

EMC EMISSIONS - TEST REPORT (Full)

Test Report No.	3180153DEN-001A	Issue Date:	May 28, 2009
Model / Serial No.	MN: CM Analyzer/CM Analyzer with barcode reader /SN: 09126002BCS		
Product Type	LTO RFID reader with barcode scanner		
Client	MP Tapes, Inc.		
Manufacturer	MP Tapes, Inc.		
License holder	MP Tapes, Inc.		
Address	1233 Sherman Dr. Longmont, CO 80501		
Test Criteria Applied	FCC 47 CFR Part 15.209		
Test Result	PASS 3180153 35		
Test Project Number	Title 47 CFR 15: RADIO FREQUENCY DEVICES		
References	Subpart C – Intentional Radiators		
Total Pages			
Including Appendices:			
Tested By: Michael Spataro		Reviewed By : Richard Georgerian	

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	Removed all ETSI related information – Added conducted emissions data per 15.207 – Added Support equipment to annex B – Added statement to pg. 4 in regards to worst case configuration.	Michael Spataro <i>MS</i>	7/16/2009	RG <i>RG</i>

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D I R E C T O R Y

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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 ± 3.14 dB and for Radiated Emissions is calculated to be ± 4.4 dB in the frequency range of 10kHz – 1000MHz at 3m and ± 4.9 dB in the frequency range of 1 – 18GHz at 3m. For testing at 10m ± 4.8 dB in the frequency range of 30 – 1000MHz. For Disturbance Power, ± 3.3 dB in the frequency range of 30 – 1000MHz. For Flicker and Harmonics testing the equipment used is calibrated by the manufacturer and is within 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: 28-May-2009

Testing Start Date: 28-May-2009

Testing End Date: 28-May-2009

The tests were performed according to following regulations:

1. FCC CFR47 Part 15 subpart C
2. IC RSS-210:2007
3. IC RSS-GEN:2007
4. ETSI EN 300 330-2:2006

Emission Test Results:

Conducted Emissions 15.207 - PASS

Test Result

Minimum limit margin -0.4 dB at 13.56 MHz

Remarks: Worst case emissions is from the fundamental frequency at 13.56 MHz.

Radiated Unintentional and Spurious Emissions 15.109/15.205/209 - **PASS**

Test Result

Minimum limit margin -10.2 dB at 61.47 MHz

Remarks:

Field Strength of the Fundamental 15.209/RSS-210 - **PASS**

Test Result

Minimum limit margin -23.5 dB at 13.56 MHz

Remarks:

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.

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.

The EUT comes in two different configurations; one is with an internal barcode scanner and the other without the barcode scanner. The RF board is the same in both configurations. The configuration with the barcode scanner was determined to be worst case, all emissions testing was completed on this configuration.

Sample:

Production Prototype See Appendix B

Modifications required to pass: None

Test Specification Deviations: Additions to or Exclusions from: None

Test-setup photo(s):

Radiated Emissions:



Test-setup photo(s):

Radiated Emissions:



Test-setup photo(s):
Radiated Emissions:



Test-setup photo(s):
Conducted Emissions:



Test-setup photo(s):
Conducted Emissions:



Appendix A

Test Data Sheets

and

Test Equipment Used

Conducted Emissions

FCC 15.207

Conducted Electromagnetic Emissions

Test Report #:	3180153	Test Area:	Pinewood Site 1 Cond	Temperature:	22	°C
Test Method:	FCC Part 15.207	Test Date:	16-Jul-2009	Relative Humidity:	44	%
EUT Model #:	CM Analyzer w/ Barcode reader	EUT Power:	EUT is USB powered Host PC is 120VAC 60Hz	Air Pressure:	101	kPa
EUT Serial #:	09126002BCS					
Manufacturer:	MP Tapes					
EUT Description:						Nb – Narrow Band
Notes:						Qp – QuasiPeak Bb – Broad Band
						Av - Average

FREQ (MHz)	LEVEL (dBuV)	CABLE / LISN / ATTEN (dB)	FINAL (dBuV)	TEST POINT	DELTA1 (dB) QP 15.207	DELTA2 (dB) AV 15.207
0.150	17.7 Qp	0.1 / 0.2 / -9.8	27.8	Neutral	-38.2	N/A
0.150	2.0 Av	0.1 / 0.2 / -9.8	12.1	Neutral	N/A	-43.9
0.197	29.7 Qp	0.1 / 0.1 / -9.8	39.7	Neutral	-24.0	N/A
0.197	27.2 Av	0.1 / 0.1 / -9.8	37.2	Neutral	N/A	-16.5
0.690	25.4 Qp	0.1 / 0.0 / -9.8	35.4	Neutral	-20.6	N/A
0.690	23.0 Av	0.1 / 0.0 / -9.8	33.0	Neutral	N/A	-13.0
0.986	27.0 Qp	0.2 / 0.0 / -9.8	37.0	Neutral	-19.0	N/A
0.986	25.4 Av	0.2 / 0.0 / -9.8	35.4	Neutral	N/A	-10.6
18.11	19.5 Qp	0.9 / 0.5 / -9.8	30.8	Neutral	-29.2	N/A
18.11	10.2 Av	0.9 / 0.5 / -9.8	21.5	Neutral	N/A	-28.5
2.11	21.9 Qp	0.3 / 0.1 / -9.8	32.1	Neutral	-23.9	N/A
2.11	19.3 Av	0.3 / 0.1 / -9.8	29.5	Neutral	N/A	-16.5
1.28	17.5 Qp	0.2 / 0.0 / -9.8	27.6	Neutral	-28.4	N/A
13.56	48.6 Qp	0.7 / 0.5 / -9.8	59.6	Neutral	-0.4	N/A
13.56	3.8 Av	0.7 / 0.5 / -9.8	14.8	Neutral	N/A	-35.2
19.80	26.7 Qp	1.0 / 0.6 / -9.9	38.1	Neutral	-21.9	N/A
30.00	4.5 Av	1.2 / 1.3 / -9.9	16.9	Neutral	N/A	-33.1
1.38	25.6 Qp	0.2 / 0.0 / -9.8	35.7	Line 1	-20.3	N/A
1.38	24.5 Av	0.2 / 0.0 / -9.8	34.6	Line 1	N/A	-11.4
18.75	29.3 Qp	0.9 / 0.5 / -9.8	40.6	Line 1	-19.4	N/A
18.75	20.2 Av	0.9 / 0.5 / -9.8	31.5	Line 1	N/A	-18.5
21.56	22.5 Qp	1.0 / 1.1 / -9.9	34.5	Line 1	-25.5	N/A
21.56	12.2 Av	1.0 / 1.1 / -9.9	24.2	Line 1	N/A	-25.8
13.56	47.0 Qp	0.7 / 0.5 / -9.8	58.0	Line 1	-2.0	N/A
13.56	10.3 Av	0.7 / 0.5 / -9.8	21.3	Line 1	N/A	-28.7
0.197	29.9 Qp	0.1 / 0.1 / -9.8	39.9	Line 1	-23.8	N/A
0.197	28.9 Av	0.1 / 0.1 / -9.8	38.9	Line 1	N/A	-14.8
0.690	26.9 Qp	0.1 / 0.0 / -9.8	36.9	Line 1	-19.1	N/A
0.690	24.1 Av	0.1 / 0.0 / -9.8	34.1	Line 1	N/A	-11.9

FREQ (MHz)	LEVEL (dBuV)	CABLE / LISN / ATTEN (dB)	FINAL (dBuV)	TEST POINT	DELTA1 (dB) QP 15.207	DELTA2 (dB) AV 15.207
***** Measurement Summary *****						
13.56	48.6 Qp	0.7 / 0.5 / -9.8	59.6	Neutral	-0.4	N/A
0.986	25.4 Av	0.2 / 0.0 / -9.8	35.4	Neutral	N/A	-10.6
1.38	24.5 Av	0.2 / 0.0 / -9.8	34.6	Line 1	N/A	-11.4
0.690	24.1 Av	0.1 / 0.0 / -9.8	34.1	Line 1	N/A	-11.9
0.197	28.9 Av	0.1 / 0.1 / -9.8	38.9	Line 1	N/A	-14.8
2.11	19.3 Av	0.3 / 0.1 / -9.8	29.5	Neutral	N/A	-16.5
18.75	20.2 Av	0.9 / 0.5 / -9.8	31.5	Line 1	N/A	-18.5
19.80	26.7 Qp	1.0 / 0.6 / -9.9	38.1	Neutral	-21.9	N/A
21.56	22.5 Qp	1.0 / 1.1 / -9.9	34.5	Line 1	-25.5	N/A
1.28	17.5 Qp	0.2 / 0.0 / -9.8	27.6	Neutral	-28.4	N/A
18.11	10.2 Av	0.9 / 0.5 / -9.8	21.5	Neutral	N/A	-28.5
30.00	4.5 Av	1.2 / 1.3 / -9.9	16.9	Neutral	N/A	-33.1
0.150	17.7 Qp	0.1 / 0.2 / -9.8	27.8	Neutral	-38.2	N/A

**Spurious Emissions
And
Unintentional Emissions**

FCC 15.205/209/109

Radiated Electromagnetic Emissions

Test Report #:	3180153	Test Area:	Pinewood Site 1 (10m)		Temperature:	22.2	°C								
Test Method:	15.209	Test Date:	28-May-2009		Relative Humidity:	51.6	%								
EUT Model #:	CM Analyzer w/ Barcode reader	EUT Power:	USB		Air Pressure:	82	kPa								
EUT Serial #:	09126002BCS					<table border="1"> <tr> <td colspan="2">Level Key</td> </tr> <tr> <td>Pk – Peak</td> <td>Nb – Narrow Band</td> </tr> <tr> <td>Qp – QuasiPeak</td> <td>Bb – Broad Band</td> </tr> <tr> <td>Av - Average</td> <td></td> </tr> </table>		Level Key		Pk – Peak	Nb – Narrow Band	Qp – QuasiPeak	Bb – Broad Band	Av - Average	
Level Key															
Pk – Peak	Nb – Narrow Band														
Qp – QuasiPeak	Bb – Broad Band														
Av - Average															
Manufacturer:	MP Tapes														
EUT Description:	LTO RFID reader with barcode scanner														
Notes:															

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	NA	FCC 15.209 <1GHz
45.14	28.7 Qp	1.8 / 10.9 / 28.2	13.2	V / 1.0 / 0.0	NA	-16.3
51.05	30.7 Qp	1.9 / 8.2 / 28.2	12.6	V / 1.0 / 0.0	NA	-16.9
61.47	37.6 Qp	2.2 / 7.8 / 28.2	19.3	V / 1.0 / 0.0	NA	-10.2
263.23	28.0 Qp	4.3 / 12.6 / 27.0	17.9	V / 1.0 / 0.0	NA	-17.6
45.14	28.7 Qp	1.8 / 10.9 / 28.2	13.2	V / 1.0 / 90.0	NA	-16.3
51.05	30.5 Qp	1.9 / 8.2 / 28.2	12.4	V / 1.0 / 90.0	NA	-17.1
263.23	27.9 Qp	4.3 / 12.6 / 27.0	17.8	V / 1.0 / 90.0	NA	-17.7
45.14	28.7 Qp	1.8 / 10.9 / 28.2	13.2	V / 1.0 / 180.0	NA	-16.3
51.05	30.4 Qp	1.9 / 8.2 / 28.2	12.4	V / 1.0 / 180.0	NA	-17.1
263.23	28.1 Qp	4.3 / 12.6 / 27.0	18.0	V / 1.0 / 180.0	NA	-17.5
45.14	28.4 Qp	1.8 / 10.9 / 28.2	12.9	V / 1.0 / 270.0	NA	-16.6
51.05	30.7 Qp	1.9 / 8.2 / 28.2	12.6	V / 1.0 / 270.0	NA	-16.9
263.23	27.8 Qp	4.3 / 12.6 / 27.0	17.7	V / 1.0 / 270.0	NA	-17.8
The following were maximized between 30 and 1000 MHz.						
45.14	29.2 Qp	1.8 / 10.9 / 28.2	13.8	V / 1.0 / 180.0	NA	-15.7
51.05	32.0 Qp	1.9 / 8.2 / 28.2	13.9	V / 1.0 / 25.0	NA	-15.6
61.47 did not maximize any higher.						
263.23	29.0 Qp	4.3 / 12.6 / 27.0	18.9	V / 1.0 / 290.0	NA	-16.6
No higher emissions found: 30 to 1000MHz Horizontal.						
Noise floor.						
30.00	22.7 Qp	1.5 / 21.0 / 28.2	17.0	H / 1.0 / 0.0	NA	-12.5
500.00	25.0 Qp	6.1 / 17.8 / 28.2	20.8	H / 1.0 / 0.0	NA	-14.7
995.00	20.2 Qp	9.3 / 22.5 / 27.2	24.9	H / 1.0 / 0.0	NA	-18.6
No emissions found: 9kHz to 30MHz.						
The following are noise floor.						
0.0100	37.0 Qp	0.0 / 18.9 / 0.0	55.9	V / 1.0 / 0.0	N/A	-71.7
1.00	30.0 Qp	0.1 / 10.6 / 0.0	40.7	V / 1.0 / 0.0	N/A	-26.9

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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)	NA	FCC 15.209 <1GHz
20.00	6.9 Qp	0.4 / 10.2 / 0.0	17.5	V / 1.0 / 0.0	N/A	-52.0
Noise floor.						
0.150	39.7 Qp	0.1 / 10.8 / 0.0	50.5	H / 1.0 / 0.0	N/A	-53.6
5.00	16.4 Qp	0.2 / 10.5 / 0.0	27.1	H / 1.0 / 0.0	N/A	-42.4
25.00	15.7 Qp	0.5 / 9.1 / 0.0	25.2	H / 1.0 / 0.0	N/A	-44.3

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB/m) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) NA	DELTA2 (dB) FCC 15.209 <1GHz
***** Measurement Summary *****						
61.47	37.6 Qp	2.2 / 7.8 / 28.2	19.3	V / 1.0 / 0.0	NA	-10.2
30.00	22.7 Qp	1.5 / 21.0 / 28.2	17.0	H / 1.0 / 0.0	NA	-12.5
500.00	25.0 Qp	6.1 / 17.8 / 28.2	20.8	H / 1.0 / 0.0	NA	-14.7
51.05	32.0 Qp	1.9 / 8.2 / 28.2	13.9	V / 1.0 / 25.0	NA	-15.6
45.14	29.2 Qp	1.8 / 10.9 / 28.2	13.8	V / 1.0 / 180.0	NA	-15.7
263.23	29.0 Qp	4.3 / 12.6 / 27.0	18.9	V / 1.0 / 290.0	NA	-16.6
995.00	20.2 Qp	9.3 / 22.5 / 27.2	24.9	H / 1.0 / 0.0	NA	-18.6
1.00	30.0 Qp	0.1 / 10.6 / 0.0	40.7	V / 1.0 / 0.0	NA	-26.9
5.00	16.4 Qp	0.2 / 10.5 / 0.0	27.1	H / 1.0 / 0.0	NA	-42.4
25.00	15.7 Qp	0.5 / 9.1 / 0.0	25.2	H / 1.0 / 0.0	NA	-44.3
20.00	6.9 Qp	0.4 / 10.2 / 0.0	17.5	V / 1.0 / 0.0	NA	-52.0
0.150	39.7 Qp	0.1 / 10.8 / 0.0	50.5	H / 1.0 / 0.0	NA	-53.6
0.0100	37.0 Qp	0.0 / 18.9 / 0.0	55.9	V / 1.0 / 0.0	NA	-71.7

**Fundamental field strength
And
Harmonics of the Fundamental**

FCC 15.209

Field Strength Measurements

Fundamental and Spurious of the Transmitter

Test Report #: **3180153**
 Test Method: FCC Part 15.209/IC RSS-210
 EUT Model #: CM Analyzer w/ Barcode reader
 EUT Serial #: 09126002BCS
 Manufacturer: MP Tapes
 EUT Description: LTO RFID reader with barcode scanner
 Notes: All measurements were made at a test distance of 3m, the limits below 30MHz were extrapolated using 15.31.

Test Area: Pinewood Site 1 (3m)

Test Date: 28-May-2009

EUT Power: USB

Temperature: 22.2 °C

Relative Humidity: 51.6 %

Air Pressure: 82 kPa

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

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB)	FINAL (dBuV)	POL / HGT / AZ (m) (DEG)	Duty Cycle Correction (dB)	Final Corrected (dBuV/m)	Limit (dBuV/m)	DELTA (dB)
Fundamental								
Loop antenna is parallel to the EUT.								
13.56	29.4 Pk	0.3 / 10.8 / 0.0	40.5	V / 1.0 / 110.0	0.0	40.5	69.5	-29.0
Loop antenna is perpendicular to the EUT.								
13.56	34.9 Pk	0.3 / 10.8 / 0.0	46.0	H / 1.0 / 125.0	0.0	46.0	69.5	-23.5
No harmonics found, all of the following are noise floor.								
27.12	4.5 Pk	0.5 / 8.7 / 0.0	13.7	V / 1.0 / 0.0	0.0	13.7	69.5	-55.8
40.68	18.6 Pk	0.7 / 11.4 / 28.2	2.4	V / 1.0 / 0.0	0.0	2.4	40	-37.6
54.24	25.4 Pk	0.7 / 9.4 / 28.2	7.2	V / 1.0 / 0.0	0.0	7.2	40	-32.8
67.8	29.9 Pk	0.8 / 8.6 / 28.2	11.2	V / 1.0 / 0.0	0.0	11.2	40	-28.8
81.36	27.7 Pk	0.9 / 6.8 / 28.1	7.3	V / 1.0 / 0.0	0.0	7.3	40	-32.7
94.92	25.2 Pk	1.0 / 8.5 / 27.9	6.7	V / 1.0 / 0.0	0.0	6.7	43.5	-36.8
108.48	19.6 Pk	1.1 / 10.5 / 27.9	3.3	V / 1.0 / 0.0	0.0	3.3	43.5	-40.2
121.04	25.1 Pk	1.2 / 11.6 / 28.0	9.9	V / 1.0 / 0.0	0.0	9.9	43.5	-33.6
135.6	18.5 Pk	1.3 / 12.1 / 27.8	4.1	V / 1.0 / 0.0	0.0	4.1	43.5	-39.4

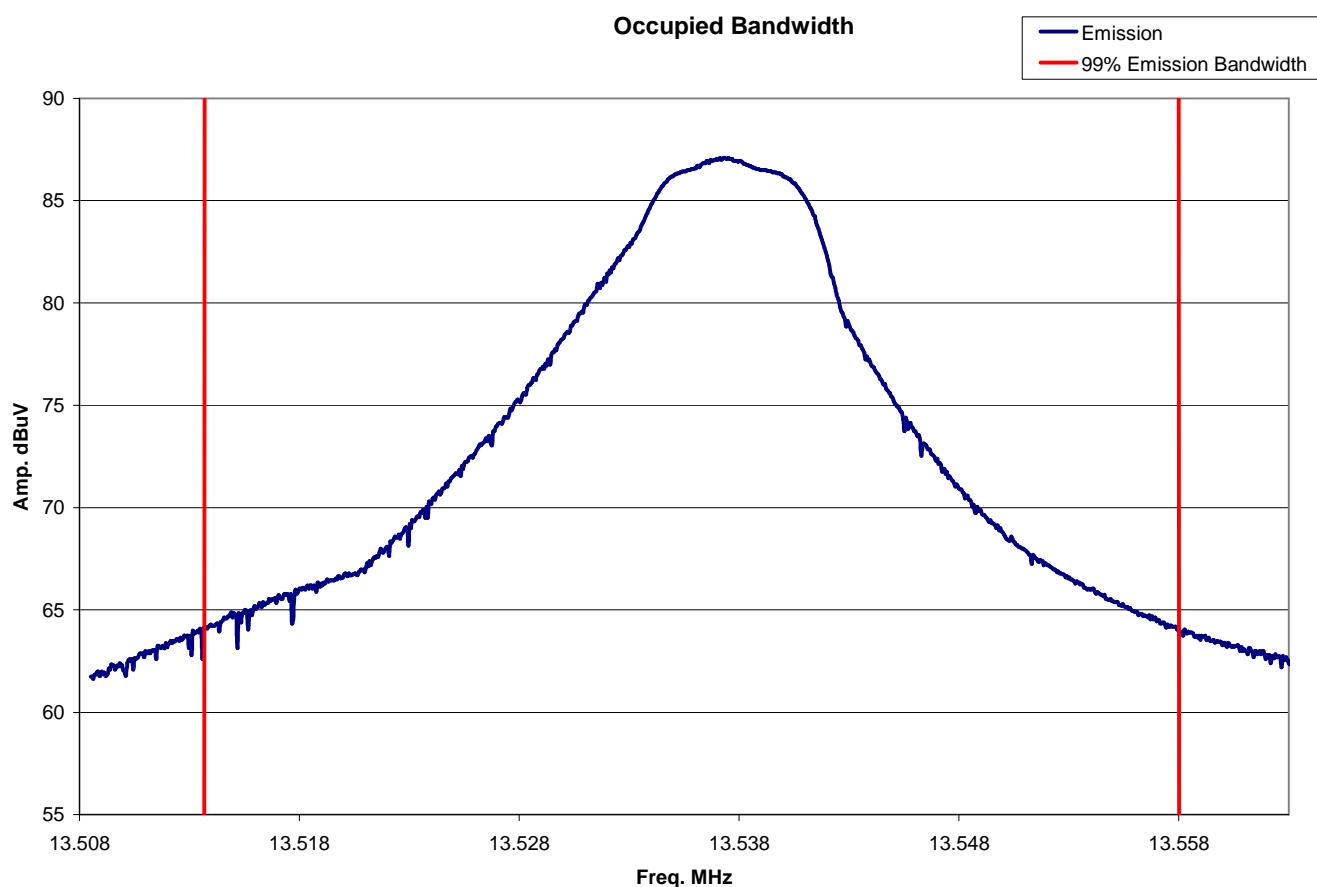
Bandwidth

Test Report #: **3180153**
 Test Method: RSS-Gen
 EUT Model #: CM Analyzer w/ Barcode reader
 EUT Serial #: 09126002BCS
 Manufacturer: MP Tapes
 EUT Description: LTO RFID reader with barcode scanner
 Notes: The Occupied Bandwidth is 44kHz.

Test Area: Pinewood Site 1 (3m)
 Test Date: 28-May-2009
 EUT Power: USB

Temperature: 22.7 °C
 Relative Humidity: 41 %
 Air Pressure: 80 kPa

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



List of Equipment Utilized for Final Test

Project Report

Begin Date: 5/28/2009 **End Date:** 5/28/2009

Technician Mike Spataro

Project: 3180153

Capital Asset ID	Manufacturer	Model #	Serial #	Description	Test Performed	Service Type	Service Date	Service Due
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
18888	EMCO	3146	9402-3775	Log Periodic Antenna (200-1000MHz)	R Radiated Emissions	For Cal	10/21/2008	10/21/2009
18889	EMC TEST SYSTEMS	3109	3142	Biconical Antenna 30-300MHz	R Radiated Emissions	For Cal	2/22/2009	2/22/2010
18897	EMCO	6502	9205-2738	Magnetic loop	R Radiated Emissions	For Cal	10/2/2008	10/2/2009
18912	Hewlett-Packard	8447F	3113A05545	9 kHz- 1.3GHz Pre Amp	R Radiated Emissions	For Cal	5/12/2009	5/12/2010
19937	Sunol Sciences	JB6	019937	BiLog 30 to 2GHz	R Radiated Emissions	For Cal	11/7/2008	11/7/2009

Project Report

Begin Date: 7/16/2009 **End Date:** 7/16/2009

Technician Mike Spataro

Project: 3180153

Capital Asset ID	Manufacturer	Model #	Serial #	Description	Test Performed	Service Type	Service Date	Service Due
18766	EMCO	3825/2	9202-1946	LISN	C Conducted Emissions	For Cal	4/9/2009	4/9/2010
18802	RHODE & SCHWARZ	ESH3	872318/036	Low Frequency Receiver (9 kHz - 30 MHz)	C Conducted Emissions	For Cal	9/24/2008	9/24/2009
18885	Hewlett-Packard	11947A	3107A00700	Transient Limiter	C Conducted Emissions	For Cal	4/20/2009	4/20/2010
18914	EMCO	3816/NM	9408-1003	Single Phase LISN	C Conducted Emissions	For Cal	4/15/2009	4/15/2010

Appendix B

Test Plan

and

Constructional Data Form

Request for Estimate & Test Plan

Please contact with any questions:

Contact:	David Walter
Title:	V.P.
Phone Number:	303.774.6361 x 22
Email Address:	davidw@mptapes.com

Client Information:

License Holder:	MP Tapes, Inc.
Address:	1233 Sherman Dr.
Contact:	Same as above
Title:	
Phone Number:	
Fax Number:	303.651.6371
Email Address:	

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

I.E. EMC Quote – Pages 1,2 & 3, Add Safety – add Page 4, If a radio is part of the device add page 5 etc.

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. Thank you for all your time and effort on this matter.

Estimates Requested: (Required for all devices)

EMC Testing/Services	
<input type="checkbox"/> Requesting Estimate	<input type="checkbox"/> On-site/In-Situ Testing
<input type="checkbox"/> Pre-Compliance Scans / Engineering test	<input type="checkbox"/> TCF Compilation/Review Service

Radio Device Testing and Certification

X FCC Certification	X Industry Canada Certification (Receivers required)
<input type="checkbox"/> Class 2 Notification Under the R&TTED	<input type="checkbox"/> TCF Compilation/Review Service
X Pre-Compliance Scans / Engineering test	

Safety Testing and Certification

<input type="checkbox"/> NRTL Listing	<input type="checkbox"/> 1 Day Pre-Assessment (conducted at your facility)
<input type="checkbox"/> Letter of Findings	<input type="checkbox"/> CB Report Covering all country Deviations
<input type="checkbox"/> CE Report to Cover the LVD/MDD	<input type="checkbox"/> CB Report Covering - Specify Countries:

Any Additional Interest(s)

<input type="checkbox"/> ISO Certification (Another RFQ is required)	<input type="checkbox"/> Energy Star Compliance
<input type="checkbox"/> FDA 510K Services (Another RFQ is required)	<input type="checkbox"/> NEBS
<input type="checkbox"/> International Approvals Management	<input type="checkbox"/> Wire and Cable
<input type="checkbox"/> Product Verification and Integrity Testing	<input type="checkbox"/> Other:

General Product Information: (Required for all Devices)

Product/Model Number(s):	VeriTape		
Description of product(s):	LTO tape and tape drive analyzer		
Intended Use:	<input type="checkbox"/> Household/Office <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Hospital <input type="checkbox"/> Life Supporting		
Intended Location:	<input type="checkbox"/> Dry <input type="checkbox"/> Damp <input type="checkbox"/> Wet <input type="checkbox"/> Hazardous Location		
Product Type:	<input type="checkbox"/> Prototype <input checked="" type="checkbox"/> Production Sample <input type="checkbox"/> Manufacturing Design Change: Please Describe		
Is it a stand-alone device or part of a system?	<input checked="" type="checkbox"/> Stand Alone Device <input type="checkbox"/> Component of a System		
If part of a system, please describe system parts and accessories: Communicates with a PC through USB port.			
If there is more than one product/model what are the differences? 2 models with and without a bar code scanner.			
Is the Product Enclosure: <input type="checkbox"/> Metal <input type="checkbox"/> Plastic <input checked="" type="checkbox"/> Both			
Size:	Length: 5.5"	Width: 5"	Height: 1"to 2"
What Voltages/Current does the EUT run at? (AC/DC etc.) – if the unit runs off of DC though it is supplied with an AC/DC converter, please state the operating parameters of the converter.	Rated Voltage: Rated Current: # of Phases/Conductors: # of Power Cords:		
Are there multiple suppliers of power supplies?	<input type="checkbox"/> Yes <input type="checkbox"/> No If Yes Please Describe:		
Are there Multiple Modes of Operation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If Yes Please Describe:		
Is there programmable software? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Can all modes of operation be operated simultaneously? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Explain:		
In which countries will you be selling the product? USA, Canada and Europe			
When can you supply samples of the device and all pertinent documentation (where applicable) to Intertek for testing? Mid October 2008			

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

What EMC certifications are desired?	
X FCC/ICES (US & Canada) <input type="checkbox"/> CE / EMC / MDD <input type="checkbox"/> BSMI (Taiwan) <input type="checkbox"/> VCCI (Japan)	<input type="checkbox"/> SII (Israel) <input type="checkbox"/> AS/NZS (Australia/New Zealand) <input type="checkbox"/> Korea MIC Certification / RRL <input type="checkbox"/> Other: Please Specify
Highest frequency utilized for device operation: 48MHz	
List of Clock Frequencies: 48MHz	
What is the time that it takes for the device to complete a full cycle of operation? (time required to identify any degradation in performance) (please list per mode of operation) 3 seconds	
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)	0
Number of Dedicated Earth Equalization Ports	
Number of Ethernet and/or Telecommunications Ports 1 USB Port	
When the device is a compilation of subsystems (in separate chassis) how many interconnecting I/O's are greater than 1 meter in length between the Subsystem chassis? N/A	
CISPR11/EN 55011 Specific Devices: 1. Does the EUT use RF Energy to affect a material? <input type="checkbox"/> Yes X No If yes, state frequency of energy:	

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

What Safety certifications are desired?

- NRTL Listing US/Canada
- CB Certification (Worldwide – Outside US/Can)
- EU Investigation (EU – LVD/MDD)
- Field Label (Onsite Inspection)

- Limited Production Certification/Listing
- S Mark
- GS Mark
- 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?

- Yes
- No

A. If it has been previously tested, to which standard and by which organization?

Standard tested to:

B. Can you provide the test report?

Organization tested by:

- Yes
- No

Do manuals and installation instructions exist? (Not always a necessity for quoting but most useful for complex products)

- Yes
- No

Power Supply Safety Information:

- Yes
- No

A. Is the power supply an approved “off-the-shelf” supply?

Standard tested to:

B. Can you provide the test report/CB Report?

Organization tested by:

- Yes
- No

Does the device contain batteries?

- Yes
- No

What Type?

How Many?

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

RFID

If Laser:

Class:

Output Power:

Beam Divergence Angle:

Wavelength:

Preferred testing location:

Intertek Lab Customer site

Intertek Local Lab (May increase turn around time and expense)

Radio 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.

FCC Part 15, Intentional Radiator (Section 15.209)

Operating Frequency: 13.560 MHz

RF Output Power: Unknown – Estimated field strength of < 2 uV/m at 30 meters

Is there an RF Conducted Port? Yes X No Description:Number of Antennas & Description:
(Internal, External, Known Gain, etc.) 1 Internal Loop Antenna

Modulation Technique: Amplitude Shift Keying

Number of Channels/Number of Discrete frequencies per Channel: 1/1

Can the device be operated in CW Mode? Yes No

What is the lowest utilized frequency within the device? 1 Hz – When the device is not communicating, or in an idle state

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

Additional Information:

This information is required to be filled in to act as a test plan and constructional data form required to be supplied as part of the test report in accordance to the required standards. This information is not required to obtain a quote but should be filled out to show a completed report under the applicable standards for EMC etc. Thank you for your time in effort in completing this section of the RFQ/Test Plan.

Support Equipment:

Intertek requires our customers 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 pc, LTO cartridge

Description – Host computer

Manufacturer Dell

Model No. Dimension 7100

SN. CN-0NYD544-70821-63G-4213

Description –Monitor

Manufacturer Dell

Model No. NA

SN. CN-0GC811-72872-63N-272L

Cabling Information:

Cable USB 2.0 COMPLIANT cable not to exceed 2 meters in length

Function*

Type of Shield

Length

Connectors

Connection**

* Function examples (Ethernet, RS232, USB, Analog, physiological parameter, etc.)

** Connection examples (Outside Plant, Patient Coupled, Ring Voltage, etc.)

Monitoring the EUT:

Please provide instructions below on how to observe the EUT to verify proper operation in all modes. (including software revision) Connect device to PC via USB cable, start software on PC, mount cartridge on device. Monitor PC application for continuous scanned information.

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.

Appendix C

Measurement Protocol

And

Test Procedures

MEASUREMENT PROTOCOL

GENERAL INFORMATION

Intertek Testing Services NA, Inc. facilities located in Boulder CO and Pinewood Springs CO are ISO 17025:2005 accredited for EMC/EMI testing. See scope of accreditation for standards and restrictions.

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 its 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 dB μ V, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the applicable limit.

To convert between dB μ V and μ V, the following conversions apply:

- $\text{dB}\mu\text{V} = 20(\log \mu\text{V})$
- $\mu\text{V} = \text{Inverse log}(\text{dB}\mu\text{V}/20)$

RADIATED EMISSIONS

The final level, expressed in dB μ V/m, is arrived at by taking the reading from the spectrum analyzer (Level dB μ V) 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 dB μ V:

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

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."

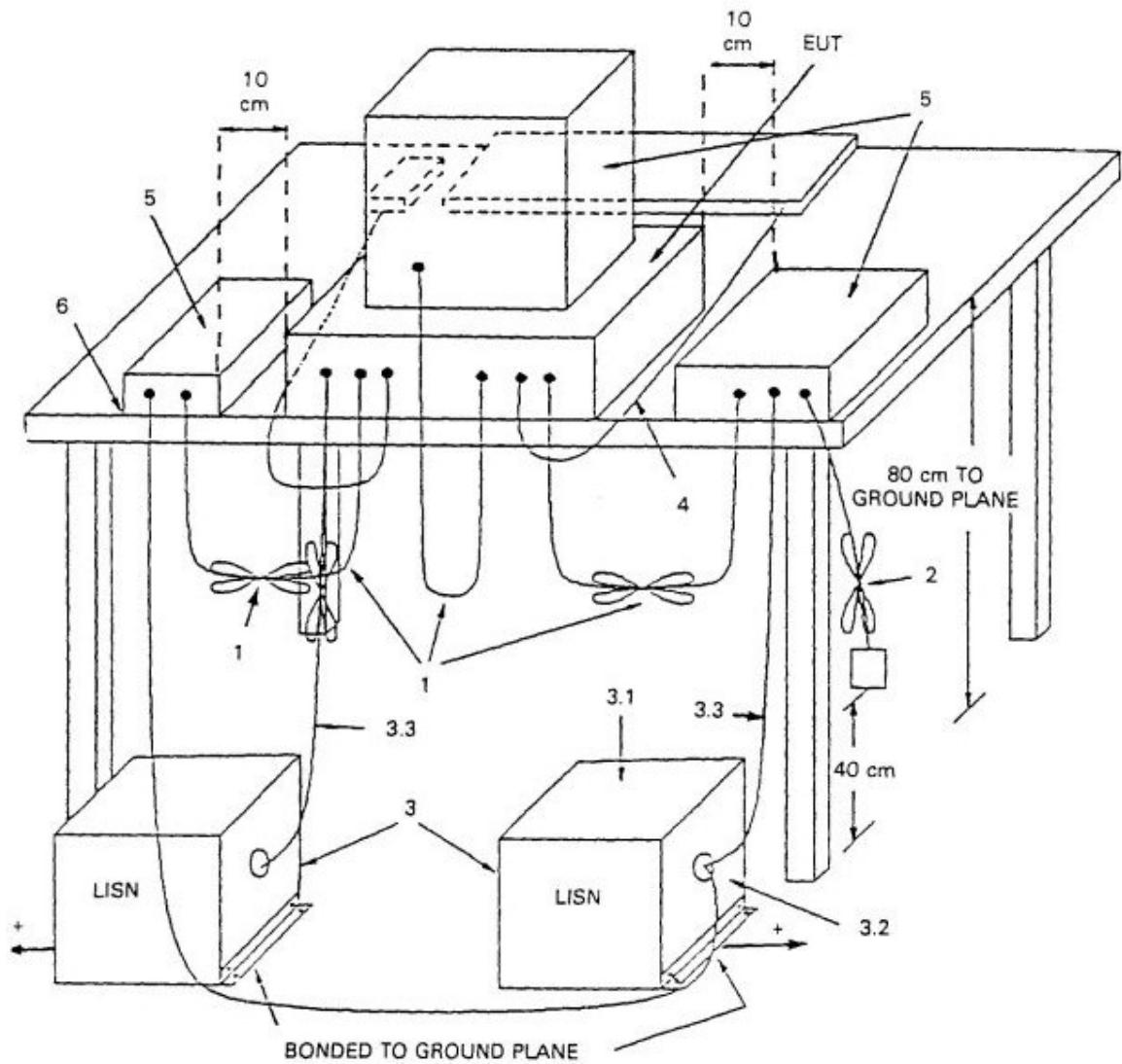
Conducted Emissions

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.

Conducted Emissions Diagram:



Radiated Emissions Diagram:

