

EMC TEST REPORT

Test Report File No. : **WC606529.3 Rev B** Date of issue: 20 April 2007

Model / Serial No(s) Tested : Brady IP Series Printer / 1287Q40

Product Type : Label printer with 13.56 MHz RFID

Applicant : Cab / Brady

Manufacturer : Cab / Brady

License holder : Cab / Brady

Address : Brady: 6835 Winnetka Circle, Brooklyn Park, MN 55428, USA

Cab: cab Produkttechnik GmbH & Co KG, Wilhelm-Schickard-Str. 14, D-76131 Karlsruhe, Germany

Test Result : ☒ **Positive** ☐ **Negative**

Test Project Number
References : **WC606529.3 Rev B**

Total pages including
Appendices : **49**

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Sign Explanations:

- ☐ - not applicable
☒ - applicable

R E V I S I O N R E C O R D

REVISION	TOTAL NUMBER OF PAGES	DATE	DESCRIPTION
	48	22 February 2007	Initial Release
A	49	27 February 2007	Revisions include: ▪ Page 4: Added antenna description. ▪ Appendix B: Added block diagram.
B	49	20 April 2007	Revisions include: TRS, Page 1 and Appendix B: Corrected model number per e-mail from Brady.

EMC TEST REGULATIONS:

The tests were performed according to the following regulations :

- ☐ - EN 50081-1 / 1991
- ☐ - EN 55014-2: 1997 + Amendment A1: 2001 - Category ____
- ☐ - EN 55024: 1998 + Amendments A1: 2001 + A2: 2003
- ☐ - EN 60601-1-2: 2001
- ☐ - EN 61000-6-1: 2001
- ☐ - EN 61000-6-2: 2001
- ☐ - EN 61326: 1997 + Amendments A1: 1998 + A2: 2001 + A3: 2003
- ☐ - EN 61800-3: 1996 + Amendment A11: 2000
- ☐ - ETS 300 683: 1997
- ☐ - ETS 300 683: 1997
- ☐ - ETSI EN 301 489-3 V1.4.1: 2002
- ☐ - EN 300 220-3 V1.1.1
- ☐ - EN 300 330-2 V1.1.1
- ☐ - FCC Part 15 Subpart C Section 15.249
- ☒ - FCC Part 15 Subpart C Section 15.207
- ☒ - FCC Part 15 Subpart C Section 15.209
- ☒ - IC RSS-210 Issue 6
- ☒ - IC RSS-Gen Issue 1
- ☐ - IC RSS-Gen Issue 1

ENVIRONMENTAL CONDITIONS IN THE LAB

	<u>Actual</u>
Temperature:	: 14 - 16 °C
Atmospheric pressure	: 96 - 99 kPa
Relative Humidity	: 34 - 56 %

POWER SUPPLY UTILIZED

Power supply system : 100-240 V~ 50/60Hz

Field strength limits 13.110-14.010 MHz

FCC 15.225(a), (b), (c), IC RSS-210 2.6

Test summary

The requirements are: ☒ - MET ☐ - NOT MET

Minimum margin of compliance of the fundamental is 44 dB at 13.56 MHz

The maximum field strength of 40 dBuV/m (100 microvolts/meter) at 13.56 MHz is below the lowest allowed level in this band.

There are three internal antennas. The ribbon antenna sends and receives RFID tag information from the ribbon spool tag. The other two antennas send and receive RFID tag information from the media label roll such that no matter where the tag is as it rotates about the media holder, the RFID tag will always be in one of the two media antenna RFID fields. The three antennas are selected sequentially using RF switches and cycled continuously during the test.

Test location

☐ - Wild River Lab Large Test Site (Open Area Test Site)

☒ - Wild River Lab Small Test Site (Open Area Test Site)

Test distance

☐ - 1.0 meter

☐ - 3 meters

☐ - 10 meters

☒ - 30 meters

Test equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3800	ESCS 30	Rohde & Schwarz	EMI Receiver	100312	07 Jul 07
2517	HFH2-Z2	Polarad	Loop Antenna	879285/036	30 May 07

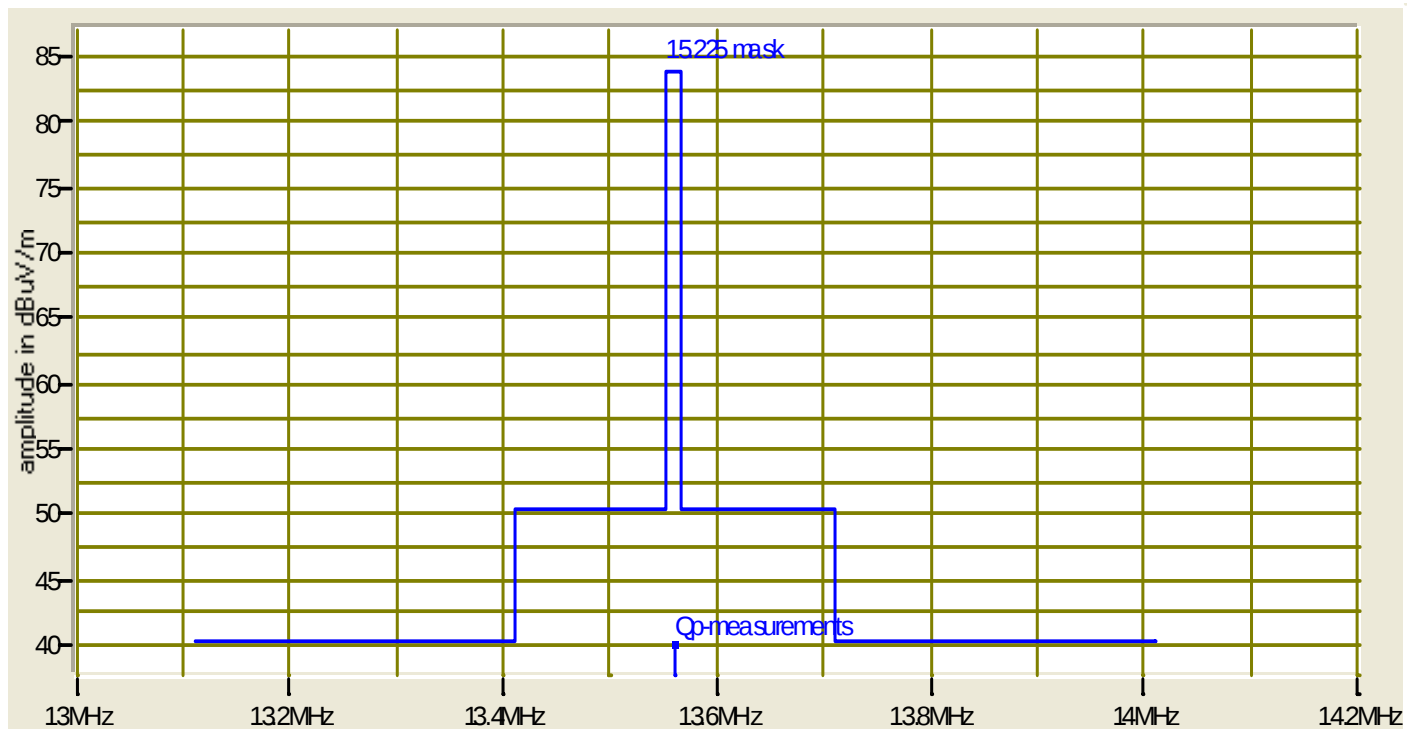
Test limit

Frequency (MHz)	Field strength μ V/m	Measurement distance (m)
13.110-13.410	106	30
13.410-13.553	334	30
13.553-13.567	15848	30
13.567-13.710	334	30
13.710-14.010	106	30

Test data

Quasi peak (dB μ V/m)

(MHz)	Distance 1.0 m	3.0 m	10.0m	30 m	Limit	Delta
13.56	-	-	-	40	84	44



Spurious radiated emissions - .09-30 MHz

FCC 15.225(d), IC RSS-210 2.6

Test summary

The requirements are: ☒ - MET ☐ - NOT MET

Minimum margin of compliance of the fundamental is 27 dB at 27.12 MHz

The maximum field strength is 2 dBuV/m (1.2 microvolts/meter) at 27.12 MHz.

Test location

☐ - Wild River Lab Large Test Site (Open Area Test Site)

☒ - Wild River Lab Small Test Site (Open Area Test Site)

Test distance

☒ - 1.0 meter

☒ - 3 meters

☐ - 10 meters

☒ - 30 meters

Test equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3800	ESCS 30	Rohde & Schwarz	EMI Receiver	100312	07 Jul 07
2517	HFH2-Z2	Polarad	Loop Antenna	879285/036	30 May 07

Test limit

Frequency (MHz)	Field strength $\mu\text{V/m}$	Measurement distance (m)
0.009-0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30	30	30

Test data

Quasi peak (dB $\mu\text{V/m}$)

(MHz)	Distance 1.0 m	3.0 m	10.0m	30 m	Limit	Delta
27.12	39.5	27	-	2*	29.5	27.5

*30 meter level is extrapolated using 25 dB/decade falloff indicated by measurements.

Radiated Emissions 30 - 1000 MHz

FCC 15.225(d), IC RSS-210 2.6

Test summary

The requirements are: ☒ - MET ☐ - NOT MET

Minimum margin of compliance in 30-135.6 MHz band is 4 dB at 40.68 MHz.

The maximum field strength in 30-135.6 MHz band is 35.8 dBuV/m (61.6 microvolts/meter) at 40.68 MHz.

Minimum margin of compliance in 135.6-1000 MHz band is 7 dB at 379.68 MHz.

The maximum field strength in 135.6-1000 MHz band is 48.5 dBuV/m (268.8 microvolts/meter) at 379.68 MHz at 3 meters. This would extrapolate to 38.5 dBuV/m (84.1 microvolts/meter) at 10 meters.

Test location

☒ - Wild River Lab Large Test Site (Open Area Test Site)

☐ - Wild River Lab Small Test Site (Open Area Test Site)

Test distance

☒ - 3 meters

☐ - 10 meters

Test Equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3995	EM-6917B	Electro-Metrics	Biconicalog Periodic	151	31-Mar-07
2665	ZHL-1042J	Mini-Circuits	Preamplifier 30 - 5000 MHz	32296	Code B
8052	8566B	Hewlett-Packard	Spectrum Analyzer	2115A00853	28-Mar-07
8051	85662A	Hewlett-Packard	Analyzer Display	2112A02220	28-Mar-07
2682	85650A	Hewlett-Packard	Quasi-Peak Adapter	2811A01127	29-Nov-07

Cal Code B = Calibration verification performed internally.

Test limits (15.209 up to 10th harmonic of fundamental)

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Measurement distance (m)
30 - 88	100	40	3
88 - 135.6	150	43.5	3

Test limits (15.109, based on printer being Class A digital device)

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Measurement distance (m)
135.6 - 216	150	43.5	10
216 - 960	210	46.4	10
960-1000	300	49.5	10

Test data

On following pages.

RADIATED EMISSIONS



Test Report #: WC606529 Run 9 Test Area: STS

EUT Model #: IP-300 Date: 12/13/2006

EUT Serial #: 1281Q40 EUT Power: 120 VAC / 60 Hz Temperature: 16.0 °C

Test Method: FCC 15.209 Air Pressure: 99.0 kPa

Customer: CAB / BRADY Rel. Humidity: 34.0 %

EUT Description: LABEL MAKER

Notes: With Low Pass Filter & metal box, and ferrite at media antenna contacts and ferrite at BDC on coax cable

Data File Name: 6529-9RE.dat

Page: 1 of 11

List of measurements for run #: 9

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-A <1GHz 3m	DELTA2 FCC-B <1GHz 3m
40.68 MHz	46.47 Qp	1.02 / 16.74 / 28.35 / 0.0	35.88	V / 1.00 / 0	-13.22	-4.12
54.24 MHz	38.32 Qp	1.12 / 12.88 / 28.04 / 0.0	24.27	V / 1.00 / 0	-24.83	-15.73
67.8 MHz	39.6 Qp	1.28 / 10.19 / 27.82 / 0.0	23.25	V / 1.00 / 0	-25.85	-16.75
81.36 MHz	42.83 Qp	1.36 / 7.91 / 27.89 / 0.0	24.21	V / 1.00 / 0	-24.89	-15.79
94.92 MHz	54.64 Qp	1.43 / 7.99 / 27.96 / 0.0	36.1	V / 1.00 / 0	-17.4	-7.4
108.48 MHz	46.1 Qp	1.53 / 8.94 / 28.03 / 0.0	28.54	V / 1.00 / 0	-24.96	-14.96
122.04 MHz	48.4 Qp	1.62 / 8.91 / 28.09 / 0.0	30.84	V / 1.00 / 0	-22.66	-12.66
135.6 MHz	49.14 Qp	1.74 / 8.07 / 27.94 / 0.0	31.0	V / 1.00 / 0	-22.5	-12.5
149.16 MHz	47.95 Qp	1.81 / 9.6 / 27.95 / 0.0	31.41	V / 1.00 / 0	-22.09	-12.09
162.72 MHz	51.15 Qp	1.87 / 8.87 / 27.99 / 0.0	33.9	V / 1.00 / 0	-19.6	-9.6
176.28 MHz	39.5 Qp	1.93 / 9.72 / 27.93 / 0.0	23.22	V / 1.00 / 0	-30.28	-20.28
189.84 MHz	47.85 Qp	1.98 / 10.58 / 27.95 / 0.0	32.46	V / 1.00 / 0	-21.04	-11.04
203.4 MHz	42.3 Qp	2.06 / 10.71 / 27.96 / 0.0	27.12	V / 1.00 / 0	-26.38	-16.38
216.96 MHz	49.85 Qp	2.15 / 11.17 / 27.86 / 0.0	35.3	V / 1.00 / 0	-21.1	-10.7
230.52 MHz	50.68 Qp	2.24 / 11.62 / 27.81 / 0.0	36.72	V / 1.00 / 0	-19.68	-9.28
244.08 MHz	48.8 Qp	2.32 / 12.07 / 27.85 / 0.0	35.33	V / 1.00 / 0	-21.07	-10.67
257.64 MHz	53.66 Qp	2.36 / 12.52 / 27.89 / 0.0	40.65	V / 1.00 / 0	-15.75	-5.35
271.2 MHz	40.6 Qp	2.41 / 12.43 / 27.88 / 0.0	27.57	V / 1.00 / 0	-28.83	-18.43
284.76 MHz	51.2 Qp	2.46 / 12.82 / 27.86 / 0.0	38.62	V / 1.00 / 0	-17.78	-7.38
298.32 MHz	46.0 Qp	2.52 / 13.2 / 27.84 / 0.0	33.88	V / 1.00 / 0	-22.52	-12.12
311.88 MHz	56.35 Qp	2.61 / 13.58 / 27.81 / 0.0	44.73	V / 1.00 / 0	-11.67	-1.27
325.44 MHz	41.15 Qp	2.7 / 13.96 / 27.81 / 0.0	30.01	V / 1.00 / 0	-26.39	-15.99
339.0 MHz	45.1 Qp	2.8 / 14.34 / 27.84 / 0.0	34.4	V / 1.00 / 0	-22.0	-11.6
352.56 MHz	46.75 Qp	2.84 / 14.73 / 27.87 / 0.0	36.44	V / 1.00 / 0	-19.96	-9.56
366.12 MHz	50.05 Qp	2.87 / 15.11 / 27.9 / 0.0	40.14	V / 1.00 / 0	-16.26	-5.86
379.68 MHz	54.7 Qp	2.91 / 15.49 / 27.81 / 0.0	45.29	V / 1.00 / 0	-11.11	-0.71

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Thomas K. Swanson

Signature

Reviewed by: J. T. Schneider

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Joel T. Schneider

Signature

RADIATED EMISSIONS



Test Report #: WC606529 Run 9 Test Area: STS

EUT Model #: IP-300 Date: 12/13/2006

EUT Serial #: 1281Q40 EUT Power: 120 VAC / 60 Hz Temperature: 16.0 °C

Test Method: FCC 15.209 Air Pressure: 99.0 kPa

Customer: CAB / BRADY Rel. Humidity: 34.0 %

EUT Description: LABEL MAKER

Notes: With Low Pass Filter & metal box, and ferrite at media antenna contacts and ferrite at BDC on coax cable

Data File Name: 6529-9RE.dat

Page: 2 of 11

List of measurements for run #: 9

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-A <1GHz 3m	DELTA2 FCC-B <1GHz 3m
393.24 MHz	50.2 Qp	2.95 / 15.46 / 27.71 / 0.0	40.91	V / 1.00 / 0	-15.49	-5.09
406.8 MHz	57.1 Qp	2.99 / 15.66 / 27.72 / 0.0	48.03	V / 1.00 / 0	-8.37	N/a
420.36 MHz	37.8 Qp	3.02 / 15.89 / 27.75 / 0.0	28.97	V / 1.00 / 0	-27.43	-17.03
433.92 MHz	49.5 Qp	3.06 / 16.27 / 27.77 / 0.0	41.06	V / 1.00 / 0	-15.34	-4.94
447.48 MHz	38.3 Qp	3.1 / 16.33 / 27.79 / 0.0	29.94	V / 1.00 / 0	-26.46	-16.06
461.04 MHz	46.35 Qp	3.16 / 16.57 / 27.77 / 0.0	38.31	V / 1.00 / 0	-18.09	-7.69
474.6 MHz	44.7 Qp	3.22 / 16.82 / 27.73 / 0.0	37.0	V / 1.00 / 0	-19.4	-9.0
488.16 MHz	39.55 Qp	3.28 / 16.94 / 27.69 / 0.0	32.07	V / 1.00 / 0	-24.33	-13.93
501.72 MHz	48.95 Qp	3.34 / 17.28 / 27.65 / 0.0	41.92	V / 1.00 / 0	-14.48	-4.08
515.28 MHz	39.5 Qp	3.4 / 17.72 / 27.61 / 0.0	33.01	V / 1.00 / 0	-23.39	-12.99
528.84 MHz	44.4 Qp	3.45 / 18.16 / 27.61 / 0.0	38.4	V / 1.00 / 0	-18.0	-7.6
542.4 MHz	41.45 Qp	3.49 / 18.13 / 27.62 / 0.0	35.46	V / 1.00 / 0	-20.94	-10.54
555.96 MHz	37.65 Qp	3.54 / 18.28 / 27.63 / 0.0	31.84	V / 1.00 / 0	-24.56	-14.16
555.96 MHz	37.65 Qp	3.54 / 18.28 / 27.63 / 0.0	31.84	V / 1.00 / 0	-24.56	-14.16
569.52 MHz	40.2 Qp	3.59 / 18.43 / 27.64 / 0.0	34.58	V / 1.00 / 0	-21.82	-11.42
583.08 MHz	33.25 Qp	3.63 / 18.76 / 27.65 / 0.0	27.99	V / 1.00 / 0	-28.41	-18.01
596.64 MHz	37.7 Qp	3.68 / 19.09 / 27.66 / 0.0	32.8	V / 1.00 / 0	-23.6	-13.2
678.0 MHz	36.9 Qp	3.99 / 19.8 / 27.61 / 0.0	33.08	V / 1.00 / 0	-23.32	-12.92
800.04 MHz	37.9 Qp	4.37 / 21.17 / 27.31 / 0.0	36.14	V / 1.00 / 0	-20.26	-9.86
501 MHz maxed						
501.72 MHz	49.81 Qp	3.34 / 17.28 / 27.65 / 0.0	42.78	V / 1.00 / 350	-13.62	-3.22
printer to original config						
501.72 MHz	50.36 Qp	3.34 / 17.28 / 27.65 / 0.0	43.33	V / 1.00 / 350	-13.07	-2.67
501.72 MHz	49.55 Qp	3.34 / 17.28 / 27.65 / 0.0	42.52	V / 1.00 / 350	-13.88	-3.48
501.72 MHz	50.22 Qp	3.34 / 17.28 / 27.65 / 0.0	43.19	V / 1.00 / 350	-13.21	-2.81

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Thomas K. Swanson

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Reviewed by: J. T. Schneider

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Joel T. Schneider

Signature

RADIATED EMISSIONS



Test Report #: WC606529 Run 9 Test Area: STS

EUT Model #: IP-300 Date: 12/13/2006

EUT Serial #: 1281Q40 EUT Power: 120 VAC / 60 Hz Temperature: 16.0 °C

Test Method: FCC 15.209 Air Pressure: 99.0 kPa

Customer: CAB / BRADY Rel. Humidity: 34.0 %

EUT Description: LABEL MAKER

Notes: With Low Pass Filter & metal box, and ferrite at media antenna contacts and ferrite at BDC on coax cable

Data File Name: 6529-9RE.dat

Page: 3 of 11

List of measurements for run #: 9

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-A <1GHz 3m	DELTA2 FCC-B <1GHz 3m
122.04 MHz	50.5 Qp	1.62 / 8.91 / 28.09 / 0.0	32.94	V / 1.00 / 270	-20.56	-10.56
189.84 MHz	54.0 Qp	1.98 / 10.58 / 27.95 / 0.0	38.61	V / 1.00 / 270	-14.89	-4.89
203.4 MHz	52.2 Qp	2.06 / 10.71 / 27.96 / 0.0	37.02	V / 1.00 / 270	-16.48	-6.48
216.96 MHz	56.46 Qp	2.15 / 11.17 / 27.86 / 0.0	41.91	V / 1.00 / 270	-14.49	-4.09
230.52 MHz	55.25 Qp	2.24 / 11.62 / 27.81 / 0.0	41.29	V / 1.00 / 270	-15.11	-4.71
244.08 MHz	52.65 Qp	2.32 / 12.07 / 27.85 / 0.0	39.18	V / 1.00 / 270	-17.22	-6.82
257.64 MHz	54.95 Qp	2.36 / 12.52 / 27.89 / 0.0	41.94	V / 1.00 / 270	-14.46	-4.06
271.2 MHz	45.7 Qp	2.41 / 12.43 / 27.88 / 0.0	32.67	V / 1.00 / 270	-23.73	-13.33
284.76 MHz	51.65 Qp	2.46 / 12.82 / 27.86 / 0.0	39.07	V / 1.00 / 270	-17.33	-6.93
352.56 MHz	48.55 Qp	2.84 / 14.73 / 27.87 / 0.0	38.24	V / 1.00 / 270	-18.16	-7.76
379.68 MHz	58.0 Qp	2.91 / 15.49 / 27.81 / 0.0	48.59	V / 1.00 / 270	-7.81	N/a
433.92 MHz	52.75 Qp	3.06 / 16.27 / 27.77 / 0.0	44.31	V / 1.00 / 270	-12.09	-1.69
447.48 MHz	43.9 Qp	3.1 / 16.33 / 27.79 / 0.0	35.54	V / 1.00 / 270	-20.86	-10.46
461.04 MHz	47.75 Qp	3.16 / 16.57 / 27.77 / 0.0	39.71	V / 1.00 / 270	-16.69	-6.29
474.6 MHz	46.85 Qp	3.22 / 16.82 / 27.73 / 0.0	39.15	V / 1.00 / 270	-17.25	-6.85
569.52 MHz	43.0 Qp	3.59 / 18.43 / 27.64 / 0.0	37.38	V / 1.00 / 270	-19.02	-8.62
81.36 MHz	47.45 Qp	1.36 / 7.91 / 27.89 / 0.0	28.83	V / 1.00 / 180	-20.27	-11.17
122.04 MHz	52.3 Qp	1.62 / 8.91 / 28.09 / 0.0	34.74	V / 1.00 / 180	-18.76	-8.76
271.2 MHz	51.6 Qp	2.41 / 12.43 / 27.88 / 0.0	38.57	V / 1.00 / 180	-17.83	-7.43
284.76 MHz	58.0 Qp	2.46 / 12.82 / 27.86 / 0.0	45.42	V / 1.00 / 180	-10.98	-0.58
311.88 MHz	56.6 Qp	2.61 / 13.58 / 27.81 / 0.0	44.98	V / 1.00 / 180	-11.42	-1.02
325.44 MHz	55.15 Qp	2.7 / 13.96 / 27.81 / 0.0	44.01	V / 1.00 / 180	-12.39	-1.99
339.0 MHz	54.25 Qp	2.8 / 14.34 / 27.84 / 0.0	43.55	V / 1.00 / 180	-12.85	-2.45
352.56 MHz	50.25 Qp	2.84 / 14.73 / 27.87 / 0.0	39.94	V / 1.00 / 180	-16.46	-6.06
461.04 MHz	50.0 Qp	3.16 / 16.57 / 27.77 / 0.0	41.96	V / 1.00 / 180	-14.44	-4.04

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Reviewed by: J. T. Schneider

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Joel T. Schneider

Signature

RADIATED EMISSIONS



Test Report #: WC606529 Run 9 Test Area: STS

EUT Model #: IP-300 Date: 12/13/2006

EUT Serial #: 1281Q40 EUT Power: 120 VAC / 60 Hz Temperature: 16.0 °C

Test Method: FCC 15.209 Air Pressure: 99.0 kPa

Customer: CAB / BRADY Rel. Humidity: 34.0 %

EUT Description: LABEL MAKER

Notes: With Low Pass Filter & metal box, and ferrite at media antenna contacts and ferrite at BDC on coax cable

Data File Name: 6529-9RE.dat Page: 4 of 11

List of measurements for run #: 9

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-A <1GHz 3m	DELTA2 FCC-B <1GHz 3m
488.16 MHz	42.3 Qp	3.28 / 16.94 / 27.69 / 0.0	34.82	V / 1.00 / 180	-21.58	-11.18
216 MHz maxed						
216.96 MHz	57.19 Qp	2.15 / 11.17 / 27.86 / 0.0	42.64	V / 1.00 / 295	-13.76	-3.36
474 MHz maxed						
474.6 MHz	48.92 Qp	3.22 / 16.82 / 27.73 / 0.0	41.22	V / 1.00 / 0	-15.18	-4.78
189 MHz Maxed						
189.84 MHz	55.03 Qp	1.98 / 10.58 / 27.95 / 0.0	39.64	V / 1.00 / 0	-13.86	-3.86
528 MHz maxed						
528.84 MHz	48.47 Qp	3.45 / 18.16 / 27.61 / 0.0	42.47	V / 1.00 / 30	-13.93	-3.53
End of vertical scan						
54.24 MHz	36.65 Qp	1.12 / 12.88 / 28.04 / 0.0	22.6	H / 3.00 / 315	-26.5	-17.4
176.28 MHz	39.08 Qp	1.93 / 9.72 / 27.93 / 0.0	22.8	H / 3.00 / 315	-30.7	-20.7
244.08 MHz	51.87 Qp	2.32 / 12.07 / 27.85 / 0.0	38.4	H / 3.00 / 315	-18.0	-7.6
420.36 MHz	36.03 Qp	3.02 / 15.89 / 27.75 / 0.0	27.2	H / 3.00 / 315	-29.2	-18.8
54.24 MHz maxed						
54.24 MHz	39.73 Qp	1.12 / 12.88 / 28.04 / 0.0	25.68	H / 1.00 / 17	-23.42	-14.32
176.28 MHz	45.35 Qp	1.93 / 9.72 / 27.93 / 0.0	29.07	H / 1.00 / 17	-24.43	-14.43
420.36 MHz	43.04 Qp	3.02 / 15.89 / 27.75 / 0.0	34.21	H / 1.00 / 17	-22.19	-11.79
515.28 MHz	42.61 Qp	3.4 / 17.72 / 27.61 / 0.0	36.12	H / 1.00 / 17	-20.28	-9.88

Tested by: T. K. Swanson Thomas K. Swanson
Printed Signature

Reviewed by: J. T. Schneider Joel T. Schneider
Printed Signature

RADIATED EMISSIONS



Test Report #: WC606529 Run 9 Test Area: STS

EUT Model #: IP-300 Date: 12/13/2006

EUT Serial #: 1281Q40 EUT Power: 120 VAC / 60 Hz Temperature: 16.0 °C

Test Method: FCC 15.209 Air Pressure: 99.0 kPa

Customer: CAB / BRADY Rel. Humidity: 34.0 %

EUT Description: LABEL MAKER

Notes: With Low Pass Filter & metal box, and ferrite at media antenna contacts and ferrite at BDC on coax cable

Data File Name: 6529-9RE.dat

Page: 5 of 11

List of measurements for run #: 9

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-A <1GHz 3m	DELTA2 FCC-B <1GHz 3m
542.4 MHz	45.41 Qp	3.49 / 18.13 / 27.62 / 0.0	39.42	H / 1.00 / 17	-16.98	-6.58
555.96 MHz	42.19 Qp	3.54 / 18.28 / 27.63 / 0.0	36.38	H / 1.00 / 17	-20.02	-9.62
569.52 MHz	44.22 Qp	3.59 / 18.43 / 27.64 / 0.0	38.6	H / 1.00 / 17	-17.8	-7.4
596.64 MHz	39.87 Qp	3.68 / 19.09 / 27.66 / 0.0	34.97	H / 1.00 / 17	-21.43	-11.03
678.0 MHz	39.75 Qp	3.99 / 19.8 / 27.61 / 0.0	35.93	H / 1.00 / 17	-20.47	-10.07
800.04 MHz	39.34 Qp	4.37 / 21.17 / 27.31 / 0.0	37.58	H / 1.00 / 17	-18.82	-8.42
542.40 MHz maxed						
542.4 MHz	45.51 Qp	3.49 / 18.13 / 27.62 / 0.0	39.52	H / 1.00 / 25	-16.88	-6.48
569.52 MHz maxed						
569.52 MHz	44.59 Qp	3.59 / 18.43 / 27.64 / 0.0	38.97	H / 1.00 / 25	-17.43	-7.03
End of Horizontal scan						
Idle mode						
583.08 MHz	33.47 Qp	3.63 / 18.76 / 27.65 / 0.0	28.21	V / 1.00 / 0	-28.19	-17.79
583.08 MHz	33.74 Qp	3.63 / 18.76 / 27.65 / 0.0	28.48	V / 1.00 / 90	-27.92	-17.52
54.24 MHz	38.85 Qp	1.12 / 12.88 / 28.04 / 0.0	24.8	V / 1.00 / 90	-24.3	-15.2
67.8 MHz	39.87 Qp	1.28 / 10.19 / 27.82 / 0.0	23.52	V / 1.00 / 180	-25.58	-16.48
298.32 MHz	46.02 Qp	2.52 / 13.2 / 27.84 / 0.0	33.9	V / 1.00 / 180	-22.5	-12.1
800.04 MHz	43.3 Qp	4.37 / 21.17 / 27.31 / 0.0	41.54	V / 1.00 / 180	-14.86	-4.46
678.0 MHz	41.05 Qp	3.99 / 19.8 / 27.61 / 0.0	37.23	V / 1.00 / 270	-19.17	-8.77
583.08 MHz	34.58 Qp	3.63 / 18.76 / 27.65 / 0.0	29.32	V / 1.00 / 270	-27.08	-16.68

Tested by: T. K. Swanson

Printed

Thomas K. Swanson

Signature

Reviewed by: J. T. Schneider

Printed

Joel T. Schneider

Signature

RADIATED EMISSIONS



Test Report #: WC606529 Run 9 Test Area: STS

EUT Model #: IP-300 Date: 12/13/2006

EUT Serial #: 1281Q40 EUT Power: 120 VAC / 60 Hz Temperature: 16.0 °C

Test Method: FCC 15.209 Air Pressure: 99.0 kPa

Customer: CAB / BRADY Rel. Humidity: 34.0 %

EUT Description: LABEL MAKER

Notes: With Low Pass Filter & metal box, and ferrite at media antenna contacts and ferrite at BDC on coax cable

Data File Name: 6529-9RE.dat Page: 6 of 11

List of measurements for run #: 9

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-A <1GHz 3m	DELTA2 FCC-B <1GHz 3m
203.4 MHz	53.1 Qp	2.06 / 10.71 / 27.96 / 0.0	37.92	V / 1.00 / 270	-15.58	-5.58
244.08 MHz	52.76 Qp	2.32 / 12.07 / 27.85 / 0.0	39.29	V / 1.00 / 315	-17.11	-6.71
800.04 MHz maxed						
800.04 MHz	45.05 Qp	4.37 / 21.17 / 27.31 / 0.0	43.29	V / 1.00 / 272	-13.11	-2.71
Truned off Transmitter						
800.04 MHz	45.86 Qp	4.37 / 21.17 / 27.31 / 0.0	44.1	V / 1.00 / 211	-12.3	-1.9
Truned Transmitter back on						
203.4 MHz maxed						
203.4 MHz	53.83 Qp	2.06 / 10.71 / 27.96 / 0.0	38.65	V / 1.00 / 286	-14.85	-4.85
678.0 MHz maxed						
678.0 MHz	44.38 Qp	3.99 / 19.8 / 27.61 / 0.0	40.56	V / 1.00 / 257	-15.84	-5.44
End of Vertical Scan						
No higher emission in the Horizontal Polarization at all azimuths						
Check printer only at 175 MHz for ferrit on ground wire. For Cab (At 3m)						
175.0 MHz	52.33 Qp	1.92 / 9.64 / 27.94 / 0.0	35.96	V / 1.00 / 0	-17.54	-7.54
175.0 MHz	52.34 Qp	1.92 / 9.64 / 27.94 / 0.0	35.97	H / 1.00 / 0	-17.53	-7.53

Tested by: T. K. Swanson

Printed

Thomas K. Swanson

Signature

Reviewed by: J. T. Schneider

Printed

Joel T. Schneider

Signature

RADIATED EMISSIONS



Test Report #: WC606529 Run 9 Test Area: STS

EUT Model #: IP-300 Date: 12/13/2006

EUT Serial #: 1281Q40 EUT Power: 120 VAC / 60 Hz Temperature: 16.0 °C

Test Method: FCC 15.209 Air Pressure: 99.0 kPa

Customer: CAB / BRADY Rel. Humidity: 34.0 %

EUT Description: LABEL MAKER

Notes: With Low Pass Filter & metal box, and ferrite at media antenna contacts and ferrite at BDC on coax cable

Data File Name: 6529-9RE.dat Page: 7 of 11

Measurement summary for limit1: FCC-A <1GHz 3m (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-A <1GHz 3m
379.68 MHz	58.0 Qp	2.91 / 15.49 / 27.81 / 0.0	48.59	V / 1.00 / 270	-7.81
406.8 MHz	57.1 Qp	2.99 / 15.66 / 27.72 / 0.0	48.03	V / 1.00 / 0	-8.37
284.76 MHz	58.0 Qp	2.46 / 12.82 / 27.86 / 0.0	45.42	V / 1.00 / 180	-10.98
311.88 MHz	56.6 Qp	2.61 / 13.58 / 27.81 / 0.0	44.98	V / 1.00 / 180	-11.42
433.92 MHz	52.75 Qp	3.06 / 16.27 / 27.77 / 0.0	44.31	V / 1.00 / 270	-12.09
800.04 MHz	45.86 Qp	4.37 / 21.17 / 27.31 / 0.0	44.1	V / 1.00 / 211	-12.3
325.44 MHz	55.15 Qp	2.7 / 13.96 / 27.81 / 0.0	44.01	V / 1.00 / 180	-12.39
339.0 MHz	54.25 Qp	2.8 / 14.34 / 27.84 / 0.0	43.55	V / 1.00 / 180	-12.85
501.72 MHz	50.36 Qp	3.34 / 17.28 / 27.65 / 0.0	43.33	V / 1.00 / 350	-13.07
40.68 MHz	46.47 Qp	1.02 / 16.74 / 28.35 / 0.0	35.88	V / 1.00 / 0	-13.22
216.96 MHz	57.19 Qp	2.15 / 11.17 / 27.86 / 0.0	42.64	V / 1.00 / 295	-13.76
189.84 MHz	55.03 Qp	1.98 / 10.58 / 27.95 / 0.0	39.64	V / 1.00 / 0	-13.86
528.84 MHz	48.47 Qp	3.45 / 18.16 / 27.61 / 0.0	42.47	V / 1.00 / 30	-13.93
461.04 MHz	50.0 Qp	3.16 / 16.57 / 27.77 / 0.0	41.96	V / 1.00 / 180	-14.44
257.64 MHz	54.95 Qp	2.36 / 12.52 / 27.89 / 0.0	41.94	V / 1.00 / 270	-14.46
203.4 MHz	53.83 Qp	2.06 / 10.71 / 27.96 / 0.0	38.65	V / 1.00 / 286	-14.85
230.52 MHz	55.25 Qp	2.24 / 11.62 / 27.81 / 0.0	41.29	V / 1.00 / 270	-15.11
474.6 MHz	48.92 Qp	3.22 / 16.82 / 27.73 / 0.0	41.22	V / 1.00 / 0	-15.18
393.24 MHz	50.2 Qp	2.95 / 15.46 / 27.71 / 0.0	40.91	V / 1.00 / 0	-15.49
678.0 MHz	44.38 Qp	3.99 / 19.8 / 27.61 / 0.0	40.56	V / 1.00 / 257	-15.84
366.12 MHz	50.05 Qp	2.87 / 15.11 / 27.9 / 0.0	40.14	V / 1.00 / 0	-16.26
352.56 MHz	50.25 Qp	2.84 / 14.73 / 27.87 / 0.0	39.94	V / 1.00 / 180	-16.46
542.4 MHz	45.51 Qp	3.49 / 18.13 / 27.62 / 0.0	39.52	H / 1.00 / 25	-16.88
244.08 MHz	52.76 Qp	2.32 / 12.07 / 27.85 / 0.0	39.29	V / 1.00 / 315	-17.11
94.92 MHz	54.64 Qp	1.43 / 7.99 / 27.96 / 0.0	36.1	V / 1.00 / 0	-17.4
569.52 MHz	44.59 Qp	3.59 / 18.43 / 27.64 / 0.0	38.97	H / 1.00 / 25	-17.43

Tested by: T. K. Swanson Thomas K. Swanson
 Printed Signature

Reviewed by: J. T. Schneider Joel T. Schneider
 Printed Signature

RADIATED EMISSIONS



Test Report #: WC606529 Run 9 Test Area: STS

EUT Model #: IP-300 Date: 12/13/2006

EUT Serial #: 1281Q40 EUT Power: 120 VAC / 60 Hz Temperature: 16.0 °C

Test Method: FCC 15.209 Air Pressure: 99.0 kPa

Customer: CAB / BRADY Rel. Humidity: 34.0 %

EUT Description: LABEL MAKER

Notes: With Low Pass Filter & metal box, and ferrite at media antenna contacts and ferrite at BDC on coax cable

Data File Name: 6529-9RE.dat

Page: 8 of 11

Measurement summary for limit1: FCC-A <1GHz 3m (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-A <1GHz 3m
175.0 MHz	52.34 Qp	1.92 / 9.64 / 27.94 / 0.0	35.97	H / 1.00 / 0	-17.53
271.2 MHz	51.6 Qp	2.41 / 12.43 / 27.88 / 0.0	38.57	V / 1.00 / 180	-17.83
122.04 MHz	52.3 Qp	1.62 / 8.91 / 28.09 / 0.0	34.74	V / 1.00 / 180	-18.76
162.72 MHz	51.15 Qp	1.87 / 8.87 / 27.99 / 0.0	33.9	V / 1.00 / 0	-19.6
555.96 MHz	42.19 Qp	3.54 / 18.28 / 27.63 / 0.0	36.38	H / 1.00 / 17	-20.02
81.36 MHz	47.45 Qp	1.36 / 7.91 / 27.89 / 0.0	28.83	V / 1.00 / 180	-20.27
515.28 MHz	42.61 Qp	3.4 / 17.72 / 27.61 / 0.0	36.12	H / 1.00 / 17	-20.28
447.48 MHz	43.9 Qp	3.1 / 16.33 / 27.79 / 0.0	35.54	V / 1.00 / 270	-20.86
596.64 MHz	39.87 Qp	3.68 / 19.09 / 27.66 / 0.0	34.97	H / 1.00 / 17	-21.43
488.16 MHz	42.3 Qp	3.28 / 16.94 / 27.69 / 0.0	34.82	V / 1.00 / 180	-21.58
149.16 MHz	47.95 Qp	1.81 / 9.6 / 27.95 / 0.0	31.41	V / 1.00 / 0	-22.09
420.36 MHz	43.04 Qp	3.02 / 15.89 / 27.75 / 0.0	34.21	H / 1.00 / 17	-22.19
135.6 MHz	49.14 Qp	1.74 / 8.07 / 27.94 / 0.0	31.0	V / 1.00 / 0	-22.5
298.32 MHz	46.02 Qp	2.52 / 13.2 / 27.84 / 0.0	33.9	V / 1.00 / 180	-22.5
54.24 MHz	39.73 Qp	1.12 / 12.88 / 28.04 / 0.0	25.68	H / 1.00 / 17	-23.42
176.28 MHz	45.35 Qp	1.93 / 9.72 / 27.93 / 0.0	29.07	H / 1.00 / 17	-24.43
108.48 MHz	46.1 Qp	1.53 / 8.94 / 28.03 / 0.0	28.54	V / 1.00 / 0	-24.96
67.8 MHz	39.87 Qp	1.28 / 10.19 / 27.82 / 0.0	23.52	V / 1.00 / 180	-25.58
583.08 MHz	34.58 Qp	3.63 / 18.76 / 27.65 / 0.0	29.32	V / 1.00 / 270	-27.08

Tested by: T. K. Swanson

Printed

Thomas K. Swanson

Signature

Reviewed by: J. T. Schneider

Printed

Joel T. Schneider

Signature

RADIATED EMISSIONS



Test Report #: WC606529 Run 9 Test Area: STS

EUT Model #: IP-300 Date: 12/13/2006

EUT Serial #: 1281Q40 EUT Power: 120 VAC / 60 Hz Temperature: 16.0 °C

Test Method: FCC 15.209 Air Pressure: 99.0 kPa

Customer: CAB / BRADY Rel. Humidity: 34.0 %

EUT Description: LABEL MAKER

Notes: With Low Pass Filter & metal box, and ferrite at media antenna contacts and ferrite at BDC on coax cable

Data File Name: 6529-9RE.dat Page: 9 of 11

Measurement summary for limit2: FCC-B <1GHz 3m (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA2 FCC-B <1GHz 3m
40.68 MHz	46.47 Qp	1.02 / 16.74 / 28.35 / 0.0	35.88	V / 1.00 / 0	-4.12
230.52 MHz	55.25 Qp	2.24 / 11.62 / 27.81 / 0.0	41.29	V / 1.00 / 270	-4.71
474.6 MHz	48.92 Qp	3.22 / 16.82 / 27.73 / 0.0	41.22	V / 1.00 / 0	-4.78
203.4 MHz	53.83 Qp	2.06 / 10.71 / 27.96 / 0.0	38.65	V / 1.00 / 286	-4.85
393.24 MHz	50.2 Qp	2.95 / 15.46 / 27.71 / 0.0	40.91	V / 1.00 / 0	-5.09
678.0 MHz	44.38 Qp	3.99 / 19.8 / 27.61 / 0.0	40.56	V / 1.00 / 257	-5.44
366.12 MHz	50.05 Qp	2.87 / 15.11 / 27.9 / 0.0	40.14	V / 1.00 / 0	-5.86
352.56 MHz	50.25 Qp	2.84 / 14.73 / 27.87 / 0.0	39.94	V / 1.00 / 180	-6.06
542.4 MHz	45.51 Qp	3.49 / 18.13 / 27.62 / 0.0	39.52	H / 1.00 / 25	-6.48
244.08 MHz	52.76 Qp	2.32 / 12.07 / 27.85 / 0.0	39.29	V / 1.00 / 315	-6.71
569.52 MHz	44.59 Qp	3.59 / 18.43 / 27.64 / 0.0	38.97	H / 1.00 / 25	-7.03
94.92 MHz	54.64 Qp	1.43 / 7.99 / 27.96 / 0.0	36.1	V / 1.00 / 0	-7.4
271.2 MHz	51.6 Qp	2.41 / 12.43 / 27.88 / 0.0	38.57	V / 1.00 / 180	-7.43
175.0 MHz	52.34 Qp	1.92 / 9.64 / 27.94 / 0.0	35.97	H / 1.00 / 0	-7.53
122.04 MHz	52.3 Qp	1.62 / 8.91 / 28.09 / 0.0	34.74	V / 1.00 / 180	-8.76
162.72 MHz	51.15 Qp	1.87 / 8.87 / 27.99 / 0.0	33.9	V / 1.00 / 0	-9.6
555.96 MHz	42.19 Qp	3.54 / 18.28 / 27.63 / 0.0	36.38	H / 1.00 / 17	-9.62
515.28 MHz	42.61 Qp	3.4 / 17.72 / 27.61 / 0.0	36.12	H / 1.00 / 17	-9.88
447.48 MHz	43.9 Qp	3.1 / 16.33 / 27.79 / 0.0	35.54	V / 1.00 / 270	-10.46
596.64 MHz	39.87 Qp	3.68 / 19.09 / 27.66 / 0.0	34.97	H / 1.00 / 17	-11.03
81.36 MHz	47.45 Qp	1.36 / 7.91 / 27.89 / 0.0	28.83	V / 1.00 / 180	-11.17
488.16 MHz	42.3 Qp	3.28 / 16.94 / 27.69 / 0.0	34.82	V / 1.00 / 180	-11.18
420.36 MHz	43.04 Qp	3.02 / 15.89 / 27.75 / 0.0	34.21	H / 1.00 / 17	-11.79

Tested by: T. K. Swanson

Printed

Thomas K. Swanson

Signature

Reviewed by: J. T. Schneider

Printed

Joel T. Schneider

Signature

RADIATED EMISSIONS



Test Report #: WC606529 Run 9 Test Area: STS

EUT Model #: IP-300 Date: 12/13/2006

EUT Serial #: 1281Q40 EUT Power: 120 VAC / 60 Hz Temperature: 16.0 °C

Test Method: FCC 15.209 Air Pressure: 99.0 kPa

Customer: CAB / BRADY Rel. Humidity: 34.0 %

EUT Description: LABEL MAKER

Notes: With Low Pass Filter & metal box, and ferrite at media antenna contacts and ferrite at BDC on coax cable

Data File Name: 6529-9RE.dat

Page: 10 of 11

Measurement summary for limit2: FCC-B <1GHz 3m (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA2 FCC-B <1GHz 3m
149.16 MHz	47.95 Qp	1.81 / 9.6 / 27.95 / 0.0	31.41	V / 1.00 / 0	-12.09
298.32 MHz	46.02 Qp	2.52 / 13.2 / 27.84 / 0.0	33.9	V / 1.00 / 180	-12.1
135.6 MHz	49.14 Qp	1.74 / 8.07 / 27.94 / 0.0	31.0	V / 1.00 / 0	-12.5
54.24 MHz	39.73 Qp	1.12 / 12.88 / 28.04 / 0.0	25.68	H / 1.00 / 17	-14.32
176.28 MHz	45.35 Qp	1.93 / 9.72 / 27.93 / 0.0	29.07	H / 1.00 / 17	-14.43
108.48 MHz	46.1 Qp	1.53 / 8.94 / 28.03 / 0.0	28.54	V / 1.00 / 0	-14.96
67.8 MHz	39.87 Qp	1.28 / 10.19 / 27.82 / 0.0	23.52	V / 1.00 / 180	-16.48
583.08 MHz	34.58 Qp	3.63 / 18.76 / 27.65 / 0.0	29.32	V / 1.00 / 270	-16.68

Tested by: T. K. Swanson

Printed

Signature

Reviewed by: J. T. Schneider

Printed

Signature

RADIATED EMISSIONS



Test Report #: WC606529 Run 9 Test Area: STS

EUT Model #: IP-300 Date: 12/13/2006

EUT Serial #: 1281Q40 EUT Power: 120 VAC / 60 Hz Temperature: 16.0 °C

Test Method: FCC 15.209 Air Pressure: 99.0 kPa

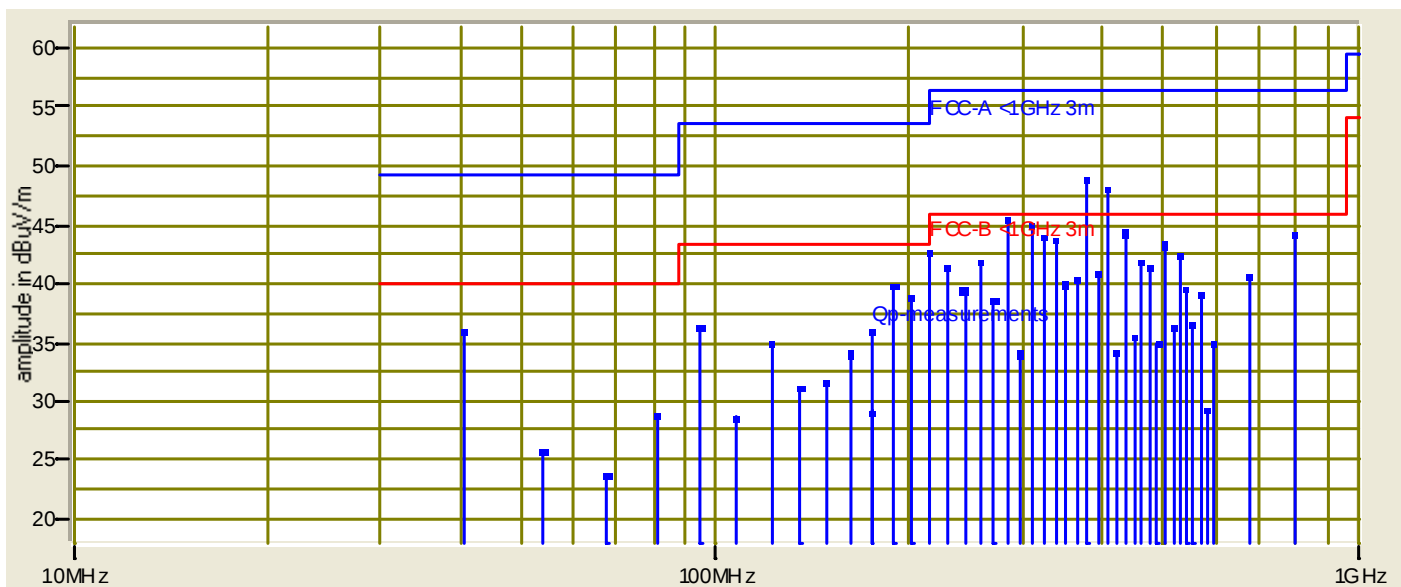
Customer: CAB / BRADY Rel. Humidity: 34.0 %

EUT Description: LABEL MAKER

Notes: With Low Pass Filter & metal box, and ferrite at media antenna contacts and ferrite at BDC on coax cable

Data File Name: 6529-9RE.dat Page: 11 of 11

Graph:



Tested by: T. K. Swanson Thomas K. Swanson
Printed Signature

Reviewed by: J. T. Schneider Joel T. Schneider
Printed Signature

Frequency tolerance

FCC 15.225(e), IC RSS-210 2.6

Test summary

The requirements are: ■ - MET □ - NOT MET

The device transmitter deviates by less than $\pm 0.01\%$ (1.356 kHz) of the operating frequency

Test location

□ - Wild River Lab Large Test Site (Open Area Test Site)

■ - New Brighton Environmental Lab

Test Equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
2235	SH27	Envirotronics	Temperature chamber	09963481-S	08 Aug 07
10440	E4446A	Agilent	Spectrum Analyzer		30 May 07
3846	1520CT	Staco	Variac		B
2103	77	Fluke	Multimeter	52171299	30 Mar 07

Cal Code B = Calibration verification performed internally.

Test data

Temperature (degrees C)	Frequency (MHz)
-20	13.5595
-10	13.5595
0	13.5595
+10	13.5595
+20	13.5595
+30	13.5595
+40	13.5595
+50	13.5595

Input Voltage	Frequency (MHz)
85% of nominal	13.5595
115% of nominal	13.5595

Occupied bandwidth

RSS-Gen 4.4.1

Test summary

The requirements are: ☒ - MET ☐ - NOT MET

The 99% occupied bandwidth = 3.1 kHz

Test location

☒ - Wild River Lab Large Test Site (Open Area Test Site)

☐ - Wild River Lab Small Test Site (Open Area Test Site)

Test equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3367	E4440A	Agilent	Spectrum Analyzer	MY42510439	14 Sep 07
	7405-901	EMCO	Near field probe	na	Code Y

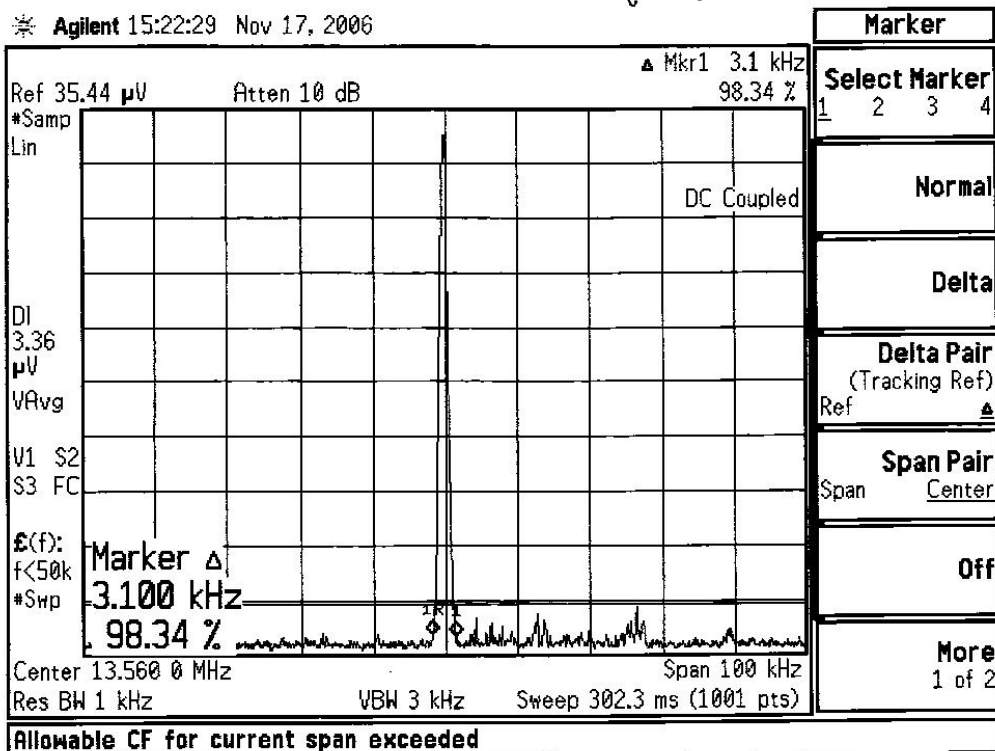
Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

Test limit

No limit specified

Test data

RSS-GEN 4.4.1



Conducted Emissions - AC Power Lines

FCC 15.207(a) – intentional radiator, FCC 15.107 Class A – printer, IC RSS-Gen 7.2.2

Test summary

The requirements are: ☒ - MET ☐ - NOT MET

The minimum margin of compliance to 15.207 is 2 dB at 630 kHz (13.56 MHz transmitter with antenna replaced by termination).

With the 13.56 MHz rfid disabled, the minimum margin of compliance of the printer to 15.107 Class A is 6 dB at 26 MHz.

Test location

☒ - Wild River Lab Shield Room

☐ - Wild River Lab Small Test Site (Open Area Test Site)

Test Equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
2416	3825/2	Electro-Mechanics (EMCO)	50 Ω LISN	8812-1437	Code B
2534	ESHS-20	Rhode & Schwarz	EMI Receiver	837055/003	27-Feb-07

Cal Code B = Calibration verification performed internally.

15.207 Test limits, dB μ V

Frequency (MHz)	Quasi Peak	Average
0.15 - 0.5	66 - 56*	56 - 64*
0.5 - 5	56	46
5 - 30	60	50

*Decreases with the logarithm of the frequency

15.107 Class A Test limits, dB μ V

Frequency (MHz)	Quasi Peak	Average
0.15 - 0.5	79	66
0.5 - 30	73	60

Test data

On following pages

CONDUCTED EMISSIONS



Test Report #: WC606529 Run 2 Test Area: LTS

EUT Model #: IP-300 Date: 11/17/2006

EUT Serial #: 1287Q40 EUT Power: 110V, 60Hz & 230V, 50 Temperature: 23.0 °C

Test Method: EN55022 B Air Pressure: 98.0 kPa

Customer: Brady Rel. Humidity: 23.0 %

EUT Description: Label Maker
Dummy loads instead of antennas

Notes:

Data File Name: 6529 CE.dat

Page: 1 of 4

List of measurements for run #: 2

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp	DELTA2 EN55022 B Avg
630.0 kHz	48.39 Qp	0.01 / 0.1 / 0.0 / 0.0	48.5	N	-7.5	n/a
13.56 MHz	54.23 Qp	0.13 / 0.24 / 0.0 / 0.0	54.59	N	-5.41	n/a
13.585 MHz	55.21 Qp	0.13 / 0.24 / 0.0 / 0.0	55.57	N	-4.43	n/a
RFID section off						
26 MHz is not related to the RFID board - passes class A						
RFID section on						
630.0 kHz	39.22 Av	0.01 / 0.1 / 0.0 / 0.0	39.33	N	n/a	-6.67
13.56 MHz	45.24 Av	0.13 / 0.24 / 0.0 / 0.0	45.6	N	n/a	-4.4
13.585 MHz	42.68 Av	0.13 / 0.24 / 0.0 / 0.0	43.04	N	n/a	-6.96
630.0 kHz	49.52 Qp	0.01 / 0.1 / 0.0 / 0.0	49.63	L1	-6.37	n/a
13.56 MHz	54.52 Qp	0.13 / 0.24 / 0.0 / 0.0	54.88	L1	-5.12	n/a
13.585 MHz	52.47 Qp	0.13 / 0.24 / 0.0 / 0.0	52.83	L1	-7.17	n/a
630.0 kHz	43.57 Av	0.01 / 0.1 / 0.0 / 0.0	43.68	L1	n/a	-2.32
13.56 MHz	43.84 Av	0.13 / 0.24 / 0.0 / 0.0	44.2	L1	n/a	-5.8
13.585 MHz	43.3 Av	0.13 / 0.24 / 0.0 / 0.0	43.66	L1	n/a	-6.34
RFID section off						
210 kHz & 421 kHz are not related to the RFID board - passes class A						
only RFID freq, 13.56 MHz, passes B,						
All other emissions, unrelated to RFID, pass class A						

Tested by: Greg Jakubowski

Printed

Signature

Reviewed by: J. T. Schneider

Printed

Signature

CONDUCTED EMISSIONS



Test Report #: WC606529 Run 2 Test Area: LTS

EUT Model #: IP-300 Date: 11/17/2006

EUT Serial #: 1287Q40 EUT Power: 110V, 60Hz & 230V, 50 Temperature: 23.0 °C

Test Method: EN55022 B Air Pressure: 98.0 kPa

Customer: Brady Rel. Humidity: 23.0 %

EUT Description: Label Maker

Notes: Dummy loads instead of antennas

Data File Name: 6529 CE.dat Page: 2 of 4

Measurement summary for limit1: EN55022 B Qp (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp
13.585 MHz	55.21 Qp	0.13 / 0.24 / 0.0 / 0.0	55.57	N	-4.43
13.56 MHz	54.52 Qp	0.13 / 0.24 / 0.0 / 0.0	54.88	L1	-5.12
630.0 kHz	49.52 Qp	0.01 / 0.1 / 0.0 / 0.0	49.63	L1	-6.37

Tested by: Greg Jakubowski

Printed

Signature

Reviewed by: J. T. Schneider

Printed

Signature

CONDUCTED EMISSIONS



Test Report #: WC606529 Run 2 Test Area: LTS

EUT Model #: IP-300 Date: 11/17/2006

EUT Serial #: 1287Q40 EUT Power: 110V, 60Hz & 230V, 50 Temperature: 23.0 °C

Test Method: EN55022 B Air Pressure: 98.0 kPa

Customer: Brady Rel. Humidity: 23.0 %

EUT Description: Label Maker

Notes: Dummy loads instead of antennas

Data File Name: 6529 CE.dat Page: 3 of 4

Measurement summary for limit2: EN55022 B Avg (Av)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA2 EN55022 B Avg
630.0 kHz	43.57 Av	0.01 / 0.1 / 0.0 / 0.0	43.68	L1	-2.32
13.56 MHz	45.24 Av	0.13 / 0.24 / 0.0 / 0.0	45.6	N	-4.4
13.585 MHz	43.3 Av	0.13 / 0.24 / 0.0 / 0.0	43.66	L1	-6.34

Tested by: Greg Jakubowski

Printed

Signature

Reviewed by: J. T. Schneider

Printed

Signature

CONDUCTED EMISSIONS



Test Report #: WC606529 Run 2 Test Area: LTS

EUT Model #: IP-300 Date: 11/17/2006

EUT Serial #: 1287Q40 EUT Power: 110V, 60Hz & 230V, 50 Temperature: 23.0 °C

Test Method: EN55022 B Air Pressure: 98.0 kPa

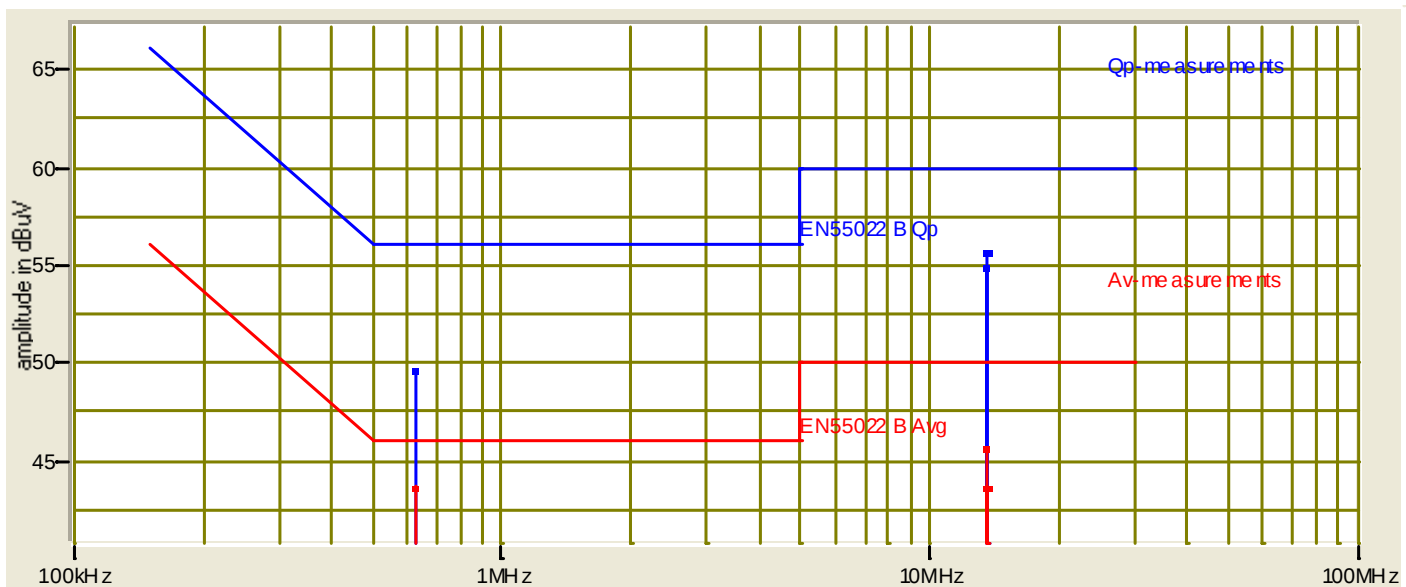
Customer: Brady Rel. Humidity: 23.0 %

EUT Description: Label Maker

Notes: Dummy loads instead of antennas

Data File Name: 6529 CE.dat Page: 4 of 4

Graph:



Tested by: Greg Jakubowski

Printed

Signature

Reviewed by: J. T. Schneider

Printed

Signature

CONDUCTED EMISSIONS



Test Report #: WC606529 Run 2 Test Area: LTS

EUT Model #: IP-300 Date: 11/17/2006

EUT Serial #: 1287Q40 EUT Power: 110V, 60Hz & 230V, 50 Temperature: 23.0 °C

Test Method: EN55022 B Air Pressure: 98.0 kPa

Customer: Brady Rel. Humidity: 23.0 %

EUT Description: Label Maker

Dummy loads instead of antennas

Notes: _____

Data File Name: 6529 CE.dat Page: 1 of 5

List of measurements for run #: 2

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 A Qp	DELTA2 EN55022 A Avg
210.0 kHz	60.02 Qp	0.0 / 0.14 / 0.0 / 0.0	60.16	N	-18.84	n/a
421.42 kHz	52.79 Qp	0.0 / 0.1 / 0.0 / 0.0	52.89	N	-26.11	n/a
630.0 kHz	48.39 Qp	0.01 / 0.1 / 0.0 / 0.0	48.5	N	-24.5	n/a
13.56 MHz	54.23 Qp	0.13 / 0.24 / 0.0 / 0.0	54.59	N	-18.41	n/a
13.585 MHz	55.21 Qp	0.13 / 0.24 / 0.0 / 0.0	55.57	N	-17.43	n/a
26.0 MHz	63.45 Qp	0.21 / 0.78 / 0.0 / 0.0	64.44	N	-8.56	n/a
RFID section off						
26.0 MHz	63.22 Qp	0.21 / 0.78 / 0.0 / 0.0	64.21	N	-8.79	n/a
26 MHz is not related to the RFID board - passes class A						
RFID section on						
210.0 kHz	52.98 Av	0.0 / 0.14 / 0.0 / 0.0	53.12	N	n/a	-12.88
421.42 kHz	41.21 Av	0.0 / 0.1 / 0.0 / 0.0	41.31	N	n/a	-24.69
630.0 kHz	39.22 Av	0.01 / 0.1 / 0.0 / 0.0	39.33	N	n/a	-20.67
13.56 MHz	45.24 Av	0.13 / 0.24 / 0.0 / 0.0	45.6	N	n/a	-14.4
13.585 MHz	42.68 Av	0.13 / 0.24 / 0.0 / 0.0	43.04	N	n/a	-16.96
26.0 MHz	52.4 Av	0.21 / 0.78 / 0.0 / 0.0	53.39	N	n/a	-6.61
210.0 kHz	61.01 Qp	0.0 / 0.14 / 0.0 / 0.0	61.15	L1	-17.85	n/a
421.42 kHz	55.92 Qp	0.0 / 0.1 / 0.0 / 0.0	56.02	L1	-22.98	n/a
630.0 kHz	49.52 Qp	0.01 / 0.1 / 0.0 / 0.0	49.63	L1	-23.37	n/a
13.56 MHz	54.52 Qp	0.13 / 0.24 / 0.0 / 0.0	54.88	L1	-18.12	n/a
13.585 MHz	52.47 Qp	0.13 / 0.24 / 0.0 / 0.0	52.83	L1	-20.17	n/a
26.0 MHz	61.89 Qp	0.21 / 0.78 / 0.0 / 0.0	62.88	L1	-10.12	n/a

Tested by: Greg Jakubowski

Printed

Signature

Reviewed by: J. T. Schneider

Printed

Signature

CONDUCTED EMISSIONS



Test Report #: WC606529 Run 2 Test Area: LTS

EUT Model #: IP-300 Date: 11/17/2006

EUT Serial #: 1287Q40 EUT Power: 110V, 60Hz & 230V, 50 Temperature: 23.0 °C

Test Method: EN55022 B Air Pressure: 98.0 kPa

Customer: Brady Rel. Humidity: 23.0 %

EUT Description: Label Maker

Notes: Dummy loads instead of antennas

Data File Name: 6529 CE.dat Page: 2 of 5

List of measurements for run #: 2

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 A Qp	DELTA2 EN55022 A Avg
210.0 kHz	53.74 Av	0.0 / 0.14 / 0.0 / 0.0	53.88	L1	n/a	-12.12
421.42 kHz	50.29 Av	0.0 / 0.1 / 0.0 / 0.0	50.39	L1	n/a	-15.61
630.0 kHz	43.57 Av	0.01 / 0.1 / 0.0 / 0.0	43.68	L1	n/a	-16.32
13.56 MHz	43.84 Av	0.13 / 0.24 / 0.0 / 0.0	44.2	L1	n/a	-15.8
13.585 MHz	43.3 Av	0.13 / 0.24 / 0.0 / 0.0	43.66	L1	n/a	-16.34
26.0 MHz	51.03 Av	0.21 / 0.78 / 0.0 / 0.0	52.02	L1	n/a	-7.98
RFID section off						
210.0 kHz	53.45 Av	0.0 / 0.14 / 0.0 / 0.0	53.59	L1	n/a	-12.41
421.42 kHz	49.26 Av	0.0 / 0.1 / 0.0 / 0.0	49.36	L1	n/a	-16.64
210 kHz & 421 kHz are not related to the RFID board - passes class A						
only RFID freq, 13.56 MHz, passes B,						
All other emissions, unrelated to RFID, pass class A						

Tested by: Greg Jakubowski

Printed

Signature

Reviewed by: J. T. Schneider

Printed

Signature

CONDUCTED EMISSIONS



Test Report #: WC606529 Run 2 Test Area: LTS

EUT Model #: IP-300 Date: 11/17/2006

EUT Serial #: 1287Q40 EUT Power: 110V, 60Hz & 230V, 50 Temperature: 23.0 °C

Test Method: EN55022 B Air Pressure: 98.0 kPa

Customer: Brady Rel. Humidity: 23.0 %

EUT Description: Label Maker

Notes: Dummy loads instead of antennas

Data File Name: 6529 CE.dat Page: 3 of 5

Measurement summary for limit1: EN55022 A Qp (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 A Qp
26.0 MHz	63.45 Qp	0.21 / 0.78 / 0.0 / 0.0	64.44	N	-8.56
13.585 MHz	55.21 Qp	0.13 / 0.24 / 0.0 / 0.0	55.57	N	-17.43
210.0 kHz	61.01 Qp	0.0 / 0.14 / 0.0 / 0.0	61.15	L1	-17.85
13.56 MHz	54.52 Qp	0.13 / 0.24 / 0.0 / 0.0	54.88	L1	-18.12
421.42 kHz	55.92 Qp	0.0 / 0.1 / 0.0 / 0.0	56.02	L1	-22.98
630.0 kHz	49.52 Qp	0.01 / 0.1 / 0.0 / 0.0	49.63	L1	-23.37

Tested by: Greg Jakubowski

Printed

Signature

Reviewed by: J. T. Schneider

Printed

Signature

CONDUCTED EMISSIONS



Test Report #: WC606529 Run 2 Test Area: LTS

EUT Model #: IP-300 Date: 11/17/2006

EUT Serial #: 1287Q40 EUT Power: 110V, 60Hz & 230V, 50 Temperature: 23.0 °C

Test Method: EN55022 B Air Pressure: 98.0 kPa

Customer: Brady Rel. Humidity: 23.0 %

EUT Description: Label Maker

Notes: Dummy loads instead of antennas

Data File Name: 6529 CE.dat Page: 4 of 5

Measurement summary for limit2: EN55022 A Avg (Av)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA2 EN55022 A Avg
26.0 MHz	52.4 Av	0.21 / 0.78 / 0.0 / 0.0	53.39	N	-6.61
210.0 kHz	53.74 Av	0.0 / 0.14 / 0.0 / 0.0	53.88	L1	-12.12
13.56 MHz	45.24 Av	0.13 / 0.24 / 0.0 / 0.0	45.6	N	-14.4
421.42 kHz	50.29 Av	0.0 / 0.1 / 0.0 / 0.0	50.39	L1	-15.61
630.0 kHz	43.57 Av	0.01 / 0.1 / 0.0 / 0.0	43.68	L1	-16.32
13.585 MHz	43.3 Av	0.13 / 0.24 / 0.0 / 0.0	43.66	L1	-16.34

Tested by: Greg Jakubowski

Printed

Signature

Reviewed by: J. T. Schneider

Printed

Signature

CONDUCTED EMISSIONS



Test Report #: WC606529 Run 2 Test Area: LTS

EUT Model #: IP-300 Date: 11/17/2006

EUT Serial #: 1287Q40 EUT Power: 110V, 60Hz & 230V, 50 Temperature: 23.0 °C

Test Method: EN55022 B Air Pressure: 98.0 kPa

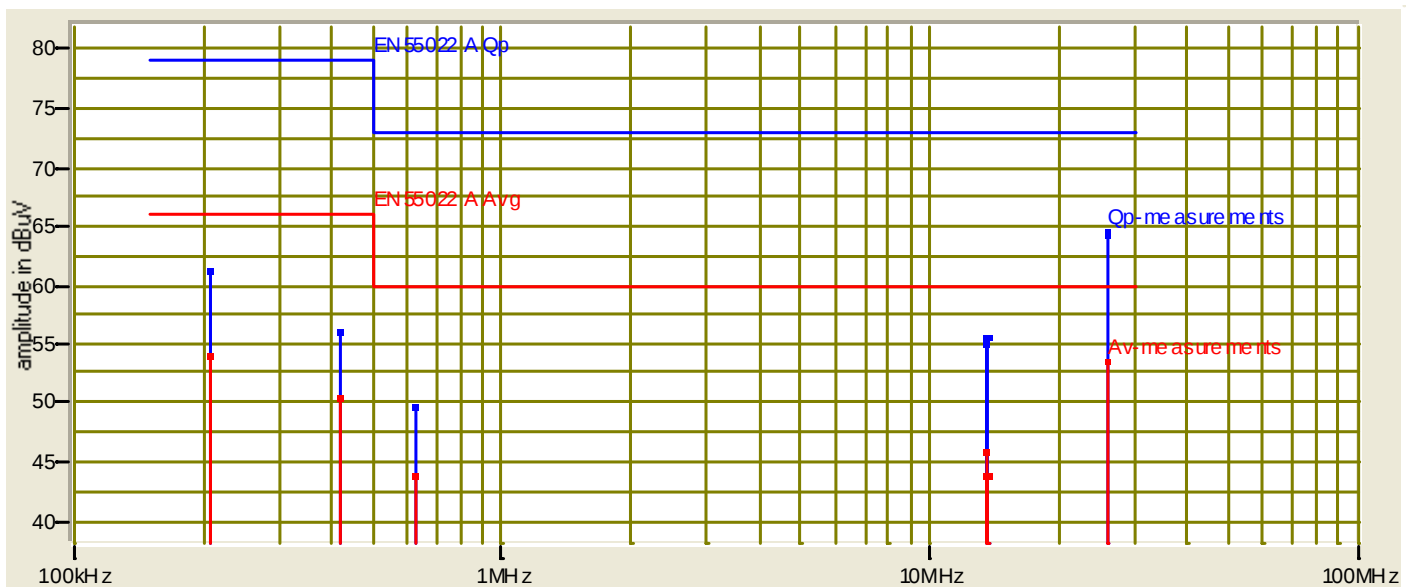
Customer: Brady Rel. Humidity: 23.0 %

EUT Description: Label Maker

Notes: Dummy loads instead of antennas

Data File Name: 6529 CE.dat Page: 5 of 5

Graph:



Tested by: Greg Jakubowski

Printed

Greg Jakubowski

Signature

Reviewed by: J. T. Schneider

Printed

Joel T. Schneider

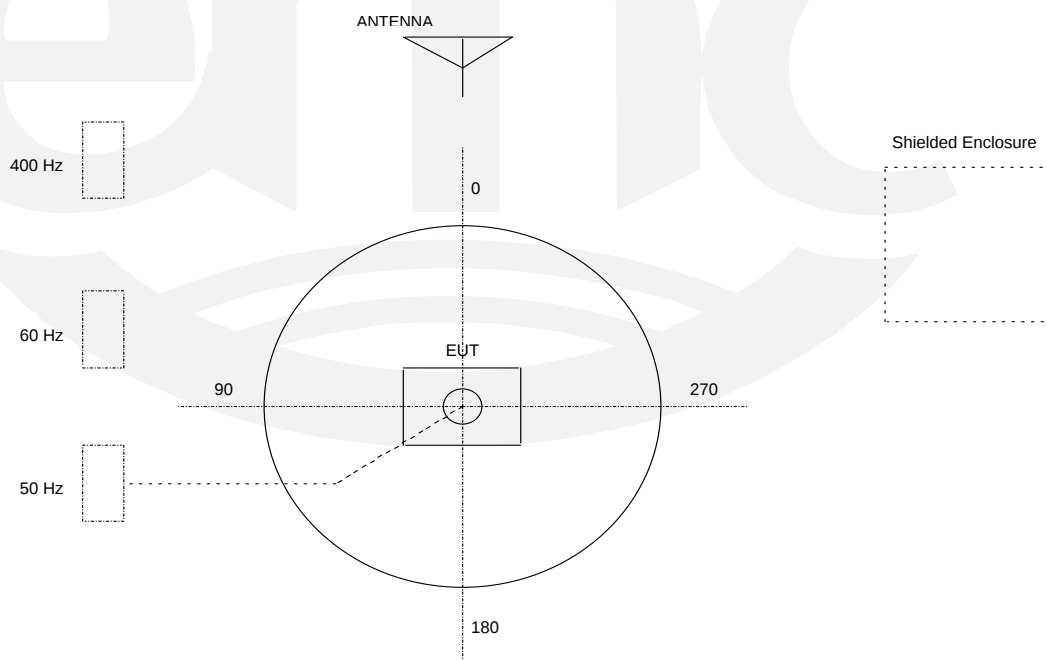
Signature

TEST SETUP FOR EMISSIONS TESTING

WILD RIVER LAB Large Test Site

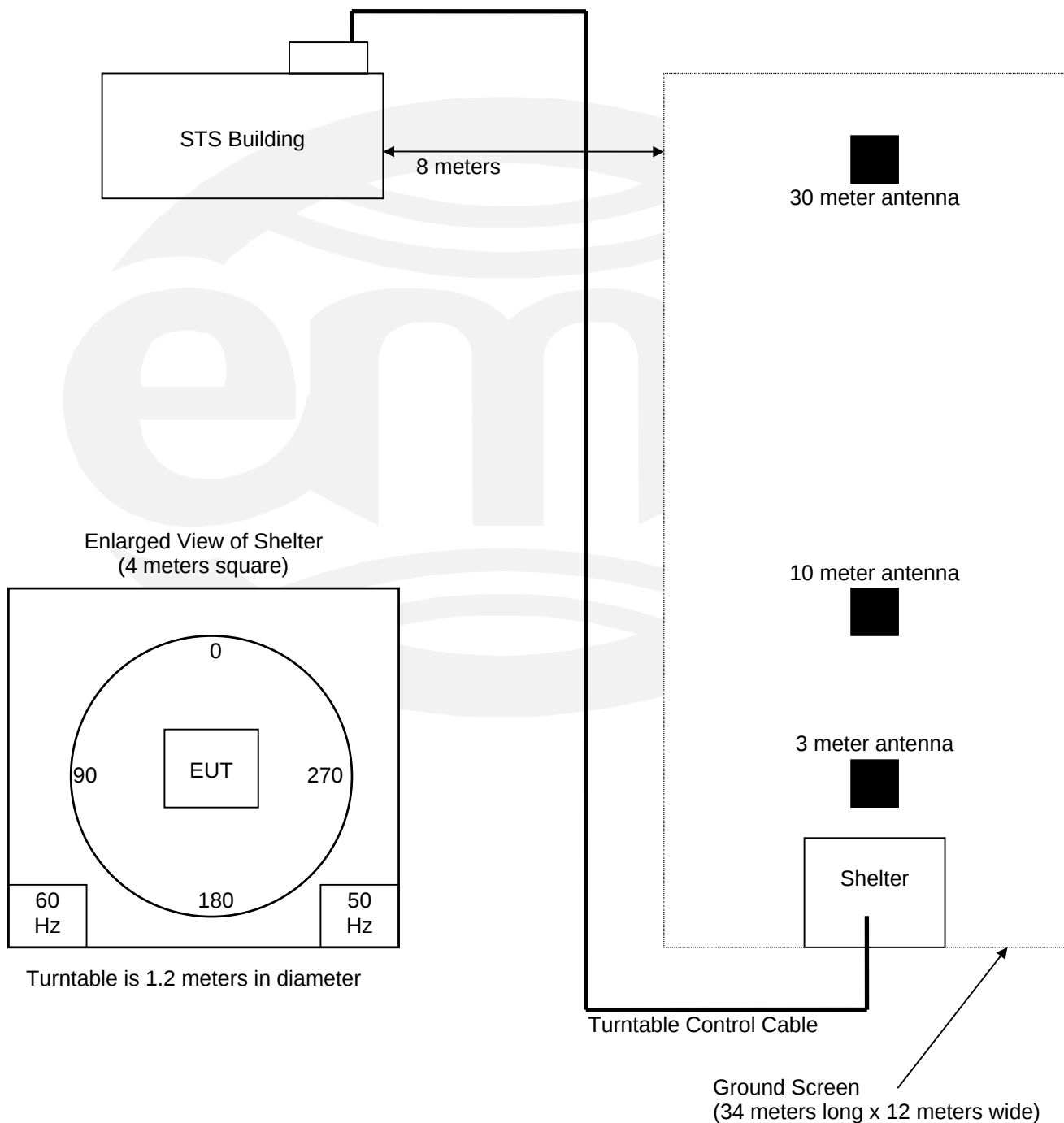
Notes:

1. Items shown in dotted lines are located on the floor below the test area. It is 5 meters vertically from the ground floor to the test area.
2. 50 Hz, 60 Hz, and 400 Hz are power panels for alternating current.
3. The antenna may be positioned horizontally 3, 10 or 30 meters from the center of the turntable.
4. The circle is a 6.7 meter diameter turntable.
5. A ground plane is in the plane of this sheet.
6. The test sample is shown in the azimuthal position representing zero degrees.



TEST SETUP FOR EMISSIONS TESTING

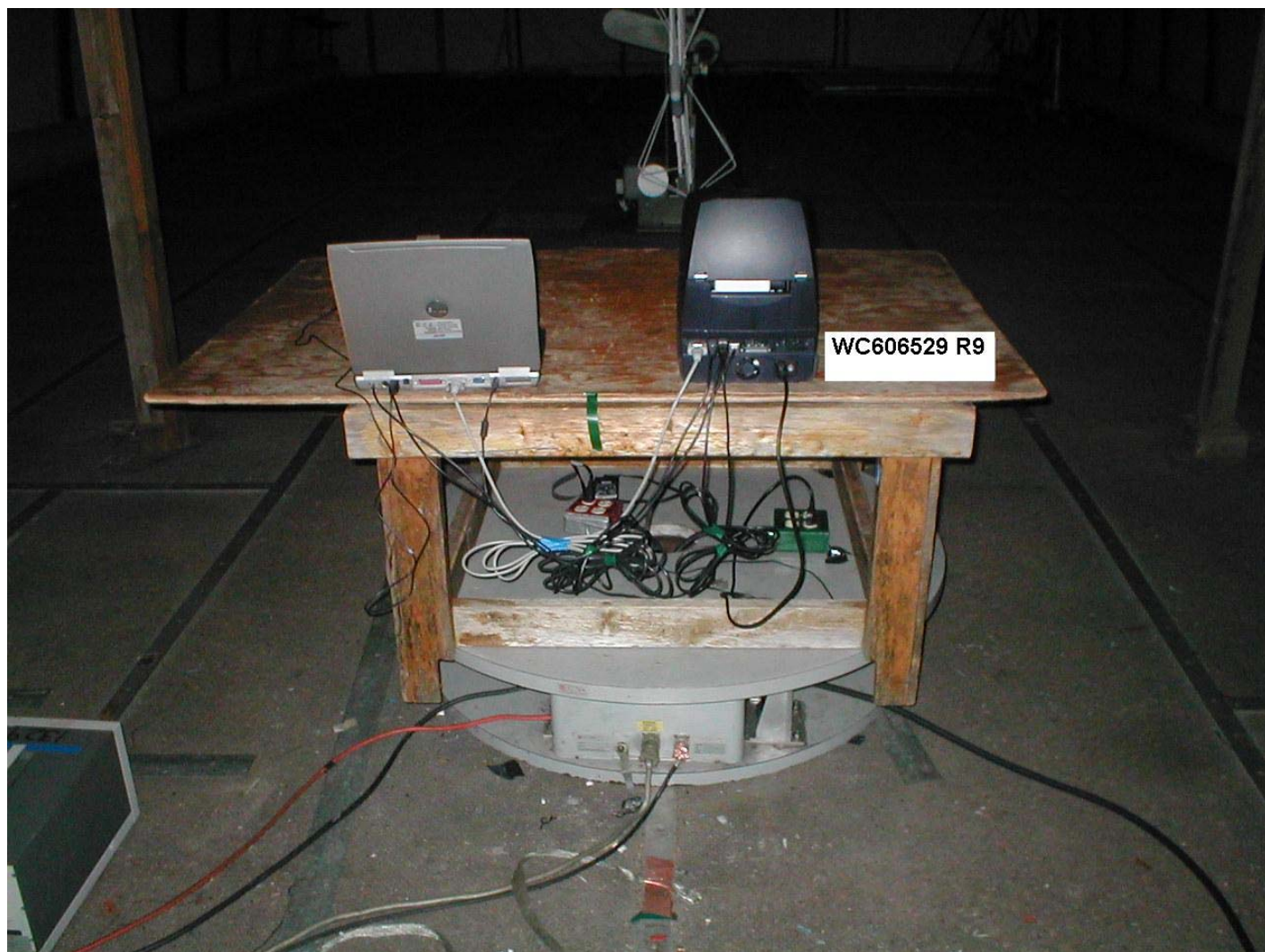
WILD RIVER LAB
Small Test Site (STS)



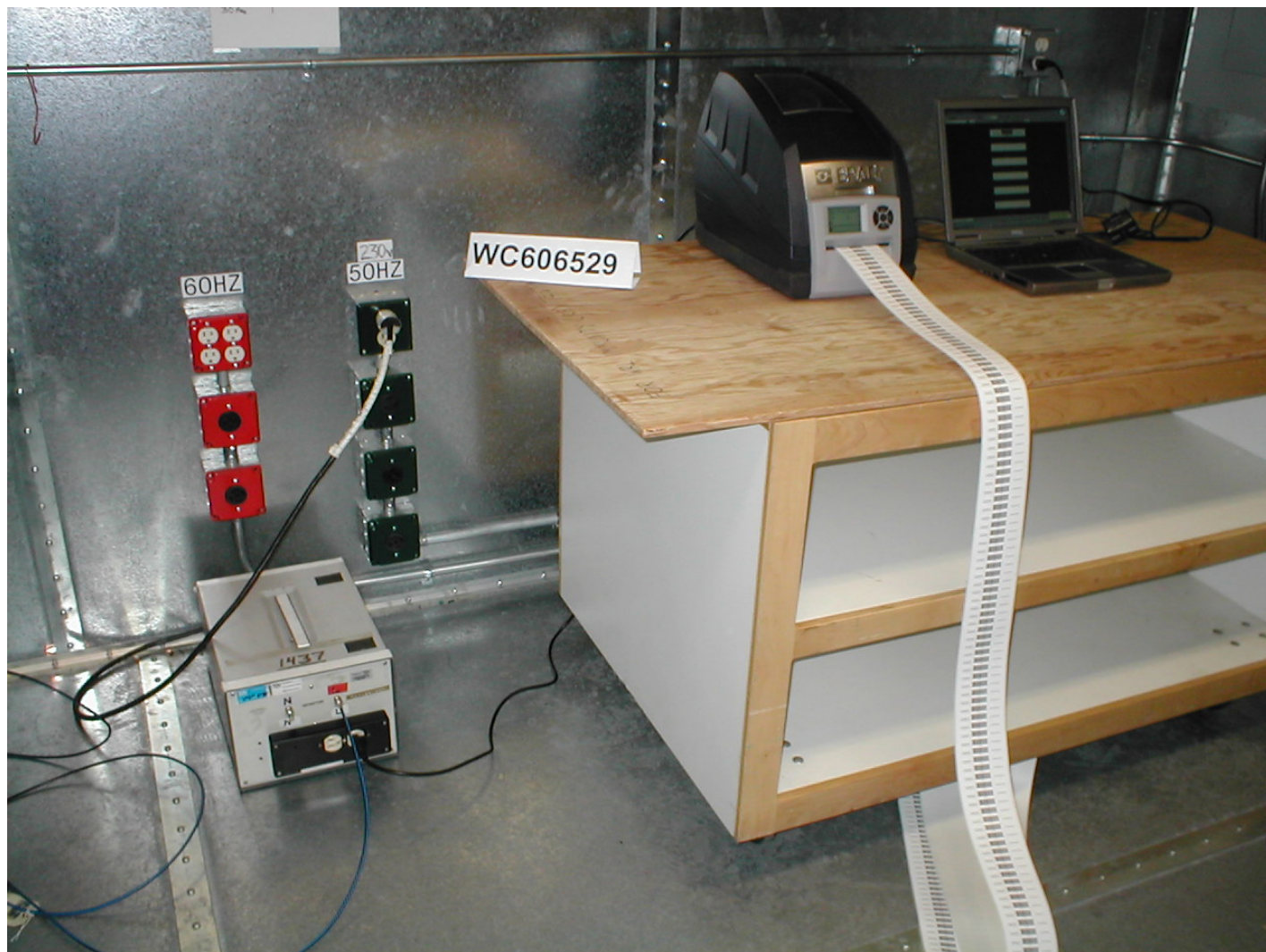
Test-setup photo(s):
Radiated Emissions



Test-setup photo(s):
Radiated Emissions



Test-setup photo(s):
Conducted Emissions 0.150 - 30 MHz



Equipment Under Test (EUT) Test Operation Mode:

The device under test was operated under the following conditions during immunity testing :

- ☐ - Standby
- ☐ - Test program (H - Pattern)
- ☐ - Test program (color bar)
- ☐ - Test program (customer specific)
- ☐ - Practice operation
- ☐ - Normal operating mode
- - Printer is printing a label consisting of "H"s and barcode. Windows label-printing application software receives label media and ribbon type installed in printer prior to print function based on information stored and retrieved from RFID tags located on ribbon and media core.

Information is transmitted and received to RFID tags using internal antennas, hardware, and firmware on the BDC, sent to the Front panel firmware, and also via USB to the application software. Print information is sent to the printer via the printer driver.

After each label is printed, quantity remaining is updated in RFID tags attached to ribbon and media cores via the BDC and internal antennas. The bar graph on printer front panel is updated with installed media part number and quantity remaining using Front Panel hardware and firmware. This process is repeated through out the test for each label.

Configuration of the device under test:

- - See Appendix A and test setup photo
- ☐ - See Product Information Form(s) in Appendix B

DEVIATIONS FROM STANDARD:

None.

GENERAL REMARKS:

At the time of test, the EUT was identified as Model Number IP-300. Notification of a change in equipment identification to Model Number Brady IP Series Printer was received from the manufacturer and is on file with TÜV America.

Modifications required to pass:

- ☐ - None
- ☒ - As indicated on the data sheet(s)

Test Specification Deviations: Additions to or Exclusions from:

- ☒ None
- ☐ As indicated in the Test Plan

SUMMARY:

The requirements according to the technical regulations are

- ☒ - met and the device under test does fulfill the general approval requirements.
- ☐ - **not** met and the device under test does **not** fulfill the general approval requirements..

EUT Received Date: 17 November 2006

Condition of EUT: Normal

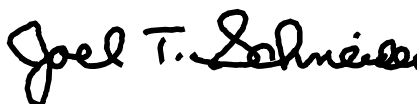
Testing Start Date: 17 November 2006

Testing End Date: 16 February 2007

TÜV SÜD AMERICA INC



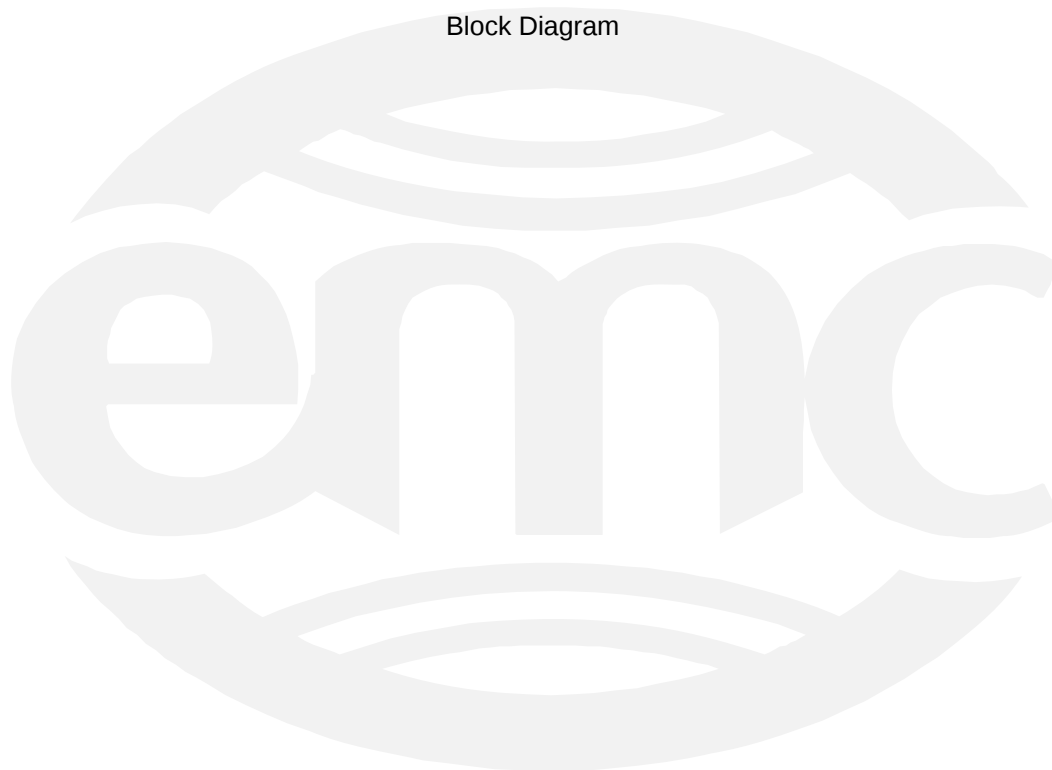
Ross Johnson
EMC Technician



Joel Schneider
Sr. EMC Engineer

Appendix A

Constructional Data Form
and
Block Diagram





EMC Test Plan and Constructional Data Form

PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE. IF TESTING RESULTS IN MODIFICATIONS TO THE EQUIPMENT, PLEASE SUBMIT A REVISED TP/CDF INDICATING THOSE MODIFICATIONS.
NOTE: This information will be input into your test report as shown below. Press the F1 key at any time to get HELP for the current field selected.

Company: Cab/ Brady
 Address: Brady: 6835 Winnetka Circle, Brooklyn Park, MN 55428, USA
Cab: cab Produkttechnik GmbH & Co KG, Wilhelm-Schickard-Str. 14, D-76131 Karlsruhe, Germany
 Contact: Bill Tischer Position: Sr. Lead Systems Engineer
 Phone: 763-536-6407 Fax: 763-536-0769
 E-mail Address: bill_tischer@bradycorp.com

General Equipment Description -- NOTE: This information will be input into your test report as shown below.

EUT Description Label printer
 EUT Name Brady IP Series Printer
 Model No.: Brady IP Series Printer Serial No.: 1287Q40
 Product Options: 203 dpi print head (IP-200), 600 dpi print head (IP-600), cutter, compact flash card
 Configurations to be tested: 300 dpi print head (IP-300), compact flash card.

Equipment Modification (If applicable, indicate modifications since EUT was last tested. If modifications are made during this testing, submit revised TP/CDF after testing is complete.)

Modifications since last test: _____
 Modifications made during test: _____

Test Objective(s): Please indicate the tests to be performed, entering the applicable standard(s) where noted.

- | | |
|--|--|
| ☒ EMC Directive 89/336/EEC (EMC)
Std: <u>EN 300 330</u> | ☒ FCC: Class ☒ A ☐ B Part <u>209</u> |
| ☐ Machinery Directive 89/392/EEC (EMC)
Std: _____ | ☐ VCCI: Class ☐ A ☐ B |
| ☐ Medical Device Directive 93/42/EEC (EMC)
Std: _____ | ☒ BSMI: Class ☒ A ☐ B |
| | ☒ Canada: Class ☒ A ☐ B |
| | ☒ Australia: Class ☒ A ☐ B |
| | ☒ Other: <u>Mexico, Japan, Brazil, Korea, Hong Kong, Philipines, Peru, Venezuela, Costa Rica, El Salvador. Panama, Dominican Republic, Peurto Rico, Egypt, Romania, Saudi Arabia, United Arab Emerites</u> |
| ☐ Vehicle Directive 72/245/EEC (EMC)
Std: _____ | |
| ☐ FDA Reviewers Guidance for Premarket Notification Submissions (EMC) | |



EMC Test Plan and Constructional Data Form

America

Third Party Certification, if applicable (*Signature on Page 6 Required)

- | | |
|--|---|
| ☐ Attestation of Conformity (AoC)* | ☐ EMC Certification (used with Octagon Mark)* |
| ☐ Certificate of Conformity (CoC)* | ☐ Compliance Document* |
| Protection Class (N/A for vehicles) | ☐ Class I ☐ Class II ☐ Class III |
| <small>(Press F1 when field is selected to show additional information on Protection Class.)</small> | |
| ☒ FCC / TCB Certification | ☒ Industry Canada / FCB Certification |
| ☐ E-Mark Certification | ☒ Taiwan Certification |

Attendance

Test will be: ☒ Attended by the customer ☐ Unattended by the customer

Failure - Complete this section if testing will not be attended by the customer.

If a failure occurs, TÜV America should:

- ☐ Call contact listed above, if not available then stop testing. (After hrs phone): _____
- ☐ Continue testing to complete test series.
- ☐ Continue testing to define corrective action.
- ☐ Stop testing.

EUT Specifications and Requirements

Length: 425 mm Width: 240 mm Height: 290 mm Weight: 6 kg

Power Requirements

Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)

Voltage: 100-240 V~ (If battery powered, make sure battery life is sufficient to complete testing.)
50/60Hz

of Phases: 1

Current (Amps/phase(max)): 2 Current (Amps/phase(nominal)): 1

Other N/A

Other Special Requirements

N/A

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)
 Light industrial

EUT Power Cable

- | | | | |
|---|----|--|------------------------------|
| ☐ Permanent | OR | ☒ Removable | Length (in meters): <u>2</u> |
| ☐ Shielded | OR | ☒ Unshielded | |
| ☐ Not Applicable | | | |



EMC Test Plan and Constructional Data Form

EUT Interface Ports and Cables													
Type	Analog	Digital	During Test		Qty	Shielding		Termination	Connector Type	Port Termination	Length tested (in meters)	Removable	Permanent
			Active	Passive		Yes	No						
EXAMPLE:													
RS232	☐	☒	☒	☐	2	☒	☐	Foil over braid	Coaxial	Metallized 9-pin D-Sub	Characteristic Impedance	6	☒ ☐
RS232	☐	☒	☐	☒	1	☒	☐	Foil	Coaxial	Metallized 9-pin D-sub	Characteristic Impedance	4	☒ ☐
USB	☐	☒	☒	☐	1	☒	☐	Foil over braid	Coaxial	USB A/B	Characteristic Impedance	2	☒ ☐
CAT 5 ethernet	☐	☒	☐	☒	1	☐	☒	N/A	N/A	RJ45	Characteristic Impedance	4	☒ ☐
	☐	☐	☐	☐		☐	☐						☐ ☐
	☐	☐	☐	☐		☐	☐						☐ ☐
	☐	☐	☐	☐		☐	☐						☐ ☐
	☐	☐	☐	☐		☐	☐						☐ ☐
	☐	☐	☐	☐		☐	☐						☐ ☐
	☐	☐	☐	☐		☐	☐						☐ ☐
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EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level: cab/ Front panel: V1.04 rev 1.04
Brady/ BDC: Rev 1.09

Description: cab/ Front panel is the firmware control of printing functions and interface to the Brady RFID board (BDC).

Brady/ BDC is the firmware control of the RFID transmit and receive function and interface to the cab/ Front panel firmware.

Brady printer driver: for model IP-300 printer

Brady label creation application software: LabelMark Plus version 3.2

Equipment Under Test (EUT) Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1. Printer is printing a label consisting of "H"s and barcode. Windows label-printing application software receives label media and ribbon type installed in printer prior to print function based on information stored and retrieved from RFID tags located on ribbon and media core.

Information is transmitted and received to RFID tags using internal antennas, hardware, and firmware on the BDC, sent to the Front panel firmware, and also via USB to the application software. Print information is sent to the printer via the printer driver.

After each label is printed, quantity remaining is updated in RFID tags attached to ribbon and media cores via the BDC and internal antennas. The bar graph on printer front panel is updated with installed media part number and quantity remaining using Front Panel hardware and firmware. This process is repeated throughout the test for each label.
- 2.
- 3.

**EMC Test Plan and Constructional Data Form**

America

Equipment Under Test (EUT) System Components -- List and describe all components which are part of the EUT. For FCC & Taiwan testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc)

Description	Model #	Serial #	FCC ID #
Label Printer	IP-300	1287Q40	N/A



EMC Test Plan and Constructional Data Form

Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc)
This information is required for FCC & Taiwan testing.

Description	Model #	Serial #	FCC ID #
Personal Computer	Dell Latitude D610	CN-0M7181-48643-64T-2697	E2K24BNHM
Mouse	Dell OKD944	F0N057AN	

Oscillator Frequencies

Frequency	Derived Frequency	Component # / Location	Description of Use
13.560 MHz	13.560 MHz	Y2/BDC	RFID
12.000 MHz	12.000 MHz	Y1/BDC	RFID CPU clock
25.000 MHz	25.000 MHz	Q1/ main board	ethernet clock
32.768 KHz	32.768 KHz	Q2/ main board	RS232
33.333 MHz	33.333 MHz	X01/ main board	CPU

Power Supply

Manufacturer	Model #	Serial #	Type
Phihong Technology Co, Ltd.	PSM165-207	099054330844	☒ Switched-mode: (Frequency) 100 kHz ☐ Linear ☐ Other: _____
			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____

Power Line Filters

Manufacturer	Model #	Location in EUT
N/A		discrete in power supply



EMC Test Plan and Constructional Data Form

Critical EMI Components (Capacitors, ferrites, etc.)

Description	Manufacturer	Part # or Value	Qty	Component # / Location
Ferrite	Steward	HZ0805E601R	2	L8, L9 / BDC
TVS diodes	On Semiconductor	SL15T1G	4	D2,D3,D4,D5/BDC
Ferrite	Steward	HZ0805D152R-10	2	L6,L7/BDC

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

Metal enclosure surrounding BDC.
 Ferrite on coaxial cables to BDC. Kitagawa SFC-8.
 Ground wire from PE ground to DC ground on printer main board with ferrite -- Kitagawa SFC-4.
 Low-pass filter on BDC RFID transmit output pin 2 -- 1 ohm resistor and 390 pf capacitor
 Ferrite on coaxial cables at media antenna contacts -- Kitagawa SFC-8

(PLEASE INSERT "ELECTRONIC SIGNATURE" BELOW IF POSSIBLE)

Authorization Signatures (Signature Required for Certifications checked on pg 1)

November 20, 2006

Customer authorization to perform tests according to this test plan.

Date

Bill Tischer

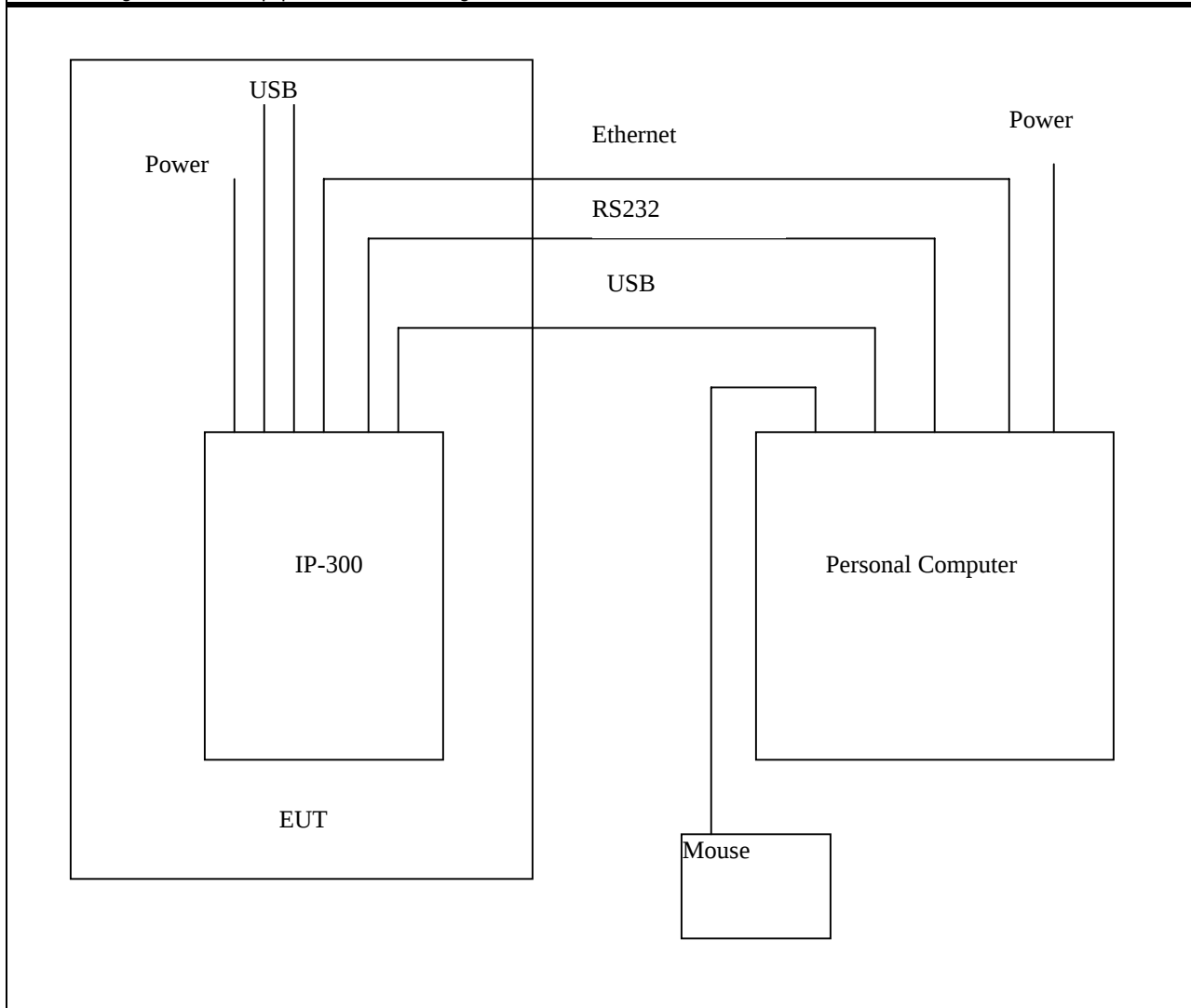
November 20, 2006

Test Plan/CDF Prepared By (please print)

Date

EMC Block Diagram Form

System Configuration Block Diagram -- Provide a line drawing identifying the EUT, simulators, support equipment, I/O cables, power cables, and any other pertinent components to be used during testing. Use a dashed line to separate the equipment in the testing field versus equipment outside testing field.



Authorization Signatures



Customer authorization to perform tests
according to this test plan.

Bill Tischer

Test Plan/CDF Prepared By (please print)

November 28, 2006

Date

November 28, 2006

Date

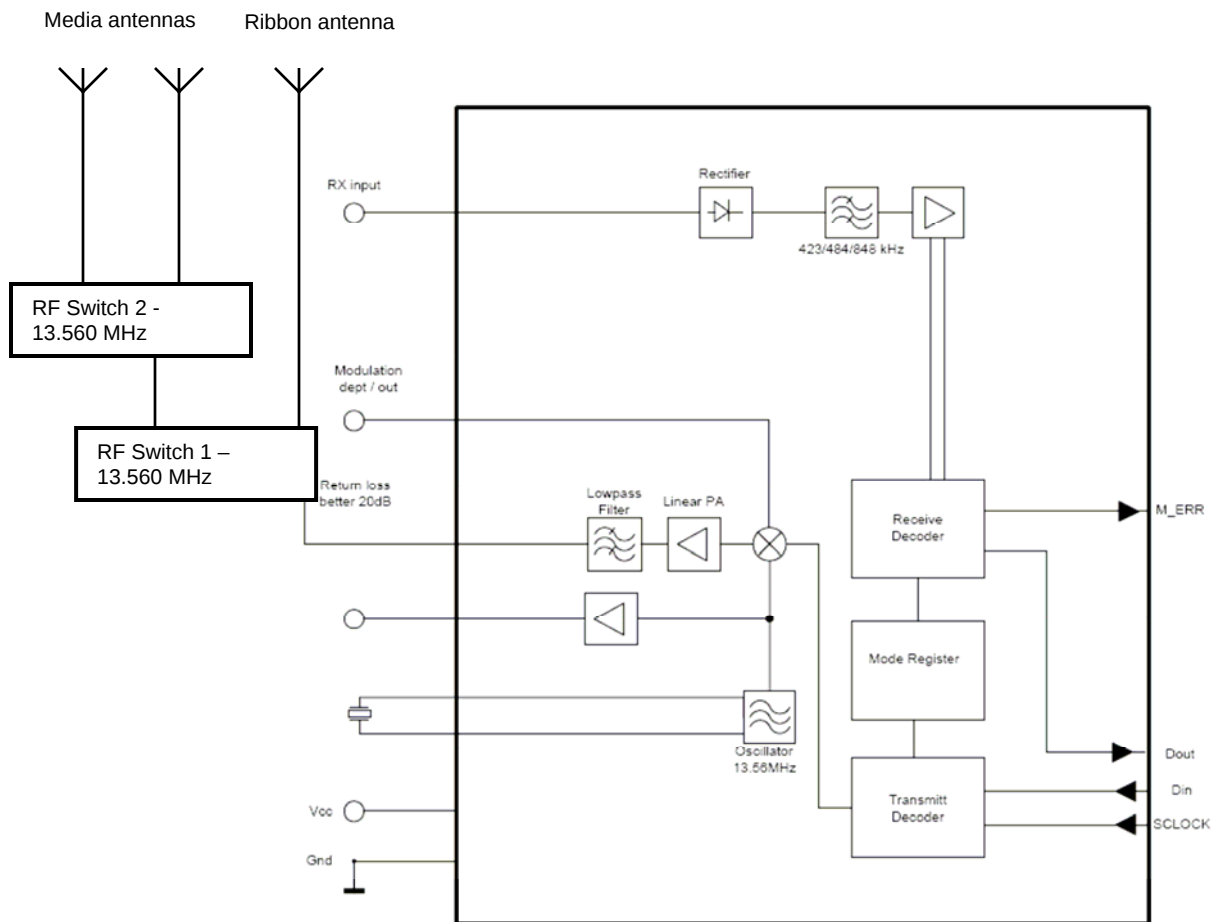


Figure 1 - Block Diagram – Transmitter, IP-200/ IP-300/ IP-600

Appendix B

Measurement Protocol



MEASUREMENT PROTOCOL

GENERAL INFORMATION

Test Methodology

Emission testing is performed according to the procedures in ANSI C63.4-2003.

Measurement Uncertainty

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. The test system has a measurement uncertainty of ± 1.8 dB. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. The test system has a measurement uncertainty of ± 4.8 dB. The equipment comprising the test systems is calibrated on an annual basis.

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, in dB μ V, equals the EMI receiver level plus the cable loss and LISN factor.

Radiated Emissions

The final level, in dB μ V/m, equals the reading from the spectrum analyzer (Level dB μ V), adding the antenna correction factor and cable loss factor (Factor dB) to it, and subtracting the preamp gain (and duty cycle correction factor, if applicable). This result then has the limit subtracted from it to provide the Delta, which gives the tabular data as shown in the data sheets in Attachment A. Intentional radiators are rotated through 3 orthogonal axes to determine the test position yielding the maximum emission levels.

Below 30 MHz, a calibrated loop antenna was positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. For certain applications, the loop antenna may also need to be positioned horizontally at the specified distance from the EUT.

Radiated emissions from the EUT are measured in the frequency range of 30 to 1000 MHz 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. Tabletop equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the 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. 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.

Example:

FREQ (MHz)	LEVEL (dB μ V)	CABLE/ANT/PREAMP (dB) (dB/m) (dB)	FINAL (dB μ V/m)	POL/HGT/AZ (m) (deg)	DELTA1
60.80	42.5Qp +	1.2 + 10.9 - 25.5 =	29.1	V 1.0 0.0	-10.9

Test Equipment

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure.