EMC EMISSIONS - TEST REPORT (Full)

Test Report No.	**3162555DEN-006a** Issue Date: **Wednesday 14/Jan/2009**
Model / Serial No.	**Model: QP03 / SN: Proto1**
Product Type	**2.45 RFID Reader/Transmitter**
Client	**SYMX Systems Inc.**
Manufacturer	**SYMX Systems Inc.**
License holder	**SYMX Systems Inc.**
Address	**4909 Pearl E Circle** **Boulder, CO 80301**
Test Criteria Applied	**FCC 47 CFR Part 15.249** **IC RSS-210 issue 7**
Test Result	**PASS**
Test Project Number	**3162555**
References	
Total Pages Including Appendices:	79

Title 47 CFR 15: RADIO FREQUENCY DEVICES

Low-power License-exempt Radio Communication Devices (All Frequency Bands): Category 1 Equipment.

Tested By : Randy Thompson

Reviewed By : Michael Spataro

REVISION SUMMARY - The following changes have been made to this Report:

Rev.	Revision Statement	Author	Revision Date	Reviewer
	Initial Release of Document	See above	See above	
A	Added data for second configuration of EUT	Michael Spataro	1-12-09	

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D I R E C T O R Y

STATEMENT OF MEASUREMENT UNCERTAINTY

The data and results referenced in this document are true and accurate. The measurement uncertainty for Conducted Emissions in the frequency range of 150kHz – 30MHz is calculated to be ±3.14dB and for Radiated Emissions is calculated to be ±4.4dB in the frequency range of 10kHz – 1000MHz at 3m and ±4.9dB in the frequency range of 1 – 18GHz at 3m. For testing at 10m ±4.8dB in the frequency range of 30 – 1000MHz. For Disturbance Power, ±3.3dB in the frequency range of 30 – 1000MHz. For Flicker and Harmonics testing the equipment used is calibrated by the manufacture and is with in the tolerances specified in 61000-3-2/3. These uncertainties have been calculated using CISPR 16-4-2:2003 and represent a 95% confidence level (k=2).

EUT Received Date: 22-Sep-2008

Testing Start Date: 22-Sep-2008

Testing End Date: 12-Jan-2009

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The tests were performed according to following regulations:

1. FCC CFR47 Part 15 subpart C
2. IC RSS-210e Issue 7 2007
3. IC RSS-GEN Issue 2 2007

Emission Test Results:

Conducted Emissions – 15.207 - PASS

Test Result

Minimum limit margin - 3.30 dB at 0.520 MHz

Remarks: Configuration: AC Adapter, Average Measurement, Neutral

Radiated Unintentional and Spurious Emissions - 15.249(d) /15.205/209 - PASS

Test Result

Minimum limit margin - 4.60 dB at 123.75 MHz

Remarks: Covers RSS-210 tables 1 & 2
Configuration 1: Power Over Ethernet [POE], Quasi-Peak Measurement, Vertical

Field Strength of the Fundamental - 15.249(a) - PASS

Test Result

Minimum limit margin - 5.3 dB at 2477.94 MHz

Remarks: Covers RSS-210 A2.9(a)
Configuration 1:Mid Channel: Peak Measurement - Horizontal

Field Strength of Harmonics - 15.249(a) - PASS

Test Result

Minimum limit margin -0.6 dB at 4965.42 MHz

Remarks: Covers RSS-210 A2.9(a)

Configuration 2:High Channel: Peak Measurement

Occupied Bandwidth RSS-GEN - PASS

Test Result

Remarks: The 99% emission bandwidth is: 253.8 kHz

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GENERAL REMARKS:

The following remarks are to be considered as "where applicable" and are taken into account while completing any FCC/IC/ETSI radio tests at Intertek, ETL Semko.

Testing was performed in 3 different orthogonal axes to determine the worst case emissions from the device. The worst case emissions measurements are shown in this report.

FCC CFR47 Part 15.31: Measurement Standards: In any case where the device is powered off a battery, a fresh battery was used during test. In cases where the device is powered off an AC supply, voltage was varied per Part 15.31 to find worst case emissions.

FCC CFR47 Part 15.35: Measurement Detector Functions and Bandwidths: FCC Part 15.35 was utilized when performing the measurements within this report.

GENERAL REMARKS:

Product tested in the following configurations:
Config 1 tested September 22 2008 thru October 3 2008.

- Power Over Ethernet [POE]
- AC Adapter

Config 2 tested January 9 2009 thru January 12 2009.

Config 2 of the EUT is electrically the same as config 1. The PCBs do not change. The differences are, the plastic enclosure changes shape and is smaller and the POE module to power the EUT is moved from internal to external. The RF cables now penetrate the chassis via RF connectors. The RF power out does not change.

All Intentional Radiated Emissions measurements taken with the following:

- Tx Power = - 10dBm

Sample:
☐Production ☒Prototype ☐See Appendix B

Modifications required to pass: None

Test Specification Deviations: Additions to or Exclusions from: None

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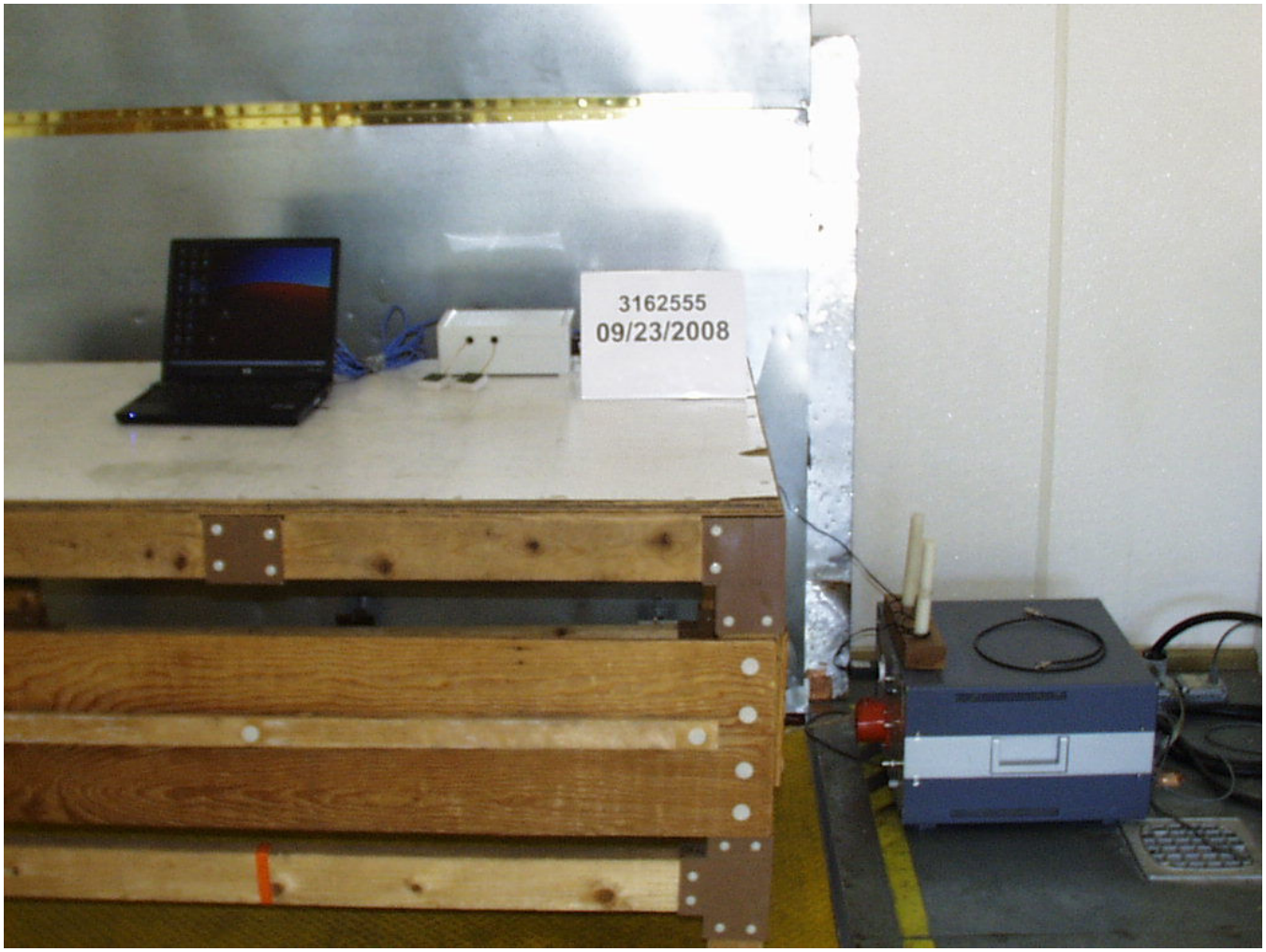
Test-setup photo(s): Config 1
Conducted Emissions – AC Adapter Power



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Test-setup photo(s): Config 1
Conducted Emissions - AC Adapter Power

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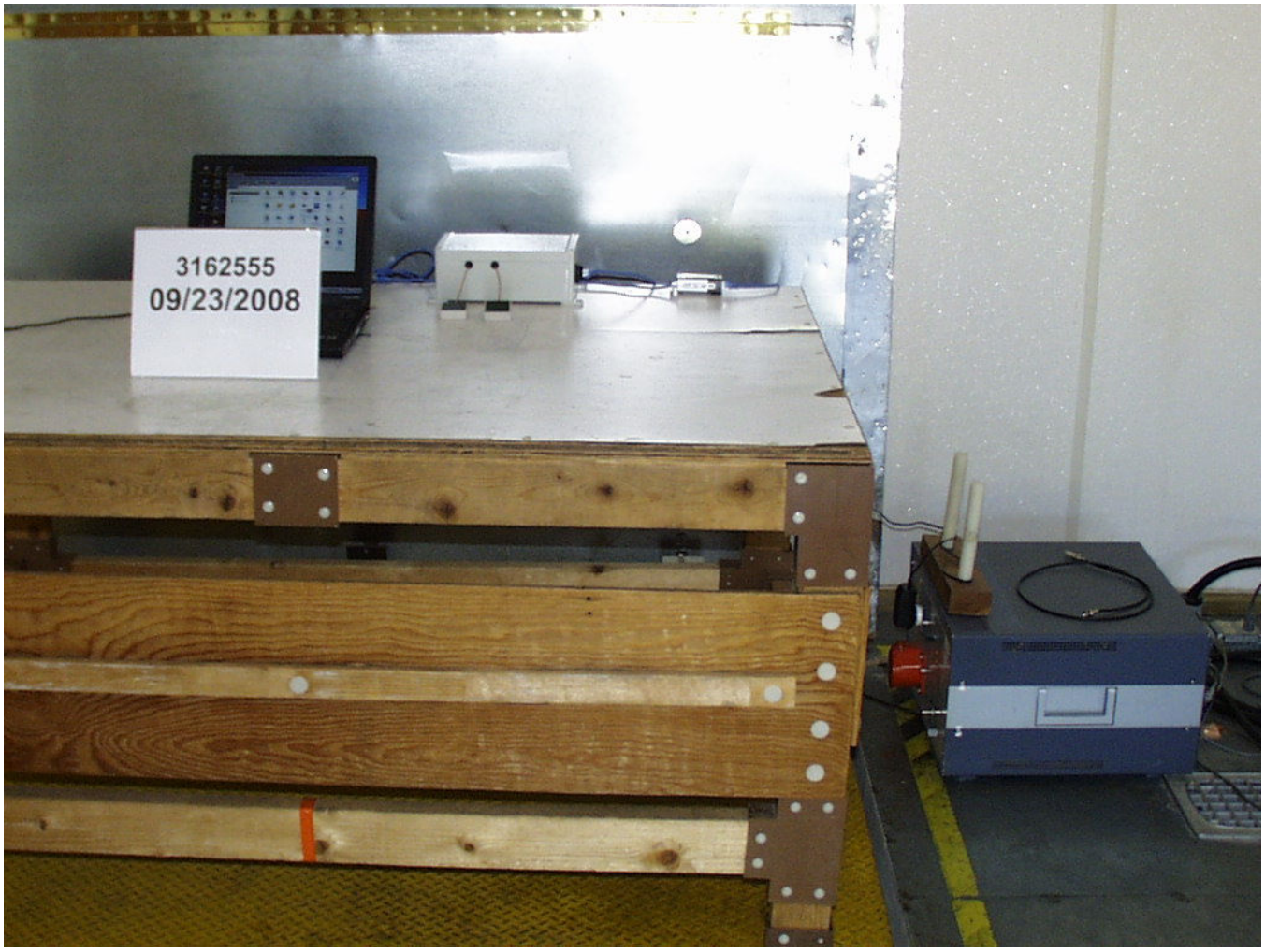
Test-setup photo(s): Config 1
Conducted Emissions – Power Over Ethernet [POE]



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Test-setup photo(s): Config 1
Conducted Emissions - Power Over Ethernet [POE]

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Test-setup photo(s): Config 1
Radiated Intentional Emissions – AC Adapter Power
Worst-Case Axis 3

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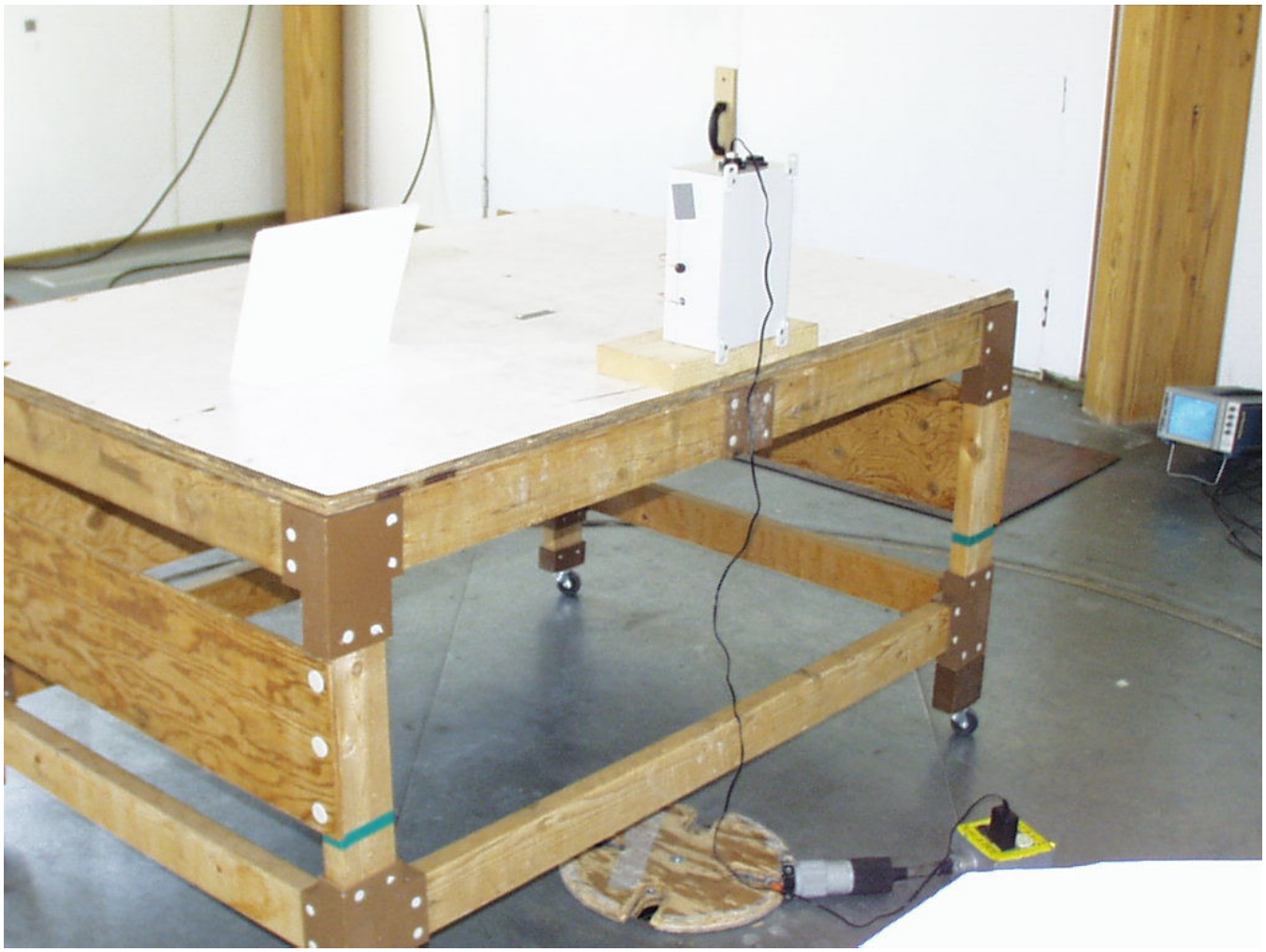
Test-setup photo(s): Config 1
Radiated Intentional Emissions – AC Adapter Power
Worst-Case Axis 3



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Test-setup photo(s): Config 1
Radiated Unintentional/Spurious Emissions – AC Adapter Power

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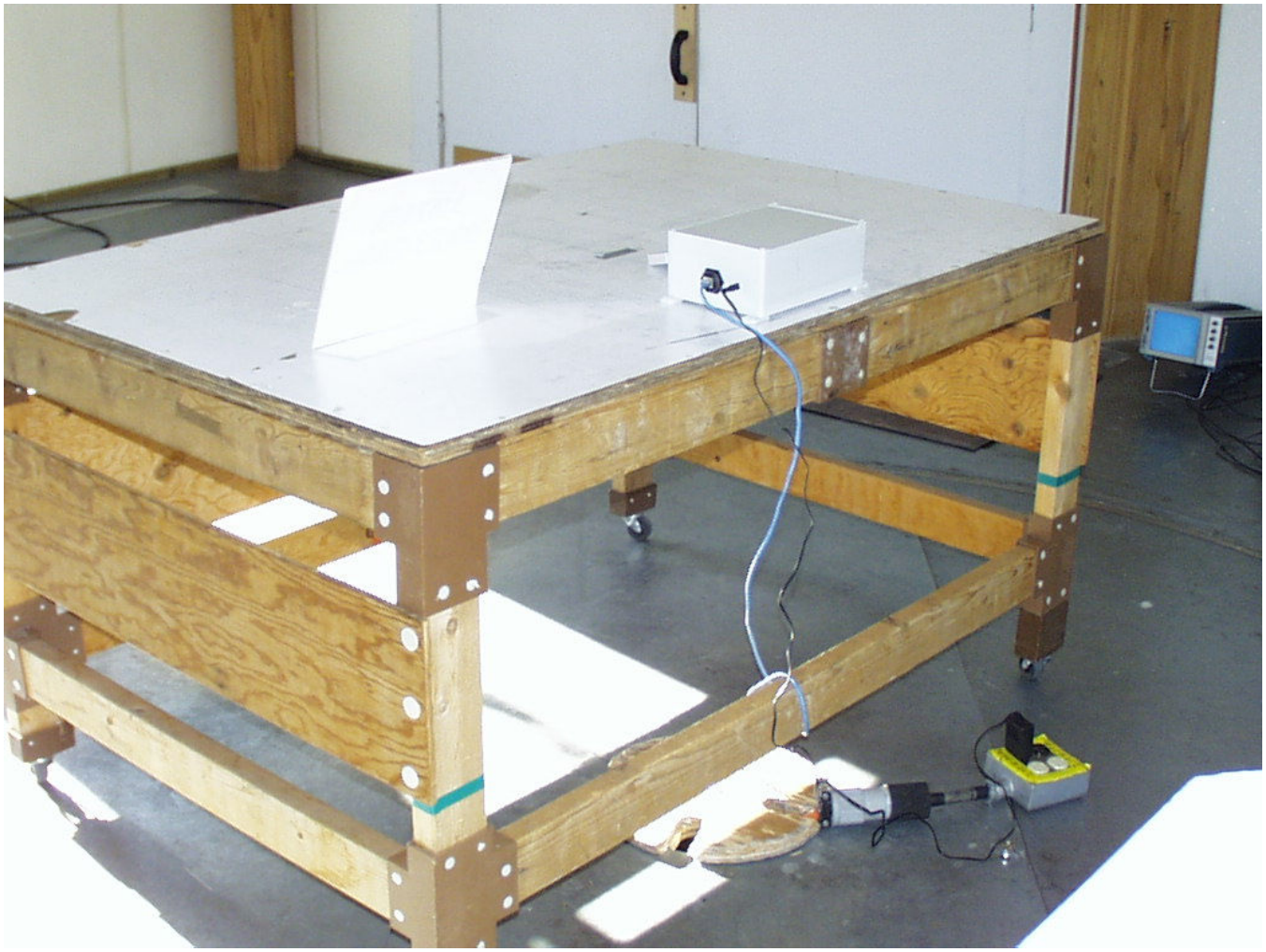
Test-setup photo(s): Config 1
Radiated Unintentional/Spurious Emissions – AC Adapter Power



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Test-setup photo(s): Config 1
Radiated Unintentional/Spurious Emissions – Power Over Ethernet [POE]

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Test-setup photo(s): Config 1
Radiated Unintentional/Spurious Emissions - Power Over Ethernet [POE]

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Test-setup photo(s): Config 2
Radiated Intentional/Spurious Emissions – Axis 1

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Test-setup photo(s): Config 2
Radiated Intentional/Spurious Emissions – Axis 2

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Test-setup photo(s): Config 2
Radiated Intentional/Spurious Emissions – Axis 2

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Test-setup photo(s): Config 2
Radiated Unintentional/Spurious Emissions

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Test-setup photo(s): Config 2
Radiated Unintentional/Spurious Emissions

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Appendix A

Test Data Sheets

and

Test Equipment Used

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Conducted Emissions Data
15.207

Data Flows as Follows:
110VAC/60Hz

- **AC Adapter Power**

- Power Over Ethernet [POE]

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Conducted Electromagnetic Emissions

Test Report #:	**3162555 Run 01**	Test Area:	Pinewood Site 1 Cond	Temperature:	26.3	°C
Test Method:	FCC Part 15.207 Class B	Test Date:	23-Sep-2008	Relative Humidity:	28.4	%
EUT Model #:	QP03	EUT Power:	110VAC/60Hz	Air Pressure:	80.0	kPa
EUT Serial #:	Proto 1					
Manufacturer:	SYMX					
EUT Description:	2.45 RFID Reader/ Transmitter					
Notes:	Test Configuration: Using AC Adapter					
	LAN Ethernet Termination with Laptop					

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / LISN / ATTEN	FINAL	TEST POINT	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB)	(dBuV)		AV15.107B	QP15.207B
0.150	-5.6 Av	0.1 / -0.2 / -9.7	4.0	Neutral	-52.0	N/A
0.150	14.5 Qp	0.1 / -0.2 / -9.7	24.1	Neutral	N/A	-41.9
0.260	29.7 Av	0.1 / -0.2 / -9.7	39.3	Neutral	-12.1	N/A
0.260	37.6 Qp	0.1 / -0.2 / -9.7	47.2	Neutral	N/A	-14.2
0.520	33.1 Av	0.1 / -0.2 / -9.7	42.7	Neutral	-3.3	N/A
0.520	39.2 Qp	0.1 / -0.2 / -9.7	48.8	Neutral	N/A	-7.2
0.780	28.4 Av	0.2 / -0.2 / -9.7	38.1	Neutral	-7.9	N/A
0.780	36.7 Qp	0.2 / -0.2 / -9.7	46.4	Neutral	N/A	-9.6
1.04	22.8 Av	0.2 / -0.2 / -9.7	32.5	Neutral	-13.5	N/A
1.04	0.0 Qp	0.2 / -0.2 / -9.7	9.7	Neutral	N/A	-46.3
1.30	10.8 Av	0.2 / -0.2 / -9.7	20.5	Neutral	-25.5	N/A
1.30	0.0 Qp	0.2 / -0.2 / -9.7	9.7	Neutral	N/A	-46.3
1.56	29.7 Av	0.3 / -0.2 / -9.7	39.5	Neutral	-6.5	N/A
1.56	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Neutral	N/A	-46.2
1.82	29.9 Av	0.3 / -0.2 / -9.7	39.7	Neutral	-6.3	N/A
1.82	38.3 Qp	0.3 / -0.2 / -9.7	48.1	Neutral	N/A	-7.9
2.08	7.1 Av	0.3 / -0.2 / -9.7	16.9	Neutral	-29.1	N/A
2.08	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Neutral	N/A	-46.2
3.12	-5.6 Av	0.3 / -0.2 / -9.7	4.2	Neutral	-41.8	N/A
3.12	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Neutral	N/A	-46.2
3.40	15.4 Av	0.3 / -0.2 / -9.7	25.2	Neutral	-20.8	N/A
3.40	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Neutral	N/A	-46.2
4.02	11.5 Av	0.3 / -0.2 / -9.7	21.3	Neutral	-24.7	N/A
4.02	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Neutral	N/A	-46.2
5.00	11.2 Av	0.4 / -0.2 / -9.7	21.1	Neutral	-24.9	N/A
5.00	0.0 Qp	0.4 / -0.2 / -9.7	9.9	Neutral	N/A	-46.1
10.00	-2.5 Av	0.7 / -0.3 / -9.7	7.6	Neutral	-42.4	N/A
10.00	0.0 Qp	0.7 / -0.3 / -9.7	10.1	Neutral	N/A	-49.9
20.00	-6.0 Av	1.0 / -1.2 / -9.8	3.6	Neutral	-46.4	N/A
20.00	0.0 Qp	1.0 / -1.2 / -9.8	9.6	Neutral	N/A	-50.4
30.00	-5.2 Av	1.2 / -2.2 / -9.9	3.7	Neutral	-46.3	N/A
30.00	0.0 Qp	1.2 / -2.2 / -9.9	8.9	Neutral	N/A	-51.1
0.150	-5.3 Av	0.1 / -0.2 / -9.7	4.3	Line 1	-51.7	N/A

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FREQ	LEVEL	CABLE / LISN / ATTEN	FINAL	TEST POINT	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB)	(dBuV)		AV15.107B	QP15.207B
0.150	0.0 Qp	0.1 / -0.2 / -9.7	9.6	Line 1	N/A	-56.4
0.240	-2.3 Av	0.1 / -0.2 / -9.7	7.3	Line 1	-44.8	N/A
0.240	0.0 Qp	0.1 / -0.2 / -9.7	9.6	Line 1	N/A	-52.5
0.490	-4.9 Av	0.1 / -0.2 / -9.7	4.7	Line 1	-41.5	N/A
0.490	0.0 Qp	0.1 / -0.2 / -9.7	9.6	Line 1	N/A	-46.6
0.490	1.2 Av	0.1 / -0.2 / -9.7	10.8	Line 1	-35.4	N/A
0.490	0.0 Qp	0.1 / -0.2 / -9.7	9.6	Line 1	N/A	-46.6
0.490	-4.8 Av	0.1 / -0.2 / -9.7	4.8	Line 1	-41.4	N/A
0.490	0.0 Qp	0.1 / -0.2 / -9.7	9.6	Line 1	N/A	-46.6
0.740	-6.0 Av	0.1 / -0.2 / -9.7	3.6	Line 1	-42.4	N/A
0.740	0.0 Qp	0.1 / -0.2 / -9.7	9.6	Line 1	N/A	-46.4
1.000	14.4 Av	0.2 / -0.2 / -9.7	24.1	Line 1	-21.9	N/A
1.000	0.0 Qp	0.2 / -0.2 / -9.7	9.7	Line 1	N/A	-46.3
1.24	-7.5 Av	0.2 / -0.2 / -9.7	2.2	Line 1	-43.8	N/A
1.24	0.0 Qp	0.2 / -0.2 / -9.7	9.7	Line 1	N/A	-46.3
1.50	26.5 Av	0.2 / -0.2 / -9.7	36.2	Line 1	-9.8	N/A
1.50	0.0 Qp	0.2 / -0.2 / -9.7	9.8	Line 1	N/A	-46.2
1.75	4.5 Av	0.3 / -0.2 / -9.7	14.3	Line 1	-31.7	N/A
1.75	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Line 1	N/A	-46.2
1.99	2.9 Av	0.3 / -0.2 / -9.7	12.7	Line 1	-33.3	N/A
1.99	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Line 1	N/A	-46.2
3.00	-7.0 Av	0.3 / -0.2 / -9.7	2.8	Line 1	-43.2	N/A
3.00	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Line 1	N/A	-46.2
3.25	-7.0 Av	0.3 / -0.2 / -9.7	2.8	Line 1	-43.2	N/A
3.25	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Line 1	N/A	-46.2
3.77	16.1 Av	0.3 / -0.2 / -9.7	25.9	Line 1	-20.1	N/A
3.77	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Line 1	N/A	-46.2
5.00	10.1 Av	0.4 / -0.2 / -9.7	20.0	Line 1	-26.0	N/A
5.00	0.0 Qp	0.4 / -0.2 / -9.7	9.9	Line 1	N/A	-46.1
10.00	0.7 Av	0.7 / -0.3 / -9.7	10.8	Line 1	-39.2	N/A
10.00	0.0 Qp	0.7 / -0.3 / -9.7	10.1	Line 1	N/A	-49.9
20.00	-2.4 Av	1.0 / -1.2 / -9.8	7.2	Line 1	-42.8	N/A
20.00	0.0 Qp	1.0 / -1.2 / -9.8	9.6	Line 1	N/A	-50.4
30.00	-1.7 Av	1.2 / -2.2 / -9.9	7.2	Line 1	-42.8	N/A
30.00	0.0 Qp	1.2 / -2.2 / -9.9	8.9	Line 1	N/A	-51.1

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FREQ	LEVEL	CABLE / LISN / ATTEN	FINAL	TEST POINT	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB)	(dBuV)		AV15.207B	QP15.207B
********** **Measurement Summary** **********						
0.520	33.1 Av	0.1 / -0.2 / -9.7	42.7	Neutral	-3.3	N/A
1.82	29.9 Av	0.3 / -0.2 / -9.7	39.7	Neutral	-6.3	N/A
1.56	29.7 Av	0.3 / -0.2 / -9.7	39.5	Neutral	-6.5	N/A
0.780	28.4 Av	0.2 / -0.2 / -9.7	38.1	Neutral	-7.9	N/A
1.50	26.5 Av	0.2 / -0.2 / -9.7	36.2	Line 1	-9.8	N/A
0.260	29.7 Av	0.1 / -0.2 / -9.7	39.3	Neutral	-12.1	N/A
1.04	22.8 Av	0.2 / -0.2 / -9.7	32.5	Neutral	-13.5	N/A
3.77	16.1 Av	0.3 / -0.2 / -9.7	25.9	Line 1	-20.1	N/A
3.40	15.4 Av	0.3 / -0.2 / -9.7	25.2	Neutral	-20.8	N/A
1.000	14.4 Av	0.2 / -0.2 / -9.7	24.1	Line 1	-21.9	N/A
4.02	11.5 Av	0.3 / -0.2 / -9.7	21.3	Neutral	-24.7	N/A
5.00	11.2 Av	0.4 / -0.2 / -9.7	21.1	Neutral	-24.9	N/A
1.30	10.8 Av	0.2 / -0.2 / -9.7	20.5	Neutral	-25.5	N/A
2.08	7.1 Av	0.3 / -0.2 / -9.7	16.9	Neutral	-29.1	N/A
1.75	4.5 Av	0.3 / -0.2 / -9.7	14.3	Line 1	-31.7	N/A
1.99	2.9 Av	0.3 / -0.2 / -9.7	12.7	Line 1	-33.3	N/A
0.490	1.2 Av	0.1 / -0.2 / -9.7	10.8	Line 1	-35.4	N/A
10.00	0.7 Av	0.7 / -0.3 / -9.7	10.8	Line 1	-39.2	N/A
3.12	-5.6 Av	0.3 / -0.2 / -9.7	4.2	Neutral	-41.8	N/A
0.150	14.5 Qp	0.1 / -0.2 / -9.7	24.1	Neutral	N/A	-41.9
0.740	-6.0 Av	0.1 / -0.2 / -9.7	3.6	Line 1	-42.4	N/A
20.00	-2.4 Av	1.0 / -1.2 / -9.8	7.2	Line 1	-42.8	N/A
30.00	-1.7 Av	1.2 / -2.2 / -9.9	7.2	Line 1	-42.8	N/A
3.00	-7.0 Av	0.3 / -0.2 / -9.7	2.8	Line 1	-43.2	N/A
3.25	-7.0 Av	0.3 / -0.2 / -9.7	2.8	Line 1	-43.2	N/A
1.24	-7.5 Av	0.2 / -0.2 / -9.7	2.2	Line 1	-43.8	N/A
0.240	-2.3 Av	0.1 / -0.2 / -9.7	7.3	Line 1	-44.8	N/A

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Conducted Electromagnetic Emissions

Test Report #:	**3162555 Run 02**	Test Area:	Pinewood Site 1 Cond	Temperature:	26.3	°C
Test Method:	FCC Part 15.207 Class B	Test Date:	23-Sep-2008	Relative Humidity:	28.4	%
EUT Model #:	QP03	EUT Power:	110VAC/60Hz	Air Pressure:	80.0	kPa
EUT Serial #:	Proto 1					
Manufacturer:	SYMX					
EUT Description:	2.45 RFID Reader/ Transmitter					
Notes:	Test Config: Using POE D-Link Base Unit DWL-P200					
	LAN Ethernet Termination with Laptop					

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / LISN / ATTEN	FINAL	TEST POINT	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB)	(dBuV)		AV15.207B	QP15.207B
0.150	28.9 Av	0.1 / -0.2 / -9.7	38.5	Neutral	-17.5	N/A
0.150	0.0 Qp	0.1 / -0.2 / -9.7	9.6	Neutral	N/A	-56.4
0.375	-4.8 Av	0.1 / -0.2 / -9.7	4.8	Neutral	-43.6	N/A
0.375	0.0 Qp	0.1 / -0.2 / -9.7	9.6	Neutral	N/A	-48.8
0.920	7.9 Av	0.2 / -0.2 / -9.7	17.6	Neutral	-28.4	N/A
0.920	0.0 Qp	0.2 / -0.2 / -9.7	9.7	Neutral	N/A	-46.3
1.01	4.5 Av	0.2 / -0.2 / -9.7	14.2	Neutral	-31.8	N/A
1.01	0.0 Qp	0.2 / -0.2 / -9.7	9.7	Neutral	N/A	-46.3
1.13	4.8 Av	0.2 / -0.2 / -9.7	14.5	Neutral	-31.5	N/A
1.13	0.0 Qp	0.2 / -0.2 / -9.7	9.7	Neutral	N/A	-46.3
1.26	0.7 Av	0.2 / -0.2 / -9.7	10.4	Neutral	-35.6	N/A
1.26	0.0 Qp	0.2 / -0.2 / -9.7	9.7	Neutral	N/A	-46.3
1.81	10.1 Av	0.3 / -0.2 / -9.7	19.9	Neutral	-26.1	N/A
1.81	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Neutral	N/A	-46.2
2.39	7.2 Av	0.3 / -0.2 / -9.7	17.0	Neutral	-29.0	N/A
2.39	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Neutral	N/A	-46.2
2.72	10.1 Av	0.3 / -0.2 / -9.7	19.9	Neutral	-26.1	N/A
2.72	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Neutral	N/A	-46.2
3.33	3.9 Av	0.3 / -0.2 / -9.7	13.7	Neutral	-32.3	N/A
3.33	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Neutral	N/A	-46.2
3.61	6.7 Av	0.3 / -0.2 / -9.7	16.4	Neutral	-29.6	N/A
3.61	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Neutral	N/A	-46.2
4.40	8.2 Av	0.3 / -0.2 / -9.7	18.1	Neutral	-27.9	N/A
4.40	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Neutral	N/A	-46.2
5.01	7.1 Av	0.4 / -0.2 / -9.7	17.0	Neutral	-33.0	N/A
5.01	0.0 Qp	0.4 / -0.2 / -9.7	9.9	Neutral	N/A	-50.1
5.23	13.5 Av	0.4 / -0.2 / -9.7	23.4	Neutral	-26.6	N/A
5.23	0.0 Qp	0.4 / -0.2 / -9.7	9.9	Neutral	N/A	-50.1
5.78	11.9 Av	0.6 / -0.2 / -9.7	22.0	Neutral	-28.0	N/A
5.78	0.0 Qp	0.6 / -0.2 / -9.7	10.1	Neutral	N/A	-49.9
7.06	11.4 Av	0.6 / -0.2 / -9.7	21.5	Neutral	-28.5	N/A
7.06	0.0 Qp	0.6 / -0.2 / -9.7	10.1	Neutral	N/A	-49.9
7.91	14.0 Av	0.6 / -0.2 / -9.7	24.1	Neutral	-25.9	N/A
7.91	0.0 Qp	0.6 / -0.2 / -9.7	10.1	Neutral	N/A	-49.9

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FREQ	LEVEL	CABLE / LISN / ATTEN	FINAL	TEST POINT	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB)	(dBuV)		AV15.207B	QP15.207B
8.22	15.2 Av	0.6 / -0.2 / -9.7	25.3	Neutral	-24.7	N/A
8.22	0.0 Qp	0.6 / -0.2 / -9.7	10.1	Neutral	N/A	-49.9
8.71	13.4 Av	0.6 / -0.3 / -9.7	23.4	Neutral	-26.6	N/A
8.71	0.0 Qp	0.6 / -0.3 / -9.7	10.0	Neutral	N/A	-50.0
9.38	17.0 Av	0.7 / -0.3 / -9.7	27.1	Neutral	-22.9	N/A
9.38	0.0 Qp	0.7 / -0.3 / -9.7	10.1	Neutral	N/A	-49.9
10.05	13.2 Av	0.7 / -0.3 / -9.7	23.3	Neutral	-26.7	N/A
10.05	0.0 Qp	0.7 / -0.3 / -9.7	10.1	Neutral	N/A	-49.9
11.21	12.0 Av	0.7 / -0.3 / -9.7	22.1	Neutral	-27.9	N/A
11.21	0.0 Qp	0.7 / -0.3 / -9.7	10.1	Neutral	N/A	-49.9
11.58	21.0 Av	0.7 / -0.3 / -9.7	31.1	Neutral	-18.9	N/A
11.58	0.0 Qp	0.7 / -0.3 / -9.7	10.1	Neutral	N/A	-49.9
11.88	14.5 Av	0.7 / -0.3 / -9.7	24.6	Neutral	-25.4	N/A
11.88	0.0 Qp	0.7 / -0.3 / -9.7	10.1	Neutral	N/A	-49.9
13.41	15.0 Av	0.7 / -0.4 / -9.7	25.0	Neutral	-25.0	N/A
13.41	0.0 Qp	0.7 / -0.4 / -9.7	10.0	Neutral	N/A	-50.0
14.02	13.7 Av	0.7 / -0.4 / -9.7	23.7	Neutral	-26.3	N/A
14.02	0.0 Qp	0.7 / -0.4 / -9.7	10.0	Neutral	N/A	-50.0
14.69	16.3 Av	0.7 / -0.5 / -9.7	26.2	Neutral	-23.8	N/A
14.69	0.0 Qp	0.7 / -0.5 / -9.7	9.9	Neutral	N/A	-50.1
16.22	15.2 Av	0.8 / -0.6 / -9.7	25.1	Neutral	-24.9	N/A
16.22	0.0 Qp	0.8 / -0.6 / -9.7	9.9	Neutral	N/A	-50.1
20.37	6.0 Av	1.0 / -1.2 / -9.8	15.6	Neutral	-34.4	N/A
20.37	0.0 Qp	1.0 / -1.2 / -9.8	9.6	Neutral	N/A	-50.4
23.43	8.5 Av	1.0 / -1.6 / -9.8	17.7	Neutral	-32.3	N/A
23.43	0.0 Qp	1.0 / -1.6 / -9.8	9.2	Neutral	N/A	-50.8
29.96	0.9 Av	1.2 / -2.2 / -9.9	9.8	Neutral	-40.2	N/A
29.96	0.0 Qp	1.2 / -2.2 / -9.9	8.9	Neutral	N/A	-51.1
0.150	13.9 Av	0.1 / -0.2 / -9.7	23.5	Line 1	-32.5	N/A
0.150	0.0 Qp	0.1 / -0.2 / -9.7	9.6	Line 1	N/A	-56.4
0.375	-4.9 Av	0.1 / -0.2 / -9.7	4.7	Line 1	-43.7	N/A
0.375	0.0 Qp	0.1 / -0.2 / -9.7	9.6	Line 1	N/A	-48.8
0.920	8.9 Av	0.2 / -0.2 / -9.7	18.6	Line 1	-27.4	N/A
0.920	0.0 Qp	0.2 / -0.2 / -9.7	9.7	Line 1	N/A	-46.3
1.01	11.7 Av	0.2 / -0.2 / -9.7	21.4	Line 1	-24.6	N/A
1.01	0.0 Qp	0.2 / -0.2 / -9.7	9.7	Line 1	N/A	-46.3
1.13	-0.5 Av	0.2 / -0.2 / -9.7	9.2	Line 1	-36.8	N/A
1.13	0.0 Qp	0.2 / -0.2 / -9.7	9.7	Line 1	N/A	-46.3
1.26	10.0 Av	0.2 / -0.2 / -9.7	19.7	Line 1	-26.3	N/A
1.26	0.0 Qp	0.2 / -0.2 / -9.7	9.7	Line 1	N/A	-46.3
1.81	12.4 Av	0.3 / -0.2 / -9.7	22.2	Line 1	-23.8	N/A
1.81	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Line 1	N/A	-46.2
2.39	10.9 Av	0.3 / -0.2 / -9.7	20.7	Line 1	-25.3	N/A
2.39	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Line 1	N/A	-46.2
2.72	6.0 Av	0.3 / -0.2 / -9.7	15.8	Line 1	-30.2	N/A
2.72	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Line 1	N/A	-46.2

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FREQ	LEVEL	CABLE / LISN / ATTEN	FINAL	TEST POINT	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB)	(dBuV)		AV15.207B	QP15.207B
3.33	3.0 Av	0.3 / -0.2 / -9.7	12.8	Line 1	-33.2	N/A
3.33	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Line 1	N/A	-46.2
3.61	6.6 Av	0.3 / -0.2 / -9.7	16.4	Line 1	-29.6	N/A
3.61	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Line 1	N/A	-46.2
4.40	8.6 Av	0.3 / -0.2 / -9.7	18.4	Line 1	-27.6	N/A
4.40	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Line 1	N/A	-46.2
5.01	7.0 Av	0.4 / -0.2 / -9.7	16.9	Line 1	-33.1	N/A
5.01	0.0 Qp	0.4 / -0.2 / -9.7	9.9	Line 1	N/A	-50.1
5.23	15.1 Av	0.4 / -0.2 / -9.7	25.0	Line 1	-25.0	N/A
5.23	0.0 Qp	0.4 / -0.2 / -9.7	9.9	Line 1	N/A	-50.1
5.78	12.7 Av	0.6 / -0.2 / -9.7	22.8	Line 1	-27.2	N/A
5.78	0.0 Qp	0.6 / -0.2 / -9.7	10.1	Line 1	N/A	-49.9
7.06	11.4 Av	0.6 / -0.2 / -9.7	21.5	Line 1	-28.5	N/A
7.06	0.0 Qp	0.6 / -0.2 / -9.7	10.1	Line 1	N/A	-49.9
7.91	15.7 Av	0.6 / -0.2 / -9.7	25.8	Line 1	-24.2	N/A
7.91	0.0 Qp	0.6 / -0.2 / -9.7	10.1	Line 1	N/A	-49.9
8.22	15.2 Av	0.6 / -0.2 / -9.7	25.3	Line 1	-24.7	N/A
8.22	0.0 Qp	0.6 / -0.2 / -9.7	10.1	Line 1	N/A	-49.9
8.71	14.1 Av	0.6 / -0.3 / -9.7	24.1	Line 1	-25.9	N/A
8.71	0.0 Qp	0.6 / -0.3 / -9.7	10.0	Line 1	N/A	-50.0
9.38	16.7 Av	0.7 / -0.3 / -9.7	26.8	Line 1	-23.2	N/A
9.38	21.7 Qp	0.7 / -0.3 / -9.7	31.8	Line 1	N/A	-28.2
10.05	13.0 Av	0.7 / -0.3 / -9.7	23.1	Line 1	-26.9	N/A
10.05	17.7 Qp	0.7 / -0.3 / -9.7	27.8	Line 1	N/A	-32.2
11.21	9.5 Av	0.7 / -0.3 / -9.7	19.6	Line 1	-30.4	N/A
11.21	15.7 Qp	0.7 / -0.3 / -9.7	25.8	Line 1	N/A	-34.2
11.58	13.3 Av	0.7 / -0.3 / -9.7	23.4	Line 1	-26.6	N/A
11.58	0.0 Qp	0.7 / -0.3 / -9.7	10.1	Line 1	N/A	-49.9
11.88	15.2 Av	0.7 / -0.3 / -9.7	25.3	Line 1	-24.7	N/A
11.88	0.0 Qp	0.7 / -0.3 / -9.7	10.1	Line 1	N/A	-49.9
13.41	14.8 Av	0.7 / -0.4 / -9.7	24.8	Line 1	-25.2	N/A
13.41	0.0 Qp	0.7 / -0.4 / -9.7	10.0	Line 1	N/A	-50.0
14.02	15.6 Av	0.7 / -0.4 / -9.7	25.6	Line 1	-24.4	N/A
14.02	0.0 Qp	0.7 / -0.4 / -9.7	10.0	Line 1	N/A	-50.0
14.69	14.4 Av	0.7 / -0.5 / -9.7	24.3	Line 1	-25.7	N/A
14.69	0.0 Qp	0.7 / -0.5 / -9.7	9.9	Line 1	N/A	-50.1
16.22	15.2 Av	0.8 / -0.6 / -9.7	25.1	Line 1	-24.9	N/A
16.22	0.0 Qp	0.8 / -0.6 / -9.7	9.9	Line 1	N/A	-50.1
20.37	8.5 Av	1.0 / -1.2 / -9.8	18.1	Line 1	-31.9	N/A
20.37	12.8 Qp	1.0 / -1.2 / -9.8	22.4	Line 1	N/A	-37.6
23.43	7.9 Av	1.0 / -1.6 / -9.8	17.1	Line 1	-32.9	N/A
23.43	0.0 Qp	1.0 / -1.6 / -9.8	9.2	Line 1	N/A	-50.8
29.96	0.8 Av	1.2 / -2.2 / -9.9	9.7	Line 1	-40.3	N/A
29.96	0.0 Qp	1.2 / -2.2 / -9.9	8.9	Line 1	N/A	-51.1

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FREQ	LEVEL	CABLE / LISN / ATTEN	FINAL	TEST POINT	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB)	(dBuV)		AV15.207B	QP15.207B
********** **Measurement Summary** **********						
0.150	28.9 Av	0.1 / -0.2 / -9.7	38.5	Neutral	-17.5	N/A
11.58	21.0 Av	0.7 / -0.3 / -9.7	31.1	Neutral	-18.9	N/A
9.38	17.0 Av	0.7 / -0.3 / -9.7	27.1	Neutral	-22.9	N/A
1.81	12.4 Av	0.3 / -0.2 / -9.7	22.2	Line 1	-23.8	N/A
14.69	16.3 Av	0.7 / -0.5 / -9.7	26.2	Neutral	-23.8	N/A
7.91	15.7 Av	0.6 / -0.2 / -9.7	25.8	Line 1	-24.2	N/A
14.02	15.6 Av	0.7 / -0.4 / -9.7	25.6	Line 1	-24.4	N/A
1.01	11.7 Av	0.2 / -0.2 / -9.7	21.4	Line 1	-24.6	N/A
8.22	15.2 Av	0.6 / -0.2 / -9.7	25.3	Line 1	-24.7	N/A
11.88	15.2 Av	0.7 / -0.3 / -9.7	25.3	Line 1	-24.7	N/A
16.22	15.2 Av	0.8 / -0.6 / -9.7	25.1	Line 1	-24.9	N/A
5.23	15.1 Av	0.4 / -0.2 / -9.7	25.0	Line 1	-25.0	N/A
13.41	15.0 Av	0.7 / -0.4 / -9.7	25.0	Neutral	-25.0	N/A
2.39	10.9 Av	0.3 / -0.2 / -9.7	20.7	Line 1	-25.3	N/A
8.71	14.1 Av	0.6 / -0.3 / -9.7	24.1	Line 1	-25.9	N/A
2.72	10.1 Av	0.3 / -0.2 / -9.7	19.9	Neutral	-26.1	N/A
1.26	10.0 Av	0.2 / -0.2 / -9.7	19.7	Line 1	-26.3	N/A
10.05	13.2 Av	0.7 / -0.3 / -9.7	23.3	Neutral	-26.7	N/A
5.78	12.7 Av	0.6 / -0.2 / -9.7	22.8	Line 1	-27.2	N/A
0.920	8.9 Av	0.2 / -0.2 / -9.7	18.6	Line 1	-27.4	N/A
4.40	8.6 Av	0.3 / -0.2 / -9.7	18.4	Line 1	-27.6	N/A
11.21	12.0 Av	0.7 / -0.3 / -9.7	22.1	Neutral	-27.9	N/A
7.06	11.4 Av	0.6 / -0.2 / -9.7	21.5	Line 1	-28.5	N/A
3.61	6.6 Av	0.3 / -0.2 / -9.7	16.4	Line 1	-29.6	N/A
1.13	4.8 Av	0.2 / -0.2 / -9.7	14.5	Neutral	-31.5	N/A
20.37	8.5 Av	1.0 / -1.2 / -9.8	18.1	Line 1	-31.9	N/A
3.33	3.9 Av	0.3 / -0.2 / -9.7	13.7	Neutral	-32.3	N/A
23.43	8.5 Av	1.0 / -1.6 / -9.8	17.7	Neutral	-32.3	N/A
5.01	7.1 Av	0.4 / -0.2 / -9.7	17.0	Neutral	-33.0	N/A
29.96	0.9 Av	1.2 / -2.2 / -9.9	9.8	Neutral	-40.2	N/A
0.375	-4.8 Av	0.1 / -0.2 / -9.7	4.8	Neutral	-43.6	N/A
2.72	0.0 Qp	0.3 / -0.2 / -9.7	9.8	Neutral	N/A	-46.2
1.13	0.0 Qp	0.2 / -0.2 / -9.7	9.7	Neutral	N/A	-46.3

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Radiated Emissions Data

Spurious Emissions
and
Unintentional Emissions

15.249(d)/15.205

Config 1
- AC Adapter Power

- Power Over Ethernet [POE]

Followed by

Config 2

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Boulder, Colorado 80301
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Radiated Electromagnetic Emissions

Test Report #:	**3162555 Run 02**	Test Area:	Pinewood Site 1 (3m)	Temperature:	24.3	°C
Test Method:	FCC Part 15.209	Test Date:	23-Sep-2008	Relative Humidity:	30.3	%
EUT Model #:	QP03	EUT Power:	110VAC/60Hz	Air Pressure:		kPa
EUT Serial #:	Proto 1					
Manufacturer:	SYMX					
EUT Description:	2.45 RFID Reader/ Transmitter					
Notes:	**Test Config: Using AC Adapter**					
	LAN Ethernet Termination with Laptop					

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
30-200MHz Vertical 0 degrees						
30.00	29.4 Qp	0.5 / 12.8 / 28.2	14.5	V / 1.0 / 0.0	-25.5	
33.39	33.2 Qp	0.6 / 12.2 / 28.2	17.8	V / 1.0 / 0.0	-22.2	
34.09	31.6 Qp	0.6 / 12.1 / 28.2	16.0	V / 1.0 / 0.0	-24.0	
34.75	32.1 Qp	0.6 / 12.1 / 28.2	16.5	V / 1.0 / 0.0	-23.5	
36.00	34.1 Qp	0.6 / 11.9 / 28.2	18.4	V / 1.0 / 0.0	-21.6	
36.14	35.8 Qp	0.6 / 11.9 / 28.2	20.0	V / 1.0 / 0.0	-20.0	
40.00	41.5 Qp	0.6 / 11.4 / 28.2	25.3	V / 1.0 / 0.0	-14.7	
45.24	37.1 Qp	0.7 / 10.6 / 28.2	20.2	V / 1.0 / 0.0	-19.8	
47.79	39.4 Qp	0.7 / 10.1 / 28.2	22.1	V / 1.0 / 0.0	-17.9	
50.00	44.2 Qp	0.7 / 9.8 / 28.2	26.6	V / 1.0 / 0.0	-13.4	
51.01	40.9 Qp	0.7 / 9.7 / 28.2	23.0	V / 1.0 / 0.0	-17.0	
52.80	44.6 Qp	0.7 / 9.4 / 28.2	26.6	V / 1.0 / 0.0	-13.4	
53.68	41.0 Qp	0.7 / 9.3 / 28.2	22.8	V / 1.0 / 0.0	-17.2	
54.59	43.8 Qp	0.7 / 9.1 / 28.2	25.4	V / 1.0 / 0.0	-14.6	
59.38	37.0 Qp	0.7 / 8.4 / 28.2	18.0	V / 1.0 / 0.0	-22.0	
60.00	37.5 Qp	0.7 / 8.3 / 28.1	18.4	V / 1.0 / 0.0	-21.6	
63.72	39.8 Qp	0.8 / 7.9 / 28.2	20.3	V / 1.0 / 0.0	-19.7	
70.00	37.0 Qp	0.8 / 8.5 / 28.2	18.1	V / 1.0 / 0.0	-21.9	
72.00	39.1 Qp	0.8 / 8.0 / 28.1	19.8	V / 1.0 / 0.0	-20.2	
80.00	40.1 Qp	0.9 / 6.8 / 28.1	19.7	V / 1.0 / 0.0	-20.3	
84.00	43.0 Qp	0.9 / 6.7 / 28.0	22.7	V / 1.0 / 0.0	-17.3	
108.54	43.5 Qp	1.1 / 10.3 / 27.9	27.0	V / 1.0 / 0.0	-16.5	
108.81	42.5 Qp	1.1 / 10.3 / 27.9	25.9	V / 1.0 / 0.0	-17.6	
120.00	39.8 Qp	1.2 / 11.4 / 27.9	24.4	V / 1.0 / 0.0	-19.1	
130.00	36.0 Qp	1.2 / 12.0 / 27.8	21.5	V / 1.0 / 0.0	-22.0	
144.00	34.2 Qp	1.3 / 12.3 / 27.7	20.2	V / 1.0 / 0.0	-23.3	
150.00	34.6 Qp	1.3 / 12.2 / 27.7	20.5	V / 1.0 / 0.0	-23.0	
160.00	30.9 Qp	1.4 / 12.0 / 27.7	16.6	V / 1.0 / 0.0	-26.9	
181.25	31.5 Qp	1.4 / 12.4 / 27.5	17.8	V / 1.0 / 0.0	-25.7	
200.00	32.9 Qp	1.5 / 13.3 / 27.3	20.3	V / 1.0 / 0.0	-23.2	
30-200MHz Vertical 90 degrees						
30.00	29.6 Qp	0.5 / 12.8 / 28.2	14.7	V / 1.0 / 90.0	-25.3	

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
33.39	32.9 Qp	0.6 / 12.2 / 28.2	17.4	V / 1.0 / 90.0	-22.6	
34.70	32.2 Qp	0.6 / 12.1 / 28.2	16.7	V / 1.0 / 90.0	-23.3	
36.00	33.6 Qp	0.6 / 11.9 / 28.2	17.9	V / 1.0 / 90.0	-22.1	
36.14	34.8 Qp	0.6 / 11.9 / 28.2	19.0	V / 1.0 / 90.0	-21.0	
40.00	41.1 Qp	0.6 / 11.4 / 28.2	24.9	V / 1.0 / 90.0	-15.1	
45.24	37.4 Qp	0.7 / 10.6 / 28.2	20.4	V / 1.0 / 90.0	-19.6	
47.79	39.9 Qp	0.7 / 10.1 / 28.2	22.5	V / 1.0 / 90.0	-17.5	
48.00	38.4 Qp	0.7 / 10.1 / 28.2	21.1	V / 1.0 / 90.0	-18.9	
50.00	44.5 Qp	0.7 / 9.8 / 28.2	26.9	V / 1.0 / 90.0	-13.1	
51.01	40.6 Qp	0.7 / 9.7 / 28.2	22.8	V / 1.0 / 90.0	-17.2	
52.80	44.4 Qp	0.7 / 9.4 / 28.2	26.3	V / 1.0 / 90.0	-13.7	
53.68	41.0 Qp	0.7 / 9.3 / 28.2	22.7	V / 1.0 / 90.0	-17.3	
59.38	37.6 Qp	0.7 / 8.4 / 28.2	18.6	V / 1.0 / 90.0	-21.4	
60.00	37.5 Qp	0.7 / 8.3 / 28.1	18.3	V / 1.0 / 90.0	-21.7	
63.72	40.9 Qp	0.8 / 7.9 / 28.2	21.4	V / 1.0 / 90.0	-18.6	
70.00	38.2 Qp	0.8 / 8.5 / 28.2	19.3	V / 1.0 / 90.0	-20.7	
72.00	36.4 Qp	0.8 / 8.0 / 28.1	17.1	V / 1.0 / 90.0	-22.9	
140.00	34.1 Qp	1.3 / 12.4 / 27.7	20.2	V / 1.0 / 90.0	-23.3	
160.00	32.6 Qp	1.4 / 12.0 / 27.7	18.4	V / 1.0 / 90.0	-25.1	
181.25	29.6 Qp	1.4 / 12.4 / 27.5	15.9	V / 1.0 / 90.0	-27.6	
30-200MHz Vertical 180 degrees						
30.00	30.8 Qp	0.5 / 12.8 / 28.2	15.8	V / 1.0 / 180.0	-24.2	
33.39	33.0 Qp	0.6 / 12.2 / 28.2	17.5	V / 1.0 / 180.0	-22.5	
40.00	41.3 Qp	0.6 / 11.4 / 28.2	25.1	V / 1.0 / 180.0	-14.9	
45.24	37.0 Qp	0.7 / 10.6 / 28.2	20.1	V / 1.0 / 180.0	-19.9	
47.79	40.1 Qp	0.7 / 10.1 / 28.2	22.8	V / 1.0 / 180.0	-17.2	
50.00	44.5 Qp	0.7 / 9.8 / 28.2	26.8	V / 1.0 / 180.0	-13.2	
52.80	44.0 Qp	0.7 / 9.4 / 28.2	25.9	V / 1.0 / 180.0	-14.1	
63.72	40.5 Qp	0.8 / 7.9 / 28.2	21.1	V / 1.0 / 180.0	-18.9	
110.00	40.0 Qp	1.1 / 10.5 / 28.0	23.6	V / 1.0 / 180.0	-19.9	
30-200MHz Vertical 270 degrees						
33.39	33.0 Qp	0.6 / 12.2 / 28.2	17.5	V / 1.0 / 270.0	-22.5	
45.24	37.1 Qp	0.7 / 10.6 / 28.2	20.2	V / 1.0 / 270.0	-19.8	
47.79	39.5 Qp	0.7 / 10.1 / 28.2	22.2	V / 1.0 / 270.0	-17.8	
63.72	42.1 Qp	0.8 / 7.9 / 28.2	22.7	V / 1.0 / 270.0	-17.3	
Following signals maximized between 30 & 200MHz Vertical						
40.00	44.3 Qp	0.6 / 11.4 / 28.2	28.1	V / 1.0 / 352.0	-11.9	
50.00	45.0 Qp	0.7 / 9.8 / 28.2	27.3	V / 1.0 / 354.0	-12.7	
52.80	45.3 Qp	0.7 / 9.4 / 28.2	27.2	V / 1.0 / 208.0	-12.8	
54.59	45.0 Qp	0.7 / 9.1 / 28.2	26.6	V / 1.0 / 315.0	-13.4	
108.82	42.0 Qp	1.1 / 10.3 / 27.9	25.5	V / 1.0 / 12.0	-18.0	
30-200MHz Horizontal 0 degrees						
30.00	23.4 Qp	0.5 / 12.8 / 28.2	8.5	H / 1.6 / 0.0	-31.5	
33.39	26.8 Qp	0.6 / 12.2 / 28.2	11.3	H / 1.6 / 0.0	-28.7	

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
34.09	25.6 Qp	0.6 / 12.1 / 28.2	10.1	H / 1.6 / 0.0	-29.9	
34.70	26.8 Qp	0.6 / 12.1 / 28.2	11.2	H / 1.6 / 0.0	-28.8	
36.00	27.4 Qp	0.6 / 11.9 / 28.2	11.7	H / 1.6 / 0.0	-28.3	
36.14	28.8 Qp	0.6 / 11.9 / 28.2	13.0	H / 1.6 / 0.0	-27.0	
40.00	31.1 Qp	0.6 / 11.4 / 28.2	14.8	H / 1.6 / 0.0	-25.2	
45.24	31.9 Qp	0.7 / 10.6 / 28.2	14.9	H / 1.6 / 0.0	-25.1	
47.79	31.7 Qp	0.7 / 10.1 / 28.2	14.4	H / 1.6 / 0.0	-25.6	
47.47	34.4 Qp	0.7 / 10.2 / 28.2	17.1	H / 1.6 / 0.0	-22.9	
48.00	34.4 Qp	0.7 / 10.1 / 28.2	17.0	H / 1.6 / 0.0	-23.0	
50.00	36.0 Qp	0.7 / 9.8 / 28.2	18.3	H / 1.6 / 0.0	-21.7	
51.01	35.9 Qp	0.7 / 9.7 / 28.2	18.0	H / 1.6 / 0.0	-22.0	
52.80	34.1 Qp	0.7 / 9.4 / 28.2	16.1	H / 1.6 / 0.0	-23.9	
53.68	30.9 Qp	0.7 / 9.3 / 28.2	12.7	H / 1.6 / 0.0	-27.3	
54.59	33.5 Qp	0.7 / 9.1 / 28.2	15.1	H / 1.6 / 0.0	-24.9	
60.00	29.1 Qp	0.7 / 8.3 / 28.1	10.0	H / 1.6 / 0.0	-30.0	
72.00	30.4 Qp	0.8 / 8.0 / 28.1	11.1	H / 1.6 / 0.0	-28.9	
80.00	27.4 Qp	0.9 / 6.8 / 28.1	7.0	H / 1.6 / 0.0	-33.0	
84.00	29.9 Qp	0.9 / 6.7 / 28.0	9.6	H / 1.6 / 0.0	-30.4	
108.81	34.0 Qp	1.1 / 10.3 / 27.9	17.4	H / 1.6 / 0.0	-26.1	
110.00	35.1 Qp	1.1 / 10.5 / 28.0	18.7	H / 1.6 / 0.0	-24.8	
120.00	30.0 Qp	1.2 / 11.4 / 27.9	14.7	H / 1.6 / 0.0	-28.8	
123.64	28.1 Qp	1.2 / 11.7 / 27.9	13.1	H / 1.6 / 0.0	-30.4	
129.94	30.1 Qp	1.2 / 12.0 / 27.8	15.5	H / 1.6 / 0.0	-28.0	
130.84	30.0 Qp	1.2 / 12.1 / 27.8	15.5	H / 1.6 / 0.0	-28.0	
132.00	29.1 Qp	1.2 / 12.1 / 27.9	14.6	H / 1.6 / 0.0	-28.9	
139.83	31.5 Qp	1.3 / 12.4 / 27.7	17.5	H / 1.6 / 0.0	-26.0	
144.00	31.7 Qp	1.3 / 12.3 / 27.7	17.6	H / 1.6 / 0.0	-25.9	
150.00	29.7 Qp	1.3 / 12.2 / 27.7	15.6	H / 1.6 / 0.0	-27.9	
156.00	26.4 Qp	1.4 / 12.1 / 27.7	12.1	H / 1.6 / 0.0	-31.4	
160.00	29.4 Qp	1.4 / 12.0 / 27.7	15.1	H / 1.6 / 0.0	-28.4	
168.00	28.9 Qp	1.4 / 12.0 / 27.6	14.7	H / 1.6 / 0.0	-28.8	
169.79	27.6 Qp	1.4 / 12.0 / 27.6	13.5	H / 1.6 / 0.0	-30.0	
180.00	28.4 Qp	1.4 / 12.3 / 27.4	14.7	H / 1.6 / 0.0	-28.8	
181.25	30.8 Qp	1.4 / 12.4 / 27.5	17.1	H / 1.6 / 0.0	-26.4	
189.91	27.0 Qp	1.4 / 12.7 / 27.5	13.7	H / 1.6 / 0.0	-29.8	
30-200MHz Horizontal 90 degrees						
40.00	27.7 Qp	0.6 / 11.4 / 28.2	11.5	H / 1.6 / 90.0	-28.5	
47.47	29.2 Qp	0.7 / 10.2 / 28.2	12.0	H / 1.6 / 90.0	-28.0	
50.00	30.2 Qp	0.7 / 9.8 / 28.2	12.5	H / 1.6 / 90.0	-27.5	
51.01	30.1 Qp	0.7 / 9.7 / 28.2	12.3	H / 1.6 / 90.0	-27.7	
52.80	33.8 Qp	0.7 / 9.4 / 28.2	15.7	H / 1.6 / 90.0	-24.3	
54.59	33.8 Qp	0.7 / 9.1 / 28.2	15.4	H / 1.6 / 90.0	-24.6	
72.00	31.1 Qp	0.8 / 8.0 / 28.1	11.8	H / 1.6 / 90.0	-28.2	
123.60	28.5 Qp	1.2 / 11.7 / 27.9	13.5	H / 1.6 / 90.0	-30.0	
129.90	31.1 Qp	1.2 / 12.0 / 27.8	16.5	H / 1.6 / 90.0	-27.0	
130.84	31.6 Qp	1.2 / 12.1 / 27.8	17.0	H / 1.6 / 90.0	-26.5	
132.00	28.2 Qp	1.2 / 12.1 / 27.9	13.8	H / 1.6 / 90.0	-29.7	

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(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
139.81	31.4 Qp	1.3 / 12.4 / 27.7	17.4	H / 1.6 / 90.0	-26.1	
139.82	31.7 Qp	1.3 / 12.4 / 27.7	17.7	H / 1.6 / 90.0	-25.8	
144.00	31.6 Qp	1.3 / 12.3 / 27.7	17.6	H / 1.6 / 90.0	-25.9	
150.00	29.7 Qp	1.3 / 12.2 / 27.7	15.6	H / 1.6 / 90.0	-27.9	
156.00	27.3 Qp	1.4 / 12.1 / 27.7	13.0	H / 1.6 / 90.0	-30.5	
160.00	28.9 Qp	1.4 / 12.0 / 27.7	14.6	H / 1.6 / 90.0	-28.9	
168.00	29.8 Qp	1.4 / 12.0 / 27.6	15.6	H / 1.6 / 90.0	-27.9	
169.79	28.9 Qp	1.4 / 12.0 / 27.6	14.7	H / 1.6 / 90.0	-28.8	
169.79	29.1 Qp	1.4 / 12.0 / 27.6	14.9	H / 1.6 / 90.0	-28.6	
180.00	31.4 Qp	1.4 / 12.3 / 27.4	17.7	H / 1.6 / 90.0	-25.8	
181.25	31.9 Qp	1.4 / 12.4 / 27.5	18.2	H / 1.6 / 90.0	-25.3	
189.89	29.8 Qp	1.4 / 12.7 / 27.5	16.4	H / 1.6 / 90.0	-27.1	
189.89	29.6 Qp	1.4 / 12.7 / 27.5	16.3	H / 1.6 / 90.0	-27.2	
200.00	25.9 Qp	1.5 / 13.3 / 27.3	13.3	H / 1.6 / 90.0	-30.2	
30-200MHz Horizontal 180 degrees						
72.00	31.2 Qp	0.8 / 8.0 / 28.1	11.9	H / 1.6 / 180.0	-28.1	
123.60	29.4 Qp	1.2 / 11.7 / 27.9	14.4	H / 1.6 / 180.0	-29.1	
123.58	29.4 Qp	1.2 / 11.7 / 27.9	14.5	H / 1.6 / 180.0	-29.0	
129.90	32.8 Qp	1.2 / 12.0 / 27.8	18.2	H / 1.6 / 180.0	-25.3	
130.79	32.4 Qp	1.2 / 12.1 / 27.8	17.9	H / 1.6 / 180.0	-25.6	
132.00	30.7 Qp	1.2 / 12.1 / 27.9	16.2	H / 1.6 / 180.0	-27.3	
139.80	30.5 Qp	1.3 / 12.4 / 27.7	16.5	H / 1.6 / 180.0	-27.0	
140.08	32.1 Qp	1.3 / 12.4 / 27.7	18.2	H / 1.6 / 180.0	-25.3	
144.00	31.1 Qp	1.3 / 12.3 / 27.7	17.0	H / 1.6 / 180.0	-26.5	
156.00	27.2 Qp	1.4 / 12.1 / 27.7	12.9	H / 1.6 / 180.0	-30.6	
167.98	29.6 Qp	1.4 / 12.0 / 27.6	15.4	H / 1.6 / 180.0	-28.1	
169.79	35.7 Qp	1.4 / 12.0 / 27.6	21.5	H / 1.6 / 180.0	-22.0	
169.78	27.2 Qp	1.4 / 12.0 / 27.6	13.0	H / 1.6 / 180.0	-30.5	
181.25	29.1 Qp	1.4 / 12.4 / 27.5	15.5	H / 1.6 / 180.0	-28.0	
30-200MHz Horizontal 270 degrees						
72.00	30.6 Qp	0.8 / 8.0 / 28.1	11.3	H / 1.6 / 270.0	-28.7	
160.00	27.9 Qp	1.4 / 12.0 / 27.7	13.6	H / 1.6 / 270.0	-29.9	
181.25	30.9 Qp	1.4 / 12.4 / 27.5	17.2	H / 1.6 / 270.0	-26.3	
Following signals maximized between 30 & 200 MHz Horizontal						
40.00	32.9 Qp	0.6 / 11.4 / 28.2	16.7	H / 1.1 / 32.0	-23.3	
50.00	37.6 Qp	0.7 / 9.8 / 28.2	20.0	H / 1.1 / 348.0	-20.0	
52.80	41.0 Qp	0.7 / 9.4 / 28.2	23.0	H / 1.1 / 348.0	-17.0	
200-1000MHz Vertical 0 degrees						
203.16	30.2 Qp	1.5 / 11.2 / 27.4	15.5	V / 1.0 / 0.0	-28.0	
204.00	30.2 Qp	1.5 / 11.2 / 27.4	15.5	V / 1.0 / 0.0	-28.0	
216.00	29.2 Qp	1.6 / 11.1 / 27.3	14.6	V / 1.0 / 0.0	-28.9	
228.00	23.9 Qp	1.6 / 11.0 / 27.2	9.4	V / 1.0 / 0.0	-36.6	
239.65	23.4 Qp	1.7 / 11.5 / 27.2	9.4	V / 1.0 / 0.0	-36.6	

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(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
240.00	25.4 Qp	1.7 / 11.6 / 27.2	11.4	V / 1.0 / 0.0	-34.6	
248.94	28.1 Qp	1.7 / 12.4 / 27.2	15.0	V / 1.0 / 0.0	-31.0	
250.05	45.4 Qp	1.7 / 12.5 / 27.2	32.5	V / 1.0 / 0.0	-13.5	
250.18	25.6 Qp	1.7 / 12.5 / 27.2	12.7	V / 1.0 / 0.0	-33.3	
250.34	26.2 Qp	1.7 / 12.6 / 27.1	13.4	V / 1.0 / 0.0	-32.6	
252.00	22.4 Qp	1.7 / 12.6 / 27.0	9.7	V / 1.0 / 0.0	-36.3	
256.48	26.3 Qp	1.8 / 12.6 / 27.1	13.6	V / 1.0 / 0.0	-32.4	
260.66	25.0 Qp	1.8 / 12.7 / 27.1	12.4	V / 1.0 / 0.0	-33.6	
263.23	27.4 Qp	1.8 / 12.7 / 27.0	14.9	V / 1.0 / 0.0	-31.1	
263.33	22.6 Qp	1.8 / 12.7 / 27.0	10.0	V / 1.0 / 0.0	-36.0	
266.71	26.6 Qp	1.8 / 12.6 / 27.1	13.8	V / 1.0 / 0.0	-32.2	
269.65	25.1 Qp	1.8 / 12.5 / 27.0	12.3	V / 1.0 / 0.0	-33.7	
312.00	25.4 Qp	1.9 / 14.8 / 27.0	15.2	V / 1.0 / 0.0	-30.8	
324.00	25.1 Qp	2.0 / 14.1 / 27.1	14.0	V / 1.0 / 0.0	-32.0	
360.00	22.9 Qp	2.1 / 14.8 / 27.3	12.5	V / 1.0 / 0.0	-33.5	
400.01	26.1 Qp	2.2 / 15.4 / 27.7	16.0	V / 1.0 / 0.0	-30.0	
432.00	25.2 Qp	2.3 / 16.1 / 28.0	15.7	V / 1.0 / 0.0	-30.3	
513.74	32.5 Qp	2.6 / 17.9 / 28.3	24.7	V / 1.0 / 0.0	-21.3	
540.00	25.9 Qp	2.6 / 17.9 / 28.3	18.1	V / 1.0 / 0.0	-27.9	
566.33	22.9 Qp	2.7 / 18.4 / 28.4	15.7	V / 1.0 / 0.0	-30.3	
630.09	26.2 Qp	3.0 / 19.5 / 28.3	20.4	V / 1.0 / 0.0	-25.6	
673.75	26.9 Qp	3.1 / 21.0 / 28.1	22.9	V / 1.0 / 0.0	-23.1	
960.00	24.8 Qp	3.7 / 23.1 / 27.3	24.2	V / 1.0 / 0.0	-21.8	
960.13	21.6 Qp	3.7 / 23.1 / 27.3	21.0	V / 1.0 / 0.0	-33.0	
200-1000MHz Vertical 90 degrees						
216.00	33.1 Qp	1.6 / 11.1 / 27.3	18.5	V / 1.0 / 90.0	-25.0	
228.00	26.5 Qp	1.6 / 11.0 / 27.2	12.0	V / 1.0 / 90.0	-34.0	
239.65	25.4 Qp	1.7 / 11.5 / 27.2	11.5	V / 1.0 / 90.0	-34.5	
240.00	26.2 Qp	1.7 / 11.6 / 27.2	12.3	V / 1.0 / 90.0	-33.7	
248.94	27.9 Qp	1.7 / 12.4 / 27.2	14.8	V / 1.0 / 90.0	-31.2	
250.34	26.1 Qp	1.7 / 12.6 / 27.1	13.3	V / 1.0 / 90.0	-32.7	
252.00	23.9 Qp	1.7 / 12.6 / 27.0	11.2	V / 1.0 / 90.0	-34.8	
256.48	26.6 Qp	1.8 / 12.6 / 27.1	14.0	V / 1.0 / 90.0	-32.0	
260.66	25.8 Qp	1.8 / 12.7 / 27.1	13.2	V / 1.0 / 90.0	-32.8	
263.23	26.9 Qp	1.8 / 12.7 / 27.0	14.4	V / 1.0 / 90.0	-31.6	
324.00	27.6 Qp	2.0 / 14.1 / 27.1	16.6	V / 1.0 / 90.0	-29.4	
360.00	22.6 Qp	2.1 / 14.8 / 27.3	12.1	V / 1.0 / 90.0	-33.9	
432.00	26.9 Qp	2.3 / 16.1 / 28.0	17.4	V / 1.0 / 90.0	-28.6	
540.00	27.7 Qp	2.6 / 17.9 / 28.3	19.9	V / 1.0 / 90.0	-26.1	
673.75	27.9 Qp	3.1 / 21.0 / 28.1	23.8	V / 1.0 / 90.0	-22.2	
960.00	25.4 Qp	3.7 / 23.1 / 27.3	24.8	V / 1.0 / 90.0	-21.2	
200-1000MHz Vertical 180 degrees						
216.00	33.0 Qp	1.6 / 11.1 / 27.3	18.3	V / 1.0 / 180.0	-25.2	
240.00	26.0 Qp	1.7 / 11.6 / 27.2	12.0	V / 1.0 / 180.0	-34.0	
250.34	26.1 Qp	1.7 / 12.6 / 27.1	13.2	V / 1.0 / 180.0	-32.8	
256.48	27.2 Qp	1.8 / 12.6 / 27.1	14.5	V / 1.0 / 180.0	-31.5	

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(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
263.23	27.9 Qp	1.8 / 12.7 / 27.0	15.4	V / 1.0 / 180.0	-30.6	
269.65	24.9 Qp	1.8 / 12.5 / 27.0	12.2	V / 1.0 / 180.0	-33.8	
432.00	27.9 Qp	2.3 / 16.1 / 28.0	18.3	V / 1.0 / 180.0	-27.7	
673.75	28.4 Qp	3.1 / 21.0 / 28.1	24.4	V / 1.0 / 180.0	-21.6	
960.13	21.6 Qp	3.7 / 23.1 / 27.3	21.1	V / 1.0 / 180.0	-32.9	
960.13	21.6 Qp	3.7 / 23.1 / 27.3	21.1	V / 1.0 / 180.0	-32.9	
200-1000MHz Vertical 270 degrees						
216.00	37.3 Qp	1.6 / 11.1 / 27.3	22.7	V / 1.0 / 270.0	-20.8	
250.05	45.1 Qp	1.7 / 12.5 / 27.2	32.3	V / 1.0 / 270.0	-13.7	
250.34	26.4 Qp	1.7 / 12.6 / 27.1	13.6	V / 1.0 / 270.0	-32.4	
256.48	27.0 Qp	1.8 / 12.6 / 27.1	14.3	V / 1.0 / 270.0	-31.7	
263.23	27.9 Qp	1.8 / 12.7 / 27.0	15.4	V / 1.0 / 270.0	-30.6	
269.65	25.0 Qp	1.8 / 12.5 / 27.0	12.3	V / 1.0 / 270.0	-33.7	
513.74	32.2 Qp	2.6 / 17.9 / 28.3	24.5	V / 1.0 / 270.0	-21.5	
566.33	23.0 Qp	2.7 / 18.4 / 28.4	15.7	V / 1.0 / 270.0	-30.3	
960.13	21.8 Qp	3.7 / 23.1 / 27.3	21.2	V / 1.0 / 270.0	-32.8	
Following are maximized						
216.00	37.8 Qp	1.6 / 11.1 / 27.3	23.2	V / 1.0 / 270.0	-20.3	
250.02	32.4 Qp	1.7 / 12.5 / 27.2	19.5	V / 1.2 / 277.8	-26.5	
324.00	29.3 Qp	2.0 / 14.1 / 27.1	18.3	V / 1.0 / 83.1	-27.7	
432.00	31.9 Qp	2.3 / 16.1 / 28.0	22.3	V / 1.2 / 229.3	-23.7	
673.75	28.3 Qp	3.1 / 21.0 / 28.1	24.3	V / 1.2 / 84.6	-21.7	
960.00	26.7 Qp	3.7 / 23.1 / 27.3	26.2	V / 1.5 / 87.7	-19.8	
200-1000MHz Horizontal 0 degrees						
200.00	26.4 Qp	1.5 / 11.2 / 27.3	11.8	H / 1.6 / 0.0	-31.7	
203.16	24.7 Qp	1.5 / 11.2 / 27.4	10.0	H / 1.6 / 0.0	-33.5	
203.76	29.8 Qp	1.5 / 11.2 / 27.4	15.0	H / 1.6 / 0.0	-28.5	
216.00	41.6 Qp	1.6 / 11.1 / 27.3	27.0	H / 1.6 / 0.0	-16.5	
228.00	22.7 Qp	1.6 / 11.0 / 27.2	8.2	H / 1.6 / 0.0	-37.8	
240.00	29.6 Qp	1.7 / 11.6 / 27.2	15.6	H / 1.6 / 0.0	-30.4	
250.05	30.1 Qp	1.7 / 12.5 / 27.2	17.2	H / 1.6 / 0.0	-28.8	
256.48	28.4 Qp	1.8 / 12.6 / 27.1	15.7	H / 1.6 / 0.0	-30.3	
263.23	27.8 Qp	1.8 / 12.7 / 27.0	15.2	H / 1.6 / 0.0	-30.8	
270.00	28.1 Qp	1.8 / 12.5 / 27.0	15.4	H / 1.6 / 0.0	-30.6	
324.00	25.5 Qp	2.0 / 14.1 / 27.1	14.5	H / 1.6 / 0.0	-31.5	
432.00	30.4 Qp	2.3 / 16.1 / 28.0	20.9	H / 1.6 / 0.0	-25.1	
540.00	31.9 Qp	2.6 / 17.9 / 28.3	24.0	H / 1.6 / 0.0	-22.0	
960.00	23.4 Qp	3.7 / 23.1 / 27.3	22.8	H / 1.6 / 0.0	-23.2	
200-1000MHz Horizontal 90 degrees						
203.76	28.9 Qp	1.5 / 11.2 / 27.4	14.2	H / 1.6 / 90.0	-29.3	
216.00	40.1 Qp	1.6 / 11.1 / 27.3	25.5	H / 1.6 / 90.0	-18.0	
240.00	29.9 Qp	1.7 / 11.6 / 27.2	15.9	H / 1.6 / 90.0	-30.1	
256.48	28.3 Qp	1.8 / 12.6 / 27.1	15.6	H / 1.6 / 90.0	-30.4	
263.23	28.1 Qp	1.8 / 12.7 / 27.0	15.6	H / 1.6 / 90.0	-30.4	

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
270.00	32.6 Qp	1.8 / 12.5 / 27.0	19.9	H / 1.6 / 90.0	-26.1	
260.00	24.8 Qp	1.8 / 12.7 / 27.1	12.1	H / 1.6 / 90.0	-33.9	
300.04	24.9 Qp	1.9 / 13.9 / 27.1	13.6	H / 1.6 / 90.0	-32.4	
550.06	33.2 Qp	2.6 / 18.0 / 28.3	25.6	H / 1.6 / 90.0	-20.4	
200-1000MHz Horizontal 180 degrees						
240.00	32.1 Qp	1.7 / 11.6 / 27.2	18.2	H / 1.6 / 180.0	-27.8	
256.48	28.4 Qp	1.8 / 12.6 / 27.1	15.8	H / 1.6 / 180.0	-30.2	
263.23	28.6 Qp	1.8 / 12.7 / 27.0	16.0	H / 1.6 / 180.0	-30.0	
270.00	29.6 Qp	1.8 / 12.5 / 27.0	16.9	H / 1.6 / 180.0	-29.1	
300.04	27.0 Qp	1.9 / 13.9 / 27.1	15.7	H / 1.6 / 180.0	-30.3	
550.06	28.4 Qp	2.6 / 18.0 / 28.3	20.7	H / 1.6 / 180.0	-25.3	
200-1000MHz Horizontal 270 degrees						
203.76	29.8 Qp	1.5 / 11.2 / 27.4	15.0	H / 1.6 / 270.0	-28.5	
256.48	28.6 Qp	1.8 / 12.6 / 27.1	15.9	H / 1.6 / 270.0	-30.1	
260.00	27.1 Qp	1.8 / 12.7 / 27.1	14.4	H / 1.6 / 270.0	-31.6	
270.00	33.1 Qp	1.8 / 12.5 / 27.0	20.4	H / 1.6 / 270.0	-25.6	
300.04	26.9 Qp	1.9 / 13.9 / 27.1	15.6	H / 1.6 / 270.0	-30.4	
432.00	30.6 Qp	2.3 / 16.1 / 28.0	21.1	H / 1.6 / 270.0	-24.9	
Following signals maximized between 200 & 1000MHz Horizontal						
216.00	42.8 Qp	1.6 / 11.1 / 27.3	28.2	H / 1.4 / 348.0	-15.3	
250.05	31.4 Qp	1.7 / 12.5 / 27.2	18.6	H / 1.7 / 245.0	-27.4	
270.00	37.1 Qp	1.8 / 12.5 / 27.0	24.4	H / 1.3 / 264.0	-21.6	
324.00	35.7 Qp	2.0 / 14.1 / 27.1	24.7	H / 1.1 / 120.0	-21.3	
960.00	26.4 Qp	3.7 / 23.1 / 27.3	25.8	H / 1.1 / 12.0	-20.2	

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
********** **Measurement Summary** **********						
40.00	44.3 Qp	0.6 / 11.4 / 28.2	28.1	V / 1.0 / 352.0	-11.9	
50.00	45.0 Qp	0.7 / 9.8 / 28.2	27.3	V / 1.0 / 354.0	-12.7	
52.80	45.3 Qp	0.7 / 9.4 / 28.2	27.2	V / 1.0 / 208.0	-12.8	
54.59	45.0 Qp	0.7 / 9.1 / 28.2	26.6	V / 1.0 / 315.0	-13.4	
250.05	45.4 Qp	1.7 / 12.5 / 27.2	32.5	V / 1.0 / 0.0	-13.5	
216.00	42.8 Qp	1.6 / 11.1 / 27.3	28.2	H / 1.4 / 348.0	-15.3	
108.54	43.5 Qp	1.1 / 10.3 / 27.9	27.0	V / 1.0 / 0.0	-16.5	
51.01	40.9 Qp	0.7 / 9.7 / 28.2	23.0	V / 1.0 / 0.0	-17.0	
47.79	40.1 Qp	0.7 / 10.1 / 28.2	22.8	V / 1.0 / 180.0	-17.2	
53.68	41.0 Qp	0.7 / 9.3 / 28.2	22.8	V / 1.0 / 0.0	-17.2	
63.72	42.1 Qp	0.8 / 7.9 / 28.2	22.7	V / 1.0 / 270.0	-17.3	
84.00	43.0 Qp	0.9 / 6.7 / 28.0	22.7	V / 1.0 / 0.0	-17.3	
108.81	42.5 Qp	1.1 / 10.3 / 27.9	25.9	V / 1.0 / 0.0	-17.6	
48.00	38.4 Qp	0.7 / 10.1 / 28.2	21.1	V / 1.0 / 90.0	-18.9	
120.00	39.8 Qp	1.2 / 11.4 / 27.9	24.4	V / 1.0 / 0.0	-19.1	
45.24	37.4 Qp	0.7 / 10.6 / 28.2	20.4	V / 1.0 / 90.0	-19.6	
960.00	26.7 Qp	3.7 / 23.1 / 27.3	26.2	V / 1.5 / 87.7	-19.8	
110.00	40.0 Qp	1.1 / 10.5 / 28.0	23.6	V / 1.0 / 180.0	-19.9	
36.14	35.8 Qp	0.6 / 11.9 / 28.2	20.0	V / 1.0 / 0.0	-20.0	
72.00	39.1 Qp	0.8 / 8.0 / 28.1	19.8	V / 1.0 / 0.0	-20.2	
80.00	40.1 Qp	0.9 / 6.8 / 28.1	19.7	V / 1.0 / 0.0	-20.3	
550.06	33.2 Qp	2.6 / 18.0 / 28.3	25.6	H / 1.6 / 90.0	-20.4	
70.00	38.2 Qp	0.8 / 8.5 / 28.2	19.3	V / 1.0 / 90.0	-20.7	
324.00	35.7 Qp	2.0 / 14.1 / 27.1	24.7	H / 1.1 / 120.0	-21.3	
513.74	32.5 Qp	2.6 / 17.9 / 28.3	24.7	V / 1.0 / 0.0	-21.3	
59.38	37.6 Qp	0.7 / 8.4 / 28.2	18.6	V / 1.0 / 90.0	-21.4	
36.00	34.1 Qp	0.6 / 11.9 / 28.2	18.4	V / 1.0 / 0.0	-21.6	
60.00	37.5 Qp	0.7 / 8.3 / 28.1	18.4	V / 1.0 / 0.0	-21.6	
270.00	37.1 Qp	1.8 / 12.5 / 27.0	24.4	H / 1.3 / 264.0	-21.6	
673.75	28.4 Qp	3.1 / 21.0 / 28.1	24.4	V / 1.0 / 180.0	-21.6	
130.00	36.0 Qp	1.2 / 12.0 / 27.8	21.5	V / 1.0 / 0.0	-22.0	
169.79	35.7 Qp	1.4 / 12.0 / 27.6	21.5	H / 1.6 / 180.0	-22.0	
540.00	31.9 Qp	2.6 / 17.9 / 28.3	24.0	H / 1.6 / 0.0	-22.0	
33.39	33.2 Qp	0.6 / 12.2 / 28.2	17.8	V / 1.0 / 0.0	-22.2	
47.47	34.4 Qp	0.7 / 10.2 / 28.2	17.1	H / 1.6 / 0.0	-22.9	
150.00	34.6 Qp	1.3 / 12.2 / 27.7	20.5	V / 1.0 / 0.0	-23.0	
200.00	32.9 Qp	1.5 / 13.3 / 27.3	20.3	V / 1.0 / 0.0	-23.2	
34.70	32.2 Qp	0.6 / 12.1 / 28.2	16.7	V / 1.0 / 90.0	-23.3	
140.00	34.1 Qp	1.3 / 12.4 / 27.7	20.2	V / 1.0 / 90.0	-23.3	
144.00	34.2 Qp	1.3 / 12.3 / 27.7	20.2	V / 1.0 / 0.0	-23.3	
432.00	31.9 Qp	2.3 / 16.1 / 28.0	22.3	V / 1.2 / 229.3	-23.7	
34.09	31.6 Qp	0.6 / 12.1 / 28.2	16.0	V / 1.0 / 0.0	-24.0	
30.00	30.8 Qp	0.5 / 12.8 / 28.2	15.8	V / 1.0 / 180.0	-24.2	
160.00	32.6 Qp	1.4 / 12.0 / 27.7	18.4	V / 1.0 / 90.0	-25.1	
129.90	32.8 Qp	1.2 / 12.0 / 27.8	18.2	H / 1.6 / 180.0	-25.3	
140.08	32.1 Qp	1.3 / 12.4 / 27.7	18.2	H / 1.6 / 180.0	-25.3	

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
181.25	31.9 Qp	1.4 / 12.4 / 27.5	18.2	H / 1.6 / 90.0	-25.3	
130.79	32.4 Qp	1.2 / 12.1 / 27.8	17.9	H / 1.6 / 180.0	-25.6	
630.09	26.2 Qp	3.0 / 19.5 / 28.3	20.4	V / 1.0 / 0.0	-25.6	
139.82	31.7 Qp	1.3 / 12.4 / 27.7	17.7	H / 1.6 / 90.0	-25.8	
180.00	31.4 Qp	1.4 / 12.3 / 27.4	17.7	H / 1.6 / 90.0	-25.8	
189.89	29.8 Qp	1.4 / 12.7 / 27.5	16.4	H / 1.6 / 90.0	-27.1	
132.00	30.7 Qp	1.2 / 12.1 / 27.9	16.2	H / 1.6 / 180.0	-27.3	
240.00	32.1 Qp	1.7 / 11.6 / 27.2	18.2	H / 1.6 / 180.0	-27.8	
168.00	29.8 Qp	1.4 / 12.0 / 27.6	15.6	H / 1.6 / 90.0	-27.9	
203.16	30.2 Qp	1.5 / 11.2 / 27.4	15.5	V / 1.0 / 0.0	-28.0	
204.00	30.2 Qp	1.5 / 11.2 / 27.4	15.5	V / 1.0 / 0.0	-28.0	
203.76	29.8 Qp	1.5 / 11.2 / 27.4	15.0	H / 1.6 / 270.0	-28.5	
123.58	29.4 Qp	1.2 / 11.7 / 27.9	14.5	H / 1.6 / 180.0	-29.0	
263.23	28.6 Qp	1.8 / 12.7 / 27.0	16.0	H / 1.6 / 180.0	-30.0	
400.01	26.1 Qp	2.2 / 15.4 / 27.7	16.0	V / 1.0 / 0.0	-30.0	
256.48	28.6 Qp	1.8 / 12.6 / 27.1	15.9	H / 1.6 / 270.0	-30.1	
300.04	27.0 Qp	1.9 / 13.9 / 27.1	15.7	H / 1.6 / 180.0	-30.3	
566.33	23.0 Qp	2.7 / 18.4 / 28.4	15.7	V / 1.0 / 270.0	-30.3	
156.00	27.3 Qp	1.4 / 12.1 / 27.7	13.0	H / 1.6 / 90.0	-30.5	
312.00	25.4 Qp	1.9 / 14.8 / 27.0	15.2	V / 1.0 / 0.0	-30.8	
248.94	28.1 Qp	1.7 / 12.4 / 27.2	15.0	V / 1.0 / 0.0	-31.0	
260.00	27.1 Qp	1.8 / 12.7 / 27.1	14.4	H / 1.6 / 270.0	-31.6	
266.71	26.6 Qp	1.8 / 12.6 / 27.1	13.8	V / 1.0 / 0.0	-32.2	
250.34	26.4 Qp	1.7 / 12.6 / 27.1	13.6	V / 1.0 / 270.0	-32.4	
260.66	25.8 Qp	1.8 / 12.7 / 27.1	13.2	V / 1.0 / 90.0	-32.8	
960.13	21.8 Qp	3.7 / 23.1 / 27.3	21.2	V / 1.0 / 270.0	-32.8	
250.18	25.6 Qp	1.7 / 12.5 / 27.2	12.7	V / 1.0 / 0.0	-33.3	
360.00	22.9 Qp	2.1 / 14.8 / 27.3	12.5	V / 1.0 / 0.0	-33.5	
269.65	25.0 Qp	1.8 / 12.5 / 27.0	12.3	V / 1.0 / 270.0	-33.7	
228.00	26.5 Qp	1.6 / 11.0 / 27.2	12.0	V / 1.0 / 90.0	-34.0	
239.65	25.4 Qp	1.7 / 11.5 / 27.2	11.5	V / 1.0 / 90.0	-34.5	
252.00	23.9 Qp	1.7 / 12.6 / 27.0	11.2	V / 1.0 / 90.0	-34.8	
263.33	22.6 Qp	1.8 / 12.7 / 27.0	10.0	V / 1.0 / 0.0	-36.0	

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Radiated Electromagnetic Emissions

Test Report #:	**3162555 Run 03**	Test Area:	Pinewood Site 1 (3m)	Temperature:	25.1	°C
Test Method:	FCC Part 15.209	Test Date:	25-Sep-2008	Relative Humidity:	25.1	%
EUT Model #:	QP03	EUT Power:	110VAC/60Hz	Air Pressure:	80.6	kPa
EUT Serial #:	Proto 1					
Manufacturer:	SYMX					
EUT Description:	2.45 RFID Reader/ Transmitter					
Notes:	**Test Config: Using AC Adapter for power**					
	LAN Termination with Laptop Ethernet					

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 >1GHz	
1-4GHz Vertical						
No EUT related signals 1-4GHz, measurements are noise floor.						
1010.02	35.0 Av	2.2 / 24.1 / 38.2	23.1	V / 1.0 / 0.0	-30.9	
1501.12	34.3 Av	2.9 / 25.1 / 37.3	24.9	V / 1.0 / 0.0	-29.1	
2010.06	35.2 Av	3.0 / 27.2 / 38.1	27.4	V / 1.0 / 0.0	-26.6	
2502.99	35.9 Av	4.0 / 28.8 / 38.5	30.1	V / 1.0 / 0.0	-23.9	
3010.38	35.6 Av	3.6 / 30.9 / 38.1	32.1	V / 1.0 / 0.0	-21.9	
3510.09	34.5 Av	4.8 / 31.5 / 38.3	32.6	V / 1.0 / 0.0	-21.4	
3975.04	34.4 Av	5.7 / 32.3 / 37.2	35.1	V / 1.0 / 0.0	-18.9	
1-4GHz Horizontal						
1010.14	34.9 Av	2.2 / 24.1 / 38.2	23.0	H / 1.6 / 0.0	-31.0	
1501.03	34.2 Av	2.9 / 25.1 / 37.3	24.8	H / 1.6 / 0.0	-29.2	
2008.63	35.1 Av	3.0 / 27.2 / 38.1	27.2	H / 1.6 / 0.0	-26.8	
2502.15	35.7 Av	4.0 / 28.8 / 38.5	30.0	H / 1.6 / 0.0	-24.0	
3012.76	35.8 Av	3.6 / 30.9 / 38.1	32.2	H / 1.6 / 0.0	-21.8	
3508.49	34.9 Av	4.8 / 31.5 / 38.2	33.0	H / 1.6 / 0.0	-21.0	
3998.09	34.0 Av	5.7 / 32.3 / 37.3	34.7	H / 1.6 / 0.0	-19.3	
4-8GHz Horizontal						
EUT related signal @ 4963.56MHz, all other measurements noise floor.						
4003.03	33.0 Av	5.7 / 32.3 / 39.9	31.2	H / 1.6 / 0.0	-22.8	
4963.56	**48.2 Av**	**7.7 / 33.3 / 40.4**	**48.9**	**H / 1.5 / 283.0**	**-5.1**	
6004.16	30.9 Av	7.7 / 35.1 / 39.9	33.8	H / 1.6 / 0.0	-20.2	
7997.26	32.4 Av	8.3 / 37.1 / 39.9	37.9	H / 1.6 / 0.0	-16.1	
4-8GHz Vertical						
4002.00	32.9 Av	5.7 / 32.3 / 39.9	31.1	V / 1.0 / 0.0	-22.9	
4963.56	46.9 Av	7.7 / 33.3 / 40.4	47.6	V / 2.5 / 289.0	-6.4	
6006.00	30.9 Av	7.7 / 35.1 / 39.9	33.8	V / 1.0 / 0.0	-20.2	
7997.00	32.4 Av	8.3 / 37.1 / 39.9	37.9	V / 1.0 / 0.0	-16.1	
8-18GHz Vertical						
No EUT related signals 8-18GHz, all measurements are noise floor.						

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 >1GHz	
8010.20	41.4 Av	8.3 / 37.1 / 46.9	40.0	V / 1.0 / 0.0	-14.0	
12002.4	39.9 Av	3.4 / 38.9 / 46.0	36.2	V / 1.0 / 0.0	-17.8	
15994.9	42.5 Av	4.5 / 39.1 / 47.7	38.4	V / 1.0 / 0.0	-15.6	
17997.0	40.3 Av	5.0 / 46.2 / 46.3	45.2	V / 1.0 / 0.0	-8.8	
8-18GHz Horizontal						
No EUT related signals 8-18GHz, all measurements are noise floor.						
8006.24	41.2 Av	8.3 / 37.1 / 46.8	39.8	H / 1.6 / 0.0	-14.2	
12005.4	39.0 Av	3.4 / 38.9 / 46.0	35.3	H / 1.6 / 0.0	-18.7	
15998.0	42.4 Av	4.5 / 39.1 / 47.7	38.3	H / 1.6 / 0.0	-15.7	
17998.0	40.1 Av	5.0 / 46.2 / 46.3	45.1	H / 1.6 / 0.0	-8.9	

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 >1GHz	
********** **Measurement Summary** **********						
4963.56	48.2 Av	7.7 / 33.3 / 40.4	48.9	H / 1.5 / 283.0	-5.1	
17997.0	40.3 Av	5.0 / 46.2 / 46.3	45.2	V / 1.0 / 0.0	-8.8	
17998.0	40.1 Av	5.0 / 46.2 / 46.3	45.1	H / 1.6 / 0.0	-8.9	
8010.20	41.4 Av	8.3 / 37.1 / 46.9	40.0	V / 1.0 / 0.0	-14.0	
8006.24	41.2 Av	8.3 / 37.1 / 46.8	39.8	H / 1.6 / 0.0	-14.2	
15994.9	42.5 Av	4.5 / 39.1 / 47.7	38.4	V / 1.0 / 0.0	-15.6	
15998.0	42.4 Av	4.5 / 39.1 / 47.7	38.3	H / 1.6 / 0.0	-15.7	
7997.00	32.4 Av	8.3 / 37.1 / 39.9	37.9	V / 1.0 / 0.0	-16.1	
12002.4	39.9 Av	3.4 / 38.9 / 46.0	36.2	V / 1.0 / 0.0	-17.8	
12005.4	39.0 Av	3.4 / 38.9 / 46.0	35.3	H / 1.6 / 0.0	-18.7	
3975.04	34.4 Av	5.7 / 32.3 / 37.2	35.1	V / 1.0 / 0.0	-18.9	
3998.09	34.0 Av	5.7 / 32.3 / 37.3	34.7	H / 1.6 / 0.0	-19.3	
6004.16	30.9 Av	7.7 / 35.1 / 39.9	33.8	H / 1.6 / 0.0	-20.2	
6006.00	30.9 Av	7.7 / 35.1 / 39.9	33.8	V / 1.0 / 0.0	-20.2	
3508.49	34.9 Av	4.8 / 31.5 / 38.2	33.0	H / 1.6 / 0.0	-21.0	
3510.09	34.5 Av	4.8 / 31.5 / 38.3	32.6	V / 1.0 / 0.0	-21.4	
3012.76	35.8 Av	3.6 / 30.9 / 38.1	32.2	H / 1.6 / 0.0	-21.8	
3010.38	35.6 Av	3.6 / 30.9 / 38.1	32.1	V / 1.0 / 0.0	-21.9	
4003.03	33.0 Av	5.7 / 32.3 / 39.9	31.2	H / 1.6 / 0.0	-22.8	
4002.00	32.9 Av	5.7 / 32.3 / 39.9	31.1	V / 1.0 / 0.0	-22.9	
2502.99	35.9 Av	4.0 / 28.8 / 38.5	30.1	V / 1.0 / 0.0	-23.9	
2502.15	35.7 Av	4.0 / 28.8 / 38.5	30.0	H / 1.6 / 0.0	-24.0	
2010.06	35.2 Av	3.0 / 27.2 / 38.1	27.4	V / 1.0 / 0.0	-26.6	
2008.63	35.1 Av	3.0 / 27.2 / 38.1	27.2	H / 1.6 / 0.0	-26.8	
1501.12	34.3 Av	2.9 / 25.1 / 37.3	24.9	V / 1.0 / 0.0	-29.1	
1010.02	35.0 Av	2.2 / 24.1 / 38.2	23.1	V / 1.0 / 0.0	-30.9	

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Radiated Electromagnetic Emissions

Test Report #:	**3162555 Run 02**	Test Area:	Pinewood Site 1 (3m)	Temperature:	23.2	°C
Test Method:	FCC Part 15.209	Test Date:	22-Sep-2008	Relative Humidity:	34.3	%
EUT Model #:	QP03	EUT Power:	110VAC/60Hz	Air Pressure:		kPa
EUT Serial #:	Proto 1					
Manufacturer:	SYMX					
EUT Description:	2.45 RFID Reader/ Transmitter					
Notes:	**Test Config: Using POE D-Link Base Unit DWL-P200**					
	LAN Termination with Laptop Ethernet					

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
30-200MHz Vertical 0 degrees						
30.00	29.1 Qp	0.5 / 12.8 / 28.2	14.1	V / 1.0 / 0.0	-25.9	
36.00	37.5 Qp	0.6 / 11.9 / 28.2	21.8	V / 1.0 / 0.0	-18.2	
48.00	41.1 Qp	0.7 / 10.1 / 28.2	23.8	V / 1.0 / 0.0	-16.2	
60.00	51.5 Qp	0.7 / 8.3 / 28.1	32.4	V / 1.0 / 0.0	-7.6	
72.00	43.0 Qp	0.8 / 8.0 / 28.1	23.7	V / 1.0 / 0.0	-16.3	
84.00	41.9 Qp	0.9 / 6.7 / 28.0	21.5	V / 1.0 / 0.0	-18.5	
120.00	43.2 Qp	1.2 / 11.4 / 27.9	27.9	V / 1.0 / 0.0	-15.6	
132.00	46.6 Qp	1.2 / 12.1 / 27.9	32.1	V / 1.0 / 0.0	-11.4	
144.00	39.7 Qp	1.3 / 12.3 / 27.7	25.6	V / 1.0 / 0.0	-17.9	
156.00	38.1 Qp	1.4 / 12.1 / 27.7	23.8	V / 1.0 / 0.0	-19.7	
168.00	38.8 Qp	1.4 / 12.0 / 27.6	24.5	V / 1.0 / 0.0	-19.0	
40.00	39.6 Qp	0.6 / 11.4 / 28.2	23.4	V / 1.0 / 0.0	-16.6	
80.00	42.0 Qp	0.9 / 6.8 / 28.1	21.6	V / 1.0 / 0.0	-18.4	
140.00	41.0 Qp	1.3 / 12.4 / 27.7	27.0	V / 1.0 / 0.0	-16.5	
160.00	42.5 Qp	1.4 / 12.0 / 27.7	28.2	V / 1.0 / 0.0	-15.3	
180.00	30.1 Qp	1.4 / 12.3 / 27.4	16.5	V / 1.0 / 0.0	-27.0	
200.00	32.1 Qp	1.5 / 13.3 / 27.3	19.5	V / 1.0 / 0.0	-24.0	
33.43	35.5 Qp	0.6 / 12.2 / 28.2	20.1	V / 1.0 / 0.0	-19.9	
34.09	35.0 Qp	0.6 / 12.1 / 28.2	19.5	V / 1.0 / 0.0	-20.5	
34.75	35.0 Qp	0.6 / 12.1 / 28.2	19.4	V / 1.0 / 0.0	-20.6	
36.14	37.8 Qp	0.6 / 11.9 / 28.2	22.0	V / 1.0 / 0.0	-18.0	
45.20	42.5 Qp	0.7 / 10.6 / 28.2	25.6	V / 1.0 / 0.0	-14.4	
51.03	37.6 Qp	0.7 / 9.6 / 28.2	19.8	V / 1.0 / 0.0	-20.2	
52.80	41.7 Qp	0.7 / 9.4 / 28.2	23.6	V / 1.0 / 0.0	-16.4	
53.68	39.1 Qp	0.7 / 9.3 / 28.2	20.9	V / 1.0 / 0.0	-19.1	
54.59	42.1 Qp	0.7 / 9.1 / 28.2	23.8	V / 1.0 / 0.0	-16.2	
59.38	51.3 Qp	0.7 / 8.4 / 28.2	32.3	V / 1.0 / 0.0	-7.7	
60.04	51.5 Qp	0.7 / 8.3 / 28.2	32.3	V / 1.0 / 0.0	-7.7	
63.67	47.4 Qp	0.8 / 7.9 / 28.2	27.9	V / 1.0 / 0.0	-12.1	
108.54	38.5 Qp	1.1 / 10.3 / 27.9	22.0	V / 1.0 / 0.0	-21.5	
123.75	45.3 Qp	1.2 / 11.7 / 27.9	30.3	V / 1.0 / 0.0	-13.2	
130.84	45.5 Qp	1.2 / 12.1 / 27.8	31.0	V / 1.0 / 0.0	-12.5	
181.25	32.5 Qp	1.4 / 12.4 / 27.5	18.8	V / 1.0 / 0.0	-24.7	

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
199.25	37.5 Qp	1.5 / 13.2 / 27.3	24.8	V / 1.0 / 0.0	-18.7	
50.00	40.4 Qp	0.7 / 9.8 / 28.2	22.7	V / 1.0 / 0.0	-17.3	
60.00	51.3 Qp	0.7 / 8.3 / 28.1	32.2	V / 1.0 / 0.0	-7.8	
70.00	41.6 Qp	0.8 / 8.5 / 28.2	22.7	V / 1.0 / 0.0	-17.3	
110.00	34.0 Qp	1.1 / 10.5 / 28.0	17.6	V / 1.0 / 0.0	-25.9	
130.00	44.6 Qp	1.2 / 12.0 / 27.8	30.0	V / 1.0 / 0.0	-13.5	
150.00	39.8 Qp	1.3 / 12.2 / 27.7	25.6	V / 1.0 / 0.0	-17.9	
170.00	39.7 Qp	1.4 / 12.0 / 27.6	25.5	V / 1.0 / 0.0	-18.0	
190.00	33.7 Qp	1.4 / 12.7 / 27.5	20.4	V / 1.0 / 0.0	-23.1	
30-200MHz Vertical 90 degrees						
34.75	37.9 Qp	0.6 / 12.1 / 28.2	22.3	V / 1.0 / 90.0	-17.7	
36.14	37.9 Qp	0.6 / 11.9 / 28.2	22.1	V / 1.0 / 90.0	-17.9	
40.00	38.9 Qp	0.6 / 11.4 / 28.2	22.6	V / 1.0 / 90.0	-17.4	
50.00	41.0 Qp	0.7 / 9.8 / 28.2	23.4	V / 1.0 / 90.0	-16.6	
51.01	40.4 Qp	0.7 / 9.7 / 28.2	22.6	V / 1.0 / 90.0	-17.4	
52.80	44.0 Qp	0.7 / 9.4 / 28.2	25.9	V / 1.0 / 90.0	-14.1	
53.68	41.2 Qp	0.7 / 9.3 / 28.2	23.0	V / 1.0 / 90.0	-17.0	
54.59	43.7 Qp	0.7 / 9.1 / 28.2	25.3	V / 1.0 / 90.0	-14.7	
63.67	48.2 Qp	0.8 / 7.9 / 28.2	28.7	V / 1.0 / 90.0	-11.3	
70.00	43.0 Qp	0.8 / 8.5 / 28.2	24.2	V / 1.0 / 90.0	-15.8	
72.00	43.9 Qp	0.8 / 8.0 / 28.1	24.6	V / 1.0 / 90.0	-15.4	
80.00	43.1 Qp	0.9 / 6.8 / 28.1	22.7	V / 1.0 / 90.0	-17.3	
108.54	46.0 Qp	1.1 / 10.3 / 27.9	29.5	V / 1.0 / 90.0	-14.0	
110.00	46.1 Qp	1.1 / 10.5 / 28.0	29.7	V / 1.0 / 90.0	-13.8	
120.00	49.2 Qp	1.2 / 11.4 / 27.9	33.9	V / 1.0 / 90.0	-9.6	
123.75	51.6 Qp	1.2 / 11.7 / 27.9	36.6	V / 1.0 / 90.0	-6.9	
130.00	48.4 Qp	1.2 / 12.0 / 27.8	33.8	V / 1.0 / 90.0	-9.7	
130.84	48.5 Qp	1.2 / 12.1 / 27.8	34.0	V / 1.0 / 90.0	-9.5	
132.00	47.9 Qp	1.2 / 12.1 / 27.9	33.4	V / 1.0 / 90.0	-10.1	
140.00	43.6 Qp	1.3 / 12.4 / 27.7	29.6	V / 1.0 / 90.0	-13.9	
144.00	41.4 Qp	1.3 / 12.3 / 27.7	27.3	V / 1.0 / 90.0	-16.2	
150.00	40.0 Qp	1.3 / 12.2 / 27.7	25.9	V / 1.0 / 90.0	-17.6	
156.00	41.4 Qp	1.4 / 12.1 / 27.7	27.1	V / 1.0 / 90.0	-16.4	
180.00	39.6 Qp	1.4 / 12.3 / 27.4	26.0	V / 1.0 / 90.0	-17.5	
181.25	39.5 Qp	1.4 / 12.4 / 27.5	25.8	V / 1.0 / 90.0	-17.7	
30-200MHz Vertical 180 degrees						
50.00	41.5 Qp	0.7 / 9.8 / 28.2	23.8	V / 1.0 / 180.0	-16.2	
123.75	52.8 Qp	1.2 / 11.7 / 27.9	37.8	V / 1.0 / 180.0	-5.7	
199.25	38.2 Qp	1.5 / 13.2 / 27.3	25.6	V / 1.0 / 180.0	-17.9	
30-200MHz Vertical 270 degrees						
36.14	37.8 Qp	0.6 / 11.9 / 28.2	22.0	V / 1.0 / 270.0	-18.0	
51.01	41.7 Qp	0.7 / 9.7 / 28.2	23.9	V / 1.0 / 270.0	-16.1	
52.80	45.3 Qp	0.7 / 9.4 / 28.2	27.2	V / 1.0 / 270.0	-12.8	
53.68	42.4 Qp	0.7 / 9.3 / 28.2	24.2	V / 1.0 / 270.0	-15.8	
54.59	44.4 Qp	0.7 / 9.1 / 28.2	26.0	V / 1.0 / 270.0	-14.0	

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(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
60.00	51.8 Qp	0.7 / 8.3 / 28.1	32.7	V / 1.0 / 270.0	-7.3	
63.67	49.4 Qp	0.8 / 7.9 / 28.2	29.9	V / 1.0 / 270.0	-10.1	
Following signals maximized between 30 & 200 MHz Vertical						
59.38	51.4 Qp	0.7 / 8.4 / 28.2	32.3	V / 1.0 / 0.0	-7.7	
60.00	51.8 Qp	0.7 / 8.3 / 28.1	32.6	V / 1.0 / 305.0	-7.4	
63.67	50.6 Qp	0.8 / 7.9 / 28.2	31.1	V / 1.0 / 288.0	-8.9	
123.75	53.9 Qp	1.2 / 11.7 / 27.9	38.9	V / 1.0 / 188.0	-4.6	
130.84	47.5 Qp	1.2 / 12.1 / 27.8	33.0	V / 1.0 / 78.0	-10.5	
132.00	51.2 Qp	1.2 / 12.1 / 27.9	36.7	V / 1.0 / 124.0	-6.8	
30-200MHz Horizontal 0 degrees						
30.00	25.1 Qp	0.5 / 12.8 / 28.2	10.1	H / 1.6 / 0.0	-29.9	
60.00	35.5 Qp	0.7 / 8.3 / 28.1	16.4	H / 1.6 / 0.0	-23.6	
110.00	40.9 Qp	1.1 / 10.5 / 28.0	24.4	H / 1.6 / 0.0	-19.1	
120.00	46.6 Qp	1.2 / 11.4 / 27.9	31.3	H / 1.6 / 0.0	-12.2	
123.75	47.8 Qp	1.2 / 11.7 / 27.9	32.8	H / 1.6 / 0.0	-10.7	
130.00	33.2 Qp	1.2 / 12.0 / 27.8	18.6	H / 1.6 / 0.0	-24.9	
150.00	36.8 Qp	1.3 / 12.2 / 27.7	22.6	H / 1.6 / 0.0	-20.9	
170.00	29.9 Qp	1.4 / 12.0 / 27.6	15.7	H / 1.6 / 0.0	-27.8	
181.25	37.3 Qp	1.4 / 12.4 / 27.5	23.6	H / 1.6 / 0.0	-19.9	
30-200MHz Horizontal 90 degrees						
30.00	24.8 Qp	0.5 / 12.8 / 28.2	9.8	H / 1.6 / 90.0	-30.2	
60.00	32.7 Qp	0.7 / 8.3 / 28.1	13.6	H / 1.6 / 90.0	-26.4	
110.00	38.8 Qp	1.1 / 10.5 / 28.0	22.3	H / 1.6 / 90.0	-21.2	
120.00	38.0 Qp	1.2 / 11.4 / 27.9	22.7	H / 1.6 / 90.0	-20.8	
123.75	39.8 Qp	1.2 / 11.7 / 27.9	24.8	H / 1.6 / 90.0	-18.7	
130.00	27.9 Qp	1.2 / 12.0 / 27.8	13.3	H / 1.6 / 90.0	-30.2	
150.00	30.2 Qp	1.3 / 12.2 / 27.7	16.1	H / 1.6 / 90.0	-27.4	
190.00	27.1 Qp	1.4 / 12.7 / 27.5	13.7	H / 1.6 / 90.0	-29.8	
30-200MHz Horizontal 180 degrees						
30.00	24.9 Qp	0.5 / 12.8 / 28.2	10.0	H / 1.6 / 180.0	-30.0	
60.00	34.3 Qp	0.7 / 8.3 / 28.1	15.2	H / 1.6 / 180.0	-24.8	
110.00	39.1 Qp	1.1 / 10.5 / 28.0	22.7	H / 1.6 / 180.0	-20.8	
120.00	45.2 Qp	1.2 / 11.4 / 27.9	29.9	H / 1.6 / 180.0	-13.6	
123.75	46.8 Qp	1.2 / 11.7 / 27.9	31.8	H / 1.6 / 180.0	-11.7	
130.00	35.2 Qp	1.2 / 12.0 / 27.8	20.7	H / 1.6 / 180.0	-22.8	
150.00	34.6 Qp	1.3 / 12.2 / 27.7	20.5	H / 1.6 / 180.0	-23.0	
181.25	38.9 Qp	1.4 / 12.4 / 27.5	25.2	H / 1.6 / 180.0	-18.3	
190.00	35.0 Qp	1.4 / 12.7 / 27.5	21.7	H / 1.6 / 180.0	-21.8	
30-200MHz Horizontal 270 degrees						
30.00	24.2 Qp	0.5 / 12.8 / 28.2	9.3	H / 1.6 / 270.0	-30.7	
60.00	34.2 Qp	0.7 / 8.3 / 28.1	15.1	H / 1.6 / 270.0	-24.9	
108.54	41.6 Qp	1.1 / 10.3 / 27.9	25.1	H / 1.6 / 270.0	-18.4	
110.00	40.7 Qp	1.1 / 10.5 / 28.0	24.3	H / 1.6 / 270.0	-19.2	

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(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
120.00	39.3 Qp	1.2 / 11.4 / 27.9	24.0	H / 1.6 / 270.0	-19.5	
123.75	43.0 Qp	1.2 / 11.7 / 27.9	28.0	H / 1.6 / 270.0	-15.5	
130.00	35.8 Qp	1.2 / 12.0 / 27.8	21.2	H / 1.6 / 270.0	-22.3	
150.00	29.7 Qp	1.3 / 12.2 / 27.7	15.6	H / 1.6 / 270.0	-27.9	
190.00	28.6 Qp	1.4 / 12.7 / 27.5	15.3	H / 1.6 / 270.0	-28.2	
Following are maximized						
60.00	32.5 Qp	0.7 / 8.3 / 28.1	13.4	H / 1.6 / 222.0	-26.6	
120.00	50.5 Qp	1.2 / 11.4 / 27.9	35.2	H / 1.6 / 0.0	-8.3	
123.75	51.9 Qp	1.2 / 11.7 / 27.9	36.9	H / 1.6 / 20.3	-6.6	
130.00	43.5 Qp	1.2 / 12.0 / 27.8	29.0	H / 1.6 / 308.0	-14.5	
130.84	44.2 Qp	1.2 / 12.1 / 27.8	29.7	H / 1.6 / 320.4	-13.8	
132.00	44.1 Qp	1.2 / 12.1 / 27.9	29.6	H / 1.6 / 319.0	-13.9	
200-1000MHz Vertical 0 degrees						
204.00	33.5 Qp	1.5 / 11.2 / 27.4	18.7	V / 1.0 / 0.0	-24.8	
216.00	34.0 Qp	1.6 / 11.1 / 27.3	19.4	V / 1.0 / 0.0	-24.1	
228.00	31.4 Qp	1.6 / 11.0 / 27.2	16.9	V / 1.0 / 0.0	-29.1	
240.00	34.5 Qp	1.7 / 11.6 / 27.2	20.5	V / 1.0 / 0.0	-25.5	
252.00	31.1 Qp	1.7 / 12.6 / 27.0	18.4	V / 1.0 / 0.0	-27.6	
312.00	27.1 Qp	1.9 / 14.8 / 27.0	16.9	V / 1.0 / 0.0	-29.1	
324.00	27.1 Qp	2.0 / 14.1 / 27.1	16.1	V / 1.0 / 0.0	-29.9	
360.00	26.9 Qp	2.1 / 14.8 / 27.3	16.5	V / 1.0 / 0.0	-29.5	
432.00	25.4 Qp	2.3 / 16.1 / 28.0	15.9	V / 1.0 / 0.0	-30.1	
540.00	25.7 Qp	2.6 / 17.9 / 28.3	17.9	V / 1.0 / 0.0	-28.1	
960.00	22.8 Qp	3.7 / 23.1 / 27.3	22.2	V / 1.0 / 0.0	-23.8	
240.00	33.8 Qp	1.7 / 11.6 / 27.2	19.8	V / 1.0 / 0.0	-26.2	
400.00	25.3 Qp	2.2 / 15.4 / 27.7	15.2	V / 1.0 / 0.0	-30.8	
203.16	32.0 Qp	1.5 / 11.2 / 27.4	17.3	V / 1.0 / 0.0	-26.2	
216.00	33.5 Qp	1.6 / 11.1 / 27.3	18.9	V / 1.0 / 0.0	-24.6	
239.65	34.6 Qp	1.7 / 11.5 / 27.2	20.7	V / 1.0 / 0.0	-25.3	
248.94	33.7 Qp	1.7 / 12.4 / 27.2	20.7	V / 1.0 / 0.0	-25.3	
250.18	31.9 Qp	1.7 / 12.5 / 27.2	19.1	V / 1.0 / 0.0	-26.9	
256.48	33.0 Qp	1.8 / 12.6 / 27.1	20.3	V / 1.0 / 0.0	-25.7	
260.66	30.8 Qp	1.8 / 12.7 / 27.1	18.2	V / 1.0 / 0.0	-27.8	
263.33	27.3 Qp	1.8 / 12.7 / 27.0	14.8	V / 1.0 / 0.0	-31.2	
266.71	35.2 Qp	1.8 / 12.6 / 27.1	22.5	V / 1.0 / 0.0	-23.5	
269.65	33.2 Qp	1.8 / 12.5 / 27.0	20.5	V / 1.0 / 0.0	-25.5	
513.74	35.0 Qp	2.6 / 17.9 / 28.3	27.3	V / 1.0 / 0.0	-18.7	
566.33	25.3 Qp	2.7 / 18.4 / 28.4	18.0	V / 1.0 / 0.0	-28.0	
630.09	26.0 Qp	3.0 / 19.5 / 28.3	20.2	V / 1.0 / 0.0	-25.8	
673.75	27.1 Qp	3.1 / 21.0 / 28.1	23.0	V / 1.0 / 0.0	-23.0	
200-1000MHz Vertical 90 degrees						
203.16	35.0 Qp	1.5 / 11.2 / 27.4	20.2	V / 1.0 / 90.0	-23.3	-33.8
240.00	35.4 Qp	1.7 / 11.6 / 27.2	21.4	V / 1.0 / 90.0	-24.6	-35.5
324.00	27.9 Qp	2.0 / 14.1 / 27.1	16.9	V / 1.0 / 90.0	-29.1	
432.00	28.6 Qp	2.3 / 16.1 / 28.0	19.0	V / 1.0 / 90.0	-27.0	

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
540.00	29.1 Qp	2.6 / 17.9 / 28.3	21.3	V / 1.0 / 90.0	-24.7	
566.33	25.2 Qp	2.7 / 18.4 / 28.4	18.0	V / 1.0 / 90.0	-28.0	
960.13	25.9 Qp	3.7 / 23.1 / 27.3	25.4	V / 1.0 / 90.0	-28.6	
200-1000MHz Vertical 180 degrees						
204.00	32.5 Qp	1.5 / 11.2 / 27.4	17.7	V / 1.0 / 180.0	-25.8	
250.05	30.6 Qp	1.7 / 12.5 / 27.2	17.8	V / 1.0 / 180.0	-28.2	
263.23	29.4 Qp	1.8 / 12.7 / 27.0	16.9	V / 1.0 / 180.0	-29.1	
324.00	28.4 Qp	2.0 / 14.1 / 27.1	17.4	V / 1.0 / 180.0	-28.6	
400.00	25.9 Qp	2.2 / 15.4 / 27.7	15.8	V / 1.0 / 180.0	-30.2	
432.00	31.6 Qp	2.3 / 16.1 / 28.0	22.1	V / 1.0 / 180.0	-23.9	
566.33	25.8 Qp	2.7 / 18.4 / 28.4	18.5	V / 1.0 / 180.0	-27.5	
630.09	26.2 Qp	3.0 / 19.5 / 28.3	20.4	V / 1.0 / 180.0	-25.6	
960.00	23.9 Qp	3.7 / 23.1 / 27.3	23.4	V / 1.0 / 180.0	-22.6	
200-1000MHz Vertical 270 degrees						
216.00	35.0 Qp	1.6 / 11.1 / 27.3	20.3	V / 1.0 / 270.0	-23.2	
228.00	31.9 Qp	1.6 / 11.0 / 27.2	17.4	V / 1.0 / 270.0	-28.6	
240.00	34.1 Qp	1.7 / 11.6 / 27.2	20.2	V / 1.0 / 270.0	-25.8	
250.05	32.9 Qp	1.7 / 12.5 / 27.2	20.0	V / 1.0 / 270.0	-26.0	
250.34	31.3 Qp	1.7 / 12.6 / 27.1	18.5	V / 1.0 / 270.0	-27.5	
263.23	27.3 Qp	1.8 / 12.7 / 27.0	14.8	V / 1.0 / 270.0	-31.2	
324.00	29.8 Qp	2.0 / 14.1 / 27.1	18.8	V / 1.0 / 270.0	-27.2	
360.00	28.4 Qp	2.1 / 14.8 / 27.3	17.9	V / 1.0 / 270.0	-28.1	
400.01	30.1 Qp	2.2 / 15.4 / 27.7	20.0	V / 1.0 / 270.0	-26.0	
566.33	26.0 Qp	2.7 / 18.4 / 28.4	18.7	V / 1.0 / 270.0	-27.3	
960.00	24.1 Qp	3.7 / 23.1 / 27.3	23.6	V / 1.0 / 270.0	-22.4	
Following signals maximized between 200 & 1000MHz Vertical						
203.16	34.0 Qp	1.5 / 11.2 / 27.4	19.3	V / 1.0 / 324.0	-24.2	
266.71	32.0 Qp	1.8 / 12.6 / 27.1	19.3	V / 1.0 / 324.0	-26.7	
513.74	34.5 Qp	2.6 / 17.9 / 28.3	26.8	V / 1.0 / 158.0	-19.2	
673.75	27.3 Qp	3.1 / 21.0 / 28.1	23.3	V / 1.0 / 158.0	-22.7	
960.00	25.4 Qp	3.7 / 23.1 / 27.3	24.9	V / 1.0 / 158.0	-21.1	
200-1000MHz Horizontal 0 degrees						
203.16	27.9 Qp	1.5 / 11.2 / 27.4	13.1	H / 1.6 / 0.0	-30.4	
204.00	28.5 Qp	1.5 / 11.2 / 27.4	13.8	H / 1.6 / 0.0	-29.7	
216.00	38.5 Qp	1.6 / 11.1 / 27.3	23.8	H / 1.6 / 0.0	-19.7	
228.00	30.8 Qp	1.6 / 11.0 / 27.2	16.3	H / 1.6 / 0.0	-29.7	
239.65	28.6 Qp	1.7 / 11.5 / 27.2	14.7	H / 1.6 / 0.0	-31.3	
240.00	29.8 Qp	1.7 / 11.6 / 27.2	15.8	H / 1.6 / 0.0	-30.2	
248.94	28.4 Qp	1.7 / 12.4 / 27.2	15.4	H / 1.6 / 0.0	-30.6	
250.05	29.4 Qp	1.7 / 12.5 / 27.2	16.6	H / 1.6 / 0.0	-29.4	
250.18	28.0 Qp	1.7 / 12.5 / 27.2	15.1	H / 1.6 / 0.0	-30.9	
250.34	28.3 Qp	1.7 / 12.6 / 27.1	15.5	H / 1.6 / 0.0	-30.5	
252.00	28.1 Qp	1.7 / 12.6 / 27.0	15.5	H / 1.6 / 0.0	-30.5	
256.48	28.5 Qp	1.8 / 12.6 / 27.1	15.8	H / 1.6 / 0.0	-30.2	

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
260.66	25.8 Qp	1.8 / 12.7 / 27.1	13.1	H / 1.6 / 0.0	-32.9	
263.23	24.7 Qp	1.8 / 12.7 / 27.0	12.2	H / 1.6 / 0.0	-33.8	
263.33	24.6 Qp	1.8 / 12.7 / 27.0	12.1	H / 1.6 / 0.0	-33.9	
266.71	25.7 Qp	1.8 / 12.6 / 27.1	13.0	H / 1.6 / 0.0	-33.0	
269.65	24.6 Qp	1.8 / 12.5 / 27.0	11.8	H / 1.6 / 0.0	-34.2	
312.00	25.3 Qp	1.9 / 14.8 / 27.0	15.0	H / 1.6 / 0.0	-31.0	
324.00	32.9 Qp	2.0 / 14.1 / 27.1	21.8	H / 1.6 / 0.0	-24.2	
360.00	23.2 Qp	2.1 / 14.8 / 27.3	12.8	H / 1.6 / 0.0	-33.2	
400.01	23.6 Qp	2.2 / 15.4 / 27.7	13.5	H / 1.6 / 0.0	-32.5	
432.00	31.6 Qp	2.3 / 16.1 / 28.0	22.0	H / 1.6 / 0.0	-24.0	
540.00	31.0 Qp	2.6 / 17.9 / 28.3	23.2	H / 1.6 / 0.0	-22.8	
566.33	27.7 Qp	2.7 / 18.4 / 28.4	20.4	H / 1.6 / 0.0	-25.6	
630.09	23.6 Qp	3.0 / 19.5 / 28.3	17.8	H / 1.6 / 0.0	-28.2	
673.75	24.3 Qp	3.1 / 21.0 / 28.1	20.3	H / 1.6 / 0.0	-25.7	
960.00	24.2 Qp	3.7 / 23.1 / 27.3	23.7	H / 1.6 / 0.0	-22.3	
200-1000MHz Horizontal 90 degrees						
203.16	33.4 Qp	1.5 / 11.2 / 27.4	18.7	H / 1.6 / 90.0	-24.8	
204.00	33.7 Qp	1.5 / 11.2 / 27.4	19.0	H / 1.6 / 90.0	-24.5	
216.00	38.9 Qp	1.6 / 11.1 / 27.3	24.3	H / 1.6 / 90.0	-19.2	
228.00	33.6 Qp	1.6 / 11.0 / 27.2	19.1	H / 1.6 / 90.0	-26.9	
239.65	33.4 Qp	1.7 / 11.5 / 27.2	19.4	H / 1.6 / 90.0	-26.6	
240.00	33.6 Qp	1.7 / 11.6 / 27.2	19.7	H / 1.6 / 90.0	-26.3	
248.94	31.4 Qp	1.7 / 12.4 / 27.2	18.3	H / 1.6 / 90.0	-27.7	
250.05	33.3 Qp	1.7 / 12.5 / 27.2	20.4	H / 1.6 / 90.0	-25.6	
250.18	31.3 Qp	1.7 / 12.5 / 27.2	18.4	H / 1.6 / 90.0	-27.6	
250.34	31.4 Qp	1.7 / 12.6 / 27.1	18.5	H / 1.6 / 90.0	-27.5	
252.00	30.9 Qp	1.7 / 12.6 / 27.0	18.2	H / 1.6 / 90.0	-27.8	
324.00	33.6 Qp	2.0 / 14.1 / 27.1	22.6	H / 1.6 / 90.0	-23.4	
432.00	28.2 Qp	2.3 / 16.1 / 28.0	18.7	H / 1.6 / 90.0	-27.3	
200-1000MHz Horizontal 180 degrees						
216.00	37.0 Qp	1.6 / 11.1 / 27.3	22.4	H / 1.6 / 180.0	-21.1	
324.00	30.3 Qp	2.0 / 14.1 / 27.1	19.3	H / 1.6 / 180.0	-26.7	
566.33	26.8 Qp	2.7 / 18.4 / 28.4	19.5	H / 1.6 / 180.0	-26.5	
200-1000MHz Horizontal 270 degrees						
204.00	32.4 Qp	1.5 / 11.2 / 27.4	17.7	H / 1.6 / 270.0	-25.8	
250.05	32.0 Qp	1.7 / 12.5 / 27.2	19.1	H / 1.6 / 270.0	-26.9	
252.00	29.4 Qp	1.7 / 12.6 / 27.0	16.8	H / 1.6 / 270.0	-29.2	
324.00	33.0 Qp	2.0 / 14.1 / 27.1	21.9	H / 1.6 / 270.0	-24.1	
432.00	30.8 Qp	2.3 / 16.1 / 28.0	21.2	H / 1.6 / 270.0	-24.8	
Following signals maximized between 200 & 1000MHz Horizontal						
216.00	41.5 Qp	1.6 / 11.1 / 27.3	26.9	H / 1.4 / 38.0	-16.6	
324.00	35.9 Qp	2.0 / 14.1 / 27.1	24.8	H / 1.1 / 308.0	-21.2	

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
********** **Measurement Summary** **********						
123.75	53.9 Qp	1.2 / 11.7 / 27.9	38.9	V / 1.0 / 188.0	-4.6	
132.00	51.2 Qp	1.2 / 12.1 / 27.9	36.7	V / 1.0 / 124.0	-6.8	
60.00	51.8 Qp	0.7 / 8.3 / 28.1	32.7	V / 1.0 / 270.0	-7.3	
59.38	51.4 Qp	0.7 / 8.4 / 28.2	32.3	V / 1.0 / 0.0	-7.7	
120.00	50.5 Qp	1.2 / 11.4 / 27.9	35.2	H / 1.6 / 0.0	-8.3	
63.67	50.6 Qp	0.8 / 7.9 / 28.2	31.1	V / 1.0 / 288.0	-8.9	
130.84	48.5 Qp	1.2 / 12.1 / 27.8	34.0	V / 1.0 / 90.0	-9.5	
130.00	48.4 Qp	1.2 / 12.0 / 27.8	33.8	V / 1.0 / 90.0	-9.7	
52.80	45.3 Qp	0.7 / 9.4 / 28.2	27.2	V / 1.0 / 270.0	-12.8	
110.00	46.1 Qp	1.1 / 10.5 / 28.0	29.7	V / 1.0 / 90.0	-13.8	
140.00	43.6 Qp	1.3 / 12.4 / 27.7	29.6	V / 1.0 / 90.0	-13.9	
54.59	44.4 Qp	0.7 / 9.1 / 28.2	26.0	V / 1.0 / 270.0	-14.0	
108.54	46.0 Qp	1.1 / 10.3 / 27.9	29.5	V / 1.0 / 90.0	-14.0	
45.20	42.5 Qp	0.7 / 10.6 / 28.2	25.6	V / 1.0 / 0.0	-14.4	
160.00	42.5 Qp	1.4 / 12.0 / 27.7	28.2	V / 1.0 / 0.0	-15.3	
72.00	43.9 Qp	0.8 / 8.0 / 28.1	24.6	V / 1.0 / 90.0	-15.4	
53.68	42.4 Qp	0.7 / 9.3 / 28.2	24.2	V / 1.0 / 270.0	-15.8	
70.00	43.0 Qp	0.8 / 8.5 / 28.2	24.2	V / 1.0 / 90.0	-15.8	
51.01	41.7 Qp	0.7 / 9.7 / 28.2	23.9	V / 1.0 / 270.0	-16.1	
48.00	41.1 Qp	0.7 / 10.1 / 28.2	23.8	V / 1.0 / 0.0	-16.2	
50.00	41.5 Qp	0.7 / 9.8 / 28.2	23.8	V / 1.0 / 180.0	-16.2	
144.00	41.4 Qp	1.3 / 12.3 / 27.7	27.3	V / 1.0 / 90.0	-16.2	
156.00	41.4 Qp	1.4 / 12.1 / 27.7	27.1	V / 1.0 / 90.0	-16.4	
40.00	39.6 Qp	0.6 / 11.4 / 28.2	23.4	V / 1.0 / 0.0	-16.6	
216.00	41.5 Qp	1.6 / 11.1 / 27.3	26.9	H / 1.4 / 38.0	-16.6	
80.00	43.1 Qp	0.9 / 6.8 / 28.1	22.7	V / 1.0 / 90.0	-17.3	
180.00	39.6 Qp	1.4 / 12.3 / 27.4	26.0	V / 1.0 / 90.0	-17.5	
150.00	40.0 Qp	1.3 / 12.2 / 27.7	25.9	V / 1.0 / 90.0	-17.6	
34.75	37.9 Qp	0.6 / 12.1 / 28.2	22.3	V / 1.0 / 90.0	-17.7	
181.25	39.5 Qp	1.4 / 12.4 / 27.5	25.8	V / 1.0 / 90.0	-17.7	
36.14	37.9 Qp	0.6 / 11.9 / 28.2	22.1	V / 1.0 / 90.0	-17.9	
199.25	38.2 Qp	1.5 / 13.2 / 27.3	25.6	V / 1.0 / 180.0	-17.9	
170.00	39.7 Qp	1.4 / 12.0 / 27.6	25.5	V / 1.0 / 0.0	-18.0	
36.00	37.5 Qp	0.6 / 11.9 / 28.2	21.8	V / 1.0 / 0.0	-18.2	
84.00	41.9 Qp	0.9 / 6.7 / 28.0	21.5	V / 1.0 / 0.0	-18.5	
513.74	35.0 Qp	2.6 / 17.9 / 28.3	27.3	V / 1.0 / 0.0	-18.7	
168.00	38.8 Qp	1.4 / 12.0 / 27.6	24.5	V / 1.0 / 0.0	-19.0	
33.43	35.5 Qp	0.6 / 12.2 / 28.2	20.1	V / 1.0 / 0.0	-19.9	
34.09	35.0 Qp	0.6 / 12.1 / 28.2	19.5	V / 1.0 / 0.0	-20.5	
960.00	25.4 Qp	3.7 / 23.1 / 27.3	24.9	V / 1.0 / 158.0	-21.1	
324.00	35.9 Qp	2.0 / 14.1 / 27.1	24.8	H / 1.1 / 308.0	-21.2	
190.00	35.0 Qp	1.4 / 12.7 / 27.5	21.7	H / 1.6 / 180.0	-21.8	
673.75	27.3 Qp	3.1 / 21.0 / 28.1	23.3	V / 1.0 / 158.0	-22.7	
540.00	31.0 Qp	2.6 / 17.9 / 28.3	23.2	H / 1.6 / 0.0	-22.8	
203.16	35.0 Qp	1.5 / 11.2 / 27.4	20.2	V / 1.0 / 90.0	-23.3	
266.71	35.2 Qp	1.8 / 12.6 / 27.1	22.5	V / 1.0 / 0.0	-23.5	

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 <1GHz	
432.00	31.6 Qp	2.3 / 16.1 / 28.0	22.1	V / 1.0 / 180.0	-23.9	
200.00	32.1 Qp	1.5 / 13.3 / 27.3	19.5	V / 1.0 / 0.0	-24.0	
204.00	33.7 Qp	1.5 / 11.2 / 27.4	19.0	H / 1.6 / 90.0	-24.5	
240.00	35.4 Qp	1.7 / 11.6 / 27.2	21.4	V / 1.0 / 90.0	-24.6	
239.65	34.6 Qp	1.7 / 11.5 / 27.2	20.7	V / 1.0 / 0.0	-25.3	
248.94	33.7 Qp	1.7 / 12.4 / 27.2	20.7	V / 1.0 / 0.0	-25.3	
269.65	33.2 Qp	1.8 / 12.5 / 27.0	20.5	V / 1.0 / 0.0	-25.5	
250.05	33.3 Qp	1.7 / 12.5 / 27.2	20.4	H / 1.6 / 90.0	-25.6	
566.33	27.7 Qp	2.7 / 18.4 / 28.4	20.4	H / 1.6 / 0.0	-25.6	
630.09	26.2 Qp	3.0 / 19.5 / 28.3	20.4	V / 1.0 / 180.0	-25.6	
256.48	33.0 Qp	1.8 / 12.6 / 27.1	20.3	V / 1.0 / 0.0	-25.7	
30.00	29.1 Qp	0.5 / 12.8 / 28.2	14.1	V / 1.0 / 0.0	-25.9	
400.01	30.1 Qp	2.2 / 15.4 / 27.7	20.0	V / 1.0 / 270.0	-26.0	
228.00	33.6 Qp	1.6 / 11.0 / 27.2	19.1	H / 1.6 / 90.0	-26.9	
250.18	31.9 Qp	1.7 / 12.5 / 27.2	19.1	V / 1.0 / 0.0	-26.9	
250.34	31.4 Qp	1.7 / 12.6 / 27.1	18.5	H / 1.6 / 90.0	-27.5	
252.00	31.1 Qp	1.7 / 12.6 / 27.0	18.4	V / 1.0 / 0.0	-27.6	
260.66	30.8 Qp	1.8 / 12.7 / 27.1	18.2	V / 1.0 / 0.0	-27.8	
360.00	28.4 Qp	2.1 / 14.8 / 27.3	17.9	V / 1.0 / 270.0	-28.1	
960.13	25.9 Qp	3.7 / 23.1 / 27.3	25.4	V / 1.0 / 90.0	-28.6	
263.23	29.4 Qp	1.8 / 12.7 / 27.0	16.9	V / 1.0 / 180.0	-29.1	
312.00	27.1 Qp	1.9 / 14.8 / 27.0	16.9	V / 1.0 / 0.0	-29.1	
263.33	27.3 Qp	1.8 / 12.7 / 27.0	14.8	V / 1.0 / 0.0	-31.2	

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Radiated Electromagnetic Emissions

Test Report #:	**3162555 Run 02**	Test Area:	Pinewood Site 1 (3m)	Temperature:	25.1	°C
Test Method:	FCC Part 15.209	Test Date:	25-Sep-2008	Relative Humidity:	25.1	%
EUT Model #:	QP03	EUT Power:	110VAC/60Hz	Air Pressure:	80.6	kPa
EUT Serial #:	Proto 1					
Manufacturer:	SYMX					
EUT Description:	2.45 RFID Reader/ Transmitter					
Notes:	**Test Config: Using POE D-Link Base Unit DWL-P200**					
	LAN Termination with Laptop Ethernet					

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 >1GHz	
UnIntentional - High Frequency						
***** **Measure High Band Edge at 2.483.5GHz** *****						
Using Channel 39						
2483.50	37.0 Av	4.0 / 28.7 / 38.6	31.1	V / 1.8 / 12.0	-22.9	
2483.50	48.0 Av	4.0 / 28.7 / 38.6	42.1	H / 1.5 / 324.0	-11.9	
Using Channel 40						
2483.50	52.0 Av	4.0 / 28.7 / 38.6	46.1	H / 1.6 / 68.0	-7.9	
Begin Normal UnIntentional						
1-4GHz Vertical						
No Signals Found: Noisefloor						
1000.36	35.0 Av	2.2 / 24.1 / 38.2	23.1	V / 1.0 / 0.0	-30.9	
2001.44	35.2 Av	3.0 / 27.2 / 38.1	27.3	V / 1.0 / 0.0	-26.7	
3030.57	35.9 Av	3.7 / 30.9 / 38.2	32.3	V / 1.0 / 0.0	-21.7	
3995.38	34.4 Av	5.7 / 32.3 / 37.3	35.1	V / 1.0 / 0.0	-18.9	
1-4GHz Horizontal						
No Signals Found: Noisefloor						
1000.13	34.9 Av	2.2 / 24.1 / 38.2	23.0	H / 1.6 / 0.0	-31.0	
2073.54	35.2 Av	3.1 / 27.4 / 38.2	27.6	H / 1.6 / 0.0	-26.4	
3009.27	35.9 Av	3.6 / 30.9 / 38.1	32.3	H / 1.6 / 0.0	-21.7	
3992.67	33.9 Av	5.7 / 32.3 / 37.3	34.6	H / 1.6 / 0.0	-19.4	
4-8GHz Vertical						
4963.57	47.5 Av	7.7 / 33.3 / 40.4	48.2	V / 1.4 / 284.0	-5.8	
4963.57 is real signal						
6008.35	31.2 Av	7.7 / 35.1 / 39.9	34.1	V / 1.4 / 284.0	-19.9	
7004.05	31.1 Av	8.1 / 36.0 / 40.9	34.3	V / 1.4 / 284.0	-19.7	
7995.25	32.6 Av	8.3 / 37.1 / 39.9	38.2	V / 1.4 / 284.0	-15.8	
4-8GHz Horizontal						
4963.57	40.6 Av	7.7 / 33.3 / 40.4	41.3	H / 1.6 / 38.0	-12.7	

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 >1GHz	
4963.57 is real signal						
6009.25	31.0 Av	7.7 / 35.1 / 39.9	33.9	H / 1.6 / 38.0	-20.1	
7028.96	31.0 Av	8.1 / 36.0 / 40.7	34.4	H / 1.6 / 38.0	-19.6	
7999.02	32.5 Av	8.3 / 37.1 / 39.9	38.1	H / 1.6 / 38.0	-15.9	
8-18GHz Vertical						
No Signals Found: Noisefloor						
9006.80	42.9 Av	8.5 / 37.9 / 48.5	40.8	V / 1.0 / 0.0	-13.2	
10011.1	43.6 Av	9.5 / 38.1 / 49.3	42.0	V / 1.0 / 0.0	-12.0	
11008.6	42.0 Av	11.2 / 37.8 / 48.8	42.1	V / 1.0 / 0.0	-11.9	
12009.4	28.6 Av	3.4 / 38.9 / 46.1	24.8	V / 1.0 / 0.0	-29.2	
13010.2	28.6 Av	3.7 / 39.6 / 46.9	25.0	V / 1.0 / 0.0	-29.0	
14008.6	28.1 Av	3.9 / 40.9 / 47.2	25.8	V / 1.0 / 0.0	-28.2	
15012.4	31.0 Av	4.2 / 40.8 / 47.2	28.8	V / 1.0 / 0.0	-25.2	
17013.1	31.4 Av	4.7 / 40.8 / 47.8	29.2	V / 1.0 / 0.0	-24.8	
17999.2	29.5 Av	4.0 / 46.2 / 46.3	33.4	V / 1.0 / 0.0	-20.6	
8-18GHz Horizontal						
No Signals Found: Noisefloor						
9013.10	32.5 Av	8.5 / 37.9 / 48.5	30.5	H / 1.6 / 0.0	-23.5	
10003.4	33.1 Av	9.5 / 38.1 / 49.3	31.5	H / 1.6 / 0.0	-22.5	
11009.9	31.8 Av	11.2 / 37.8 / 48.8	31.9	H / 1.6 / 0.0	-22.1	
12008.6	29.1 Av	3.4 / 38.9 / 46.1	25.3	H / 1.6 / 0.0	-28.7	
13002.5	28.3 Av	3.7 / 39.6 / 46.9	24.7	H / 1.6 / 0.0	-29.3	
14005.0	28.4 Av	3.9 / 40.9 / 47.2	26.1	H / 1.6 / 0.0	-27.9	
15006.8	30.6 Av	4.2 / 40.8 / 47.2	28.4	H / 1.6 / 0.0	-25.6	
16014.3	31.6 Av	4.5 / 39.1 / 47.7	27.6	H / 1.6 / 0.0	-26.4	
17017.9	31.4 Av	4.7 / 40.9 / 47.8	29.2	H / 1.6 / 0.0	-24.8	
17999.2	29.6 Av	3.8 / 46.2 / 46.3	33.4	H / 1.6 / 0.0	-20.6	

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC 15.209 >1GHz	
********** **Measurement Summary** **********						
4963.57	47.5 Av	7.7 / 33.3 / 40.4	48.2	V / 1.4 / 284.0	-5.8	
2483.50	52.0 Av	4.0 / 28.7 / 38.6	46.1	H / 1.6 / 68.0	-7.9	
11008.6	42.0 Av	11.2 / 37.8 / 48.8	42.1	V / 1.0 / 0.0	-11.9	
10011.1	43.6 Av	9.5 / 38.1 / 49.3	42.0	V / 1.0 / 0.0	-12.0	
9006.80	42.9 Av	8.5 / 37.9 / 48.5	40.8	V / 1.0 / 0.0	-13.2	
7995.25	32.6 Av	8.3 / 37.1 / 39.9	38.2	V / 1.4 / 284.0	-15.8	
7999.02	32.5 Av	8.3 / 37.1 / 39.9	38.1	H / 1.6 / 38.0	-15.9	
3995.38	34.4 Av	5.7 / 32.3 / 37.3	35.1	V / 1.0 / 0.0	-18.9	
3992.67	33.9 Av	5.7 / 32.3 / 37.3	34.6	H / 1.6 / 0.0	-19.4	
7028.96	31.0 Av	8.1 / 36.0 / 40.7	34.4	H / 1.6 / 38.0	-19.6	
7004.05	31.1 Av	8.1 / 36.0 / 40.9	34.3	V / 1.4 / 284.0	-19.7	
6008.35	31.2 Av	7.7 / 35.1 / 39.9	34.1	V / 1.4 / 284.0	-19.9	
6009.25	31.0 Av	7.7 / 35.1 / 39.9	33.9	H / 1.6 / 38.0	-20.1	
17999.2	29.6 Av	3.8 / 46.2 / 46.3	33.4	H / 1.6 / 0.0	-20.6	
3009.27	35.9 Av	3.6 / 30.9 / 38.1	32.3	H / 1.6 / 0.0	-21.7	
3030.57	35.9 Av	3.7 / 30.9 / 38.2	32.3	V / 1.0 / 0.0	-21.7	
11009.9	31.8 Av	11.2 / 37.8 / 48.8	31.9	H / 1.6 / 0.0	-22.1	
10003.4	33.1 Av	9.5 / 38.1 / 49.3	31.5	H / 1.6 / 0.0	-22.5	
9013.10	32.5 Av	8.5 / 37.9 / 48.5	30.5	H / 1.6 / 0.0	-23.5	
17013.1	31.4 Av	4.7 / 40.8 / 47.8	29.2	V / 1.0 / 0.0	-24.8	
17017.9	31.4 Av	4.7 / 40.9 / 47.8	29.2	H / 1.6 / 0.0	-24.8	
15012.4	31.0 Av	4.2 / 40.8 / 47.2	28.8	V / 1.0 / 0.0	-25.2	
15006.8	30.6 Av	4.2 / 40.8 / 47.2	28.4	H / 1.6 / 0.0	-25.6	
2073.54	35.2 Av	3.1 / 27.4 / 38.2	27.6	H / 1.6 / 0.0	-26.4	
16014.3	31.6 Av	4.5 / 39.1 / 47.7	27.6	H / 1.6 / 0.0	-26.4	
2001.44	35.2 Av	3.0 / 27.2 / 38.1	27.3	V / 1.0 / 0.0	-26.7	
14005.0	28.4 Av	3.9 / 40.9 / 47.2	26.1	H / 1.6 / 0.0	-27.9	
14008.6	28.1 Av	3.9 / 40.9 / 47.2	25.8	V / 1.0 / 0.0	-28.2	
12008.6	29.1 Av	3.4 / 38.9 / 46.1	25.3	H / 1.6 / 0.0	-28.7	
13010.2	28.6 Av	3.7 / 39.6 / 46.9	25.0	V / 1.0 / 0.0	-29.0	
12009.4	28.6 Av	3.4 / 38.9 / 46.1	24.8	V / 1.0 / 0.0	-29.2	
13002.5	28.3 Av	3.7 / 39.6 / 46.9	24.7	H / 1.6 / 0.0	-29.3	
1000.36	35.0 Av	2.2 / 24.1 / 38.2	23.1	V / 1.0 / 0.0	-30.9	

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Radiated Electromagnetic Emissions

Test Report #:	**3162555**	Test Area:	Pinewood Site 1 (3m)	Temperature:	25.1	°C
Test Method:	FCC Part 15.209	Test Date:	12-Jan-2009	Relative Humidity:	36.2	%
EUT Model #:	QP03	EUT Power:	POE	Air Pressure:	80	kPa
EUT Serial #:	Proto1					
Manufacturer:	Symx					
EUT Description:	2.4GHz RFID transceiver.					
Notes:	Config 2.					

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	15.209 >1GHz
37.25	35.5 Qp	0.6 / 12.0 / 28.3	19.8	V / 1.0 / 0.0	-20.2	N/A
54.53	42.1 Qp	0.7 / 9.5 / 28.2	24.1	V / 1.0 / 0.0	-15.9	N/A
62.93	44.6 Qp	0.7 / 8.5 / 28.2	25.6	V / 1.0 / 0.0	-14.4	N/A
129.71	38.4 Qp	1.2 / 12.2 / 27.8	24.0	V / 1.0 / 0.0	-19.5	N/A
172.68	33.5 Qp	1.4 / 12.4 / 27.5	19.8	V / 1.0 / 0.0	-23.7	N/A
160.00	30.9 Qp	1.4 / 12.3 / 27.7	16.8	V / 1.0 / 0.0	-26.7	N/A
37.07	35.5 Qp	0.6 / 12.0 / 28.3	19.8	V / 1.0 / 90.0	-20.2	N/A
129.71	38.5 Qp	1.2 / 12.2 / 27.8	24.1	V / 1.0 / 90.0	-19.4	N/A
160.00	30.2 Qp	1.4 / 12.3 / 27.7	16.2	V / 1.0 / 90.0	-27.3	N/A
37.07	36.6 Qp	0.6 / 12.0 / 28.3	20.9	V / 1.0 / 180.0	-19.1	N/A
37.25	36.9 Qp	0.6 / 12.0 / 28.3	21.3	V / 1.0 / 180.0	-18.7	N/A
54.53	43.1 Qp	0.7 / 9.5 / 28.2	25.0	V / 1.0 / 180.0	-15.0	N/A
129.71	38.3 Qp	1.2 / 12.2 / 27.8	23.9	V / 1.0 / 180.0	-19.6	N/A
160.00	30.5 Qp	1.4 / 12.3 / 27.7	16.5	V / 1.0 / 180.0	-27.0	N/A
62.93	45.1 Qp	0.7 / 8.5 / 28.2	26.1	V / 1.0 / 270.0	-13.9	N/A
129.71	38.2 Qp	1.2 / 12.2 / 27.8	23.9	V / 1.0 / 270.0	-19.6	N/A
The following were maximized between 30 and 200 MHz Vertical.						
54.53	43.6 Qp	0.7 / 9.5 / 28.2	25.6	V / 1.0 / 167.0	-14.4	N/A
62.93	45.8 Qp	0.7 / 8.5 / 28.2	26.8	V / 1.0 / 260.0	-13.2	N/A
No higher emissions found 30 to 200 MHz Horizontal.						
The following are noise floor.						
30.00	23.7 Qp	0.5 / 13.0 / 28.2	9.0	H / 1.8 / 270.0	-31.0	N/A
85.00	27.9 Qp	0.9 / 7.1 / 28.0	8.0	H / 1.8 / 270.0	-32.0	N/A
185.00	30.6 Qp	1.4 / 12.9 / 27.5	17.4	H / 1.8 / 270.0	-26.1	N/A
375.01	28.6 Qp	2.1 / 15.3 / 27.6	18.5	V / 1.0 / 0.0	-27.5	N/A
215.98	35.1 Qp	1.6 / 10.5 / 27.3	19.8	V / 1.0 / 0.0	-23.7	N/A
250.01	38.8 Qp	1.7 / 11.6 / 27.2	24.9	V / 1.0 / 0.0	-21.1	N/A

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	15.209 >1GHz
410.77	33.6 Qp	2.2 / 18.3 / 27.7	26.5	V / 1.0 / 0.0	-19.5	N/A
526.48	27.0 Qp	2.6 / 18.6 / 28.3	19.9	V / 1.0 / 0.0	-26.1	N/A
566.98	28.8 Qp	2.7 / 18.0 / 28.4	21.1	V / 1.0 / 0.0	-24.9	N/A
576.77	41.4 Qp	2.8 / 18.1 / 28.4	34.0	V / 1.0 / 0.0	-12.0	N/A
607.47	31.9 Qp	2.9 / 18.7 / 28.3	25.3	V / 1.0 / 0.0	-20.7	N/A
410.77	34.2 Qp	2.2 / 18.3 / 27.7	27.1	V / 1.0 / 90.0	-18.9	N/A
576.77	43.1 Qp	2.8 / 18.1 / 28.4	35.7	V / 1.0 / 90.0	-10.3	N/A
250.01	41.5 Qp	1.7 / 11.6 / 27.2	27.6	V / 1.0 / 180.0	-18.4	N/A
526.48	27.9 Qp	2.6 / 18.6 / 28.3	20.7	V / 1.0 / 180.0	-25.3	N/A
250.01	43.2 Qp	1.7 / 11.6 / 27.2	29.4	V / 1.0 / 270.0	-16.6	N/A
375.01	28.2 Qp	2.1 / 15.3 / 27.6	18.0	V / 1.0 / 270.0	-28.0	N/A
410.77	35.0 Qp	2.2 / 18.3 / 27.7	27.9	V / 1.0 / 270.0	-18.1	N/A
526.48	27.9 Qp	2.6 / 18.6 / 28.3	20.7	V / 1.0 / 270.0	-25.3	N/A
566.98	31.4 Qp	2.7 / 18.0 / 28.4	23.8	V / 1.0 / 270.0	-22.2	N/A
The following were maximized between 200 and 1000 MHz Vertical.						
576.77	45.8 Qp	2.8 / 18.1 / 28.4	38.3	V / 1.4 / 151.0	-7.7	N/A
410.77	38.1 Qp	2.2 / 18.3 / 27.7	30.9	V / 1.6 / 15.0	-15.1	N/A
250.01	44.0 Qp	1.7 / 11.6 / 27.2	30.1	V / 1.0 / 299.0	-15.9	N/A
576.77 was determined to be an ambient and will be deleted from the summary.						
215.98	37.9 Qp	1.6 / 10.5 / 27.3	22.6	H / 1.0 / 0.0	-20.9	N/A
250.01	49.4 Qp	1.7 / 11.6 / 27.2	35.5	H / 1.0 / 0.0	-10.5	N/A
526.48	28.6 Qp	2.6 / 18.6 / 28.3	21.5	H / 1.0 / 0.0	-24.5	N/A
215.98	37.9 Qp	1.6 / 10.5 / 27.3	22.6	H / 2.0 / 90.0	-20.9	N/A
526.48	28.6 Qp	2.6 / 18.6 / 28.3	21.5	H / 2.0 / 90.0	-24.5	N/A
375.01	29.3 Qp	2.1 / 15.3 / 27.6	19.2	H / 1.0 / 90.0	-26.8	N/A
250.01	50.1 Qp	1.7 / 11.6 / 27.2	36.2	H / 1.0 / 90.0	-9.8	N/A
215.98	38.8 Qp	1.6 / 10.5 / 27.3	23.5	H / 1.0 / 90.0	-20.0	N/A
242.98	38.5 Qp	1.7 / 11.1 / 27.2	24.1	H / 1.0 / 90.0	-21.9	N/A
269.98	36.5 Qp	1.8 / 12.4 / 27.0	23.6	H / 1.0 / 90.0	-22.4	N/A
296.97	30.9 Qp	1.9 / 13.6 / 27.1	19.4	H / 1.0 / 90.0	-26.6	N/A
300.01	38.5 Qp	1.9 / 13.8 / 27.1	27.1	H / 1.0 / 90.0	-18.9	N/A
323.98	33.0 Qp	2.0 / 13.9 / 27.1	21.7	H / 1.0 / 90.0	-24.3	N/A
404.98	29.4 Qp	2.2 / 17.7 / 27.7	21.5	H / 1.0 / 90.0	-24.5	N/A
250.01	49.6 Qp	1.7 / 11.6 / 27.2	35.7	H / 1.0 / 180.0	-10.3	N/A
323.98	34.2 Qp	2.0 / 13.9 / 27.1	23.0	H / 1.0 / 180.0	-23.0	N/A
539.97	30.2 Qp	2.6 / 18.4 / 28.3	22.9	H / 1.6 / 180.0	-23.1	N/A
215.98	40.3 Qp	1.6 / 10.5 / 27.3	25.0	H / 1.6 / 270.0	-18.5	N/A
526.48	34.6 Qp	2.6 / 18.6 / 28.3	27.4	H / 1.6 / 270.0	-18.6	N/A

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	15.209 >1GHz
566.98	37.1 Qp	2.7 / 18.0 / 28.4	29.4	H / 1.6 / 270.0	-16.6	N/A
607.47	32.1 Qp	2.9 / 18.7 / 28.3	25.4	H / 1.6 / 270.0	-20.6	N/A
607.47	33.1 Qp	2.9 / 18.7 / 28.3	26.4	H / 1.0 / 270.0	-19.6	N/A
404.98	31.9 Qp	2.2 / 17.7 / 27.7	24.1	H / 1.0 / 270.0	-21.9	N/A
296.97	31.2 Qp	1.9 / 13.6 / 27.1	19.6	H / 1.0 / 270.0	-26.4	N/A
250.01	49.1 Qp	1.7 / 11.6 / 27.2	35.2	H / 1.0 / 270.0	-10.8	N/A
242.98	37.2 Qp	1.7 / 11.1 / 27.2	22.8	H / 1.0 / 270.0	-23.2	N/A
215.98	40.6 Qp	1.6 / 10.5 / 27.3	25.4	H / 1.0 / 270.0	-18.1	N/A
The following were maximized between 200 and 1000 MHz.						
566.98	38.2 Qp	2.7 / 18.0 / 28.4	30.6	H / 1.4 / 285.0	-15.4	N/A
250.01	52.7 Qp	1.7 / 11.6 / 27.2	38.8	H / 1.0 / 225.0	-7.2	N/A
215.98	41.8 Qp	1.6 / 10.5 / 27.3	26.5	H / 1.3 / 299.0	-17.0	N/A

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	15.209 >1GHz
********** **Measurement Summary** **********						
250.01	52.7 Qp	1.7 / 11.6 / 27.2	38.8	H / 1.0 / 225.0	-7.2	N/A
62.93	45.8 Qp	0.7 / 8.5 / 28.2	26.8	V / 1.0 / 260.0	-13.2	N/A
54.53	43.6 Qp	0.7 / 9.5 / 28.2	25.6	V / 1.0 / 167.0	-14.4	N/A
410.77	38.1 Qp	2.2 / 18.3 / 27.7	30.9	V / 1.6 / 15.0	-15.1	N/A
566.98	38.2 Qp	2.7 / 18.0 / 28.4	30.6	H / 1.4 / 285.0	-15.4	N/A
215.98	41.8 Qp	1.6 / 10.5 / 27.3	26.5	H / 1.3 / 299.0	-17.0	N/A
526.48	34.6 Qp	2.6 / 18.6 / 28.3	27.4	H / 1.6 / 270.0	-18.6	N/A
37.25	36.9 Qp	0.6 / 12.0 / 28.3	21.3	V / 1.0 / 180.0	-18.7	N/A
300.01	38.5 Qp	1.9 / 13.8 / 27.1	27.1	H / 1.0 / 90.0	-18.9	N/A
37.07	36.6 Qp	0.6 / 12.0 / 28.3	20.9	V / 1.0 / 180.0	-19.1	N/A
129.71	38.5 Qp	1.2 / 12.2 / 27.8	24.1	V / 1.0 / 90.0	-19.4	N/A
607.47	33.1 Qp	2.9 / 18.7 / 28.3	26.4	H / 1.0 / 270.0	-19.6	N/A
242.98	38.5 Qp	1.7 / 11.1 / 27.2	24.1	H / 1.0 / 90.0	-21.9	N/A
404.98	31.9 Qp	2.2 / 17.7 / 27.7	24.1	H / 1.0 / 270.0	-21.9	N/A
269.98	36.5 Qp	1.8 / 12.4 / 27.0	23.6	H / 1.0 / 90.0	-22.4	N/A
323.98	34.2 Qp	2.0 / 13.9 / 27.1	23.0	H / 1.0 / 180.0	-23.0	N/A
539.97	30.2 Qp	2.6 / 18.4 / 28.3	22.9	H / 1.6 / 180.0	-23.1	N/A
172.68	33.5 Qp	1.4 / 12.4 / 27.5	19.8	V / 1.0 / 0.0	-23.7	N/A
185.00	30.6 Qp	1.4 / 12.9 / 27.5	17.4	H / 1.8 / 270.0	-26.1	N/A
296.97	31.2 Qp	1.9 / 13.6 / 27.1	19.6	H / 1.0 / 270.0	-26.4	N/A
160.00	30.9 Qp	1.4 / 12.3 / 27.7	16.8	V / 1.0 / 0.0	-26.7	N/A
375.01	29.3 Qp	2.1 / 15.3 / 27.6	19.2	H / 1.0 / 90.0	-26.8	N/A
30.00	23.7 Qp	0.5 / 13.0 / 28.2	9.0	H / 1.8 / 270.0	-31.0	N/A
85.00	27.9 Qp	0.9 / 7.1 / 28.0	8.0	H / 1.8 / 270.0	-32.0	N/A

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Radiated Emissions Data

Fundamental Field Strength

And

Harmonics of the Fundamental

15.249(a)/15.205

Config 1

Followed by

Config 2

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Field Strength Measurements
Fundamental and Spurious of the Transmitter

Test Report #:	**3162555 Run 02**	Test Area:	Pinewood Site 1 (3m)	Temperature:	26.3 °C
Test Method:	FCC 47 CFR part 15 subpart C	Test Date:	24-Sep-2008	Relative Humidity:	23.1 %
EUT Model #:	QP03	EUT Power:	110VAC/60Hz	Air Pressure:	kPa
EUT Serial #:	Proto 1				
Manufacturer:	SYMX				
EUT Description:	2.45 RFID Reader/ Transmitter				
Notes:	**Test Config: Using AC Adapter for power**				
	***Tx Power changed to -10dB, High Channel = 39				

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	Duty Cycle Correction	Final Corrected	Limit	DELTA
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	(dB)	(dBuV/m)	(dBuV/m) FCC 15.249(a)	(dB)

The following duty cycle was declared by the manufacturer.

100mS [No Duty Cycle Correction]

Averaging method for pulsed signals and calculation in accordance to FCC CFR47 Part 15.35 utilized to calculate field strength emissions.

The testing performed in accordance to FCC CFR47 Part 15.205 (restricted bands of operation) and 15.249 emissions and delta limits were calculated as follows:

Final Corrected Peak Measurement – Duty Cycle Correction Factor* = Final Calculated Emission

The Final Calculated Emission was then compared to the Limits in CFR47 Part 15.209 and 15.249 and the emission/limit delta was calculated.

the DTCF is calculated as follows $20*\log_{10}$(duty cycle in 100mS) “not to exceed 20dB”

Part 15.249 and 15.205 Respectively

All Measurements worst-case Axis 3 [EUT Vertical & Rotated 90 degrees as determined by preliminary evaluations]

Fundamental - High Channel								
2482.68	93.2 Pk	4.0 / 28.7 / 38.6	87.3	H / 1.3 / 0.0	0	87.3	94	-6.7
2482.68	83.0 Pk	4.0 / 28.7 / 38.6	77.1	V / 1.1 / 5.0	0	77.1	94	-16.9
Fundamental - Mid Channel								
2477.94	82.3 Pk	4.0 / 28.7 / 38.6	76.4	V / 1.3 / 8.0	0	76.4	94	-17.6
2477.94	94.6 Pk	4.0 / 28.7 / 38.6	88.7	H / 1.5 / 56.0	0	88.7	94	-5.3
Fundamental - Low Channel								
2472.94	94.2 Pk	3.9 / 28.7 / 38.6	88.3	H / 1.6 / 78.0	0	88.3	94	-5.7
2472.94	83.4 Pk	3.9 / 28.7 / 38.6	77.5	V / 1.4 / 354.0	0	77.5	94	-16.5

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	Duty Cycle Correction	Final Corrected	Limit	DELTA
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
Harmonics 4-8GHz - Low Channel								
4945.97	50.0 Pk	7.7 / 33.3 / 40.5	50.6	V / 1.5 / 338.0	0.0	50.6	54	-3.4
4945.97	52.4 Pk	7.7 / 33.3 / 40.5	52.9	H / 1.8 / 78.0	0.0	52.9	54	-1.1
7418.91	26.6 Pk	8.2 / 36.5 / 39.8	31.4	H / 1.0 / 0.0	0.0	31.4	54	-22.6
7418.91	25.6 Pk	8.2 / 36.5 / 39.8	30.4	V / 1.0 / 0.0	0.0	30.4	54	-23.6
Harmonics 4-8 GHz - Mid Channel								
4955.95	49.5 Pk	7.7 / 33.3 / 40.4	50.1	H / 1.6 / 74.0	0.0	50.1	54	-3.9
7433.89	29.4 Pk	8.2 / 36.5 / 39.8	34.3	H / 1.6 / 74.0	0.0	34.3	54	-19.7
7433.89	29.8 Pk	8.2 / 36.5 / 39.8	34.7	V / 1.6 / 74.0	0.0	34.7	54	-19.3
4955.95	50.6 Pk	7.7 / 33.3 / 40.4	51.3	V / 1.5 / 18.0	0.0	51.3	54	-2.7
Harmonics 4-8GHz - High Channel								
4965.44	50.1 Pk	7.7 / 33.3 / 40.3	50.9	V / 1.5 / 24.0	0.0	50.9	54	-3.1
7448.14	25.1 Pk	8.2 / 36.5 / 39.7	30.1	V / 1.5 / 24.0	0.0	30.1	54	-23.9
7448.14	30.1 Pk	8.2 / 36.5 / 39.7	35	H / 1.5 / 24.0	0.0	35	54	-19
4965.44	51.0 Pk	7.7 / 33.3 / 40.3	51.8	H / 1.7 / 76.0	0.0	51.8	54	-2.2
Harmonics 8-18GHz - High Channel								
Following are noise floor measurements, no harmonics found								
9930.8	38.1 Pk	9.5 / 38.2 / 49.3	36.5	H / 1.0 / 0.0	0.0	36.5	54	-17.5
12413.5	35.5 Pk	3.5 / 38.9 / 46.2	31.7	H / 1.0 / 0.0	0.0	31.7	54	-22.3
14896.2	41.3 Pk	4.2 / 41.1 / 48.3	38.2	H / 1.0 / 0.0	0.0	38.2	54	-15.8
17378.9	38.2 Pk	4.8 / 42.6 / 46.4	39.2	H / 1.0 / 0.0	0.0	39.2	54	-14.8
9930.8	38.2 Pk	9.5 / 38.2 / 49.3	36.7	V / 1.0 / 0.0	0.0	36.7	54	-17.3
12413.5	29.8 Pk	3.5 / 38.9 / 46.2	26	V / 1.0 / 0.0	0.0	26	54	-28
14896.2	32.7 Pk	4.2 / 41.1 / 48.3	29.6	V / 1.0 / 0.0	0.0	29.6	54	-24.4
17378.9	36.5 Pk	4.8 / 42.6 / 46.4	37.5	V / 1.0 / 0.0	0.0	37.5	54	-16.5
Harmonics 8-18GHz - Mid Channel								
9911.76	38.8 Pk	9.5 / 38.2 / 49.3	37.2	V / 1.0 / 0.0	0.0	37.2	54	-16.8
12389.7	33.1 Pk	3.5 / 38.9 / 46.3	29.3	V / 1.0 / 0.0	0.0	29.3	54	-24.7
14867.6	38.1 Pk	4.2 / 41.1 / 48.5	34.9	V / 1.0 / 0.0	0.0	34.9	54	-19.1
17345.6	32.6 Pk	4.8 / 42.4 / 46.6	33.3	V / 1.0 / 0.0	0.0	33.3	54	-20.7

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	Duty Cycle Correction	Final Corrected	Limit	DELTA
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
9911.76	41.0 Pk	9.5 / 38.2 / 49.3	39.4	H / 1.0 / 0.0	0.0	39.4	54	-14.6
12389.7	35.4 Pk	3.5 / 38.9 / 46.3	31.5	H / 1.0 / 0.0	0.0	31.5	54	-22.5
14867.6	35.3 Pk	4.2 / 41.1 / 48.5	32.1	H / 1.0 / 0.0	0.0	32.1	54	-21.9
17345.6	36.9 Pk	4.8 / 42.4 / 46.6	37.6	H / 1.0 / 0.0	0.0	37.6	54	-16.4
Harmonics 8-18GHz - Low Channel								
9891.76	38.4 Pk	9.5 / 38.2 / 49.2	36.8	H / 1.0 / 0.0	0.0	36.8	54	-17.2
12364.7	36.4 Pk	3.5 / 38.9 / 46.2	32.6	H / 1.0 / 0.0	0.0	32.6	54	-21.4
14837.6	42.0 Pk	4.2 / 41.2 / 48.5	38.8	H / 1.0 / 0.0	0.0	38.8	54	-15.2
17310.6	35.3 Pk	4.8 / 42.3 / 46.7	35.7	H / 1.0 / 0.0	0.0	35.7	54	-18.3
9891.76	38.2 Pk	9.5 / 38.2 / 49.2	36.7	V / 1.0 / 0.0	0.0	36.7	54	-17.3
12364.7	32.6 Pk	3.5 / 38.9 / 46.2	28.8	V / 1.0 / 0.0	0.0	28.8	54	-25.2
14837.6	38.4 Pk	4.2 / 41.2 / 48.5	35.2	V / 1.0 / 0.0	0.0	35.2	54	-18.8
17310.6	36.6 Pk	4.8 / 42.3 / 46.7	37	V / 1.0 / 0.0	0.0	37	54	-17
The following emissions were taken with the 18-26.5 GHz Horn/ Harmonic Mixer								
Harmonics 18-26GHz - Low Channel								
No signals found: Noise Floor								
19783.52	11.1 Pk	0 / 21.8 / 0	32.9	V / 1.0 / 0.0	0.0	32.9	54	-21.1
22256.46	10.9 Pk	0 / 21.1 / 0	32.0	V / 1.0 / 0.0	0.0	32.0	54	-22.0
24729.40	11.5 Pk	0 / 21.8 / 0	33.3	V / 1.0 / 0.0	0.0	33.3	54	-20.7
Harmonics 18-26GHz - Mid Channel								
No signals found: Noise Floor								
19823.52	10.2 Pk	0 / 21.8 / 0	32.0	V / 1.0 / 0.0	0.0	32.0	54	-22.0
22301.46	10.6 Pk	0 / 21.1 / 0	31.6	V / 1.0 / 0.0	0.0	31.6	54	-22.4
24779.40	11.1 Pk	0 / 21.8 / 0	32.9	V / 1.0 / 0.0	0.0	32.9	54	-21.1
Harmonics 18-26GHz - High Channel								
No signals found: Noise Floor								
19861.44	11.0 Pk	0 / 21.8 / 0	32.7	V / 1.0 / 0.0	0.0	32.7	54	-21.3
22344.12	10.4 Pk	0 / 21.1 / 0	31.4	V / 1.0 / 0.0	0.0	31.4	54	-22.6
24826.80	10.9 Pk	0 / 21.8 / 0	32.7	V / 1.0 / 0.0	0.0	32.7	54	-21.3

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Field Strength Measurements
Fundamental and Spurious of the Transmitter

Test Report #:	**3162555**	Test Area:	Pinewood Site 1 (3m)	Temperature:	25.6	°C
Test Method:	FCC 15.249	Test Date:	9-Jan-09	Relative Humidity:	32.6	%
EUT Model #:	QP03	EUT Power:	POE	Air Pressure:	80	kPa
EUT Serial #:	Proto 1			Page:		
Manufacturer:	SYMX					
EUT Description:	2.4GHz RFID transceiver.					
Notes:						

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	Duty Cycle Correction	Final Corrected	Limit	DELTA
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
The following duty cycle was declared by the manufacturer.								
100ms								
Averaging method for pulsed signals and calculation in accordance to FCC CFR47 Part 15.35 utilized to calculate field strength emissions.								
The testing performed in accordance to FCC CFR47 Part 15.205 (restricted bands of operation) and 15.249 emissions and delta limits were calculated as follows:								
Final Corrected Peak Measurement – Duty Cycle Correction Factor* = Final Calculated Emission								
The Final Calculated Emission was then compared to the Limits in CFR47 Part 15.209 and 15.249 and the emission/limit delta was calculated.								
the DTCF is calculated as follows $20*\log_{10}$(duty cycle in 100mS) “not to exceed 20dB”								
Low Channel								
Axis 1 EUT is flat on the table.								
2472.95	54.8 Pk	3.2 / 27.6 / 0.0	85.6	V / 1.0 / 347.0	0.0	85.6	94	-8.4
2472.97	46.4 Pk	3.2 / 27.6 / 0.0	77.1	H / 1.0 / 290.0	0.0	77.1	94	-16.9
4945.9	54.2 Pk	5.7 / 32.4 / 40.5	51.8	V / 1.4 / 299.0	0.0	51.8	54	-2.2
4945.9	47.5 Pk	5.7 / 32.4 / 40.5	45.1	H / 1.0 / 0.0	0.0	45.1	54	-8.9
7418.83	34.1 Pk	7.4 / 36.2 / 39.8	37.9	V / 1.0 / 0.0	0.0	37.9	54	-16.1
7418.83	33.6 Pk	7.4 / 36.2 / 39.8	37.4	H / 1.0 / 0.0	0.0	37.4	54	-16.6
Axis 2 EUT is vertical on the table.								
2472.89	52.8 Pk	3.2 / 27.6 / 0.0	83.5	V / 1.0 / 304.0	0.0	83.5	94	-10.5
2472.98	50.6 Pk	3.2 / 27.6 / 0.0	81.4	H / 1.0 / 139.0	0.0	81.4	94	-12.6
4945.9	47.1 Pk	5.7 / 32.4 / 40.5	44.8	H / 1.0 / 0.0	0.0	44.8	54	-9.2
4945.9	54.0 Pk	5.7 / 32.4 / 40.5	51.7	V / 1.0 / 0.0	0.0	51.7	54	-2.3
7418.83	33.6 Pk	7.4 / 36.2 / 39.8	37.4	H / 1.0 / 0.0	0.0	37.4	54	-16.6
7418.83	34.0 Pk	7.4 / 36.2 / 39.8	37.9	V / 1.0 / 0.0	0.0	37.9	54	-16.1
Axis 3 EUT is vertical on the table rotated 90 degrees.								
2472.9	47.2 Pk	3.2 / 27.6 / 0.0	78	H / 1.3 / 293.0	0.0	78	94	-16
2472.95	55.8 Pk	3.2 / 27.6 / 0.0	86.6	V / 1.0 / 348.0	0.0	86.6	94	-7.4
4945.9	55.4 Pk	5.7 / 32.4 / 40.5	53	H / 1.0 / 126.0	0.0	53	54	-1
4945.9	53.3 Pk	5.7 / 32.4 / 40.5	50.9	V / 1.0 / 255.0	0.0	50.9	54	-3.1
7418.83	33.6 Pk	7.4 / 36.2 / 39.8	37.5	H / 1.0 / 0.0	0.0	37.5	54	-16.5
7418.83	35.8 Pk	7.4 / 36.2 / 39.8	39.6	V / 1.0 / 0.0	0.0	39.6	54	-14.4
No higher emissions found, the following are noise floor.								
9891.76	45.9 Pk	8.7 / 37.2 / 49.2	42.6	V / 1.0 / 0.0	0.0	42.6	54	-11.4
9891.76	44.2 Pk	8.7 / 37.2 / 49.2	40.9	H / 1.0 / 0.0	0.0	40.9	54	-13.1
12364.7	42.5 Pk	9.9 / 41.3 / 46.2	47.5	V / 1.0 / 0.0	0.0	47.5	54	-6.5
12364.7	40.1 Pk	9.9 / 41.3 / 46.2	45.1	H / 1.0 / 0.0	0.0	45.1	54	-8.9
14837.6	39.2 Pk	12.0 / 43.6 / 48.5	46.3	V / 1.0 / 0.0	0.0	46.3	54	-7.7
14837.6	38.5 Pk	12.0 / 43.6 / 48.5	45.5	H / 1.0 / 0.0	0.0	45.5	54	-8.5
17310.5	35.8 Pk	14.0 / 43.6 / 46.7	46.8	V / 1.0 / 0.0	0.0	46.8	54	-7.2
17310.5	33.5 Pk	14.0 / 43.6 / 46.7	44.5	H / 1.0 / 0.0	0.0	44.5	54	-9.5
19783.52	11.1 Pk	0 / 21.8 / 0	32.9	V / 1.0 / 0.0	0.0	32.9	54	-21.1

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	Duty Cycle Correction	Final Corrected	Limit	DELTA
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
22256.46	10.9 Pk	0 / 21.1 / 0	32.0	V / 1.0 / 0.0	0.0	32.0	54	-22.0
24729.40	11.5 Pk	0 / 21.8 / 0	33.3	V / 1.0 / 0.0	0.0	33.3	54	-20.7
Mid Channel								
Axis 1								
2477.93	54.7 Pk	3.2 / 27.5 / 0.0	85.5	V / 1.0 / 282.0	0.0	85.5	94	-8.5
2477.93	46.1 Pk	3.2 / 27.5 / 0.0	76.9	H / 1.0 / 117.0	0.0	76.9	94	-17.1
4955.9	50.8 Pk	5.7 / 32.4 / 40.4	48.5	V / 1.0 / 166.0	0.0	48.5	54	-5.5
4955.91	48.0 Pk	5.7 / 32.4 / 40.4	45.7	H / 1.0 / 119.0	0.0	45.7	54	-8.3
7433.85	33.7 Pk	7.4 / 36.2 / 39.8	37.5	H / 1.0 / 119.0	0.0	37.5	54	-16.5
7433.85	32.8 Pk	7.4 / 36.2 / 39.8	36.6	V / 1.0 / 0.0	0.0	36.6	54	-17.4
Axis 2								
2477.93	52.5 Pk	3.2 / 27.5 / 0.0	83.3	H / 1.5 / 302.0	0.0	83.3	94	-10.7
2477.93	51.8 Pk	3.2 / 27.5 / 0.0	82.5	V / 1.0 / 219.0	0.0	82.5	94	-11.5
4955.9	54.1 Pk	5.7 / 32.4 / 40.4	51.9	V / 1.0 / 256.0	0.0	51.9	54	-2.1
4955.91	52.2 Pk	5.7 / 32.4 / 40.4	49.9	H / 1.0 / 0.0	0.0	49.9	54	-4.1
7433.84	34.1 Pk	7.4 / 36.2 / 39.8	37.9	V / 1.0 / 0.0	0.0	37.9	54	-16.1
7433.84	34.0 Pk	7.4 / 36.2 / 39.8	37.8	H / 1.0 / 0.0	0.0	37.8	54	-16.2
Axis 3								
2477.93	49.6 Pk	3.2 / 27.5 / 0.0	80.4	H / 1.6 / 64.5	0.0	80.4	94	-13.6
2477.94	54.6 Pk	3.2 / 27.5 / 0.0	85.4	V / 1.0 / 342.0	0.0	85.4	94	-8.6
4955.9	51.6 Pk	5.7 / 32.4 / 40.4	49.4	V / 1.0 / 227.0	0.0	49.4	54	-4.6
4955.9	53.5 Pk	5.7 / 32.4 / 40.4	51.2	H / 1.0 / 355.0	0.0	51.2	54	-2.8
7433.85	34.6 Pk	7.4 / 36.2 / 39.8	38.4	V / 1.0 / 0.0	0.0	38.4	54	-15.6
7433.85	34.4 Pk	7.4 / 36.2 / 39.8	38.2	H / 1.0 / 0.0	0.0	38.2	54	-15.8
No higher emissions found, the following are noise floor.								
9911.78	42.5 Pk	8.7 / 37.2 / 49.3	39.2	H / 1.0 / 0.0	0.0	39.2	54	-14.8
9911.78	41.8 Pk	8.7 / 37.2 / 49.3	38.4	V / 1.0 / 0.0	0.0	38.4	54	-15.6
12389.7	38.9 Pk	9.9 / 41.3 / 46.3	43.8	H / 1.0 / 0.0	0.0	43.8	54	-10.2
12389.7	39.6 Pk	9.9 / 41.3 / 46.3	44.6	V / 1.0 / 0.0	0.0	44.6	54	-9.4
14867.7	40.7 Pk	12.0 / 43.2 / 48.5	47.4	H / 1.0 / 0.0	0.0	47.4	54	-6.6
14867.7	42.4 Pk	12.0 / 43.2 / 48.5	49.1	V / 1.0 / 0.0	0.0	49.1	54	-4.9
17345.6	31.6 Pk	14.1 / 43.8 / 46.6	42.9	H / 1.0 / 0.0	0.0	42.9	54	-11.1
17345.6	32.2 Pk	14.1 / 43.8 / 46.6	43.4	V / 1.0 / 0.0	0.0	43.4	54	-10.6
19823.52	10.2 Pk	0 / 21.8 / 0	32.0	V / 1.0 / 0.0	0.0	32.0	54	-22.0
22301.46	10.6 Pk	0 / 21.1 / 0	31.6	V / 1.0 / 0.0	0.0	31.6	54	-22.4
24779.40	11.1 Pk	0 / 21.8 / 0	32.9	V / 1.0 / 0.0	0.0	32.9	54	-21.1
High Channel								
Axis 1								
2482.65	47.2 Pk	3.2 / 27.5 / 0.0	78	H / 1.0 / 123.0	0.0	78	94	-16
2482.68	55.3 Pk	3.2 / 27.5 / 0.0	86.1	V / 1.0 / 62.0	0.0	86.1	94	-7.9
4965.39	54.5 Pk	5.7 / 32.4 / 40.3	52.3	V / 1.0 / 44.0	0.0	52.3	54	-1.7
4965.42	51.4 Pk	5.7 / 32.4 / 40.3	49.2	H / 1.0 / 305.0	0.0	49.2	54	-4.8
7448.08	33.5 Pk	7.5 / 36.1 / 39.7	37.4	V / 1.0 / 0.0	0.0	37.4	54	-16.6
7448.08	34.1 Pk	7.5 / 36.1 / 39.7	37.9	H / 1.0 / 0.0	0.0	37.9	54	-16.1
Axis 2								
2482.66	52.3 Pk	3.2 / 27.5 / 0.0	83.1	V / 1.0 / 275.0	0.0	83.1	94	-10.9
2482.7	51.3 Pk	3.2 / 27.5 / 0.0	82.1	H / 1.0 / 123.0	0.0	82.1	94	-11.9
4965.42	54.6 Pk	5.7 / 32.4 / 40.3	52.4	H / 1.0 / 22.0	0.0	52.4	54	-1.6
4965.42	55.6 Pk	5.7 / 32.4 / 40.3	53.4	V / 1.4 / 256.0	0.0	53.4	54	-0.6
7448.11	34.0 Pk	7.5 / 36.1 / 39.7	37.8	H / 1.0 / 0.0	0.0	37.8	54	-16.2
7448.11	33.4 Pk	7.5 / 36.1 / 39.7	37.2	V / 1.0 / 0.0	0.0	37.2	54	-16.8
Axis 3								
2482.7	53.5 Pk	3.2 / 27.5 / 0.0	84.3	V / 1.0 / 340.0	0.0	84.3	94	-9.7
2482.7	50.5 Pk	3.2 / 27.5 / 0.0	81.3	H / 1.0 / 226.0	0.0	81.3	94	-12.7
4965.39	55.5 Pk	5.7 / 32.4 / 40.3	53.3	H / 1.1 / 226.0	0.0	53.3	54	-0.7
4965.41	54.4 Pk	5.7 / 32.4 / 40.3	52.2	V / 1.0 / 222.0	0.0	52.2	54	-1.8
7448.08	34.4 Pk	7.5 / 36.1 / 39.7	38.2	H / 1.0 / 0.0	0.0	38.2	54	-15.8
7448.08	33.4 Pk	7.5 / 36.1 / 39.7	37.2	V / 1.0 / 0.0	0.0	37.2	54	-16.8
No higher emissions found, the following are noise floor.								
9930.77	44.6 Pk	8.7 / 37.2 / 49.3	41.3	V / 1.0 / 0.0	0.0	41.3	54	-12.7
9930.77	41.9 Pk	8.7 / 37.2 / 49.3	38.5	H / 1.0 / 0.0	0.0	38.5	54	-15.5
12413.5	38.9 Pk	9.9 / 41.5 / 46.2	44.1	V / 1.0 / 0.0	0.0	44.1	54	-9.9
12413.5	36.7 Pk	9.9 / 41.5 / 46.2	42	H / 1.0 / 0.0	0.0	42	54	-12
14896.1	40.9 Pk	12.0 / 42.9 / 48.3	47.5	V / 1.0 / 0.0	0.0	47.5	54	-6.5
14896.1	35.9 Pk	12.0 / 42.9 / 48.3	42.5	H / 1.0 / 0.0	0.0	42.5	54	-11.5
17378.8	33.2 Pk	14.1 / 44.0 / 46.4	44.9	V / 1.0 / 0.0	0.0	44.9	54	-9.1

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	Duty Cycle Correction	Final Corrected	Limit	DELTA
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
17378.8	33.0 Pk	14.1 / 44.0 / 46.4	44.7	H / 1.0 / 0.0	0.0	44.7	54	-9.3
19861.44	11.0 Pk	0 / 21.8 / 0	32.7	V / 1.0 / 0.0	0.0	32.7	54	-21.3
22344.12	10.4 Pk	0 / 21.1 / 0	31.4	V / 1.0 / 0.0	0.0	31.4	54	-22.6
24826.80	10.9 Pk	0 / 21.8 / 0	32.7	V / 1.0 / 0.0	0.0	32.7	54	-21.3

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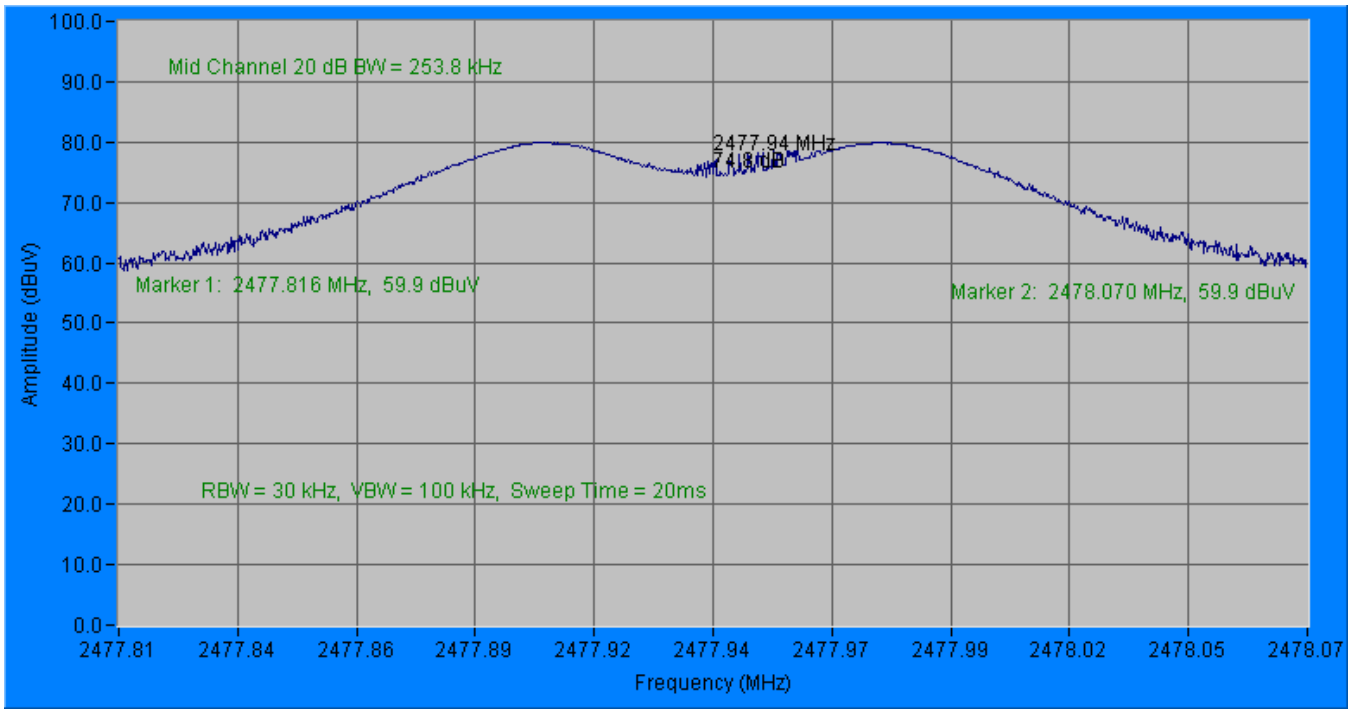
Occupied Bandwidth

Test Report #:	**3162555**	Test Area:	Pinewood Site 1 (3m)	Temperature:	23.1	°C
Test Method:	RSS-GEN	Test Date:	3-Oct-2008	Relative Humidity:	20.4	%
EUT Model #:	QP03	EUT Power:	110VAC/60Hz	Air Pressure:	84.9	kPa
EUT Serial #:	Proto 1					
Manufacturer:	SYMX					
EUT Description:	2.45 RFID Reader/ Transmitter					
Notes:	**Test Config: AC Adapter**					

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

The 99% emission bandwidth is: 253.8 kHz



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List of Equipment Utilized for Final Test

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Project Report

Begin Date: 9/23/2008 **End Date:** 10/3/2008

Technician Randall Thompson **Project** 3162555

Capital Asset ID	Manufacturer	Model #	Serial #	Description	Test Performed	Service Type	Service Date	Service Due
18805	Hewlett-Packard	11970K	2332A01280	Harmonic Mixer	R Radiated Emissions	For Cal	3/12/2008	3/12/2011
18880	Hewlett-Packard	85650A	2811A01300	Q.P Adapter	R Radiated Emissions	For Cal	11/15/2007	11/15/2008
18882	Hewlett-Packard	8566B	2410A00154	Spectrum Analyzer (dc-22 GHz)	R Radiated Emissions	For Cal	11/13/2007	11/13/2008
18887	EMCO	3115	9205-3886	Horn Antenna 1-18GHz	R Radiated Emissions	For Cal	3/6/2008	3/6/2009
18900	Avantek	AFT97-8434-10F	1007	RF Pre-Amplifier (4-8 GHz)	R Radiated Emissions	For Ver	5/2/2008	5/2/2009
18901	Avantek	AWT-18037	1002	RF Pre-Amplifier (8-18 GHz)	R Radiated Emissions	For Ver	5/2/2008	5/2/2009
18906	Mini-Circuits Lab	ZHL-42	N052792-2	Amplifier	R Radiated Emissions	For Ver	5/2/2008	5/2/2009
18912	Hewlett-Packard	8447F	3113A05545	9 kHz- 1.3GHz Pre Amp	R Radiated Emissions	For Ver	5/2/2008	5/2/2009
18913	Hewlett-Packard	E7405A	My44211889	Spectrum Analyzer	R Radiated Emissions	For Cal	2/22/2008	2/22/2009
18808	EMCO	3146	9203-3376	Log Periodic Antenna	R Radiated Emissions	ForCal	10/12/2007	10/12/2008
18889	EMC Test Systems	3109	3142	Biconical Antenna 30-300MHz	R Radiated Emissions	ForCal	10/11/2007	10/11/2008
18885	Hewlett-Packard	11947A	3107A00700	Transient Limiter	C Conducted Emissions	For Ver	3/5/2008	3/5/2009
18890	RHODE & SCHWARZ	ESH2-Z5	830364/002	LISN 50 ohm/50uH 3 line (1kHz - 30 MHz)	C Conducted Emissions	For Ver	3/6/2008	3/6/2009
18909	RHODE & SCHWARZ	ESHS 30	842806/001	EMI Test Receiver	C Conducted Emissions	For Cal	2/20/2008	2/20/2009

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Project Report

Begin Date: 1/9/2009 **End Date:** 1/12/2009

Technician Mike Spataro **Project** 3162555

Capital Asset ID	Manufacturer	Model #	Serial #	Description	Test Performed	Service Type	Service Date	Service Due
18798	EMCO	3109	9801-3142	Bicon Antenna 30 - 300 MHz	R Radiated Emissions	For Cal	2/20/2008	2/20/2009
18805	Hewlett-Packard	11970K	2332A01280	Harmonic Mixer	R Radiated Emissions	For Cal	3/12/2008	3/12/2010
18880	Hewlett-Packard	85650A	2811A01300	Q.P Adapter	R Radiated Emissions	For Cal	12/11/2008	12/11/2009
18882	Hewlett-Packard	8566B	2410A00154	Spectrum Analyzer (dc-22 GHz)	R Radiated Emissions	For Cal	12/10/2008	12/10/2009
18886	TENSOR	4105	2020	Ridged Guide Antenna 1-18GHz	R Radiated Emissions	For Cal	3/6/2008	3/6/2009
18888	EMCO	3146	9402-3775	Log Periodic Antenna (200-1000MHz)	R Radiated Emissions	For Cal	10/21/2008	10/21/2009
18900	Avantek	AFT97-8434-10F	1007	RF Pre-Amplifier (4-8 GHz)	R Radiated Emissions	For Ver	5/2/2008	5/2/2009
18901	Avantek	AWT-18037	1002	RF Pre-Amplifier (8-18 GHz)	R Radiated Emissions	For Ver	5/2/2008	5/2/2009
18906	Mini-Circuits Lab	ZHL-42	N052792-2	Amplifier	R Radiated Emissions	For Ver	5/2/2008	5/2/2009
18912	Hewlett-Packard	8447F	3113A05545	9 kHz- 1.3GHz Pre Amp	R Radiated Emissions	For Ver	5/2/2008	5/2/2009

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Appendix B

Test Plan

and

Constructional Data Form

[Provided by Client]

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Request for Quotation (Non Medical Devices)

Contact Information:

Company:	SYMX Systems, Inc.
Address:	4909-Pearl E Circle
Contact:	Tony Corrado
Title:	Chief Operating Officer
Phone Number:	(303) 444-2870
Fax Number:	
Email Address:	tcorrado@active-rfid.com

Date samples and documentation will be ready for testing:	**9-22-08**	Requested completion date:	**9-30-08**

Please fill out the pertinent pages within this document and email this form to Bryant Hart at Bryant.Hart@Intertek.com for a quotation. Pages that do not pertain to your device can be left blank.

This document is compiled as a WORD FORM. To enable the FORM tool, right click on the tool bar and select FORMS. You will then be able to add attachments, drawings etc by clicking on the "Lock" Graphic to unlock the FORM document. To make all the check boxes work within the FORM, the "Lock" graphic must be selected.

Estimates Requested:

EMC Testing and Services	
☒ Compliance Testing	☐ Compliance testing at your location
☐ Pre-Compliance Scans / Engineering testing	☐ Pre-Compliance testing at your location

Radio Device Testing and Certification	
☒ FCC Certification	☒ Canada Certification (Transmitters and Receivers)
☐ Europe	☒ TCB Services

Safety Testing and Certification	
☐ ETL Listing For US	☐ ETL Listing for Canada
☐ Preliminary Design Review	☐ CB Report and Certificate
☐ CE Testing for Europe	☐ Other:

Additional Services	
☐ Global Market Access Program	☐ Energy Star Compliance
☐ IntertekCheck Performance Mark	☐ Green Services (RoHS, WEEE, REACH, Prop. 65)
☐ Environmental Testing	☐ Hazardous Location (Intrinsic Safety, Ex-Proof, ATEX)
☐ Shock and Vibration Testing	☐ Other:

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General Product Information: (Required for all Devices)

Product/Model Number(s):	2.45 POE/DC RFID Reader/Transmitter, Model: QP03
Description of product(s): Please provide product literature if available.	RFID Reader that transmits at a factory set channel between 2.473 – 2.48275 GHz on a continuous basis as a location identifier.
Intended Use:	☐ Household/Office ☐ Commercial ☐ Industrial
Intended Location:	☒ Dry ☒ Damp ☐ Wet ☐ Hazardous Location
Product Type:	Prototype X Production Sample ☐ Revision of already listed product

If part of a system, please describe system parts and accessories: Not part of system

If there is more than one product/model what are the differences? Yes, see below
Product Options:

- Power Over Ethernet [POE]
- AC Adapter Power

Is the Product Enclosure:	Metal	Plastic	X Both	
Size: Length:	Width:	Height:	Weight:	

☒ AC Wall Adapter ☐ AC Internal Power Supply ☐ Battery ☒ External DC Power Supply	Rated Voltage: Rated Current: # of Phases/Conductors: 1/2 # of Power Cords: 1
Are their multiple suppliers of power supplies?	X Yes ☐ No If Yes Please Describe: Any Commercial POE Adapters w 5 VDC outputs

Are there Multiple Modes of Operation?
☐ Yes ☒ No If Yes Please Describe:

Is there programmable software? Service Utility program enabling channel frequency & power modifications
☒ Yes ☐ No No User SW

Can all modes of operation be operated simultaneously?
☐ Yes ☒ No Explain:

In which countries will you be selling the product? US & Canada

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EMC Specific Information: (Required only if EMC work is requested)

What EMC certifications are desired?	
☒ FCC/ICES (US & Canada)	☐ SII (Israel)
☐ CE (Europe)	☐ AS/NZS (Australia/New Zealand)
☐ BSMI (Taiwan)	☐ Korea MIC Certification / RRL
☐ VCCI (Japan)	☐ Other: Please Specify

Highest frequency utilized for device operation: 2.45 GHz

List of Clock Frequencies: 16 MHz; 27 MHz; 25 MHz; 32.768 Hz

For each mode of operation, please list the amount of time required to notice degradation of performance (cycle time) Immediate

Total Number of I/O Cables: # Greater than 3m (9.75 feet) in Length # Greater than 30m (97.5 feet) in Length # of cables at a longer length (specify)	__2__[Ethernet & USB] __1_Ethernet _____ _____

Number of Earth Ground Connections (Do NOT include AC Mains Ground): None

Please list all Ethernet, USB, Parallel and/or Telecommunications Ports and their function

1. USB – Download Utility & Service functions
2. Ethernet – Provides power to the product when configured as 'Power Over Ethernet" [POE]

When the device is a compilation of subsystems (in separate chassis) how many interconnecting I/O cables are greater than 1 meter in length between the Subsystem chassis?

Please list any specific test requirements or standards: FCC & IC TCB Prep, Review & Submittal

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General Safety Information: (Required only if Safety Listing/Certification/Testing is requested)

Please provide product literature or photos if possible.

What Safety certifications are desired?	
☐ Listing US/Canada	☐ Limited Production Certification
☐ CB Certification (Worldwide outside of US/Canada)	☐ S Mark
☐ EU Investigation (EU – LVD/MDD)	☐ GS Mark
☐ Field Label (Onsite Inspection)	☐ Other: Please Specify

Please list all applicable safety standards that you would like your device certified under:

Has the device been tested and certified for product safety before?	
A. If it has been previously tested, to which standard and by which organization?	☐ Yes X No Standard tested to: Tested by:
B. Can you provide the test report?	☐ Yes ☐ No

Can you provide manuals, installation instructions or data sheets at this time?	☐ Yes X No

Power Supply Safety Information:	
A. Is the Power Supply Listed or Recognized?	XYes ☐ No Standard tested to: Tested by:
B. Can you provide the test report/CB Report?	☐ Yes X No

Does the device contain batteries?	X Yes No What Type? Coin cell How Many? 1

What technology is used? (i.e., lasers, X Ray, resistance heating, etc.)	

If Laser:	Class:	Output Power:	Beam Divergence Angle:	Wavelength:

Preferred testing location:	☐ Intertek Local Lab ☐ Customer site ☐ First Available Intertek Lab

NEMA Rating:	
IP Rating:	

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Radio Specific Information: (Required only if the device contains an intentional transmitter)

What Radio certifications are desired?	
☒ FCC (USA) ☒ Industry Canada ☐ ETSI (R&TTE)	☒ Notified or Competent Body TCF Review ☐ Other: Please Specify

Please list the particular radio standards that apply. Test Per FCC 15.249

Operating Frequency: 2.45 GHz	Frequency Tolerance 40 ppm
RF Output Power: -10dBm	
Is there an RF Conducted Port?	☐ Yes ☒No Description:
Number of Antennas & Description: (Internal, External, Known Gain, etc.)	4 dbi external patch
Modulation Technique:	FSK
Number of Channels/Number of Discrete frequencies per Channel:	3/1
Can the device be operated in CW Mode?	☒ Yes ☐ No
What is the lowest utilized frequency within the device?	2.473 GHz

Notes: Please ensure to bring a notch filter covering your fundamental operating frequency.

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Additional Information:

Support Equipment:
Customers should be prepared to provide all support equipment necessary to fully operate the device undergoing testing. This includes any filters required for testing radio devices, computer equipment, etc.
Item
Description
Manufacturer
Model No.

Cabling Information:
Cable Ethernet, USB
Function*
Type of Shield
Length Standard
Connectors
Connection**

* Function examples (Ethernet, RS232, USB, Analog, physiological parameter, etc.)
** Connection examples (Outside Plant, Patient Coupled, Ring Voltage, etc.)

Monitoring the Equipment:
Please provide instructions below on how to observe the device to verify proper operation in all modes.
LED Indicators Internal Board & External

Any other information required: (Notes, Photos, Block Diagrams, Drawings, etc.)
A minimum of a block diagram showing the equipment under test and its support equipment.

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Appendix C

Measurement Protocol

And

Test Procedures

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MEASUREMENT PROTOCOL

GENERAL INFORMATION

Test Methodology

Conducted and radiated emission testing is performed according to the procedures in ANSI C63.4 & CNS13438.

Justification

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into it's characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

CONDUCTED EMISSIONS

The final level, expressed in dBμV, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the applicable limit.

To convert between dBμV and μV, the following conversions apply:

- dBμV = 20(log μV)
- μV = Inverse log(dBμV/20)

RADIATED EMISSIONS

The final level, expressed in dBμV/m, is arrived at by taking the reading from the spectrum analyzer (Level dBμV) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has the applicable limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets in Attachment B.

Example: At a Test Frequency of 30 MHz, with a peak reading on the spectrum analyzer or measuring receiver of 14 dBμV:

Measured Level	+	Transducer & Cable Loss factor	=	Corrected Reading	Specification Limit	-	Corrected Reading	=	Delta Specification
(dBμV)		(dB)		(dBμV/m)	(dBμV/m)		(dBμV/m)		
14.0		**14.9**		**28.9**	**40.0**		**28.9**		**-11.1**

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DETAILS OF TEST PROCEDURES

General Standard Information

The test methods used comply with ANSI C63.4-2003 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."

Conducted Emissions

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection, and a Line Impedance Stabilization Network (LISN), with 50 Ω/50 μH (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeters above the floor and is positioned 40 centimeters from the vertical ground plane (wall) of the screen room. In some cases, a pre-scan using a spectrum analyzer is initially performed on the units comprising the system under test to locate the highest emissions. If the minimum passing margin appears to be less than 20 dB with a peak mode measurement, the emissions are re-measured using a tuned receiver or spectrum analyzer with quasi-peak and average detection and recorded on the data sheets.

Radiated Emissions

Radiated emissions from the EUT are measured in the frequency range of 30 to 22GHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and peak detection. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna is positioned 3, 10 or 30 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT are rotated 360 degrees.

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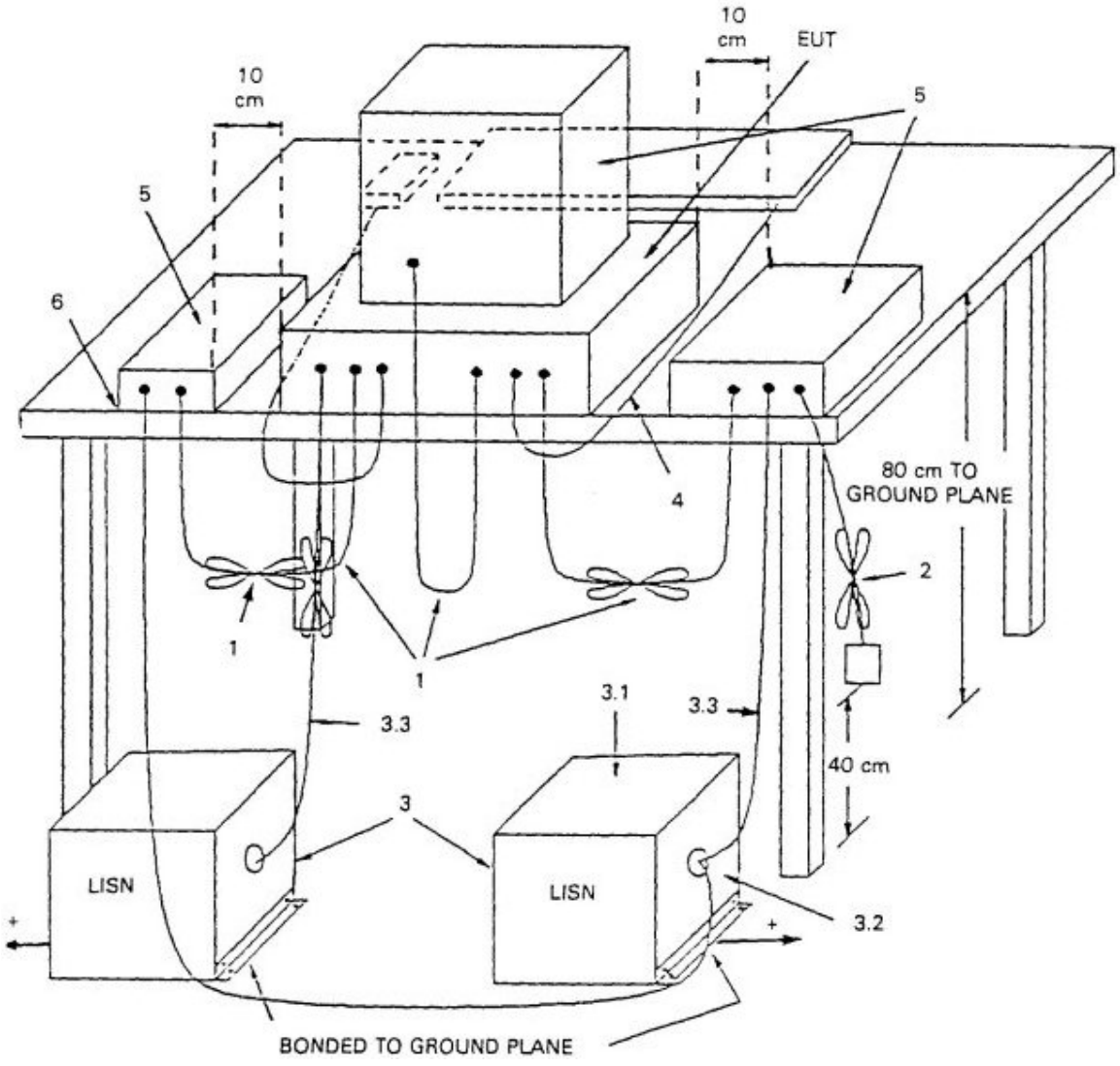
Conducted Emissions Diagram:



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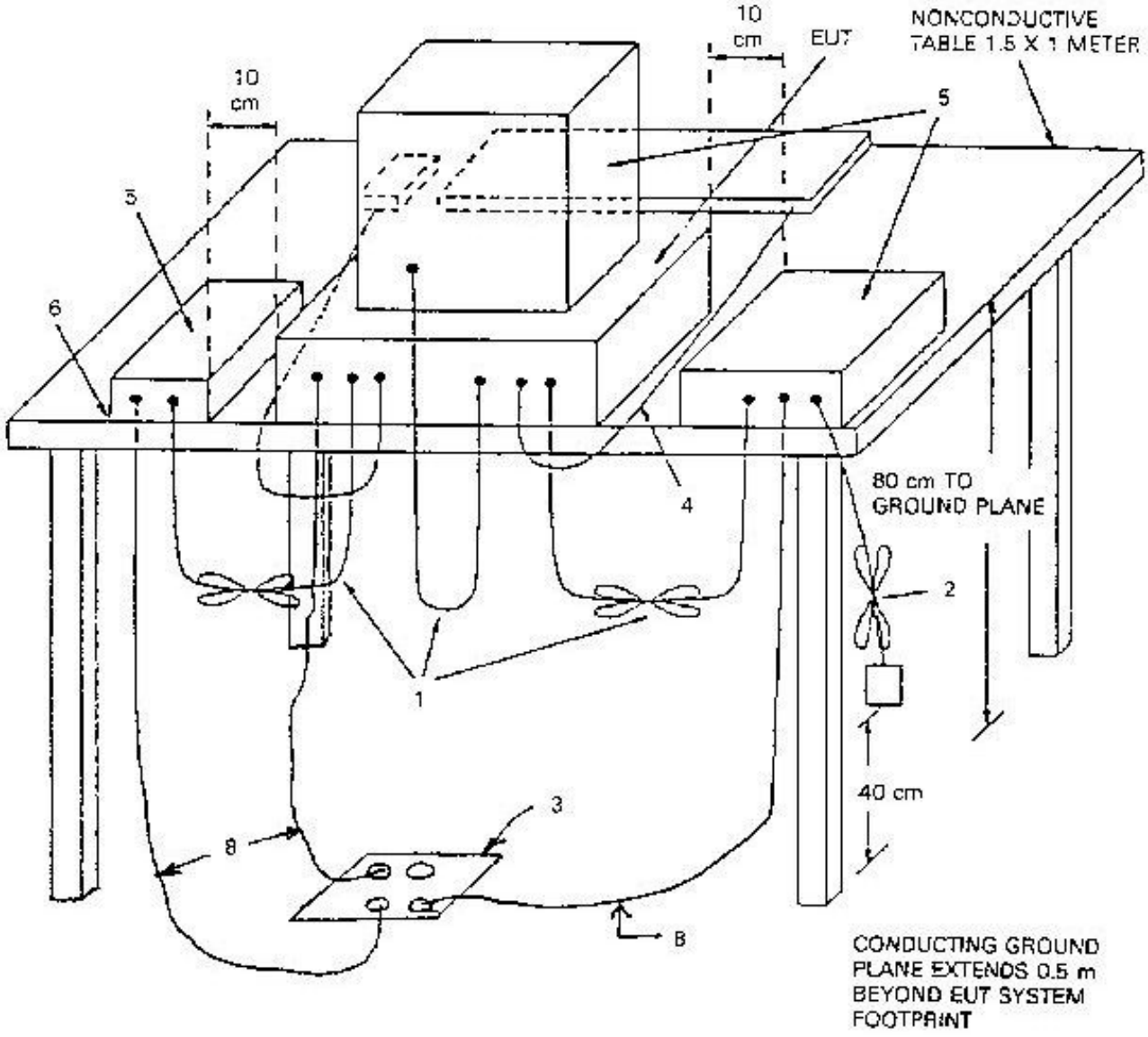
Radiated Emissions Diagram:



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