



PRINTRONIX TEST REPORT
FOR THE
RFID PRINTER, SL-5304R MP2
FCC PART 15 SUBPART C SECTIONS 15.207, 15.209, 15.247 AND RSS-210
COMPLIANCE

DATE OF ISSUE: AUGUST 15, 2005

PREPARED FOR:

Printronic
P.O. Box 19559
Irvine, CA 92623-9559

PREPARED BY:

Mary Ellen Clayton
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

P.O. No.: 350847
W.O. No.: 84108

Date of test: August 10-12, 2005

Report No.: FC05-062

This report contains a total of 58 pages and may be reproduced in full only. Partial reproduction may only be done with the written consent of CKC Laboratories, Inc. The results in this report apply only to the items tested, as identified herein.

TABLE OF CONTENTS

Administrative Information	4
FCC to Canada Standard Correlation Matrix.....	5
Conditions for Compliance	6
Approvals.....	6
Equipment Under Test (EUT) Description	7
FCC 15.31(e) Voltage Variation.....	7
FCC 15.31(m) Number of Channels	7
FCC 15.33(a) Frequency Ranges Tested	7
FCC 15.35 Analyzer Bandwidth Settings.....	7
FCC 15.203 Antenna Requirements	7
FCC 15.205 Restricted Bands.....	7
EUT Operating Frequency	8
Equipment Under Test (EUT) Description	8
Equipment Under Test	8
Peripheral Devices	8
Report of Measurements	9
Table 1: FCC 15.207 Six Highest Conducted Emission Levels	9
Table 2: FCC 15.209 Six Highest Radiated Emission Levels	10
FCC 15.247(a)(1)(i) 20 dB Bandwidth.....	11
Bandedge Plots	14
FCC 15.247(a)(1)(i) Average Time Of Occupancy.....	16
FCC 15.247 Carrier Frequency Separation.....	18
FCC 15.247 (a)(1)(iii) Number Of Hopping Frequency.....	19
FCC 15.247 (b)(3) RF Power Output	20
Table 3: FCC 15.247(d) Six Highest Radiated Emission Levels.....	21
FCC 15.247(d) Antenna Conducted Spurious Emissions.....	22
RSS-210 99% Bandwidth	23
Temperature And Humidity During Testing.....	26
EUT Setup.....	26
Correction Factors.....	26
Table A: Sample Calculations	26
Test Instrumentation and Analyzer Settings	27
Spectrum Analyzer Detector Functions.....	27
Peak.....	27
Quasi-Peak	27
Average	27
EUT Testing.....	28
Mains Conducted Emissions.....	28
Radiated Emissions	28
Appendix A: Test Setup Photographs.....	29
Photograph Showing Mains Conducted Emissions	30
Photograph Showing Mains Conducted Emissions	31

Photograph Showing Radiated Emissions	32
Photograph Showing Radiated Emissions	33
Photograph Showing Radiated Emissions	34
Photograph Showing Direct Connect Test Setup.....	35
RF Output Power	36
Appendix B: Test Equipment List	37
Appendix C: Measurement Data Sheets	39

ADMINISTRATIVE INFORMATION

DATE OF TEST: August 10-12, 2005

DATE OF RECEIPT: August 10, 2005

MANUFACTURER: Printronix
P.O. Box 19559
Irvine, CA 92623-9559

REPRESENTATIVE: Richard Hahs

TEST LOCATION: CKC Laboratories, Inc.
110 Olinda Place
Brea, CA 92621

TEST METHOD: ANSI C63.4 (2003), DA 02-2138 August 30, 2002, DA 00-705 March 30, 2000, KDB Publication No. 558074 and RSS-212

PURPOSE OF TEST: To demonstrate the compliance of the RFID Printer, SL-5304R MP2, with the requirements for FCC Part 15 Subpart C Sections 15.207, 15.209, 15.247 and RSS-210 devices.

FCC TO CANADA STANDARD CORRELATION MATRIX

Canadian Standard	Canadian Section	FCC Standard	FCC Section	Test Description
RSS 210	5.5	47CFR	15.203	Antenna Connector Requirements
RSS 210	6.2.1	47CFR	15.209	General Radiated Emissions Requirement
RSS 210	6.3	47CFR	15.205	Restricted Bands of Operation
RSS 210	6.4	47CFR	15.215(c)	Frequency Stability Recommendation
RSS 210	6.5	47CFR	15.35(c)	Pulsed Operation
RSS 210	6.6	47CFR	15.207	AC Mains Conducted Emissions Requirement
RSS 210	6.2.2(o)(a1)	47CFR	15.247(a)(1)	Minimum Channel Bandwidth
RSS 210	6.2.2(o)(a1)	47CFR	15.247(g)	Hopping Sequence
RSS 210	6.2.2(o)(a1)	47CFR	15.247(h)	Incorporation of Intelligence
RSS 210	6.2.2(o)(a2)	47CFR	15.247(a)(1)(i)	Average Time of Occupancy
RSS 210	6.2.2(o)(a2)	47CFR	15.247(b)(2)	RF Power Output
RSS 210	6.2.2(o)(a3)	47CFR	15.247(a)(1)(ii)	Average Time of Occupancy
RSS 210	6.2.2(o)(a3)	47CFR	15.247(a)(1)(iii)	Average Time of Occupancy
RSS 210	6.2.2(o)(a3)	47CFR	15.247(b)(1)	RF Power Output
RSS 210	6.2.2(o)(a3)	47CFR	15.247(b)(4)	Directional Gain Antennae
RSS 210	6.2.2(o)(b)	47CFR	15.247(d)	Peak Power Spectral Density
RSS 210	6.2.2(o)(b)	47CFR	15.247(b)(3)	RF Power Output
RSS 210	6.2.2(o)(b)	47CFR	15.247(a)(2)	Minimum 6dB Bandwidth
RSS 210	6.2.2(o)(b)	47CFR	15.247(b)(4)	Directional Gain Antennae
RSS 210	6.2.2(o)(b)	47CFR	15.247(f)	Hybrid Systems
RSS 210	6.2.2(o)(e1)	47CFR	15.247(c)	Spurious Emissions
	IC 3172-A		90473	Site File No.

Notes: Rule Sections for RSS 210 are IAW RSS 210 Issue 5 Amendment 1

CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:



Joyce Walker, Quality Assurance Administrative
Manager

TEST PERSONNEL:



Eddie Wong, EMC Engineer

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit.

FCC 15.31(e) Voltage Variations

With an AC Power variation of 85% and 110%, there was no observed variant in RF output power.

FCC 15.31(m) Number of Channels

This device was tested on three channels.

FCC 15.33(a) Frequency Ranges Tested

15.207 Conducted Emissions: 150 kHz – 30 MHz

15.209/15.247 Radiated Emissions: 9 kHz – 9.28 GHz

FCC SECTION 15.35: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	9.28 GHz	1 MHz

FCC 15.203 Antenna Requirements

The antenna is a removable by trained professionals only; therefore the EUT complies with Section 15.203 of the FCC rules.

FCC 15.205 Restricted Bands

The fundamental operating frequency lies outside the restricted bands and therefore complies with the requirements of Section 15.205 of the FCC rules. Any spurious emission coming from the EUT was investigated to determine if any portion lies inside the restricted band. If any portion of a spurious emissions signal was found to be within a restricted band, investigation was performed to ensure compliance with Section 15.209.

EUT Operating Frequency

The EUT was operating at 902 MHz – 928 MHz.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit.

The following worst case model has been tested by CKC Laboratories: **SL-5304R MP2** (this model has the 300 dBi print head)

The manufacturer states that the following additional models are identical electrically to the one which was tested, or any differences between them do not affect their EMC characteristics, and therefore they comply to the level of testing equivalent to the tested models. **SL-5204R MP2** and **5504-R40**

SL-5204r MP2 is with the 200 dBi print head
5504-R40 is the OEM number for IBM

EQUIPMENT UNDER TEST

RFID Printer

Manuf: Printronix
Model: SL-5304R MP2
Serial: NA
FCC ID: pending

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Laptop

Manuf: Dell
Model: Latitude CP
Serial: 00066902-12800-82P-3038

REPORT OF MEASUREMENTS

The following tables report the six highest worst case levels recorded during the tests performed on the EUT. All readings taken are peak readings unless otherwise noted. The data sheets from which these tables were compiled are contained in Appendix C.

Table 1: FCC 15.207 Six Highest Conducted Emission Levels									
FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV	SPEC LIMIT dBμV	MARGIN dB	NOTES
		Lisn dB	HPF dB	Cable dB					
13.102890	39.7	0.4	0.2	0.3		40.6	50.0	-9.4	B
13.201990	40.5	0.5	0.2	0.3		41.5	50.0	-8.5	W
13.201990	40.1	0.4	0.2	0.3		41.0	50.0	-9.0	B
13.292080	41.4	0.4	0.2	0.3		42.3	50.0	-7.7	B
13.373160	40.9	0.4	0.2	0.3		41.8	50.0	-8.2	B
13.571360	40.4	0.5	0.2	0.3		41.4	50.0	-8.6	B

Test Method: ANSI C63.4 (2003)
Spec Limit: FCC Part 15 Subpart C Section 15.207

NOTES: B = Black Lead
W = White Lead

COMMENTS: Transmitter is installed in the printer and transmitting info to the tag. Laptop computer is sending all "H's Pattern" to the printer via Parallel cable. EUT is in operating mode. AWID RF Card. Frequency: Hopping. 22°C, 65% relative humidity. RFID tag is not present.

Table 2: FCC 15.209 Six Highest Radiated Emission Levels

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	HPF dB				
44.810	48.8	13.4	-27.7	1.3	0.0	35.8	40.0	-4.2	VQ
48.061	51.7	12.2	-27.7	1.3	0.0	37.5	40.0	-2.5	VQ
98.361	52.9	11.4	-27.6	1.9	0.0	38.6	43.5	-4.9	VQ
102.075	53.6	12.2	-27.6	1.9	0.0	40.1	43.5	-3.4	H
104.636	52.5	12.7	-27.6	1.9	0.0	39.5	43.5	-4.0	V
4636.200	52.3	31.5	-38.0	5.3	0.9	52.0	54.0	-2.0	HA

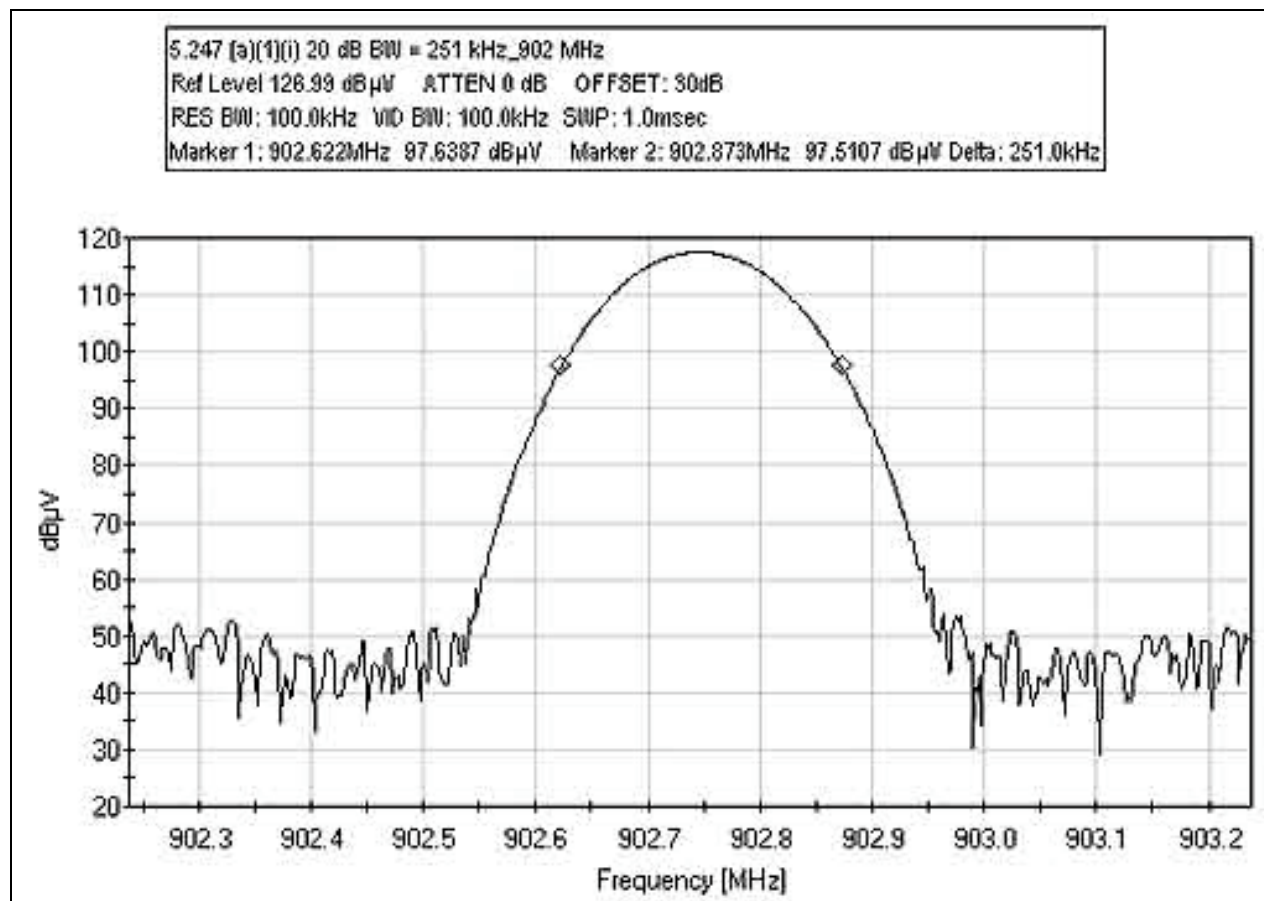
Spec Limit: FCC Part 15 Subpart C Section 15.209
Test Distance: 3 Meters

NOTES:

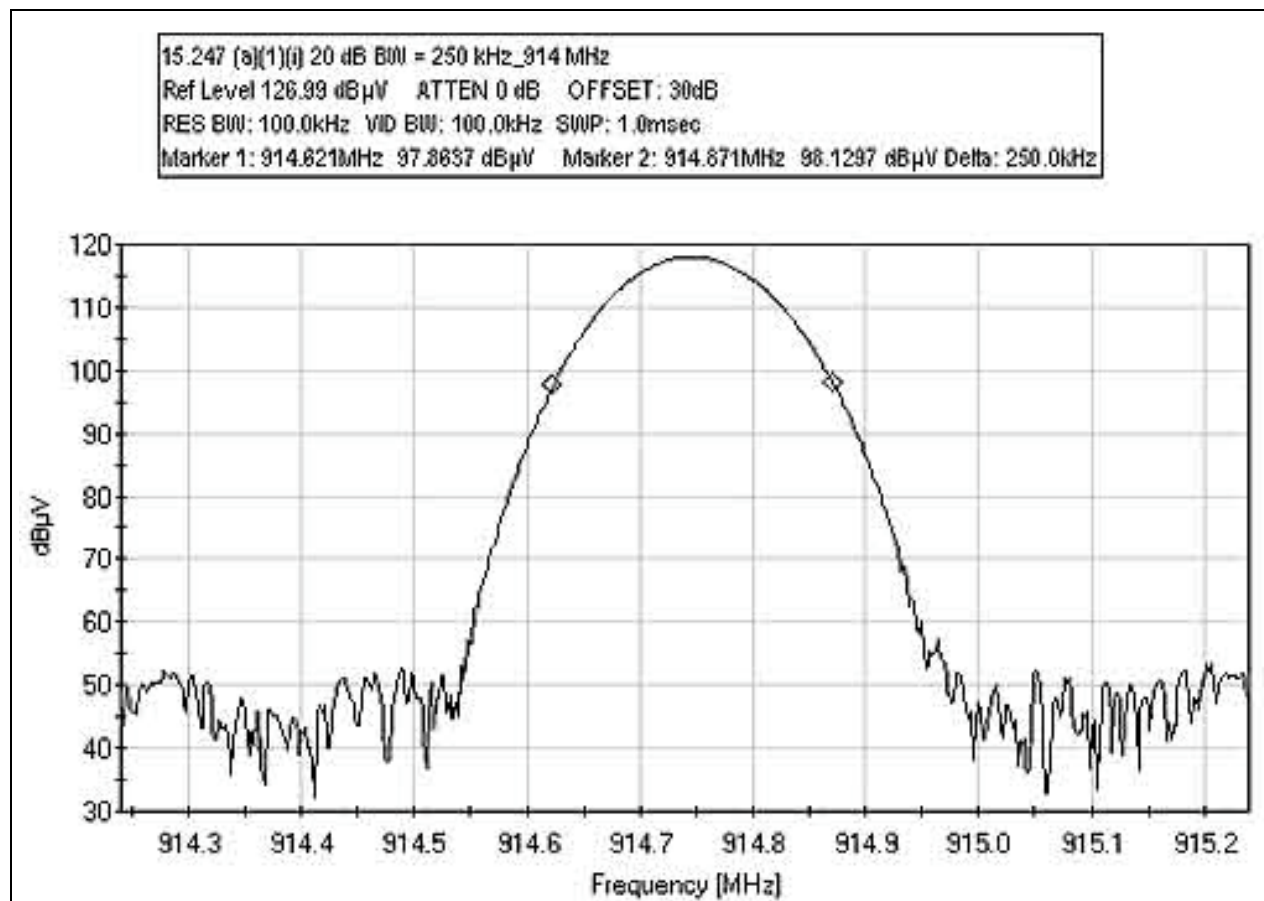
H = Horizontal Polarization
V = Vertical Polarization
Q = Quasi Peak Reading
A = Average Reading

COMMENTS: Transmitter is installed in the printer and transmitting info to the tag. Laptop computer is sending all "H's Pattern" to the printer via Parallel cable. EUT is in operating mode. AWID RF Card. Frequency: 928 MHz. Frequency range of measurement = 9 kHz – 9.28 GHz. Frequency 9 kHz - 150 kHz RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz - 9280 MHz RBW=1 MHz, VBW=1 MHz. 110VAC, 60 Hz, 22°C, 65% relative humidity. RFID tag is not present.

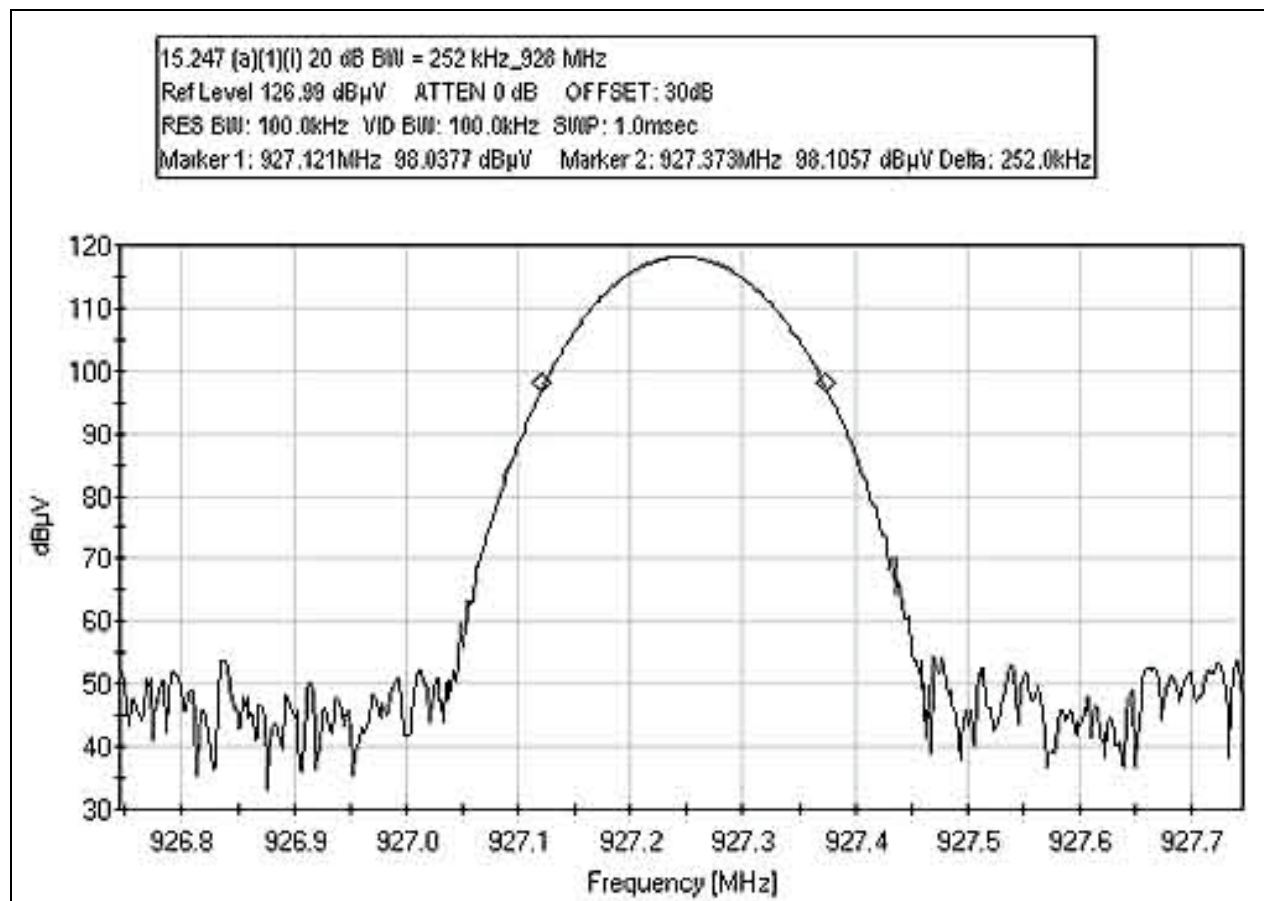
FCC 15.247(a)(1)(i) 20 dB BANDWIDTH - 902 MHz



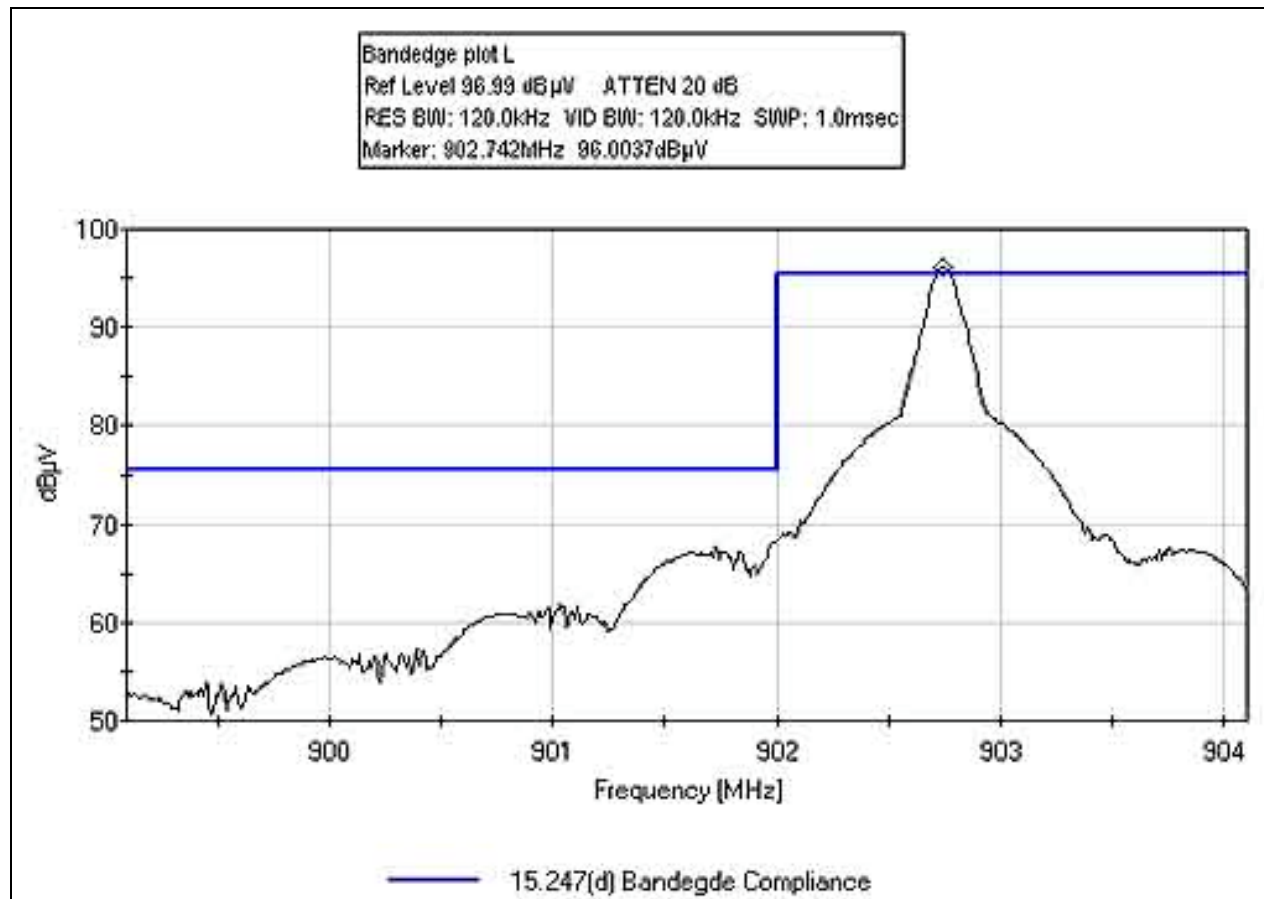
FCC 15.247(a)(1)(i) 20 dB BANDWIDTH - 914 MHz



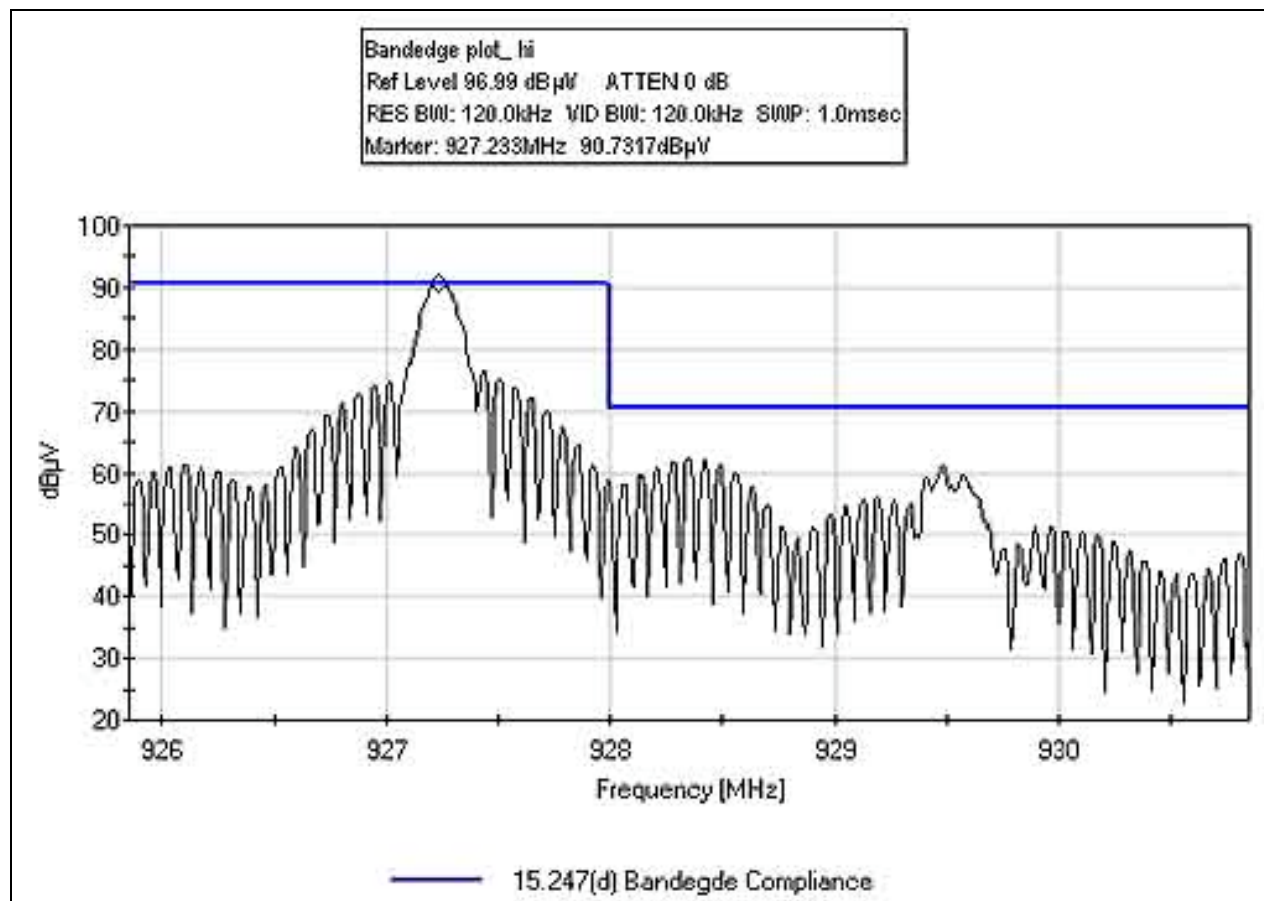
FCC 15.247(a)(1)(i) 20 dB BANDWIDTH - 928 MHz



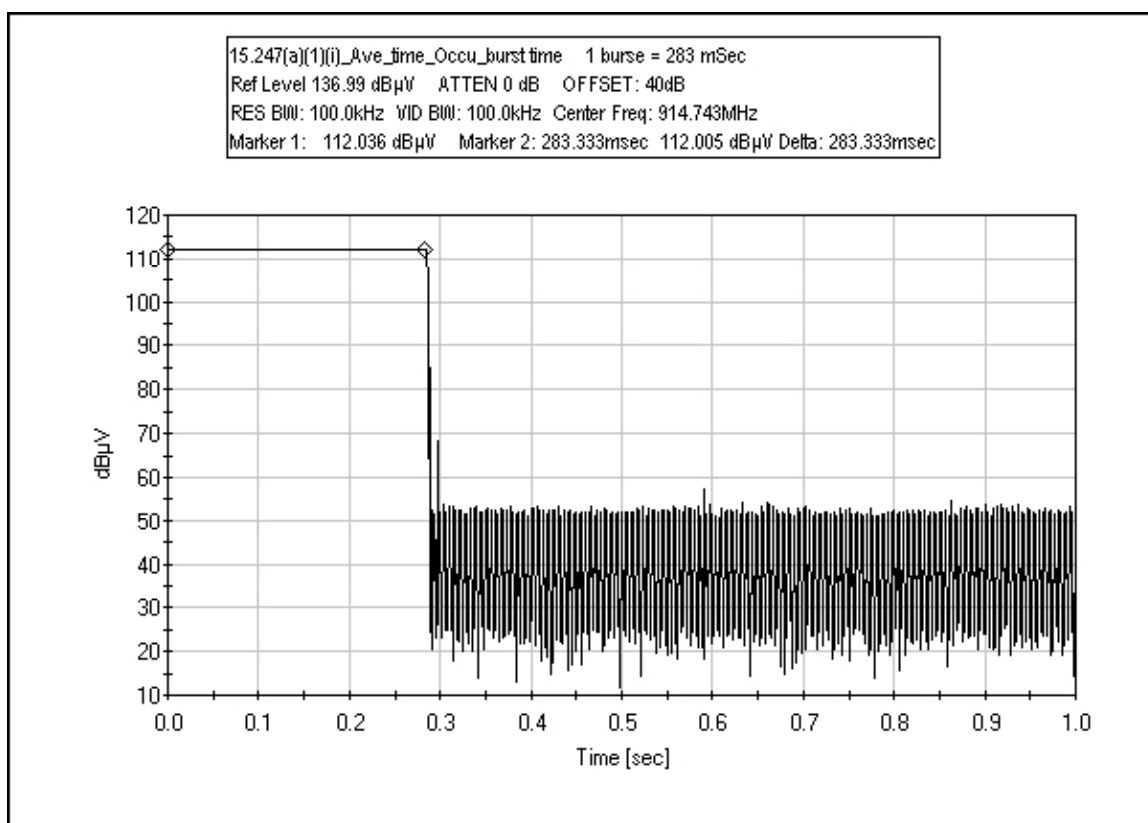
BANDEDGE PLOT LOW



BANDEGE PLOT HIGH



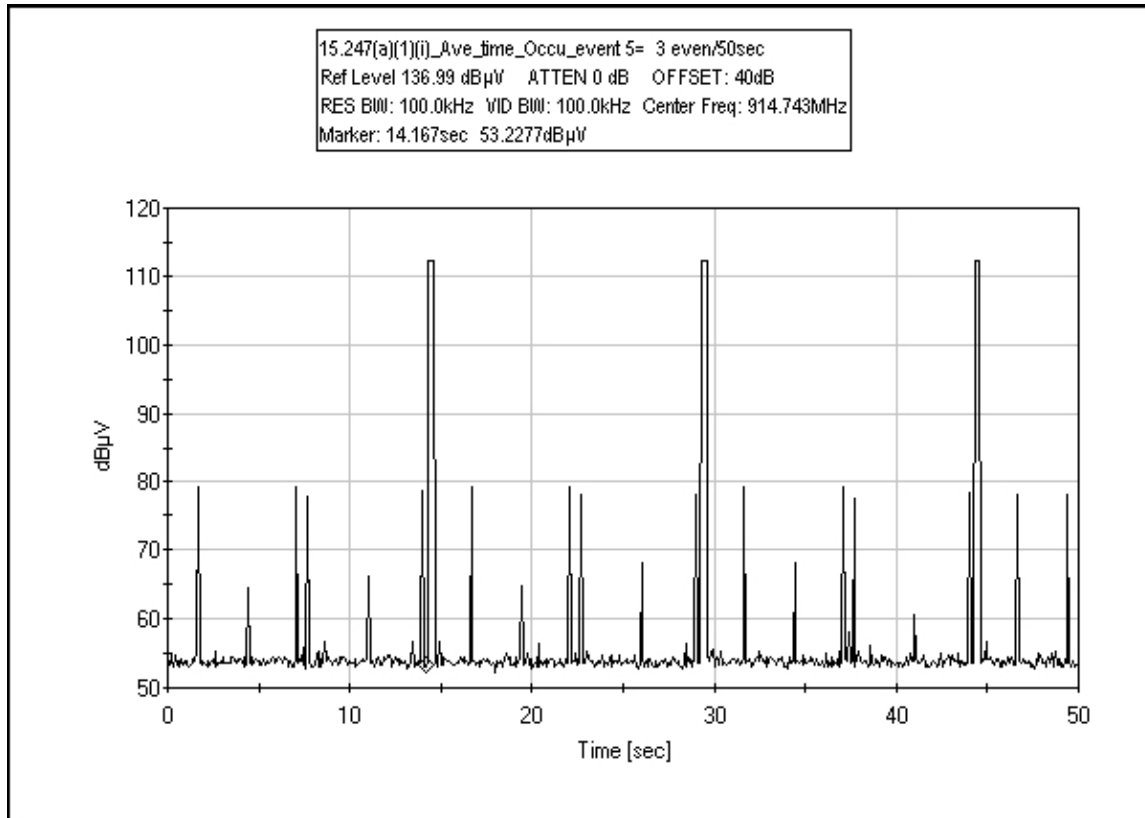
FCC 15.247(a)(1)(i) AVERAGE TIME OF OCCUPANCY



1 Burst = 283 mSec.

15.247(a)(1)(i)_Ave_time_Occu_burst time

FCC 15.247(a)(1)(i) AVERAGE TIME OF OCCUPANCY



Sample plot:

15.247(a)(1)(i)_Ave_time_Occu_event 1= 3 even/50sec

Calculation:

5 plots at 50 sec sweep were captured, average 3 events occurred per plot.

3 event in 50 sec

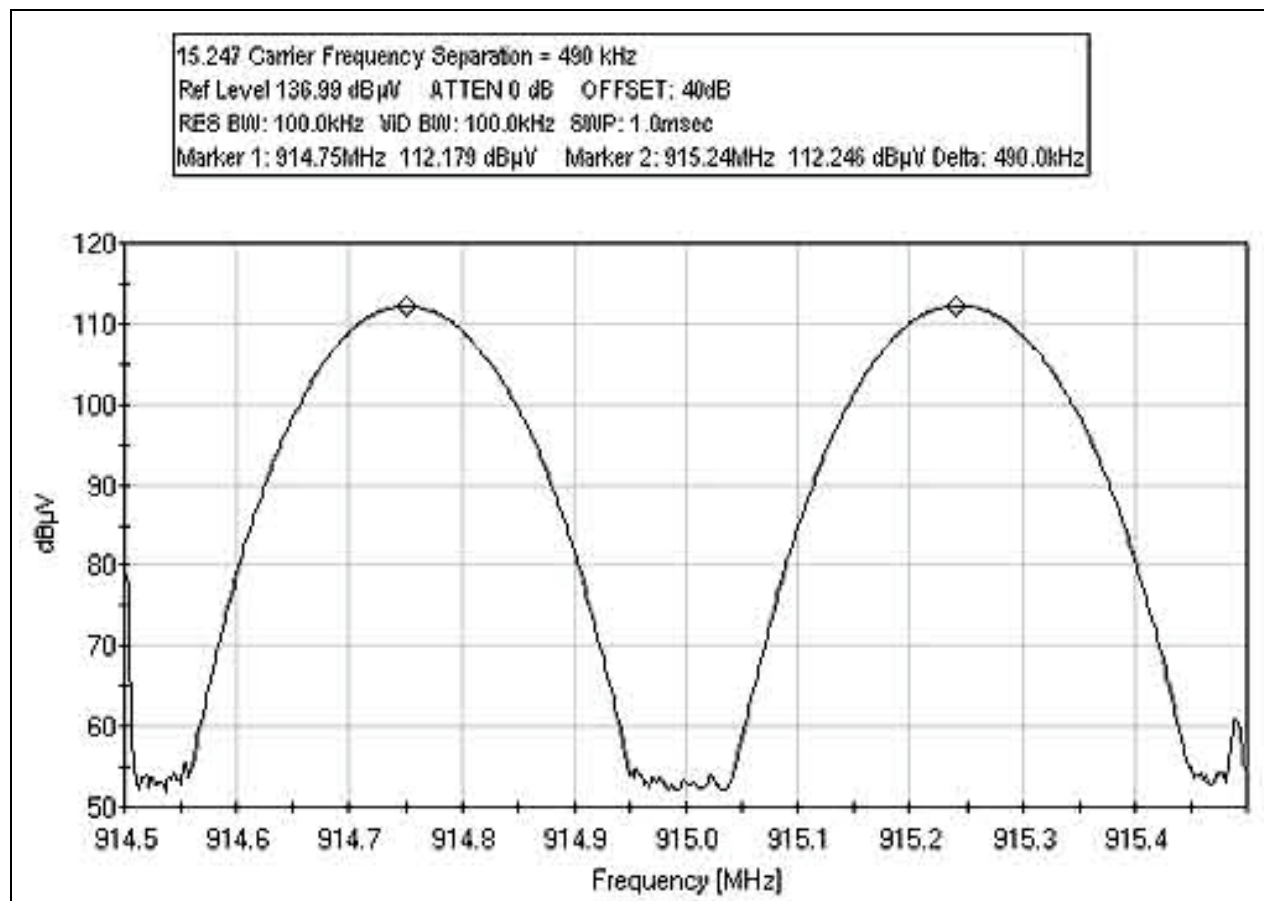
0.6 events in 10 sec.

Total on time in 10 sec =

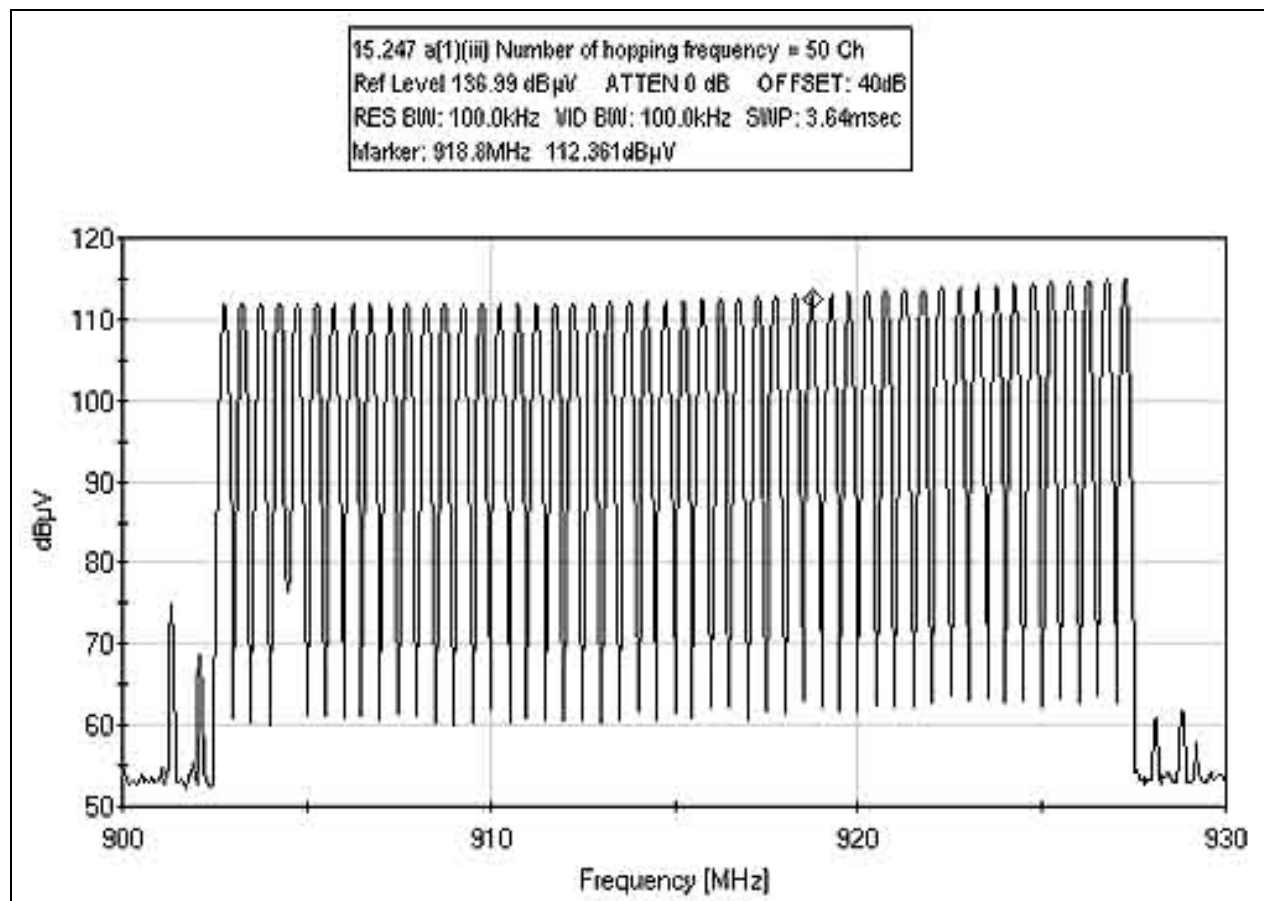
0.6 events x 283.mSec =169.8 mSec=0.17 Sec :

Limit: the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. : PASS

FCC 15.247 CARRIER FREQUENCY SEPARATION



FCC 15.247 (a)(1)(iii) NUMBER OF HOPPING FREQUENCY



FCC 15.247 (b)(3) RF Power Output

Test Conditions: Setup the EUT is place on the test bench, the RF output port is connected to a power meter.

Result:

902 MHz = 10.5 dBm = 0.011 W

914 MHz = 10.8 dBm = 0.012 W

928 MHz = 11.0 dBm = 0.013W

Conclusion : The EUT meets the requirement of less the 1 watt, RF power limit.

Radiated Power measurement

Field strength measured at 3 meter, back calculate using power density formula.

902 MHz = 94.7dBuV/m @ 3M = 0.0008 W (EIRP)

914 MHz = 93.1dBuV/m @ 3M = 0.0006 W (EIRP)

928 MHz = 91.4 dBuV/m @ 3M = 0.0004 W (EIRP)

Conclusion : The EUT meets the requirement of less the 1 watt, RF power limit.

Table 3: FCC 15.247(d) Six Highest Radiated Emission Levels

FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV/m	SPEC LIMIT dBμV/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	HPF dB				
2708.167	55.8	27.8	-38.9	3.9	0.6	49.2	54.0	-4.8	V-1
3658.990	52.6	29.9	-38.4	4.7	0.5	49.3	54.0	-4.7	HA-2
4513.633	50.3	31.3	-38.1	5.2	0.8	49.5	54.0	-4.5	HA-1
4513.742	50.2	31.3	-38.1	5.2	0.8	49.4	54.0	-4.6	V-1
4573.772	50.3	31.4	-38.1	5.2	0.9	49.7	54.0	-4.3	HA-2
4636.200	52.3	31.5	-38.0	5.3	0.9	52.0	54.0	-2.0	HA-3

Spec Limit: FCC Part 15 Subpart C Section 15.247(d)
Test Distance: 3 Meters

NOTES:

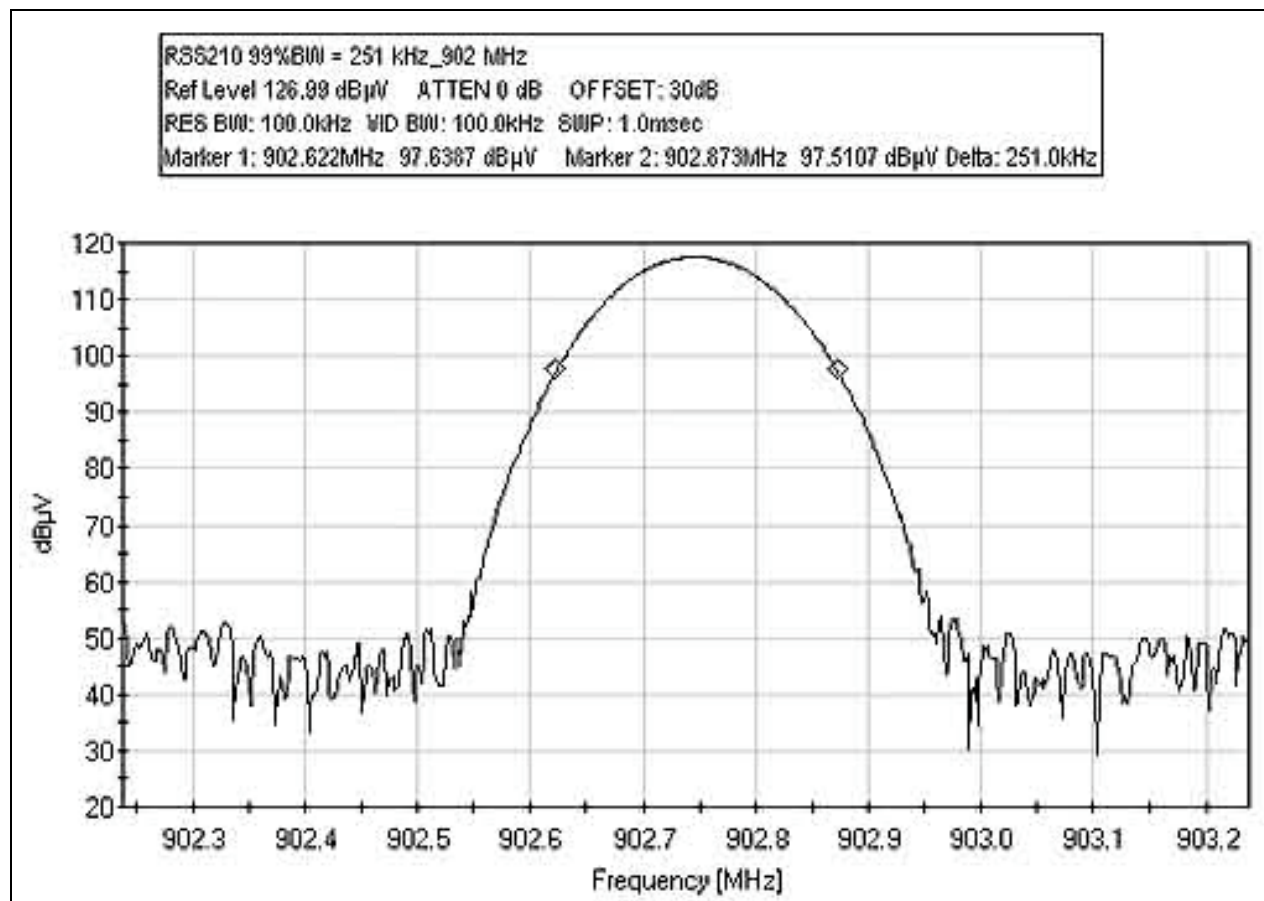
H = Horizontal Polarization
V = Vertical Polarization
A = Average Reading
1 = 902 MHz
2 = 914.65 MHz
3 = 928 MHz

COMMENTS: Transmitter is installed in the printer and transmitting info to the tag. Laptop computer is sending all "H's Pattern" to the printer via Parallel cable. EUT is in operating mode. AWID RF Card. Frequency range of measurement = 9 kHz – 9.28 GHz. Frequency 9 kHz - 150 kHz RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz - 9280 MHz RBW=1 MHz, VBW=1 MHz. 110VAC, 60 Hz, 22°C, 65% relative humidity. RFID tag is not present.

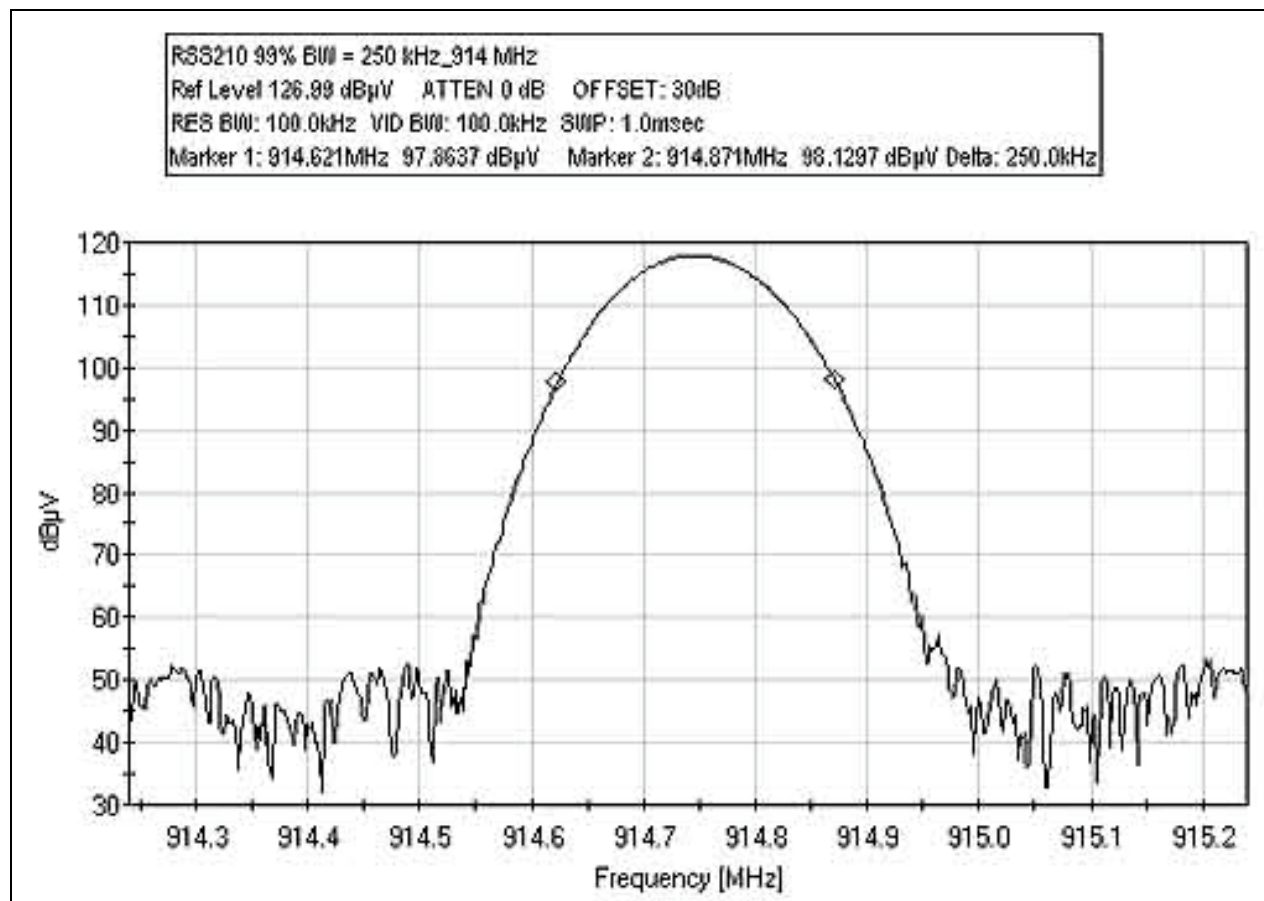
FCC 15.247(d) Antenna Conducted Spurious Emissions

Test Conditions: Detection was performed with reduced resolution bandwidth or with at the aid of High Pass Filter at the required resolution bandwidth. **No Emission found.**

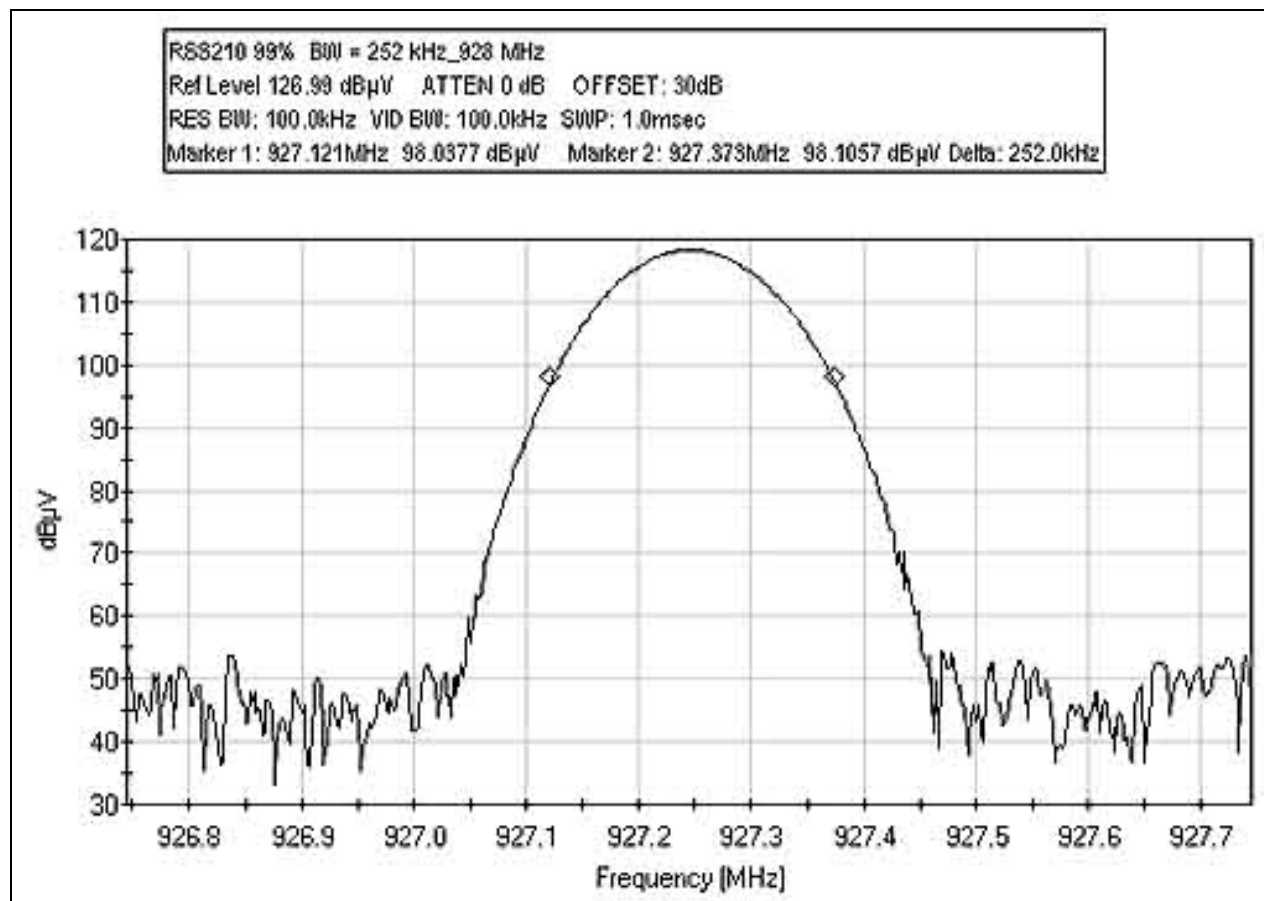
RSS-210 99% BANDWIDTH - 902 MHz



RSS-210 99% BANDWIDTH - 914 MHz



RSS-210 99% BANDWIDTH - 928 MHz



TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

EUT SETUP

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the photographs in Appendix A. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables. The corrected data was then compared to the applicable emission limits to determine compliance.

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available I/O ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. I/O cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The radiated and conducted emissions data of the EUT was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in Table A.

Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dB μ V/m, the spectrum analyzer reading in dB μ V was corrected by using the following formula in Table A. This reading was then compared to the applicable specification limit to determine compliance.

TABLE A: SAMPLE CALCULATIONS		
	Meter reading	(dB μ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB μ V/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Table A were used to collect both the radiated and conducted emissions data for the EUT. For radiated measurements from 9 kHz to 30 MHz, the magnetic loop antenna was used. For radiated measurements from 30 to 1000 MHz, the biconilog antenna was used. The horn antenna was used for frequencies above 1000 MHz. Conducted emissions tests required the use of the FCC type LISNs.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. For conducted emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. A 10 dB external attenuator was also used during conducted tests, with internal offset correction in the analyzer. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dB μ V, and a vertical scale of 10 dB per division.

SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the Tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the six highest readings, this is indicated as a "Q" or an "A" in the appropriate table. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the Spectrum Analyzer or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the HP Quasi-Peak Adapter for the HP Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer. To make these measurements, the test engineer reduces the video bandwidth on the analyzer until the modulation of the signal is filtered out. At this point the analyzer is set into the linear mode and the scan time is reduced.

EUT TESTING

Mains Conducted Emissions

During conducted emissions testing, the EUT was located on a wooden table measuring approximately 80 cm high, 1 meter deep, and 1.5 meters in length. One wall of the room where the EUT was located has a minimum 2 meter by 2 meter conductive plane. The EUT was mounted on the wooden table 40 cm away from the conductive plane, and 80 cm from any other conductive surface.

The vertical metal plane used for conducted emissions was grounded to the earth. Power to the EUT was provided through a LISN. The LISN was grounded to the ground plane. All other objects were kept a minimum of 80 cm away from the EUT during the conducted test.

The LISNs used were 50 μH / ± 50 ohms. Above 150 kHz, a 0.15 μF series capacitor was added in-line prior to connecting the analyzer to restore the proper impedance for the range. A 30 to 50 second sweep time was used for automated measurements in the frequency bands of 150 kHz to 500 kHz, and 500 kHz to 30 MHz. All readings within 20 dB of the limit were recorded, and those within 6 dB of the limit were examined with additional measurements using a slower sweep time.

Radiated Emissions

The EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters.

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. For radiated measurements from 9 kHz to 30 MHz, the magnetic loop antenna was used. The frequency range of 30 MHz to 1000 MHz was scanned with the biconilog antenna located about 1.5 meter above the ground plane in the vertical polarity. During this scan, the turntable was rotated and all peaks at or near the limit were recorded. A scan of the FM band from 88 to 110 MHz was then made using a reduced resolution bandwidth and frequency span. The biconilog antenna was changed to the horizontal polarity and the above steps were repeated. For frequencies exceeding 1000 MHz, the horn antenna was used. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

A thorough scan of all frequencies was made manually using a small frequency span, rotating the turntable and raising and lowering the antenna from one to four meters as needed. The test engineer maximized the readings with respect to the table rotation, antenna height and configuration of EUT. Maximizing of the EUT was achieved by monitoring the spectrum analyzer on a closed circuit television monitor.

APPENDIX A

TEST SETUP PHOTOGRAPHS

PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS



Mains Conducted Emissions - Front View

PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS



Mains Conducted Emissions - Side View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Back View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Loop Antenna

PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP



Conducted Spurious Emissions, Average Time of Occupancy, Channel Separation, Number of Hopping Frequencies, 20 dB Bandwidth and RSS-210 99% Bandwidth

RF OUTPUT POWER



APPENDIX B

TEST EQUIPMENT LIST

FCC 15.207 Conducted Emissions

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer RF Section	02462	HP	8568B	2928A04874	100804	100806
Spectrum Analyzer Display Section	02472	HP	85662A	3001A18430	100804	100806
QP Adapter	01437	HP	85650A	3303A01884	100804	100806
Conducted Cable	04358	Harbour Ind	RG142	Cable # 21	070204	070206
150kHz HPF	02610	TTE	HB9615- 150k-50-720	G7755	041606	041606
LISN	00847	EMCO	3816/2NM	1104	120804	120806
LISN	00276, 00277, 00278	Solar	8028-50-TS- 24BNC	B2	101403	101405

FCC15.247(c) Radiated Spurious Emission, bandedge, radiated power, FCC15.209

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	011405	011407
30-1000MHz						
Biconilog Antenna	01995	Chase	CBL6111C	2451	040804	040806
Bicon Antenna	306	AH	SAS200/540	220	061305	061307
Log Periodic Antenna	300	AH	SAS 00/516	331	061305	061307
Pre-amp	00309	HP	8447D	1937A02548	071404	071406
Antenna cable	NA	NA	RG214	Cable#15	010305	010306
Pre-amp to SA cable	NA	Pasternack	RG223/U	Cable#10	051605	051606
1-10GHz						
Horn Antenna	0849	EMCO	3115	6246	072204	072206
Microwave Pre-amp	00786	HP	83017A	3123A00281	081204	081206
Helix Antenna cable	NA	Andrew	LDF1-50	Cable#20	091604	091606
24" SMA Cable	2604	Argosy	UFA147A	0-0360-200200	012304	012306
9kHz-30 MHz						
Loop Antenna	00314	EMCO	6502	2014	062804	062806

Conducted Spurious Emissions, Average time of occupancy, Channel separation, Number of hopping frequencies, 20 dB BW, RSS-210 99% BW

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	011405	011407

Conducted Output Power

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
RF Power meter	02082	HP	435B	2445A11881	061704	061706
Power Sensor	02036	HP	8482A	1551A01004	061806	061806

APPENDIX C
MEASUREMENT DATA SHEETS

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Printronix**
 Specification: **FCC 15.207 COND [AVE]**
 Work Order #: **84108**
 Test Type: **Conducted Emissions**
 Equipment: **RFID Printer**
 Manufacturer: Printronix
 Model: SL5304R MP2
 S/N: NA

Date: 8/12/2005
 Time: 9:39:27 AM
 Sequence#: 4
 Tested By: Eddie Wong
 110V 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
RFID Printer*	Printronix	SL5304R MP2	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude CP	00066902-12800-82P-3038

Test Conditions / Notes:

Transmitter is installed in the printer and transmitting info to the tag. Laptop computer is sending all "H's Pattern" to the printer via Parallel cable. EUT is in operating mode. AWID RF Card. Frequency: Hopping. 22°C, 65% relative humidity. RFID tag is not present.

Transducer Legend:

T1=(L1) Insertion Loss 00847 EMCO 3816/2NM	T2=150kHz HPF 041605
T3=Cable #21 Conducted Site A 070206	

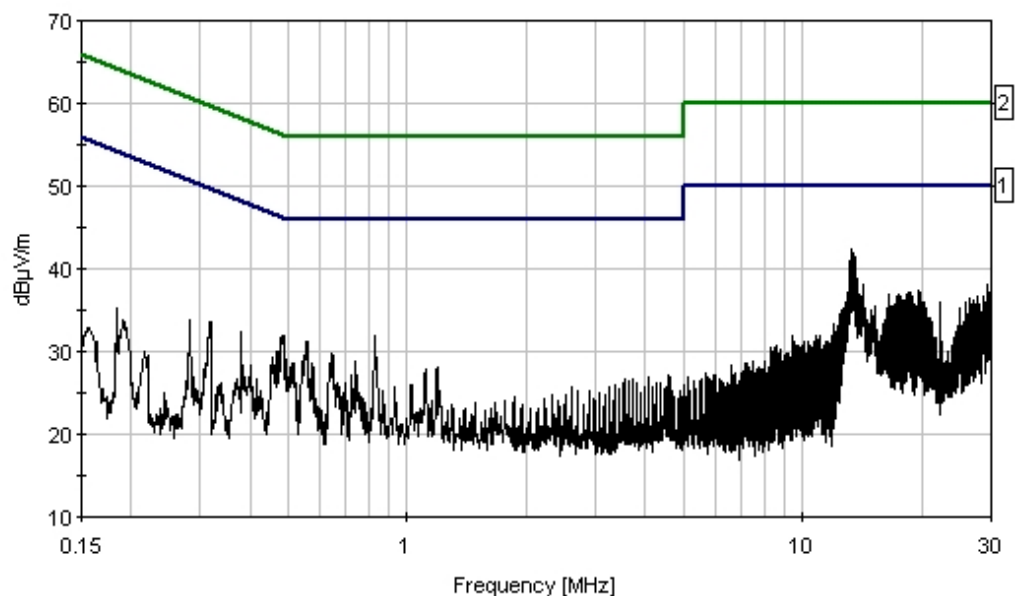
Measurement Data: Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	Dist dB	Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	13.292M	41.4	+0.4	+0.2	+0.3	+0.0		42.3	50.0	-7.7	Black
2	13.373M	40.9	+0.4	+0.2	+0.3	+0.0		41.8	50.0	-8.2	Black
3	13.571M	40.4	+0.5	+0.2	+0.3	+0.0		41.4	50.0	-8.6	Black
4	13.202M	40.1	+0.4	+0.2	+0.3	+0.0		41.0	50.0	-9.0	Black
5	13.103M	39.7	+0.4	+0.2	+0.3	+0.0		40.6	50.0	-9.4	Black
6	13.761M	37.9	+0.5	+0.2	+0.3	+0.0		38.9	50.0	-11.1	Black
7	14.301M	37.2	+0.5	+0.2	+0.3	+0.0		38.2	50.0	-11.8	Black
8	29.472M	36.0	+1.3	+0.2	+0.5	+0.0		38.0	50.0	-12.0	Black
9	19.598M	35.9	+0.8	+0.2	+0.4	+0.0		37.3	50.0	-12.7	Black
10	12.914M	36.3	+0.4	+0.2	+0.3	+0.0		37.2	50.0	-12.8	Black
11	18.499M	35.9	+0.7	+0.2	+0.4	+0.0		37.2	50.0	-12.8	Black

12	19.788M	35.8	+0.8	+0.2	+0.4	+0.0	37.2	50.0	-12.8	Black
13	18.688M	35.8	+0.7	+0.2	+0.4	+0.0	37.1	50.0	-12.9	Black
14	18.851M	35.8	+0.7	+0.2	+0.4	+0.0	37.1	50.0	-12.9	Black
15	29.541M	35.1	+1.3	+0.2	+0.5	+0.0	37.1	50.0	-12.9	Black

CKC Laboratories, Inc. Date: 8/12/2005 Time: 9:39:27 AM Printronix WO#: 84108
FCC 15.207 COND [AVE] Test Lead: Black 110V 60Hz Sequence#: 4



— Sweep Data — 1 - FCC 15.207 COND [AVE] — 2 - FCC 15.207 COND [QP]

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Printronix**
 Specification: **FCC 15.207 COND [AVE]**
 Work Order #: **84108**
 Test Type: **Conducted Emissions**
 Equipment: **RFID Printer**
 Manufacturer: Printronix
 Model: SL5304R MP2
 S/N: NA

Date: 8/12/2005
 Time: 9:48:08 AM
 Sequence#: 5
 Tested By: Eddie Wong
 110V 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
RFID Printer*	Printronix	SL5304R MP2	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude CP	00066902-12800-82P-3038

Test Conditions / Notes:

Transmitter is installed in the printer and transmitting info to the tag. Laptop computer is sending all "H's Pattern" to the printer via Parallel cable. EUT is in operating mode. AWID RF Card. Frequency: Hopping. 22°C, 65% relative humidity. RFID tag is not present.

Transducer Legend:

T1=(L2) Insertion Loss 00847 EMCO 3816/2NM	T2=150kHz HPF 041605
T3=Cable #21 Conducted Site A 070206	

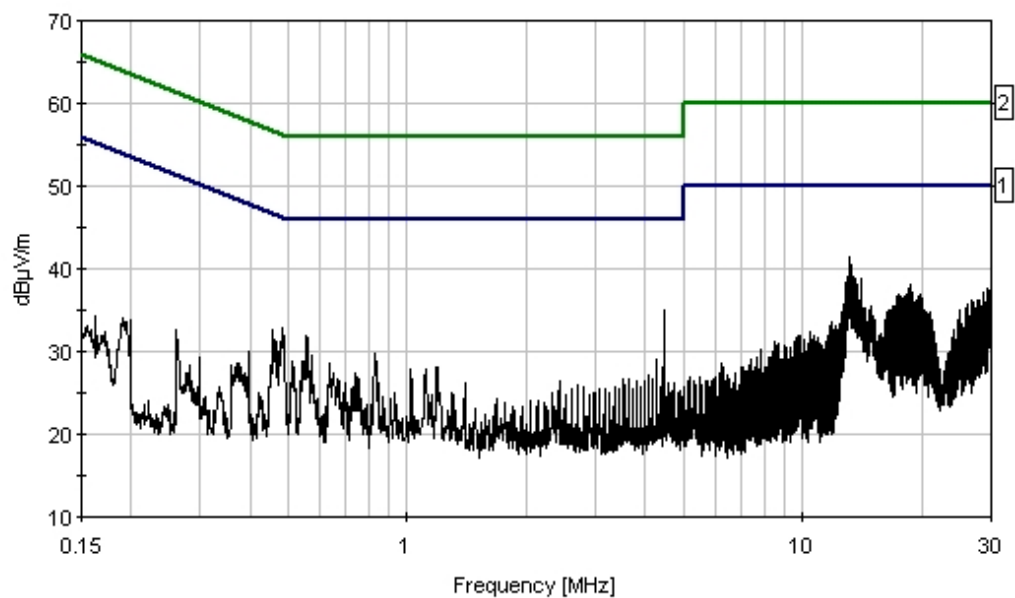
Measurement Data: Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	13.202M	40.5	+0.5	+0.2	+0.3		+0.0	41.5	50.0	-8.5	White
2	13.292M	39.4	+0.5	+0.2	+0.3		+0.0	40.4	50.0	-9.6	White
3	13.112M	38.7	+0.5	+0.2	+0.3		+0.0	39.7	50.0	-10.3	White
4	4.445M	34.7	+0.1	+0.1	+0.2		+0.0	35.1	46.0	-10.9	White
5	13.004M	38.1	+0.5	+0.2	+0.3		+0.0	39.1	50.0	-10.9	White
6	12.923M	38.0	+0.5	+0.2	+0.3		+0.0	39.0	50.0	-11.0	White
7	13.391M	38.0	+0.5	+0.2	+0.3		+0.0	39.0	50.0	-11.0	White
8	13.481M	37.9	+0.5	+0.2	+0.3		+0.0	38.9	50.0	-11.1	White
9	14.031M	37.8	+0.5	+0.2	+0.3		+0.0	38.8	50.0	-11.2	White
10	13.571M	37.7	+0.5	+0.2	+0.3		+0.0	38.7	50.0	-11.3	White
11	12.833M	37.4	+0.5	+0.2	+0.3		+0.0	38.4	50.0	-11.6	White

12	18.670M	36.8	+0.7	+0.2	+0.4	+0.0	38.1	50.0	-11.9	White
13	13.761M	37.0	+0.5	+0.2	+0.3	+0.0	38.0	50.0	-12.0	White
14	29.479M	35.8	+1.2	+0.2	+0.5	+0.0	37.7	50.0	-12.3	White
15	18.490M	36.4	+0.6	+0.2	+0.4	+0.0	37.6	50.0	-12.4	White

CKC Laboratories, Inc. Date: 8/12/2005 Time: 9:48:08 AM Printronix WO#: 84108
FCC 15.207 COND [AVE] Test Lead: White 110V 60Hz Sequence#: 5



— Sweep Data — 1 - FCC 15.207 COND [AVE] — 2 - FCC 15.207 COND [QP]

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Printronix**
 Specification: **FCC 15.209**
 Work Order #: **84108**
 Test Type: **Maximized emission**
 Equipment: **RFID Printer**
 Manufacturer: Printronix
 Model: SL5304R MP2
 S/N: NA

Date: 8/12/2005
 Time: 09:06:58
 Sequence#: 3
 Tested By: Eddie Wong

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
RFID Printer*	Printronix	SL5304R MP2	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude CP	00066902-12800-82P-3038

Test Conditions / Notes:

Transmitter is installed in the printer and transmitting info to the tag. Laptop computer is sending all "H's Pattern" to the printer via Parallel cable. EUT is in operating mode. AWID RF Card.. Frequency: 928 MHz. Frequency range of measurement = 9 kHz - 9.28 GHz. Frequency 9 kHz - 150 kHz RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz - 9280 MHz RBW=1 MHz, VBW=1 MHz. 110VAC, 60 Hz, 22°C, 65% relative humidity. RFID tag is not present.

Transducer Legend:

T1=Bicon AN306	T2=Log AN300
T3=Cable #10 051606	T4=Cable #15, Site A, 010306
T5=Preamp 8447D 071406	T6=Cable #20 48ft Helix 091605
T7=Horn 6246_072206	T8=HP 83017A 071606
T9=SMA Cable 1-40GHz AN2604_012306	T10=HPF_AN02116_1.5GHz_062707

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
	MHz	dBμV	T9	T10			Table	dBμV/m	dBμV/m	dB	Ant
1	4636.200M	52.3	+0.0	+0.0	+0.0	+0.0	+0.0	52.0	54.0	-2.0	Horiz
	Ave		+0.0	+4.6	+31.5	-38.0					
			+0.7	+0.9							
^	4636.200M	54.6	+0.0	+0.0	+0.0	+0.0	+0.0	54.3	54.0	+0.3	Horiz
			+0.0	+4.6	+31.5	-38.0					
			+0.7	+0.9							
3	48.061M	51.7	+12.2	+0.0	+0.1	+1.2	+0.0	37.5	40.0	-2.5	Vert
	QP		-27.7	+0.0	+0.0	+0.0					
			+0.0	+0.0							
^	48.061M	54.9	+12.2	+0.0	+0.1	+1.2	+0.0	40.7	40.0	+0.7	Vert
			-27.7	+0.0	+0.0	+0.0					
			+0.0	+0.0							
5	102.075M	53.6	+12.2	+0.0	+0.1	+1.8	+0.0	40.1	43.5	-3.4	Horiz
			-27.6	+0.0	+0.0	+0.0					
			+0.0	+0.0							

6	104.636M	52.5	+12.7 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	39.5	43.5	-4.0	Vert
7	44.810M QP	48.8	+13.4 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.2 +0.0 +0.0	+0.0	35.8	40.0	-4.2	Vert
^	44.810M	54.9	+13.4 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.2 +0.0 +0.0	+0.0	41.9	40.0	+1.9	Vert
9	98.361M QP	52.9	+11.4 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	38.6	43.5	-4.9	Vert
^	98.361M	56.2	+11.4 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	41.9	43.5	-1.6	Vert
11	3709.020M	51.8	+0.0 +0.0 +0.6	+0.0 +4.2 +0.5	+0.0 +30.1 -38.4	+0.0 +0.0 +0.0	+0.0	48.8	54.0	-5.2	Horiz
12	35.311M	43.7	+17.6 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.0 +0.0 +0.0	+0.0	34.7	40.0	-5.3	Vert
13	98.850M QP	52.1	+11.5 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	37.9	43.5	-5.6	Horiz
^	98.850M	57.0	+11.5 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	42.8	43.5	-0.7	Horiz
15	35.950M QP	43.7	+17.3 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.0 +0.0 +0.0	+0.0	34.4	40.0	-5.6	Horiz
^	35.950M	46.4	+17.3 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.0 +0.0 +0.0	+0.0	37.1	40.0	-2.9	Horiz
^	35.953M	41.0	+17.3 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.0 +0.0 +0.0	+0.0	31.7	40.0	-8.3	Horiz
18	4636.160M	48.7	+0.0 +0.0 +0.7	+0.0 +4.6 +0.9	+0.0 +31.5 -38.0	+0.0 +0.0 +0.0	+0.0	48.4	54.0	-5.6	Vert
19	2781.650M	54.1	+0.0 +0.0 +0.6	+0.0 +3.4 +0.6	+0.0 +28.1 -38.9	+0.0 +0.0 +0.0	+0.0	47.9	54.0	-6.1	Horiz
20	74.140M	53.1	+6.8 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.5 +0.0 +0.0	+0.0	33.8	40.0	-6.2	Horiz
21	140.610M	44.9	+16.9 -27.6 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.1 +0.0 +0.0	+0.0	36.5	43.5	-7.0	Horiz
22	116.810M	47.0	+15.0 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	36.4	43.5	-7.1	Vert

23	108.442M	48.3	+13.5 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	36.2	43.5	-7.3	Horiz
24	2781.670M	52.8	+0.0 +0.0 +0.6	+0.0 +3.4 +0.6	+0.0 +28.1 -38.9	+0.0 +0.0 +0.0	+0.0	46.6	54.0	-7.4	Vert
25	8345.275M Ave	39.5	+0.0 +0.0 +1.0	+0.0 +6.7 +0.6	+0.0 +35.3 -37.3	+0.0 +0.0 +0.0	+0.0	45.8	54.0	-8.2	Vert
^	8345.275M	43.1	+0.0 +0.0 +1.0	+0.0 +6.7 +0.6	+0.0 +35.3 -37.3	+0.0 +0.0 +0.0	+0.0	49.4	54.0	-4.6	Vert
27	3708.990M	48.3	+0.0 +0.0 +0.6	+0.0 +4.2 +0.5	+0.0 +30.1 -38.4	+0.0 +0.0 +0.0	+0.0	45.3	54.0	-8.7	Vert
28	49.220M	45.6	+11.8 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.2 +0.0 +0.0	+0.0	31.0	40.0	-9.0	Horiz
29	6490.680M	41.7	+0.0 +0.0 +0.9	+0.0 +5.7 +1.0	+0.0 +33.0 -37.4	+0.0 +0.0 +0.0	+0.0	44.9	54.0	-9.1	Vert
30	117.640M	44.3	+15.2 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	33.9	43.5	-9.6	Horiz
31	652.069M	36.9	+0.0 -27.1 +0.0	+20.9 +0.0 +0.0	+0.5 +0.0 +0.0	+5.0 +0.0 +0.0	+0.0	36.2	46.0	-9.8	Horiz
32	75.750M	46.3	+6.8 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.6 +0.0 +0.0	+0.0	27.1	40.0	-12.9	Horiz
33	761.296M	32.2	+0.0 -26.8 +0.0	+21.6 +0.0 +0.0	+0.5 +0.0 +0.0	+5.4 +0.0 +0.0	+0.0	32.9	46.0	-13.1	Horiz
34	831.692M	31.3	+0.0 -26.9 +0.0	+22.2 +0.0 +0.0	+0.6 +0.0 +0.0	+5.7 +0.0 +0.0	+0.0	32.9	46.0	-13.1	Horiz
35	871.711M	30.3	+0.0 -27.0 +0.0	+22.7 +0.0 +0.0	+0.6 +0.0 +0.0	+5.9 +0.0 +0.0	+0.0	32.5	46.0	-13.5	Horiz
36	668.914M	31.9	+0.0 -27.0 +0.0	+21.8 +0.0 +0.0	+0.5 +0.0 +0.0	+5.1 +0.0 +0.0	+0.0	32.3	46.0	-13.7	Horiz
37	400.010M	39.3	+0.0 -27.4 +0.0	+16.4 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	32.3	46.0	-13.7	Vert
38	823.249M	30.5	+0.0 -26.9 +0.0	+22.1 +0.0 +0.0	+0.6 +0.0 +0.0	+5.7 +0.0 +0.0	+0.0	32.0	46.0	-14.0	Horiz
39	1854.465M	50.2	+0.0 +0.0 +0.5	+0.0 +2.9 +0.5	+0.0 +25.4 -39.5	+0.0 +0.0 +0.0	+0.0	40.0	54.0	-14.0	Vert

40	138.100M	37.9	+16.8 -27.6 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.1 +0.0 +0.0	+0.0	29.4	43.5	-14.1	Vert
41	832.385M	30.2	+0.0 -26.9 +0.0	+22.2 +0.0 +0.0	+0.6 +0.0 +0.0	+5.7 +0.0 +0.0	+0.0	31.8	46.0	-14.2	Horiz
42	945.398M	27.5	+0.0 -27.0 +0.0	+24.1 +0.0 +0.0	+0.6 +0.0 +0.0	+6.2 +0.0 +0.0	+0.0	31.4	46.0	-14.6	Horiz
43	821.223M	29.7	+0.0 -26.9 +0.0	+22.1 +0.0 +0.0	+0.6 +0.0 +0.0	+5.7 +0.0 +0.0	+0.0	31.2	46.0	-14.8	Horiz
44	914.553M	27.6	+0.0 -27.1 +0.0	+23.5 +0.0 +0.0	+0.6 +0.0 +0.0	+6.1 +0.0 +0.0	+0.0	30.7	46.0	-15.3	Horiz
45	656.963M	30.9	+0.0 -27.1 +0.0	+21.2 +0.0 +0.0	+0.5 +0.0 +0.0	+5.0 +0.0 +0.0	+0.0	30.5	46.0	-15.5	Horiz
46	1854.133M	48.6	+0.0 +0.0 +0.5	+0.0 +2.9 +0.5	+0.0 +25.4 -39.5	+0.0 +0.0 +0.0	+0.0	38.4	54.0	-15.6	Horiz
47	584.879M	32.8	+0.0 -27.3 +0.0	+19.3 +0.0 +0.0	+0.5 +0.0 +0.0	+4.7 +0.0 +0.0	+0.0	30.0	46.0	-16.0	Horiz
48	586.632M	32.6	+0.0 -27.3 +0.0	+19.3 +0.0 +0.0	+0.5 +0.0 +0.0	+4.7 +0.0 +0.0	+0.0	29.8	46.0	-16.2	Horiz
49	500.035M	35.2	+0.0 -27.6 +0.0	+17.4 +0.0 +0.0	+0.4 +0.0 +0.0	+4.3 +0.0 +0.0	+0.0	29.7	46.0	-16.3	Horiz
50	612.505M	30.7	+0.0 -27.1 +0.0	+19.8 +0.0 +0.0	+0.5 +0.0 +0.0	+4.9 +0.0 +0.0	+0.0	28.8	46.0	-17.2	Horiz
51	374.980M	36.3	+0.0 -27.5 +0.0	+15.9 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	28.7	46.0	-17.3	Vert
52	589.278M	30.7	+0.0 -27.2 +0.0	+19.4 +0.0 +0.0	+0.5 +0.0 +0.0	+4.7 +0.0 +0.0	+0.0	28.1	46.0	-17.9	Horiz
53	392.678M	35.1	+0.0 -27.4 +0.0	+16.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	28.0	46.0	-18.0	Horiz
54	320.026M	32.6	+0.0 -27.5 +0.0	+19.2 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	28.0	46.0	-18.0	Vert
55	396.510M	34.9	+0.0 -27.4 +0.0	+16.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	27.8	46.0	-18.2	Horiz
56	397.174M	34.9	+0.0 -27.4 +0.0	+16.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	27.8	46.0	-18.2	Horiz

57	384.010M	35.1	+0.0 -27.5 +0.0	+16.1 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	27.7	46.0	-18.3	Vert
58	170.440M	31.9	+17.9 -27.6 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.4 +0.0 +0.0	+0.0	24.8	43.5	-18.7	Vert
59	517.656M	31.5	+0.0 -27.7 +0.0	+17.9 +0.0 +0.0	+0.4 +0.0 +0.0	+4.4 +0.0 +0.0	+0.0	26.5	46.0	-19.5	Horiz
60	357.893M	34.6	+0.0 -27.6 +0.0	+15.6 +0.0 +0.0	+0.3 +0.0 +0.0	+3.6 +0.0 +0.0	+0.0	26.5	46.0	-19.5	Vert
61	516.037M	30.7	+0.0 -27.7 +0.0	+17.9 +0.0 +0.0	+0.4 +0.0 +0.0	+4.4 +0.0 +0.0	+0.0	25.7	46.0	-20.3	Vert
62	344.936M	33.1	+0.0 -27.6 +0.0	+16.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.6 +0.0 +0.0	+0.0	25.4	46.0	-20.6	Horiz
63	345.012M	33.0	+0.0 -27.6 +0.0	+16.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.6 +0.0 +0.0	+0.0	25.3	46.0	-20.7	Vert
64	223.860M	30.3	+17.5 -27.6 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	23.1	46.0	-22.9	Horiz

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Printronix**
 Specification: **FCC 15.247 (d) (FCC 15.205) 25- 40000 MHz**
 Work Order #: **84108** Date: 8/10/2005
 Test Type: **Maximized emission** Time: 15:13:58
 Equipment: **RFID Printer** Sequence#: 1
 Manufacturer: Printronix Tested By: Eddie Wong
 Model: SL5304R MP2
 S/N: NA

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
RFID Printer*	Printronix	SL5304R MP2	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude CP	00066902-12800-82P-3038

Test Conditions / Notes:

Transmitter is installed in the printer and transmitting info to the tag. Laptop computer is sending all "H's Pattern" to the printer via Parallel cable. EUT is in operating mode. AWID RF Card. Frequency: 902 MHz. Frequency range of measurement = 9 kHz - 9.28 GHz. Frequency 9 kHz - 150 kHz RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz - 9280 MHz RBW=1 MHz, VBW=1 MHz. 110VAC, 60 Hz, 22°C, 65% relative humidity. RFID tag is not present.

Transducer Legend:

T1=Bicon AN306	T2=Log AN300
T3=Cable #10 051606	T4=Cable #15, Site A, 010306
T5=Preamp 8447D 071406	T6=Cable #20 48ft Helix 091605
T7=Horn 6246_072206	T8=HP 83017A 071606
T9=SMA Cable 1-40GHz AN2604_012306	T10=HPF_AN02116_1.5GHz_062707

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
	MHz	dBμV	T9	T10			Table	dBμV/m	dBμV/m	dB	Ant
1	4513.633M	50.3	+0.0	+0.0	+0.0	+0.0	+0.0	49.5	54.0	-4.5	Horiz
	Ave		+0.0	+4.5	+31.3	-38.1					
			+0.7	+0.8							
^	4513.633M	52.2	+0.0	+0.0	+0.0	+0.0	+0.0	51.4	54.0	-2.6	Horiz
			+0.0	+4.5	+31.3	-38.1					
			+0.7	+0.8							
3	4513.742M	50.2	+0.0	+0.0	+0.0	+0.0	+0.0	49.4	54.0	-4.6	Vert
			+0.0	+4.5	+31.3	-38.1					
			+0.7	+0.8							
4	2708.167M	55.8	+0.0	+0.0	+0.0	+0.0	+0.0	49.2	54.0	-4.8	Vert
			+0.0	+3.4	+27.8	-38.9					
			+0.5	+0.6							
5	3610.867M	52.0	+0.0	+0.0	+0.0	+0.0	+0.0	48.5	54.0	-5.5	Vert
			+0.0	+4.0	+29.8	-38.4					
			+0.6	+0.5							

6	117.450M	47.2	+15.2 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	36.8	43.5	-6.7	Vert
7	3610.920M	50.8	+0.0 +0.0 +0.6	+0.0 +4.0 +0.5	+0.0 +29.8 -38.4	+0.0 +0.0 +0.0	+0.0	47.3	54.0	-6.7	Horiz
8	2708.220M	49.9	+0.0 +0.0 +0.5	+0.0 +3.4 +0.6	+0.0 +27.8 -38.9	+0.0 +0.0 +0.0	+0.0	43.3	54.0	-10.7	Horiz
9	691.880M	56.3	+0.0 -26.9 +0.0	+23.1 +0.0 +0.0	+0.5 +0.0 +0.0	+5.2 +0.0 +0.0	+0.0	58.2	80.0	-21.8	Vert
10	1805.500M	52.7	+0.0 +0.0 +0.5	+0.0 +2.9 +0.5	+0.0 +25.3 -39.1	+0.0 +0.0 +0.0	+0.0	42.8	80.0	-37.2	Vert
11	1805.492M	47.7	+0.0 +0.0 +0.5	+0.0 +2.9 +0.5	+0.0 +25.3 -39.1	+0.0 +0.0 +0.0	+0.0	37.8	80.0	-42.2	Horiz
12	140.020M	46.0	+16.9 -27.6 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.1 +0.0 +0.0	+0.0	37.6	80.0	-42.4	Vert

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Printronix**
 Specification: **FCC 15.247 (d) (FCC 15.205) 25- 40000 MHz**
 Work Order #: **84108** Date: 8/10/2005
 Test Type: **Maximized emission** Time: 15:22:25
 Equipment: **RFID Printer** Sequence#: 2
 Manufacturer: Printronix Tested By: Eddie Wong
 Model: SL5304R MP2
 S/N: NA

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
RFID Printer*	Printronix	SL5304R MP2	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude CP	00066902-12800-82P-3038

Test Conditions / Notes:

Transmitter is installed in the printer and transmitting info to the tag. Laptop computer is sending all "H's Pattern" to the printer via Parallel cable. EUT is in operating mode. AWID RF Card. Frequency: 914.65 MHz. Frequency range of measurement = 9 kHz – 9.28 GHz. Frequency 9 kHz - 150 kHz RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz - 9280 MHz RBW=1 MHz, VBW=1 MHz. 110VAC, 60 Hz, 22°C, 65% relative humidity. RFID tag is not present.

Transducer Legend:

T1=Bicon AN306	T2=Log AN300
T3=Cable #10 051606	T4=Cable #15, Site A, 010306
T5=Preamp 8447D 071406	T6=Cable #20 48ft Helix 091605
T7=Horn 6246_072206	T8=HP 83017A 071606
T9=SMA Cable 1-40GHz AN2604_012306	T10=HPF_AN02116_1.5GHz_062707

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
	MHz	dBμV	T9	T10			Table	dBμV/m	dBμV/m	dB	Ant
1	4573.772M	50.3	+0.0	+0.0	+0.0	+0.0	+0.0	49.7	54.0	-4.3	Horiz
	Ave		+0.0	+4.5	+31.4	-38.1					
			+0.7	+0.9							
^	4573.772M	54.5	+0.0	+0.0	+0.0	+0.0	+0.0	53.9	54.0	-0.1	Horiz
			+0.0	+4.5	+31.4	-38.1					
			+0.7	+0.9							
3	3658.990M	52.6	+0.0	+0.0	+0.0	+0.0	+0.0	49.3	54.0	-4.7	Horiz
	Ave		+0.0	+4.1	+29.9	-38.4					
			+0.6	+0.5							
^	3658.990M	54.4	+0.0	+0.0	+0.0	+0.0	+0.0	51.1	54.0	-2.9	Horiz
			+0.0	+4.1	+29.9	-38.4					
			+0.6	+0.5							
5	3659.080M	50.9	+0.0	+0.0	+0.0	+0.0	+0.0	47.6	54.0	-6.4	Vert
			+0.0	+4.1	+29.9	-38.4					
			+0.6	+0.5							

6	4573.760M	47.0	+0.0 +0.0 +0.7	+0.0 +4.5 +0.9	+0.0 +31.4	+0.0 -38.1	+0.0	46.4	54.0	-7.6	Vert
7	2744.253M	51.1	+0.0 +0.0 +0.6	+0.0 +3.4 +0.6	+0.0 +27.9	+0.0 -38.9	+0.0	44.7	54.0	-9.3	Vert
8	320.004M	38.0	+0.0 -27.5 +0.0	+19.2 +0.0 +0.0	+0.3 +0.0	+3.4 +0.0	+0.0	33.4	46.0	-12.6	Vert
9	2743.980M	47.5	+0.0 +0.0 +0.6	+0.0 +3.4 +0.6	+0.0 +27.9	+0.0 -38.9	+0.0	41.1	54.0	-12.9	Horiz
10	132.450M	39.4	+16.4 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0	+2.1 +0.0	+0.0	30.4	43.5	-13.1	Horiz
11	6403.238M	46.3	+0.0 +0.0 +0.9	+0.0 +5.5 +1.0	+0.0 +32.9	+0.0 -37.6	+0.0	49.0	80.0	-31.0	Vert
12	6402.980M	42.1	+0.0 +0.0 +0.9	+0.0 +5.5 +1.0	+0.0 +32.9	+0.0 -37.6	+0.0	44.8	80.0	-35.2	Horiz
13	1829.330M	49.4	+0.0 +0.0 +0.5	+0.0 +2.9 +0.5	+0.0 +25.3	+0.0 -39.3	+0.0	39.3	80.0	-40.7	Vert
14	1829.330M	47.7	+0.0 +0.0 +0.5	+0.0 +2.9 +0.5	+0.0 +25.3	+0.0 -39.3	+0.0	37.6	80.0	-42.4	Horiz

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Printronix**
 Specification: **FCC 15.247 (d) (FCC 15.205) 25- 40000 MHz**
 Work Order #: **84108** Date: 8/12/2005
 Test Type: **Maximized emission** Time: 09:06:58
 Equipment: **RFID Printer** Sequence#: 3
 Manufacturer: Printronix Tested By: Eddie Wong
 Model: SL5304R MP2
 S/N: NA

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
RFID Printer*	Printronix	SL5304R MP2	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude CP	00066902-12800-82P-3038

Test Conditions / Notes:

Transmitter is installed in the printer and transmitting info to the tag. Laptop computer is sending all "H's Pattern" to the printer via Parallel cable. EUT is in operating mode. AWID RF Card. Frequency: 928 MHz. Frequency range of measurement = 9 kHz - 9.28 GHz. Frequency 9 kHz - 150 kHz RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz - 9280 MHz RBW=1 MHz, VBW=1 MHz. 110VAC, 60 Hz, 22°C, 65% relative humidity. RFID tag is not present.

Transducer Legend:

T1=Bicon AN306	T2=Log AN300
T3=Cable #10 051606	T4=Cable #15, Site A, 010306
T5=Preamp 8447D 071406	T6=Cable #20 48ft Helix 091605
T7=Horn 6246_072206	T8=HP 83017A 071606
T9=SMA Cable 1-40GHz AN2604_012306	T10=HPF_AN02116_1.5GHz_062707

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
	MHz	dBμV	T9	T10			Table	dBμV/m	dBμV/m	dB	Ant
1	4636.200M	52.3	+0.0	+0.0	+0.0	+0.0	+0.0	52.0	54.0	-2.0	Horiz
	Ave		+0.0	+4.6	+31.5	-38.0					
			+0.7	+0.9							
^	4636.200M	54.6	+0.0	+0.0	+0.0	+0.0	+0.0	54.3	54.0	+0.3	Horiz
			+0.0	+4.6	+31.5	-38.0					
			+0.7	+0.9							
3	3709.020M	51.8	+0.0	+0.0	+0.0	+0.0	+0.0	48.8	54.0	-5.2	Horiz
			+0.0	+4.2	+30.1	-38.4					
			+0.6	+0.5							
4	4636.160M	48.7	+0.0	+0.0	+0.0	+0.0	+0.0	48.4	54.0	-5.6	Vert
			+0.0	+4.6	+31.5	-38.0					
			+0.7	+0.9							
5	2781.650M	54.1	+0.0	+0.0	+0.0	+0.0	+0.0	47.9	54.0	-6.1	Horiz
			+0.0	+3.4	+28.1	-38.9					
			+0.6	+0.6							

6	74.140M	53.1	+6.8 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.5 +0.0 +0.0	+0.0	33.8	40.0	-6.2	Horiz
7	116.810M	47.0	+15.0 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	36.4	43.5	-7.1	Vert
8	108.442M	48.3	+13.5 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	36.2	43.5	-7.3	Horiz
9	2781.670M	52.8	+0.0 +0.0 +0.6	+0.0 +3.4 +0.6	+0.0 +28.1 -38.9	+0.0 +0.0 +0.0	+0.0	46.6	54.0	-7.4	Vert
10	8345.275M Ave	39.5	+0.0 +0.0 +1.0	+0.0 +6.7 +0.6	+0.0 +35.3 -37.3	+0.0 +0.0 +0.0	+0.0	45.8	54.0	-8.2	Vert
^	8345.275M	43.1	+0.0 +0.0 +1.0	+0.0 +6.7 +0.6	+0.0 +35.3 -37.3	+0.0 +0.0 +0.0	+0.0	49.4	54.0	-4.6	Vert
12	3708.990M	48.3	+0.0 +0.0 +0.6	+0.0 +4.2 +0.5	+0.0 +30.1 -38.4	+0.0 +0.0 +0.0	+0.0	45.3	54.0	-8.7	Vert
13	117.640M	44.3	+15.2 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	33.9	43.5	-9.6	Horiz
14	400.010M	39.3	+0.0 -27.4 +0.0	+16.4 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	32.3	46.0	-13.7	Vert
15	612.505M	30.7	+0.0 -27.1 +0.0	+19.8 +0.0 +0.0	+0.5 +0.0 +0.0	+4.9 +0.0 +0.0	+0.0	28.8	46.0	-17.2	Horiz
16	170.440M	31.9	+17.9 -27.6 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.4 +0.0 +0.0	+0.0	24.8	43.5	-18.7	Vert
17	6490.680M	41.7	+0.0 +0.0 +0.9	+0.0 +5.7 +1.0	+0.0 +33.0 -37.4	+0.0 +0.0 +0.0	+0.0	44.9	80.0	-35.1	Vert
18	35.044M	53.4	+17.8 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.0 +0.0 +0.0	+0.0	44.6	80.0	-35.4	Vert
19	101.469M QP	58.1	+12.1 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	44.5	80.0	-35.5	Vert
^	101.469M	63.6	+12.1 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	50.0	80.0	-30.0	Vert
21	101.569M QP	57.3	+12.1 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	43.7	80.0	-36.3	Vert
^	101.569M	63.0	+12.1 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	49.4	80.0	-30.6	Vert

23	35.044M	52.2	+17.8 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.0 +0.0 +0.0	+0.0	43.4	80.0	-36.6	Vert
24	99.719M QP	57.3	+11.7 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	43.3	80.0	-36.7	Vert
^	99.719M	62.0	+11.7 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	48.0	80.0	-32.0	Vert
26	98.922M QP	55.6	+11.5 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	41.4	80.0	-38.6	Vert
^	98.922M	60.6	+11.5 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	46.4	80.0	-33.6	Vert
28	102.075M	53.6	+12.2 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	40.1	80.0	-39.9	Horiz
29	1854.465M	50.2	+0.0 +0.0 +0.5	+0.0 +2.9 +0.5	+0.0 +25.4 -39.5	+0.0 -39.5 +0.5	+0.0	40.0	80.0	-40.0	Vert
30	104.636M	52.5	+12.7 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	39.5	80.0	-40.5	Vert
31	98.361M QP	52.9	+11.4 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	38.6	80.0	-41.4	Vert
^	98.361M	56.2	+11.4 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	41.9	80.0	-38.1	Vert
33	1854.133M	48.6	+0.0 +0.0 +0.5	+0.0 +2.9 +0.5	+0.0 +25.4 -39.5	+0.0 -39.5 +0.5	+0.0	38.4	80.0	-41.6	Horiz
34	98.850M QP	52.1	+11.5 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	37.9	80.0	-42.1	Horiz
^	98.850M	57.0	+11.5 -27.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	42.8	80.0	-37.2	Horiz
36	48.061M QP	51.7	+12.2 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.2 +0.0 +0.0	+0.0	37.5	80.0	-42.5	Vert
^	48.061M	54.9	+12.2 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.2 +0.0 +0.0	+0.0	40.7	80.0	-39.3	Vert
38	140.610M	44.9	+16.9 -27.6 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.1 +0.0 +0.0	+0.0	36.5	80.0	-43.5	Horiz
39	652.069M	36.9	+0.0 -27.1 +0.0	+20.9 +0.0 +0.0	+0.5 +0.0 +0.0	+5.0 +0.0 +0.0	+0.0	36.2	80.0	-43.8	Horiz

40	44.810M QP	48.8	+13.4 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.2 +0.0 +0.0	+0.0	35.8	80.0	-44.2	Vert
^	44.810M	54.9	+13.4 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.2 +0.0 +0.0	+0.0	41.9	80.0	-38.1	Vert
42	35.311M	43.7	+17.6 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.0 +0.0 +0.0	+0.0	34.7	80.0	-45.3	Vert
43	35.950M QP	43.7	+17.3 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.0 +0.0 +0.0	+0.0	34.4	80.0	-45.6	Horiz
^	35.950M	46.4	+17.3 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.0 +0.0 +0.0	+0.0	37.1	80.0	-42.9	Horiz
^	35.953M	41.0	+17.3 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.0 +0.0 +0.0	+0.0	31.7	80.0	-48.3	Horiz
46	761.296M	32.2	+0.0 -26.8 +0.0	+21.6 +0.0 +0.0	+0.5 +0.0 +0.0	+5.4 +0.0 +0.0	+0.0	32.9	80.0	-47.1	Horiz
47	831.692M	31.3	+0.0 -26.9 +0.0	+22.2 +0.0 +0.0	+0.6 +0.0 +0.0	+5.7 +0.0 +0.0	+0.0	32.9	80.0	-47.1	Horiz
48	871.711M	30.3	+0.0 -27.0 +0.0	+22.7 +0.0 +0.0	+0.6 +0.0 +0.0	+5.9 +0.0 +0.0	+0.0	32.5	80.0	-47.5	Horiz
49	668.914M	31.9	+0.0 -27.0 +0.0	+21.8 +0.0 +0.0	+0.5 +0.0 +0.0	+5.1 +0.0 +0.0	+0.0	32.3	80.0	-47.7	Horiz
50	823.249M	30.5	+0.0 -26.9 +0.0	+22.1 +0.0 +0.0	+0.6 +0.0 +0.0	+5.7 +0.0 +0.0	+0.0	32.0	80.0	-48.0	Horiz
51	832.385M	30.2	+0.0 -26.9 +0.0	+22.2 +0.0 +0.0	+0.6 +0.0 +0.0	+5.7 +0.0 +0.0	+0.0	31.8	80.0	-48.2	Horiz
52	945.398M	27.5	+0.0 -27.0 +0.0	+24.1 +0.0 +0.0	+0.6 +0.0 +0.0	+6.2 +0.0 +0.0	+0.0	31.4	80.0	-48.6	Horiz
53	821.223M	29.7	+0.0 -26.9 +0.0	+22.1 +0.0 +0.0	+0.6 +0.0 +0.0	+5.7 +0.0 +0.0	+0.0	31.2	80.0	-48.8	Horiz
54	49.220M	45.6	+11.8 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.2 +0.0 +0.0	+0.0	31.0	80.0	-49.0	Horiz
55	914.553M	27.6	+0.0 -27.1 +0.0	+23.5 +0.0 +0.0	+0.6 +0.0 +0.0	+6.1 +0.0 +0.0	+0.0	30.7	80.0	-49.3	Horiz
56	656.963M	30.9	+0.0 -27.1 +0.0	+21.2 +0.0 +0.0	+0.5 +0.0 +0.0	+5.0 +0.0 +0.0	+0.0	30.5	80.0	-49.5	Horiz

57	584.879M	32.8	+0.0 -27.3 +0.0	+19.3 +0.0 +0.0	+0.5 +0.0 +0.0	+4.7 +0.0 +0.0	+0.0	30.0	80.0	-50.0	Horiz
58	586.632M	32.6	+0.0 -27.3 +0.0	+19.3 +0.0 +0.0	+0.5 +0.0 +0.0	+4.7 +0.0 +0.0	+0.0	29.8	80.0	-50.2	Horiz
59	500.035M	35.2	+0.0 -27.6 +0.0	+17.4 +0.0 +0.0	+0.4 +0.0 +0.0	+4.3 +0.0 +0.0	+0.0	29.7	80.0	-50.3	Horiz
60	138.100M	37.9	+16.8 -27.6 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.1 +0.0 +0.0	+0.0	29.4	80.0	-50.6	Vert
61	374.980M	36.3	+0.0 -27.5 +0.0	+15.9 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	28.7	80.0	-51.3	Vert
62	589.278M	30.7	+0.0 -27.2 +0.0	+19.4 +0.0 +0.0	+0.5 +0.0 +0.0	+4.7 +0.0 +0.0	+0.0	28.1	80.0	-51.9	Horiz
63	392.678M	35.1	+0.0 -27.4 +0.0	+16.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	28.0	80.0	-52.0	Horiz
64	320.026M	32.6	+0.0 -27.5 +0.0	+19.2 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	28.0	80.0	-52.0	Vert
65	396.510M	34.9	+0.0 -27.4 +0.0	+16.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	27.8	80.0	-52.2	Horiz
66	397.174M	34.9	+0.0 -27.4 +0.0	+16.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	27.8	80.0	-52.2	Horiz
67	384.010M	35.1	+0.0 -27.5 +0.0	+16.1 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	27.7	80.0	-52.3	Vert
68	75.750M	46.3	+6.8 -27.7 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.6 +0.0 +0.0	+0.0	27.1	80.0	-52.9	Horiz
69	517.656M	31.5	+0.0 -27.7 +0.0	+17.9 +0.0 +0.0	+0.4 +0.0 +0.0	+4.4 +0.0 +0.0	+0.0	26.5	80.0	-53.5	Horiz
70	357.893M	34.6	+0.0 -27.6 +0.0	+15.6 +0.0 +0.0	+0.3 +0.0 +0.0	+3.6 +0.0 +0.0	+0.0	26.5	80.0	-53.5	Vert
71	516.037M	30.7	+0.0 -27.7 +0.0	+17.9 +0.0 +0.0	+0.4 +0.0 +0.0	+4.4 +0.0 +0.0	+0.0	25.7	80.0	-54.3	Vert

72	344.936M	33.1	+0.0 -27.6 +0.0	+16.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.6 +0.0 +0.0	+0.0	25.4	80.0	-54.6	Horiz
73	345.012M	33.0	+0.0 -27.6 +0.0	+16.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.6 +0.0 +0.0	+0.0	25.3	80.0	-54.7	Vert
74	223.860M	30.3	+17.5 -27.6 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	23.1	80.0	-56.9	Horiz