

TEST REPORT

Report Number: 3152981ATL-002

June 18, 2008

Product Designation: iBoom Jukebox Dock, M/N: UIX0712B

Standard: CFR 47 Part 15.249: Operation within the bands 902-928 MHz
RSS-210 Issue 7 (Annex A2.9)

Tested by:

Intertek Testing Services NA Inc.
1950 Evergreen Blvd., Suite 100
Duluth, GA 30096

Client:

Philips Consumer Lifestyle
3871 South Alston Avenue
Durham, NC 27713
Contact: Garey De Angelis
Phone: 815.577.7067
Fax: 928.447.4973

Tests performed by:



Shawn K. McGuinness
Senior Associate Engineer

Report reviewed by:



David J. Schramm
EMC Department Manager

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1.0 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 3.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested complies with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

2.0 Test Summary

Section	Test Full Name	Test Date	Result
4.0	System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)		
5.0	Overview of EUT (Low Power Transmitters) (FCC 15C - EUT Overview)		
6.0	Duty Cycle Determination (FCC 15A - 15.35(c))		
7.0	Conducted emissions on AC power lines (Conducted Emissions)	05/20/2008	PASS
8.0	Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)	05/20/2008	PASS
9.0	Revision History (Revision History)		

3.0 Description of Equipment Under Test

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
iPod Docking Station	Philips Consumer Lifestyle	iBoom Jukebox	080326
DC Power Supply	Just Hipster	5024EM1500150	Not labeled

EUT receive date:	5-20-2008
EUT receive condition:	Pre-Production

Description of EUT provided by Client:

The iBoom Jukebox is an iPod Docking Station/Home entertainment unit. The EUT is operable with an RF remote control

Description of EUT exercising:

For Radiated and Conducted emissions testing, the unit was operating in a stand-alone configuration programmed for a constant Transmit state @ 915.913 MHz.

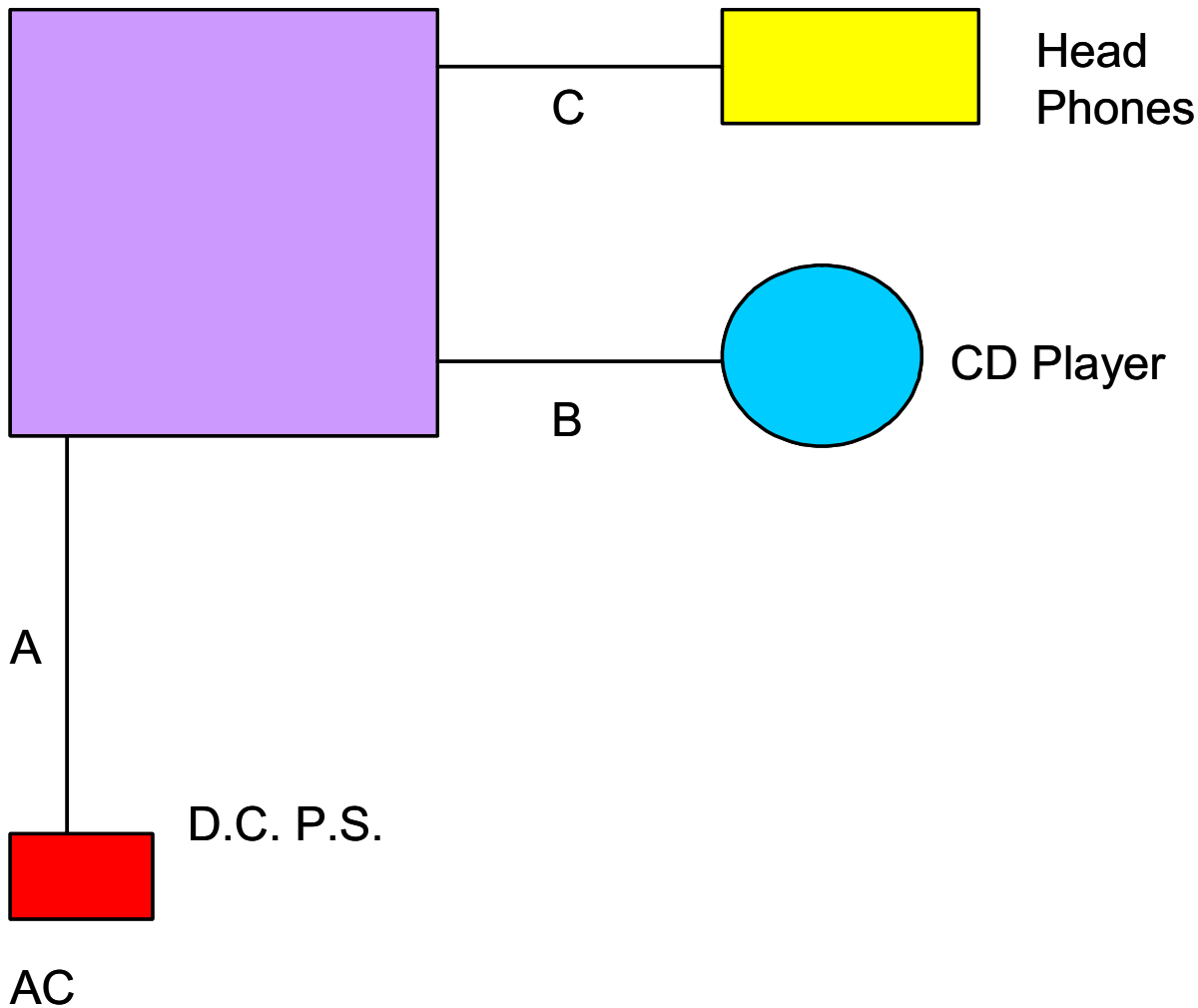
4.0 System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)

Method:

Record the details of EUT cabling, document the support equipment, and show the interconnections in a block diagram.

Drawing:

Docking Station



Block diagram

4.0 System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)

Data:

EUT Cabling						
ID	Description	Length	Shielding	Ferrites	Connection	
					From	To
A	A.C./D.C. Power Line	2.0m	no	no	DC Power Supply	Docking Station
B	CD Player Cable	2.0m	no	no	CD Player	Docking Station
C	Headphone Cable	2.0m	no	no	Headphones	Docking Station

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
CD Player	DuraBrand	CD-968	Not Labeled
Headphones	RadioShack	Not Labeled	Not Labeled

5.0 Overview of EUT (Low Power Transmitters) (FCC 15C - EUT Overview)**Method:**

Complete the overview spreadsheet.

Related Submittal(s) Grants: This report is for use with an application for certification of a low power transmitter. One transmitter is included in the application.

Data:

Applicant	Philips Consumer Lifestyle
	3871 S. Aliston Avenue
	Durham, NC 27713
Trade Name & Model No.	iBoom Jukebox Dock
FCC Identifier	UIX0712B
Use of product	Home use - commercially available
Frequency Range (MHz)	915
Antenna Type (15.203)	Integral, internal
Manufacturer name & address	Philips Consumer Lifestyle
	3871 S. Aliston Avenue
	Durham, NC 27713

Related Submittals and Grants:	This report is for use with an application for certification of a low power transmitter. One transmitter is included in the application.
Additions, deviations and exclusions from standards	None

6.0 Duty Cycle Determination (FCC 15A - 15.35(c))

Method:

(c) Unless otherwise specified, e.g. §15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.

Determine the period of the pulse train, T, in mSec and record the results. T is defined as the time from the beginning of one pulse train to the beginning of the next pulse train.

Count the number of different types of pulses, N and record the results.

For each of the different types of pulses, count the number of occurrences within one pulse train.

Use the Duty Cycle Correction Factor, DCCF, from the results table and use it to adjust the field strength measurements recorded for radiated emissions.

Test Equipment Used:

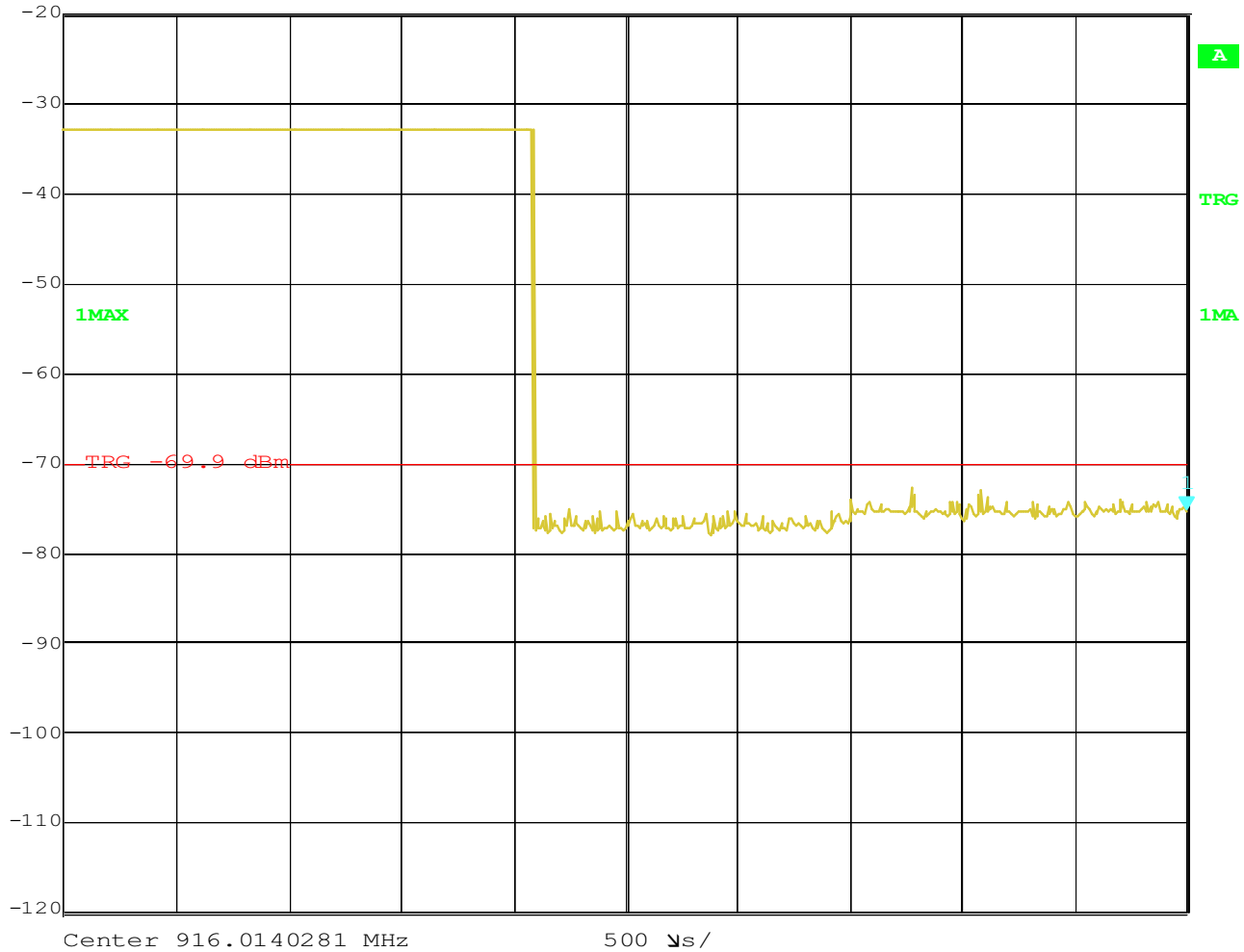
Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Spectrum Analyzer, 20Hz-40GHz	Rohde & Schwarz	FSEK30	200062	03/19/2008	03/19/2009

6.0 Duty Cycle Determination (FCC 15A - 15.35(c))

Photo:



Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	10 dB
-20 dBm	-75.12 dBm	VBW	1 MHz		
	5.000000 ms	SWT	5 ms	Unit	dBm



Date: 21.MAY.2008 09:42:24

Zoom plot

6.0 Duty Cycle Determination (FCC 15A - 15.35(c))

Photo:



Marker 1 [T1]

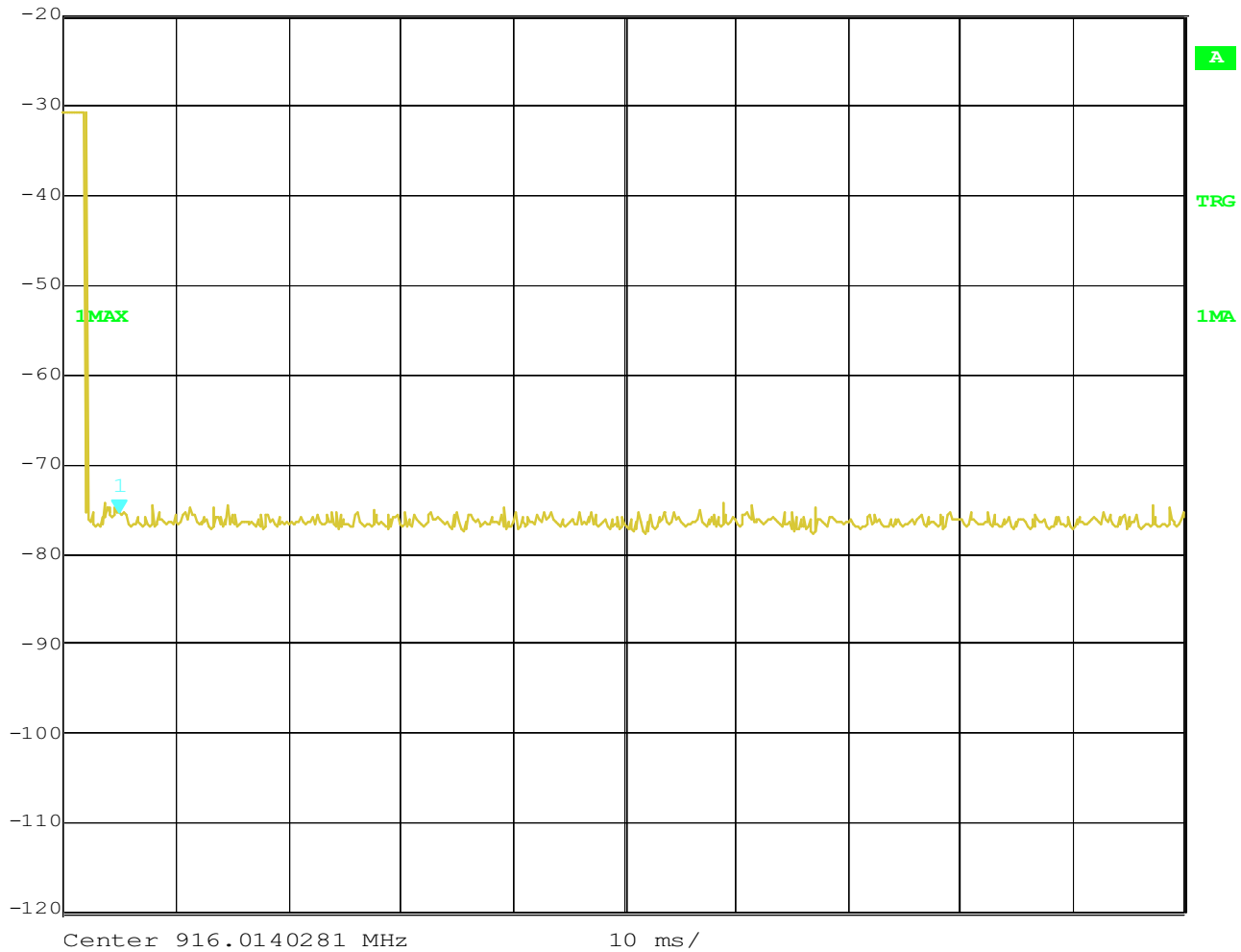
RBW 1 MHz RF Att 10 dB

Ref Lvl -75.29 dBm

VBW 1 MHz

-20 dBm 5.000000 ms

SWT 100 ms Unit dBm



Date: 21.MAY.2008 09:43:56

100 ms Plot

6.0 Duty Cycle Determination (FCC 15A - 15.35(c))

Data:

Duration of Pulse Train, T (mSec):	2
Averaging Interval, A_I (mSec):	100
Number of different Pulses, N:	1

	Number (#P _x)	Pulse Width, mSec (PW _x)	Product (#P _x)*(PW _x)
Pulse Width 1	1	2	2
Pulse Width 2			
Pulse Width 3			
Pulse Width 4			
Pulse Width 5			
Pulse Width 6			
Pulse Width 7			
Pulse Width 8			
Pulse Width 9			
Pulse Width 10			

Duty Cycle:	0.02
Duty Cycle Correction Factor, dB:	-34.0

$$T_{on} = (PW_1 * \#P_1) + (PW_2 * \#P_2) + \dots + (PW_n * \#P_n)$$

$$DutyCycle = T_{on} \div A_I$$

$$DCCF = 20 * \log_{10}(DutyCycle)$$

7.0 Conducted emissions on AC power lines (Conducted Emissions)

Method:

Equipment setup for conducted disturbance tests shall follow the guidelines of ANSI C63.4:2003, RSS-GEN Issue 2 and RSS-210 Issue 7.

Measurements in the frequency range of 150kHz to 30 MHz shall be performed with a quasi-peak or average detector instrument that meets the requirements of Section One of CISPR 16. An AMN shall be used to provide a defined impedance at high frequencies across the power feed at the point of measurement of terminal voltage and also to provide isolation of the circuit under test from the ambient noise on the power lines. An AMN defined in CISPR 16 shall be used.

In the frequency range of 150 kHz to 30 MHz, a resolution/video bandwidth of 9kHz/30kHz or greater shall be used.

The EUT shall be located so that the distance between the boundary of the EUT and the closest surface of the AMN is 0.8m.

If a flexible mains cord is provided by the manufacturer that is in excess of 1m, the excess cable shall be folded back and forth as far as possible to form a bundle not exceeding 0.4m in length.

The EUT shall be arranged and connected with cables terminated in accordance with the product specification.

Conducted disturbance shall be measured between each current carrying conductor and the reference ground. Each measured values shall be reported.

If EUT is intended for tabletop use, the EUT shall be placed on a table whose top is 0.8m above the ground plane. A vertical, metal reference plane is be placed 0.4m from the EUT. The vertical metal reference-plane is at least 2m by 2m. The EUT shall be kept at least 0.8m from any other metal surface or other ground plane not being part of the EUT. The table shall be constructed of non-conductive materials. Its dimensions are at least 1m by 1.5m, but may be extended for larger EUT.

If EUT is floor standing, the floor standing EUT shall be placed on a horizontal metal ground plane and isolated from the ground plane by up to 12 mm of insulating material. The metal ground plane shall extend at least 0.5m beyond the boundaries of the EUT and had minimum dimensions of 2m by 2m.

TEST SITE

The test site for conducted emissions is located at 1950 Evergreen Blvd, Suite 100, Duluth, Georgia 30096.

MEASUREMENT UNCERTAINTY

Compliance of the product is based on the measured value. However, the measurement uncertainty is included for informational purposes. The values given are the measurement uncertainty values with an expanded uncertainty of k=2.

150 kHz to 30 MHz: +/- 2.8 dB

Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Cable TT1, 6ft, N(Male) to N(Male)	Mini-Circuits	CBL-6FT-NMNM	TT1	05/05/2008	05/05/2009
Cable TT4	Andrews	Cable TT4	TT4 211404	05/05/2008	05/05/2009
EMI Receiver	Hewlett Packard	8546A	213109	09/10/2007	09/10/2008
EMI Receiver, Preselector section	Hewlett Packard	85460A	213108	09/10/2007	09/10/2008
Excel spreadsheet for conducted emissions tests	Software	Excel - CE Worksh	SW002	11/21/2007	11/21/2008
LISN (TT4)	Fischer Custom Com	FCC-LISN-50-50-M	211406	10/18/2007	10/18/2008
Spectrum Analyzer, 20Hz-40GHz	Rohde & Schwarz	FSEK30	200062	03/19/2008	03/19/2009
Tile - software profile for radiated and conducted emissions testing.	Software	Tile - Emissions	SW006	11/21/2007	11/21/2008
Transient Limiter	Hewlett Packard	11947A	213152	08/29/2007	08/29/2008

Results: The sample tested was found to Comply.

7.0 Conducted emissions on AC power lines (Conducted Emissions)**Photo:**

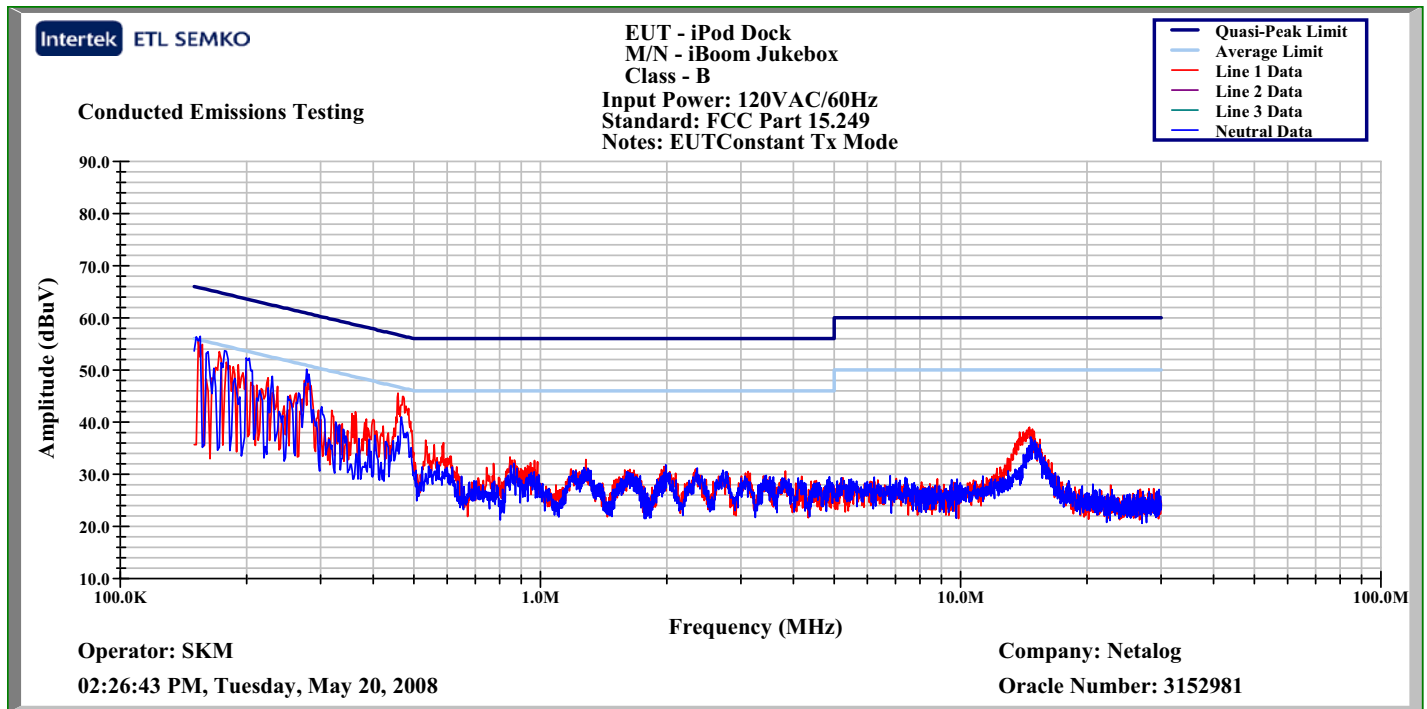
Test set up front

7.0 Conducted emissions on AC power lines (Conducted Emissions)**Photo:**

Test set up rear

7.0 Conducted emissions on AC power lines (Conducted Emissions)

Plot:



Scan plot Tx Mode

7.0 Conducted emissions on AC power lines (Conducted Emissions)

Data:

Date: 5-20-2008

Frequency Range (MHz): .150 to 30

Limit: CISPR Class B

Input power: 120VAC/60Hz

Modifications for compliance (y/n): n

A	B	C	D	E	F	G	H	I
LISN Number 1,2	Detector (P,QP, A)	Frequency MHz	Reading dBuV	Cable Loss dB	LISN Ins. Loss dB	Net dBuV	Limit dBuV	Margin dB
Constant Tx Mode								
1	QP	0.153	48.2	0.3	6.1	54.6	66.0	-11.5
1	A	0.153	30.4	0.3	6.1	36.8	56.0	-19.3
1	QP	0.185	45.4	0.3	6.1	51.8	64.3	-12.6
1	A	0.185	26.6	0.3	6.1	33.0	54.3	-21.4
1	QP	0.280	41.2	0.3	6.1	47.6	60.8	-13.3
1	A	0.280	34.0	0.3	6.1	40.4	50.8	-10.5
1	QP	0.472	37.3	0.3	6.0	43.6	56.5	-13.0
1	A	0.472	29.5	0.3	6.0	35.8	46.5	-10.8
2	QP	0.154	45.8	0.3	6.1	52.2	66.0	-13.9
2	A	0.154	27.4	0.3	6.1	33.8	56.0	-22.3
2	QP	0.185	45.9	0.3	6.1	52.3	64.3	-12.1
2	A	0.185	26.9	0.3	6.1	33.3	54.3	-21.1
2	QP	0.225	40.2	0.3	6.1	46.6	62.6	-16.1
2	A	0.225	2.7	0.3	6.1	9.1	52.6	-43.6
2	QP	0.279	41.2	0.3	6.1	47.6	61.0	-13.5
2	A	0.279	34.1	0.3	6.1	40.5	51.0	-10.6
Calculations		G=D+E+F		I=G-H				

8.0 Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)

Method:

Measurements shall be performed with a quasi-peak detector instrument that meets the requirements of Section One of CISPR 16.

Bandwidths:

30 MHz to 1000 MHz: 120 kHz RBW and 1 MHz VBW

Above 1000 MHz: 1 MHz RBW and 3 MHz VBW

Detectors:

Equal to or less than 1000 MHz: CISPR quasi-peak detector (alternative: peak detector)

Above 1000 MHz: Average detector (applies to average limit)

Above 1000 MHz: Peak detector (applies to peak limit)

Limits:

Equal to or less than 1000 MHz, the limits are specified as quasi-peak. If a peak detector is used, the limit does not change.

Above 1000 MHz, the limits are specified as average. The peak limit is 20 dB above the average limit. Both peak and average measurements are required to be reported.

Frequency range of radiated measurements

For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in this paragraph:

(1) If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

(2) If the intentional radiator operates at or above 10 GHz and below 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.

(3) If the intentional radiator operates at or above 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower, unless specified otherwise elsewhere in the rules.

(4) If the intentional radiator contains a digital device, regardless of whether this digital device controls the functions of the intentional radiator or the digital device is used for additional control or function purposes other than to enable the operation of the intentional radiator, the frequency range shall be investigated up to the range specified in paragraphs (a)(1) through (a)(3) of this section or the range applicable to the digital device, as shown in paragraph (b)(1) of this section, whichever is the higher frequency range of investigation.

Measurement antenna requirements:

Below 30 MHz - Loop antenna

30 to 1000 MHz - Biconical, Log Periodic, or equivalent

Above 1000 MHz - Horn or equivalent

Measurements of the radiated field are made with the antenna located at a distance of 3 or 10 meters from the EUT. The limit applied to the measurement shall be appropriate for the test distance. The test distance shall be indicated in the results section.

The EUT shall be arranged and connected with cables terminated in accordance with the product specification.

Exploratory tests should be carried out while varying the cable positions to determine the maximum or near-maximum emission level. During manipulation, cables shall not be placed under or on top of the system test components unless such placement is required by the inherent equipment design.

The antenna shall be adjusted between 1m and 4m in height above the ground plane for maximum meter reading at each test frequency.

The antenna-to-EUT azimuth shall be varied during the measurement to find the maximum field-strength readings.

The antenna-to-EUT polarization (horizontal and vertical) shall be varied during the measurements to find the maximum field-strength readings.

If the EUT is handheld, it shall be oriented in each of its orthogonal axes.

If the EUT is intended for tabletop use, it shall be placed on a table whose top is 0.8m above the ground plane. The table shall be constructed of non-conductive materials. Its dimensions are at least 1m by 1.5m, but may be extended for larger EUT.

If EUT is floor standing, the EUT was placed on a horizontal metal ground plane and isolated from the ground plane by up to 12 mm of insulating material.

Equipment setup for radiated disturbance tests shall follow the guidelines of ANSI C63.4:2003.

TEST SITE

The test site for radiated emissions is located at 1950 Evergreen Blvd, Suite 100, Duluth, Georgia 30096.

Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Antenna, BiLog, 20-2000MHz	Chase	CBL6112B	211386	09/07/2007	09/07/2008

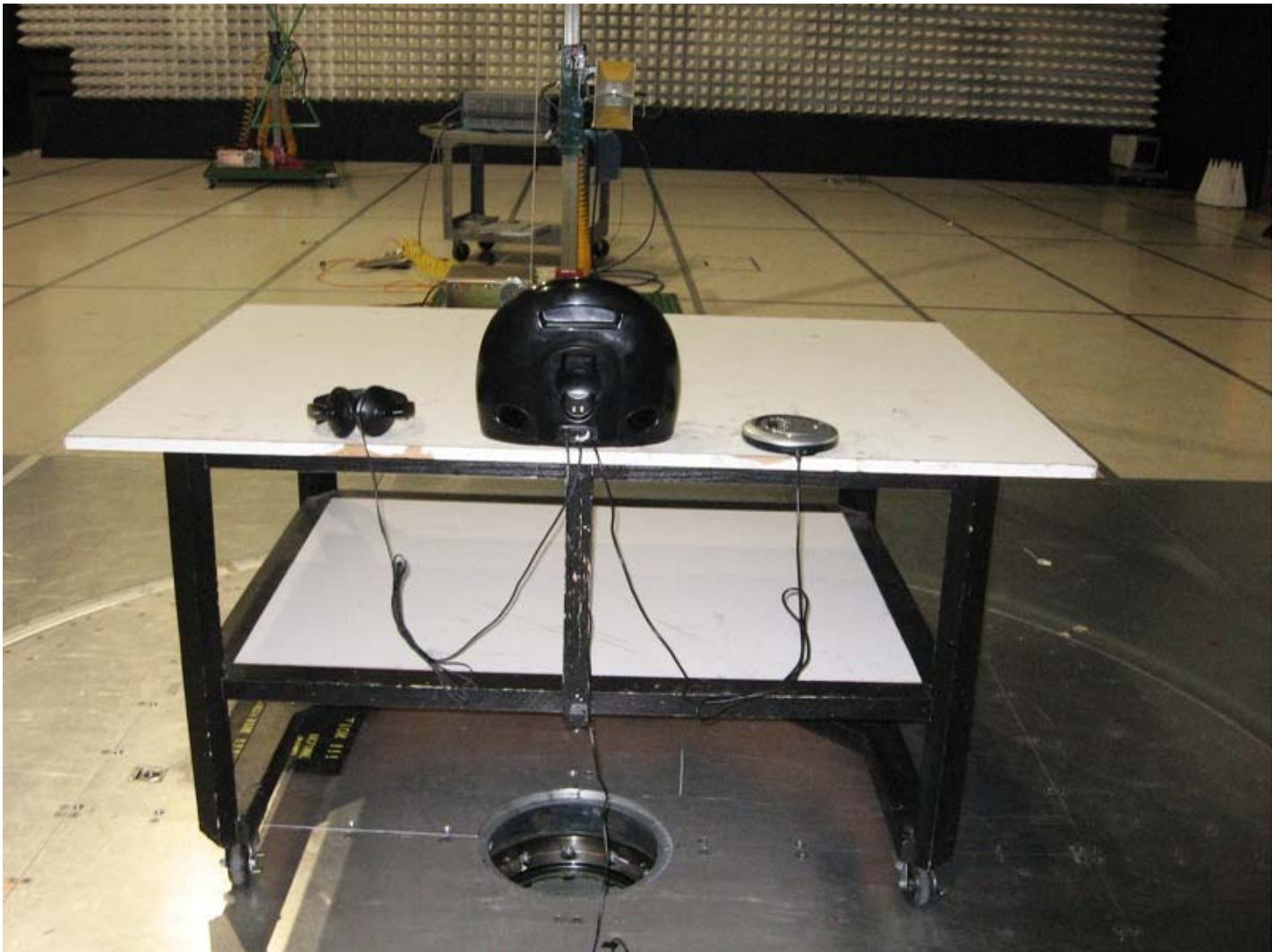
8.0 Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)**Test Equipment Used:**

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Antenna, Horn, <18 GHz	EMCO	3115	BOX-HORN1	07/26/2007	07/26/2008
Cable E01, <18GHz	Pasternack	RG214/U	E01	05/05/2008	05/05/2009
Cable E05, <18GHz	Huber-Suhner	Sucoflex 104PEA	E05	05/05/2008	05/05/2009
Cable E201, 18 GHz, N, 3m	Megaphase	TM18 NKNK 118	E201	01/16/2008	01/16/2009
Cable MP3, 18 GHz, N, 10m	Megaphase	G919-NKNK-394	MP3	05/05/2008	05/05/2009
Cable ST1, 7m, N-N, 18 GHz	Storm Products Co.	PR90-206-7MTR	ST1	01/16/2008	01/16/2009
EMI Receiver	Hewlett Packard	8546A	213109	09/10/2007	09/10/2008
EMI Receiver, Preselector section	Hewlett Packard	85460A	213108	09/10/2007	09/10/2008
Excel spreadsheet for radiated emissions	Software	Excel - RE Worksh	SW004	11/21/2007	11/21/2008
Filter, 2 GHz High Pass	Filtek	HP12/2000-5AB	213155a	03/21/2008	03/21/2009
Preamplifier, 10 MHz to 2000 MHz, 27 dB gain	Mini-Circuits	ZKL-2	200074	09/06/2007	09/06/2008
Preamplifier, 20 MHz to 18 GHz, 40 dB	A.H. Systems	PAM-0118	200108	03/27/2008	03/27/2009
Spectrum Analyzer, 20Hz-40GHz	Rohde & Schwarz	FSEK30	200062	03/19/2008	03/19/2009

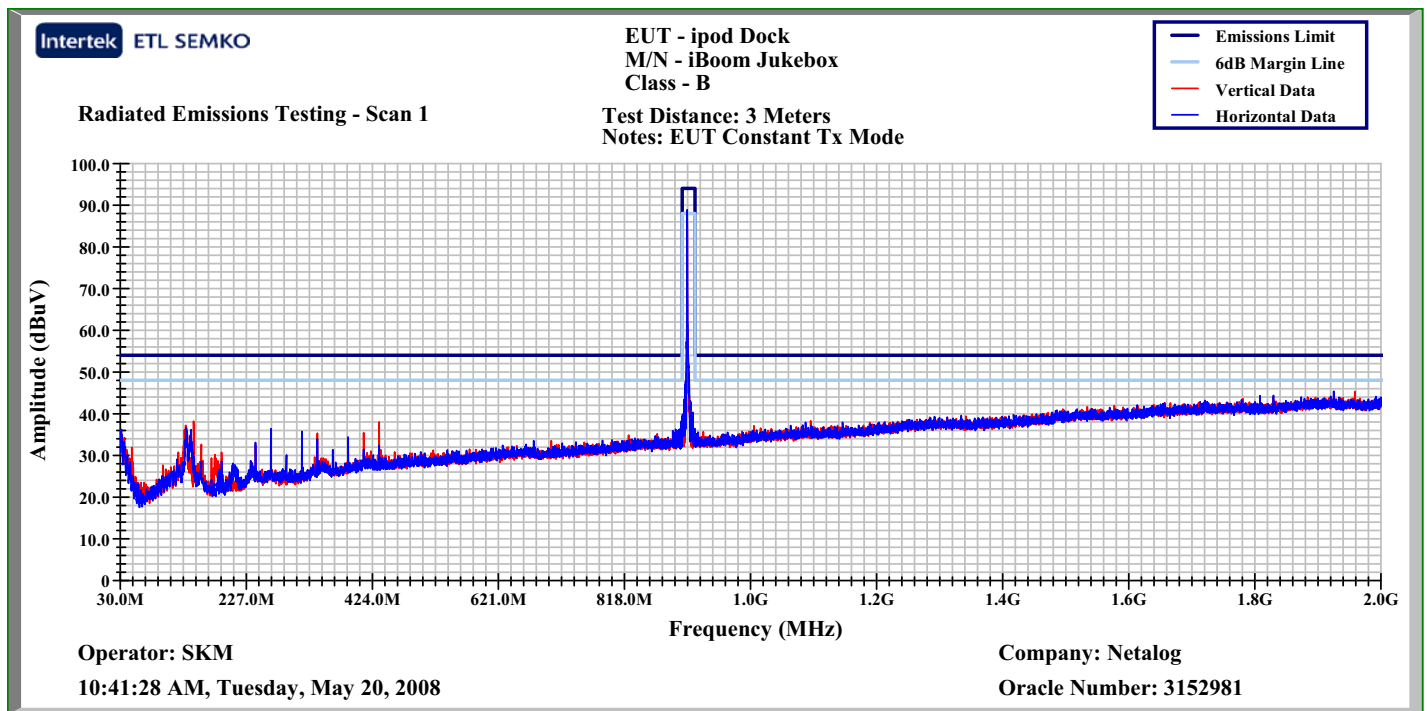
Results: The sample tested was found to Comply.

8.0 Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)**Photo:**

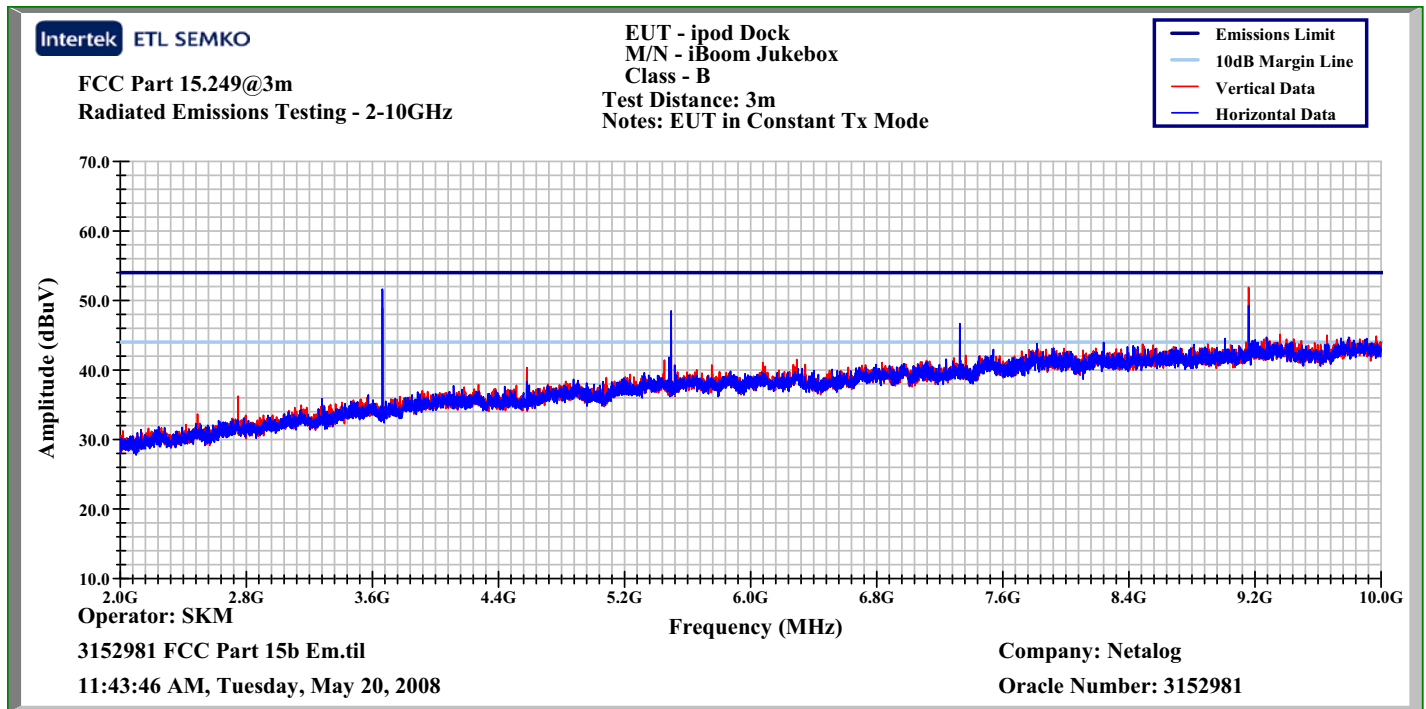
Test set up front

8.0 Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)**Photo:**

Test set up rear

8.0 Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)**Plot:**

Scan plot Tx Mode 30 to 2000MHz

8.0 Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)**Plot:**

Scan plot Tx Mode 2 to 10GHz

8.0 Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)**Data:****Client:** Netalog**Model Number:** iBoom Jukebox**Project Number:** 3152981**Tested By:** SKM**Date:** 5-20-2008**Frequency Range (MHz):** 30 to 2000**Input power:** 120VAC/60Hz**Receiver:** HP 8546A**Antenna:** Chase 2622**Cables:** E01+MP3+E201+E05**Preamp:** ZKL-2 D052005**Test Distance (m):** 3**Limit:** 15.249 @ 915MHz**Modifications for compliance (y/n):** N

A	B	C	D	E	F	G	H	I	J
Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Detectors / Bandwidths Det/RBW/VBW
Constant Tx Mode									
H	915.913	89.7	22.3	6.4	27.3	91.1	94.0	-3.0	QP120K/300K
V	915.913	90.2	20.7	6.4	27.3	88.3	94.0	-4.1	QP120K/300K
Calculations		G=C+D+E-F		I=G-H					

Data Tx Mode 30 to 2000MHz

8.0 Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)

Data:

Date: 5-20-2008

Frequency Range (GHz): 2 to 10

Test Distance (m): 3

Input power: 120VAC/60Hz

Limit: 15.249 @ 915MHz

Modifications for compliance (y/n): N

A	B	C	D	E	F	G	H	I	J
Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Detectors / Bandwidths Det/RBW/VBW
EUT in Constant Tx Mode									
H	3663.600	51.4	31.2	9.5	41.1	51.0	74.0	-23.0	Pk 1M/3M
H	3663.600	45.9	31.2	9.5	41.1	45.5	54.0	-8.5	Avg 1M/3M
H	5495.875	43.2	33.3	13.1	40.9	48.7	74.0	-25.3	Pk 1M/3M
H	5495.875	36.5	33.3	13.1	40.9	42.0	54.0	-12.0	Avg 1M/3M
H	7327.600	33.8	35.4	16.0	39.0	46.2	74.0	-27.8	Pk 1M/3M
H	7327.600	27.6	35.4	16.0	39.0	40.0	54.0	-14.0	Avg 1M/3M
V	9159.500	33.7	37.8	17.9	37.7	51.7	74.0	-22.3	Pk 1M/3M
V	9159.500	27.9	37.8	17.9	37.7	45.9	54.0	-8.1	Avg 1M/3M
Calculations		G=C+D+E-F		I=G-H					

Data sheet Tx Mode 2 to 10GHz

9.0 Revision History (Revision History)

Method:

Document the history of the report.

Data:

Original issue	May 30, 2008	3152981ATL-002	--
1	June 18, 2008	3152981ATL-002	Added model number to cover page/footers