

Date of Test: July 6 to 8, 2004

IC Number: 5202A

FCC ID: SBP2442

TEST REPORT

Report Number: 3062161
Project Number: 3062161
July 9, 2004

Testing performed on the

Model: iAccessLinc 2442

to

FCC Part 15.249
RSS-210 Part 6.2.2 (m2)

For
SmartHome, Inc.



A2LA Certificate Number: 1755.01

Test Performed by:
Intertek
1365 Adams Court
Menlo Park, CA 94025

Test Authorized by:
SmartHome, Inc.
16542 Millikan Ave.
Irvine, CA 92606

Prepared by: *S. Marker*
Sergey Marker

Date: 7/9/04

Reviewed by: *Ollie Moyrong*
Ollie Moyrong

Date: 7/9/04

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1.0 Summary of Test Results

FCC RULE	DESCRIPTION OF TEST	RESULT	PAGE
15.249a	Field Strength of fundamental	Worst case: 92.0 dB(μ V/m) Margin: 2.0 dB	12
15.249a	Field Strength of harmonics	Worst case: 36.4 dB(μ V/m) @ 1808 MHz. Margin: 17.6 dB	12
15.249c	Radiated emissions outside the band, except harmonics.	Worst case: 52.25 dB below the fundamental Margin: 2.5 dB	16
15.203	Antenna requirement	Complies	23
*15.207	Line Conducted Emissions (transmit mode)	Worst case: 47.5 dB μ V Margin: 2.5 dB	28
*15.107	Line Conducted Emissions (receive mode)	Worst case: 47.7 dB μ V Margin: 2.3 dB	25
15.109	Radiated Emission (receive mode)	Worst case: 42.7 dB μ V Margin: 3.3 dB	15
2.1049	Occupied Bandwidth	138 kHz	31


* EUT has been modified to pass this test. See section 3.4 for details of modification.

We confirm that the product tested and our review of the above numbered report without reasonable doubt will fulfill the requirements concerning electromagnetic compatibility according to the above-mentioned standard.

EMC Department

Date of issue: July 9, 2004

Test Engineer: 
Sergey Marker

Reviewing Engineer: 
Ollie Moyrong

Date of Test: July 6 to 8, 2004

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2.0 General Description**2.1 Product Description*****EQUIPMENT UNDER TEST******Type of equipment*** RF Phase Bridge Transceiver***Type/Model*** iAccessLinc 2442***EUT description***
Range: 200ft. (line of sight)
Frequency: RF 904MHz
RF sensitivity: 103 dbm
Modulation: FSK
Messages per seconds: 10
Supply voltage, wattage: 120VAC, 6VA maximum
Pass-through outlet ratings: 120VAC, 15A
Operational environment: Indoors, 0-70°C, up to 85% r.h.
Antenna: ¼ Wave Vertical Antenna (permanently attached)***Manufacturer*** SmartHome, Inc.
16542 Millikan Ave.
Irvine, CA 92606***Tested by request of*** Mr. Don Bartley
Phone: (949) 221-9200
Fax: (949) 221-0368***Standards:*** FCC Part 15.249
RSS-210 part 6.2.2 (m2)***Test Report No.*** 3062161***FCC ID:*** SBP2442***Industry Canada Number:*** 5202A

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2.2 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. This specific report details the emission characteristics of transmitter.

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). Radiated emission measurements were performed in Semi Anechoic 10 m Chamber. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

2.4 Test Facility

The 10 m Semi Anechoic Chamber and conducted measurement facility used to collect the radiated data is Site 1. This test facility and site measurement data have been fully placed on file with the FCC, Industry of Canada and A2LA accredited.

Test Facility: Intertek ETL Semko
1365 Adams Court
Menlo Park, CA 94025

Accreditations: FCC Registration Number 90708
A2LA Certificate Number 1755.01
Canada Registration Number IC2059-1

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3.0 System Test Configuration

3.1 Justification

For emission testing, the equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). During testing, all cables were manipulated to produce worst case emissions.

For the measurements, the EUT is attached to a cardboard box (if necessary) and placed on the wooden turntable. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). The EUT is wired to transmit full power.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.

3.2 EUT Exercising Software

No software was required to exercise the EUT.

3.3 System Test Configuration

3.3.1 Support Equipment

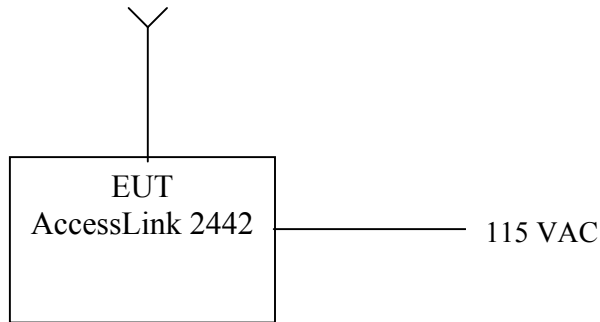
No support equipment was required to operate the EUT.

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3.3.2 Block Diagram of Test Setup



S: Shielded	U: Unshielded	F: With Ferrite Core
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Support Equipment					
Equip.#	Equipment	Manufacturer	Model #	S/N #	FCC ID
None					

3.4 Equipment Modification

EUT has been modified in order to pass Line Conducted Emission test:

- Added external wire to PCB from Power input J1 to the High voltage terminal at C4.

3.5 Mode(s) of operation

The EUT was powered from 115 VAC power line. The EUT utilizes Frequency Shift Keyed (FSK) modulation in normal operation. During the tests EUT was wired to operate at continuous transmitting mode (CW).

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4.0 Field Strength of Emission

4.1 Test Description

Parameter:	FCC 15.249a
Requirement:	FCC 15.249a
Fundamental:	Limit 94 dB μ V
Harmonics:	Limit 54 dB μ V

4.1.1 Test Procedure

For the measurements, the EUT is attached to a cardboard box (if necessary) and placed on the wooden turntable which is 0.8 m above the ground plane on the open test site. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). The EUT is wired to transmit full power in CW mode. Average Factor was calculated and added to the peak emission obtained in CW mode. The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Radiated emission measurements were performed from 30 MHz to the 10th harmonic of transmitter frequency. Analyzer resolution is 120 KHz for 30 to 1000 MHz, 1 MHz for >1000 MHz. This test was performed per test procedure specified in ANSI C63.4 (2003).

4.1.2 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with antennas, cables, preamplifiers (if any) and average factors (when specified limits is in average and measurements are made with peak detectors) The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG + AV$$

where FS = Field Strength in dB(μ V/m)
 RA = Receiver Amplitude in dB(μ V)
 CF = Cable Attenuation Factor in dB
 AF = Antenna Factor in dB/m
 AG = Amplifier Gain in dB
 AV = Average Factor in (-dB)

Assume a receiver reading of 52.0 dB(μ V) is obtained. The antenna factor of 7.4 dB/m, cable factor of 4.6 dB and average factor of -5.1dB are added. The amplifier gain of 27 dB is subtracted, giving a field strength of 32 dB(μ V/m).

$$\begin{aligned}
 RA &= 52 \text{ dB}(\mu\text{V}) & CF &= 1.6 \text{ dB} & AV &= -5.1 \text{ dB} \\
 AF &= 7.4 \text{ dB/m} & AG &= 29 \text{ dB} & FS &= 52 + 7.4 + 4.7 - 27 - 5.1 = 32 \text{ dB}(\mu\text{V/m})
 \end{aligned}$$

This value in dB(μ V/m) was converted to its corresponding level in μ V/m.

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Level in $\mu\text{V}/\text{m}$ = Common Antilogarithm $\{[32 \text{ dB}(\mu\text{V}/\text{m})]/20\} = 39.8 \mu\text{V}/\text{m}$

Note: In the following table(s), the level shown on the data table includes the antenna factor, cable factor and preamplifier gain.

4.1.3 Calculation of Average Factor.

Average Factor (AV) in dB = $20 \log$ (duty cycle)

The specification for the field strength at frequencies above 1000 MHz according to FCC rules specify measurements with average detectors. The EUT use Frequency Shift Keyed (FSK) modulation in normal operation. During the tests EUT was wired to operate at continuous transmitting mode (CW). For field strength measurements of emission from transmitter, average factor was calculated and added to the peak emission obtained in CW mode and compared to the limit specified for average detector.

The time period over the duty cycle is 100 milliseconds, or the repetition cycle, whichever is a shorter time frame. The worst case (highest percentage on) duty cycle is used for calculation.

The duty cycle is simply the On-time divided by the period:

Time period = 100 ms

Effective period of the cycle = $6.5 \text{ ms} \times 2 = 13 \text{ ms}$

DC = $13 \text{ ms}/100 \text{ ms} = 0.13$

AV = $20 \log 0.13 = -17.7 \text{ dB}$

Plot on the next page shows the transmission timing over 100 ms time frame.

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14:12:59 JUL 07, 2004

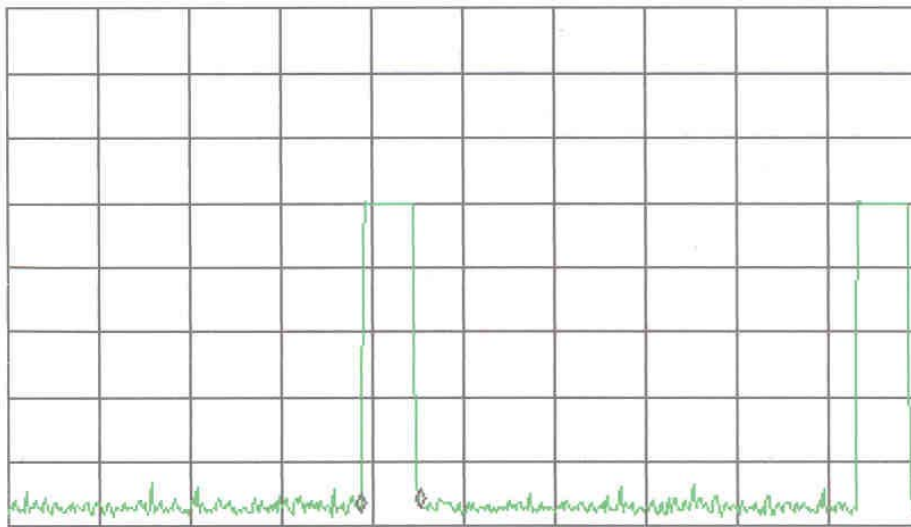
MARKER Δ
6.5000 msec
.75 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ 6.5000 msec
.75 dB

Last Hrd
Key Menu
SPAN

LOG REF 91.6 dB μ V

10
dB/
ATN
10 dB



MARKER
NORMAL

MARKER Δ

MARKER
AMPTD

SELECT
1 2 3 4

MARKER 1
ON OFF

CENTER 904.181 MHz
#IF BW 120 kHz

#AVG BW 30 kHz

SPAN 0 Hz
#SWP 100 msec

More
1 of 2

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4.1.4 Radiated Emission Data

Standard: FCC Part 15.249a
Company: SmartHome, Inc.
Job No. 3062161
Model Name: iAccessLinc 2442
Tested by: Sergey Marker
Date: 7/7/04
Mode: Transmitter
Distance: 3 m

Measurement Uncertainty: 3.92dB
 Temperature: 24°C
 Relative Humidity: 49 %

Frequency	Detector	Vertical level	Horizontal level	D.C.F.	Limit	Margin
MHz		(dBuV/m)	(dBuV/m)	dB	(dBuV/m)	(dB)
**904	Q.Peak	92.0	82.1	0.0	94	-2.0
1808	Peak	54.1	51.6	0.0	74.0	-19.9
1808	Ave	36.4	33.9	0.0	54.0	-17.6
*2712	Peak	52.3	53.2	0.0	74.0	-20.8
*2712	Ave.	34.6	35.5	0.0	54.0	-18.5
*3616	Peak	48.7	49.4	0.0	74.0	-24.6
*3616	Ave.	31.0	31.7	0.0	54.0	-22.3
*4520	Peak	47.3	46.1	0.0	74.0	-26.7
*4520	Ave.	29.6	28.4	0.0	54.0	-24.2
*5424	Peak	48.7	47.1	0.0	74.0	-25.3
*5424	Ave.	31.0	29.4	0.0	54.0	-23.0
6328	Peak	49.3	48.8	0.0	74.0	-24.7
6328	Ave.	31.6	31.1	0.0	54.0	-22.4
7232	Peak	46.2	46.2	0.0	74.0	-27.8
7232	Ave.	28.5	28.5	0.0	54.0	-25.5
*8136	Peak	47.7	47.7	0.0	74.0	-26.3
*8136	Ave.	30.0	30.0	0.0	54.0	-24.0
*9040	Peak	52.1	52.1	0.0	74.0	-21.9
*9040	Ave.	34.4	34.4	0.0	54.0	-19.6

Notes:

- a) The field strength shown in the table (Vertical and Horizontal levels) included Antenna factor, Cable loss and Pre-amplifier Gain (if applicable).
- b) The field strength shown in the table for Average Detector (Vertical and Horizontal levels) obtained through the calculation by adding Average factor (-17.7 dB) to the Peak measurements.
- c) Negative signs (-) in Margin column signify levels below the limits.
- d) For frequencies below 1000 MHz the, above limits are based on quasi-peak limits.
 Analyzer setting: RBW =120 KHz, VBW =300 KHz

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- e) For frequencies above 1000 MHz the, above limits are based on average limits.
- f) Peak measurement shown for the compliance with 15.35b (peak measurements of emission shall not exceed the average limits specified above by more than 20 dB).
Analyzer setting: RBW =1 MHz, VBW =1 MHz
- g) All other emissions not reported are below the equipment noise floor which is at least 6 dB below the limits.
- h) D.C.F: Distance Correction Factor.
- i) * Restricted Frequency Band. Only spurious emissions are permitted (15.205).

Test Result	Passed with 2 dB margin at 904 MHz. ** The measurement result is below the specification limit by a margin less than the measurement uncertainty; it is not therefore possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a high probability that the product tested complies with the specification limit
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4.2 Test Description

Parameter:	FCC 15.109
Requirement:	FCC 15.109, class B
0.009 – 0.490	2400/F (kHz) ($\mu\text{V}/\text{m}$) @ 300 m
0.490 – 1.705	2400/F (kHz) ($\mu\text{V}/\text{m}$) @ 30 m
1.705 – 30.0	29.5 dB μV @ 30 m
30-88 MHz	40 dB μ @ 3 m
88-216 MHz	43.5 dB μV @ 3 m
216-960 MHz	46 dB μV @ 3 m
Above 960 MHz	54 dB μV @ 3 m

4.2.1 Test Procedure

See section 4.1.1.

4.2.2 Field Strength Calculation

See section 4.1.2.

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4.2.3 Radiated Emission Data

Standard: FCC Part 15, Subpart C (15.249)

Measurement Uncertainty: 3.92dB

Company: SmartHome, Inc.

Temperature: 24°C

Job No. 3062161

Relative Humidity: 49 %

Model Name: iAccessLinc 2442

Tested by: Sergey Marker

Date: 7/7/04

Mode: Receiver

Frequency	Detector	Vertical level	Horizontal level	Distance	D.C.F.	Limit	Margin
MHz		(dBuV/m)	(dBuV/m)	m	dB	(dBuV/m)	(dB)
0.132	Ave.	43.8	-	10	59.1	25.2	-40.5
38.7	Q.Peak	22.3	16.1	3	0.0	40.0	-17.7
44.2	Q.Peak	31.9	17.7	3	0.0	40.0	-8.1
66.4	Q.Peak	30.6	23.7	3	0.0	40.0	-9.4
110.6	Q.Peak	28.5	28.9	3	0.0	43.5	-14.6
*904.0	Q.Peak	42.7	38.1	3	0.0	46.0	-3.3
1808.0	Ave.	38.5	40.5	3	0.0	54.0	-13.5
3616.0	Ave.	34.1	37.5	3	0.0	54.0	-16.5

Notes:

- a) The field strength shown in the table for Peak Detector (Vertical and Horizontal levels) included Antenna factor, Cable loss and Pre-amplifier Gain (if applicable).
- b) All emissions not reported were at least 20 dB below the limits.
- c) Negative signs (-) in Margin column signify levels below the limits.
- d) Analyzer setting:
 - RBW ≥ 1 MHz, VBW ≥ 1 MHz, for freq. > 1 GHz
 - RBW ≥ 100kHz, VBW ≥ 100 kHz, for freq. < 1 GHz
 - RBW ≥ 1 kHz, VBW ≥ 1 kHz for freq. < 150 kHz
 Detector mode: Average (>1 GHz and < 150 kHz) and Quasi-peak (<1 GHz).
- e) D.C.F: Distance Correction Factor

Test Result	<p>Passed with 3.3 dB margin at 904 MHz.</p> <p>* The measurement result is below the specification limit by a margin less than the measurement uncertainty; it is not therefore possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a high probability that the product tested complies with the specification limit</p>
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5.0 Out of Band Emission

5.1 Test Description

Parameter:	FCC 15.249c
Requirement:	FCC 15.249c
Attenuation limits	> 50 dB or FCC 15.209

5.2 Test Procedure

These measurements performed inside the semi anechoic chamber. For measurements below 1 GHz, a biconilog antenna was used. For measurements above 1 GHz, a horn antenna was used. Several plots were made to show emissions from 30 MHz up to 7th harmonic.

5.3 Test Results

See attached plots.

The following plots show the relative spurious emission level of the transmitter.

Plot #	Description
5.3.a	Plot shows peak measurements differential between fundamental and frequency range from 30 to 902 MHz (complies with >50 dB)
5.3.b	Plot shows peak measurements differential between fundamental and lower edge of the frequency band (complies with >50 dB)
5.3.c	Plot shows peak measurements differential between fundamental and upper edge of the frequency band (complies with >50 dB)
5.3.d	Plot shows peak measurements differential between fundamental and frequency range from 902 to 2000 MHz (complies with >50 dB)
5.3.e	Plot shows no spurious emission from 2000 to 3000 MHz. It also shows compliance with 50 dB below the level of fundamental (complies with >50 dB)
5.3.f	Plot shows no spurious emission from 3000 to 6500 MHz. It also shows compliance with 50 dB below the level of fundamental (complies with >50 dB)

Note 1: There are no emissions observed above 3d harmonic of fundamental frequency. All spurious emissions outside the frequency band 902 – 928 MHz are attenuated by more than 50 dB below the level of fundamental or below the limits specified in 15.209

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MARKER Δ
 -206.5 MHz
 -52.25 dB

ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR Δ -206.5 MHz
 -52.25 dB

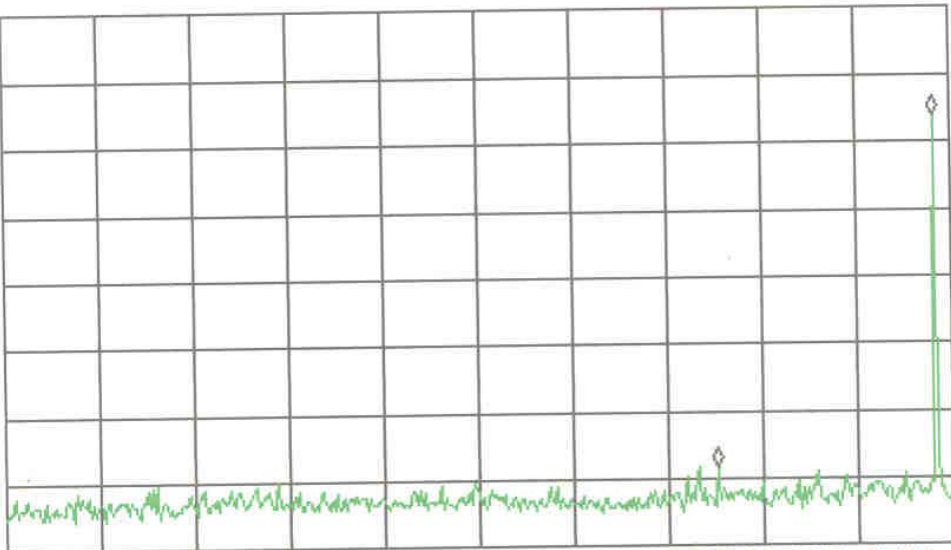
Last Hrd
 Key Menu

SPAN

LOG REF 90.0 dB μ V

10
 dB/
 ATN
 10 dB

VA SB
 SC FC
 CORR



START 30.0 MHz STOP 928.0 MHz
 #IF BW 100 kHz #AVG BW 100 kHz SWP 269 msec

MARKER
 \downarrow CF

MARKER
 Δ

NEXT
 PEAK

NEXT PK
 RIGHT

NEXT PK
 LEFT

More
 1 of 2

Plot 5.3.a

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14:54:13 JUL 06, 2004

MARKER Δ
 -2.21 MHz
 -60.72 dB

ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR Δ -2.21 MHz
 -60.72 dB

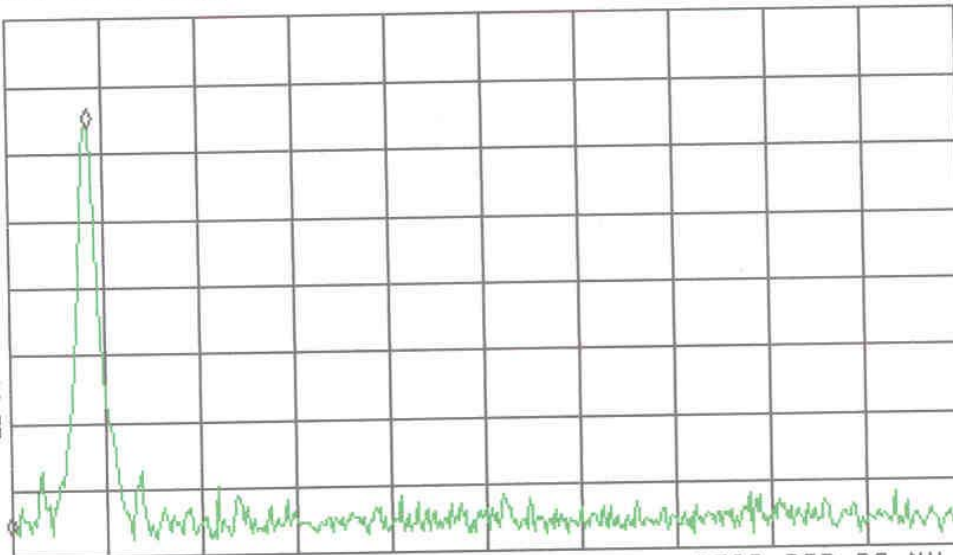
Last Hrd
 Key Menu

SPAN

LOG REF 90.0 dB μ V

10
 dB/
 ATN
 10 dB

VA SB
 SC FC
 CORR



START 902.00 MHz

#IF BW 100 kHz

#AVG BW 100 kHz

STOP 920.00 MHz

SWP 20.0 msec

MARKER
 Δ CF

MARKER Δ

NEXT
 PEAK

NEXT PK
 RIGHT

NEXT PK
 LEFT

More
 1 of 2

Plot 5.3.b

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14:55:27 JUL 06, 2004

MARKER Δ
23.79 MHz
-60.73 dB

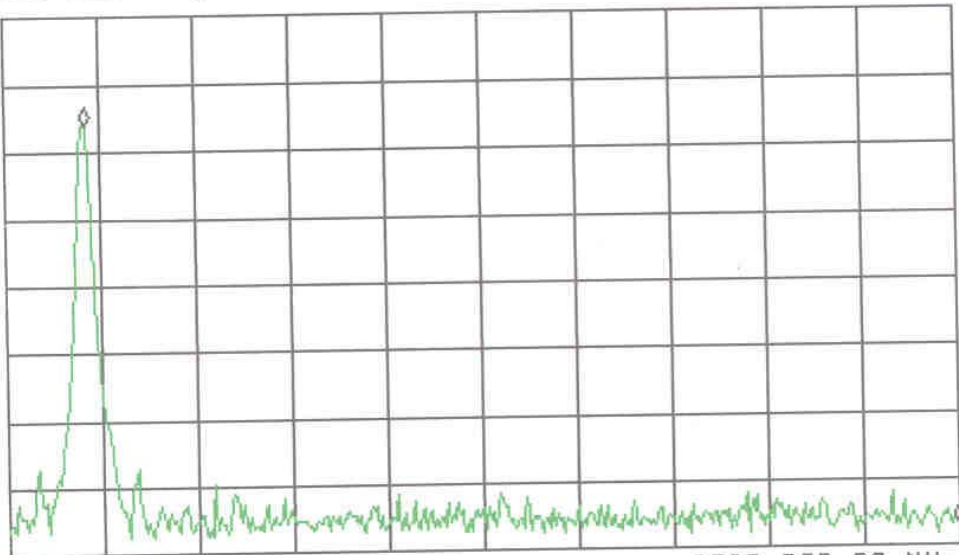
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ 23.79 MHz
-60.73 dB

Last Hrd
Key Menu
SPAN

LOG REF 90.0 dBμV

10
dB/
ATN
10 dB

VA SB
SC FC
CORR



START 902.00 MHz

#IF BW 100 kHz

#AVG BW 100 kHz

STOP 928.00 MHz

SWP 20.0 msec

MARKER
↓ CF

MARKER
Δ

NEXT
PEAK

NEXT PK
RIGHT

NEXT PK
LEFT

More
1 of 2

Plot 5.3.c

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14:21:22 JUL 06, 2004

MARKER Δ
582 MHz
-56.67 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ 582 MHz
-56.67 dB

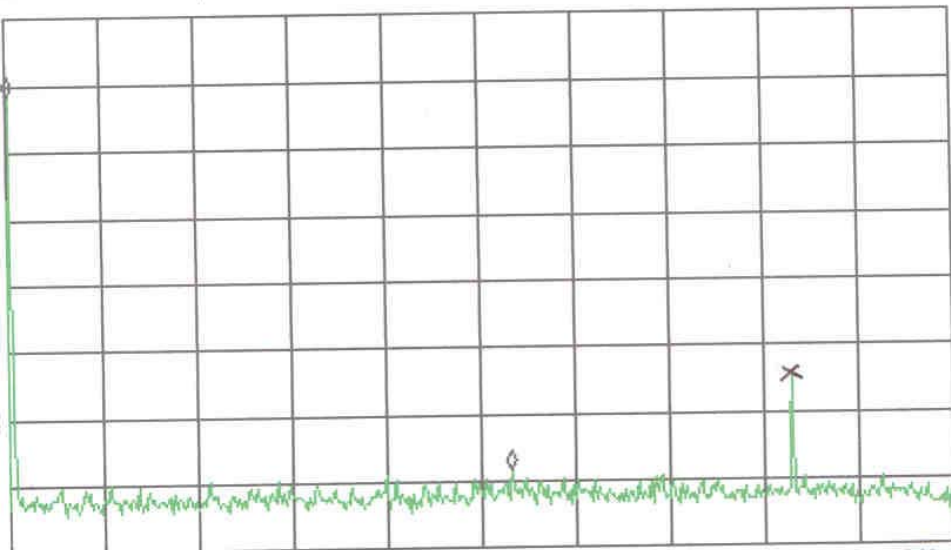
Last Hrd
Key Menu

SPAN

LOG REF 90.0 dB μ V

10
dB/
ATN
10 dB

VA SB
SC FC
CORR



#IF BW 100 kHz #AVG BW 100 kHz SWP 329 msec

MARKER
 \downarrow CF

MARKER
 Δ

NEXT
PEAK

NEXT PK
RIGHT

NEXT PK
LEFT

More
1 of 2

x Second Harmonic at 1.808 GHz

Plot 5.3.d

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14:39:26 JUL 06, 2004

START
2.000 GHz

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 2.881 GHz
13.20 dBμV

Last Hrd
Key Menu

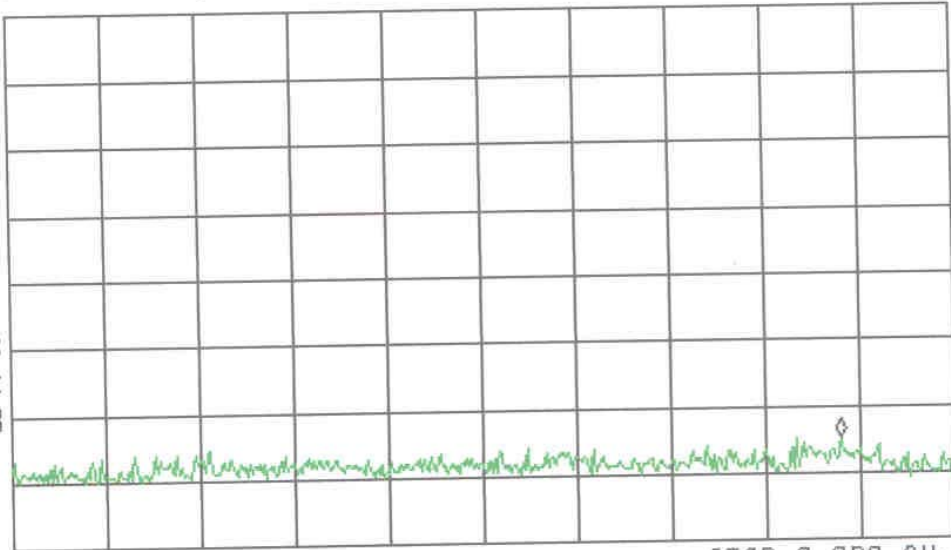
SPAN

LOG REF 78.0 dBμV

PREAMP ON

10
dB/
ATN
10 dB

VA SB
SC FC
CORR



START 2.000 GHz

#IF BW 100 kHz

#AVG BW 100 kHz

STOP 3.000 GHz

SWP 300 msec

MARKER
↓ CF

MARKER
△

NEXT
PEAK

NEXT PK
RIGHT

NEXT PK
LEFT

More

1 of 2

Plot 5.3.e

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14:31:48 JUL 06, 2004

MARKER
3.648 GHz
11.41 dBμV

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 3.648 GHz
11.41 dBμV

Last Hrd
Key Menu

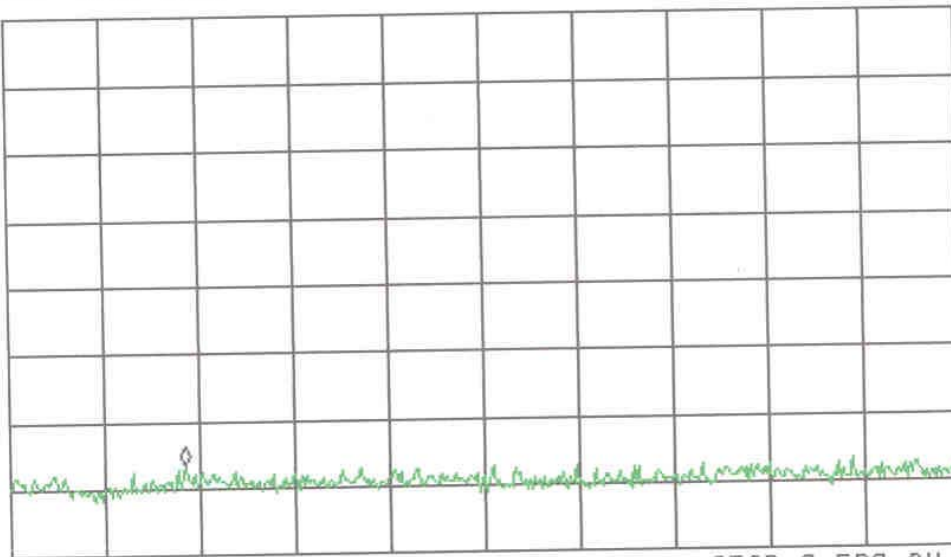
SPAN

LOG REF 78.0 dBμV

PREAMP ON

10
dB/
ATN
10 dB

VA SB
SC FC
CORR



START 3.000 GHz

#IF BW 100 kHz

#AVG BW 100 kHz

STOP 6.500 GHz

SWP 1.05 sec

MARKER
▶ CF

MARKER
▲

NEXT
PEAK

NEXT PK
RIGHT

NEXT PK
LEFT

More
1 of 2

Plot 5.3.f

Date of Test: July 6 to 8, 2004

IC Number: 5202A

FCC ID: SBP2442

6.0 Antenna Requirement**6.1 Test description**

Parameter:	FCC 15.203
Requirement:	FCC 15.203
Descriptions:	No antenna other than furnished by the responsible party shall be used with the device.

6.2 Test Procedure

None

6.3 Test Result

The device is considered to comply with the requirements by:

	Description
X	The transmitter uses a permanently connected antenna.
	The antenna is affixed to the EUT using a unique connector which allows for replacement of a broken antenna, but does NOT use a standard antenna jack or electrical connector.

Date of Test: July 6 to 8, 2004

IC Number: 5202A

FCC ID: SBP2442

7.0 Line Conducted Emission

7.1 Test Description

Parameter:	FCC 15.107, 15.207	
Requirement:	FCC 15.107, class B; 15.207	
Frequency (MHz)	QP Limits (dBμV)	AVG Limits (dBμV)
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

7.2 Test Procedure

All conducted voltage measurements were made on each current-carrying conductor at the plug end of the EUT power cord or calibrated extension by the use of mating plugs and receptacles on the EUT and LISN/AMN if used. Equipment was tested with power cords that were normally used or that have electrical and shielding characteristics that were the same as those cords normally used. For those measurements using a LISN/AMN, the 50 Ω measuring port was terminated by a 50 Ω receiver or a 50 Ω resistive load. Hence all 50 Ω measuring ports of the LISN/AMN were terminated by 50 Ω .

If a screened room or chamber was used, the EUT was placed 40 cm from a conductive wall, with the wall at the lead of the EUT. IF the test was being performed on an OATS or sheltered site, the vertical ground plane was placed 40 cm away from the rear of the EUT.

The excess length of the lead between the EUT and the LISN/AMN receptacle (or mains outlet where a LISN/AMN cannot be used) was folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length. If the EUT does not have a flexible power lead, then it was placed at a distance of 80 cm from the LISN/AMN (or mains outlet where a LISN/AMN cannot be used) and connected to it by a lead or appropriate connection no longer than 1 m. Measurements were made at the LISN/AMN end of this lead or connection

Conducted emission measurements were performed according to the procedures in ANSI C63.4 (2003)

Date of Test: July 6 to 8, 2004

IC Number: 5202A

FCC ID: SBP2442

7.3 Line Conducted Emission Data (15.107)

Standard: FCC part 15.107, Class B

Measurement Uncertainty: 1.94dB

Company: SmartHome, Inc.

Temperature: 24°C

Job No. 3062161

Relative Humidity: 49 %

Model Name: iAccessLinc 2442

Tested by: Sergey Marker

Date: 7/8/04

Mode: Receiver

EUT has been modified. See section 3.4 for details of modification

Measurements made on selected frequencies from neutral conductor are given below:

Frequency	AV	AV Limit	AV Margin	Q. Peak	QP Limit	QP Margin
MHz	(dBμV)	(dBμV)	(dBμV)	(dBμV)	(dBμV)	(dBμV)
5.5	21.0	50	-29.0	21.4	60	-38.6
16.6	32.0	50	-18.0	32.1	60	-27.9
22.1	47.0	50	-3.0	47.5	60	-12.5
27.6	35.6	50	-14.4	35.8	60	-24.2
28.6	22.1	50	-27.9	24.3	60	-35.7
29.4	20.2	50	-29.8	23.3	60	-36.7

Measurements made on selected frequencies from line conductor are given below:

Frequency	AV	AV Limit	AV Margin	Q. Peak	QP Limit	QP Margin
MHz	(dBμV)	(dBμV)	(dBμV)	(dBμV)	(dBμV)	(dBμV)
5.5	21.0	50	-29.0	21.4	60	-38.6
16.6	32.4	50	-17.6	32.5	60	-27.5
22.1	47.5	50	-2.5	47.8	60	-12.2
27.6	36.2	50	-13.8	36.6	60	-23.4
28.6	21.8	50	-28.2	23.9	60	-36.1
29.4	20.8	50	-29.2	23.1	60	-36.9

- Note 1: a) A complete scan from 0.15 - 30 MHz was made.
 b) Analyzer setting: RBW = 9 kHz, VBW = 30 kHz
 c) Detector mode: Quasi-peak and Average.
 d) All other measurements were more than 10 dB below the limit lines.
 e) Numbers with a minus sign in margin column are below the limit.

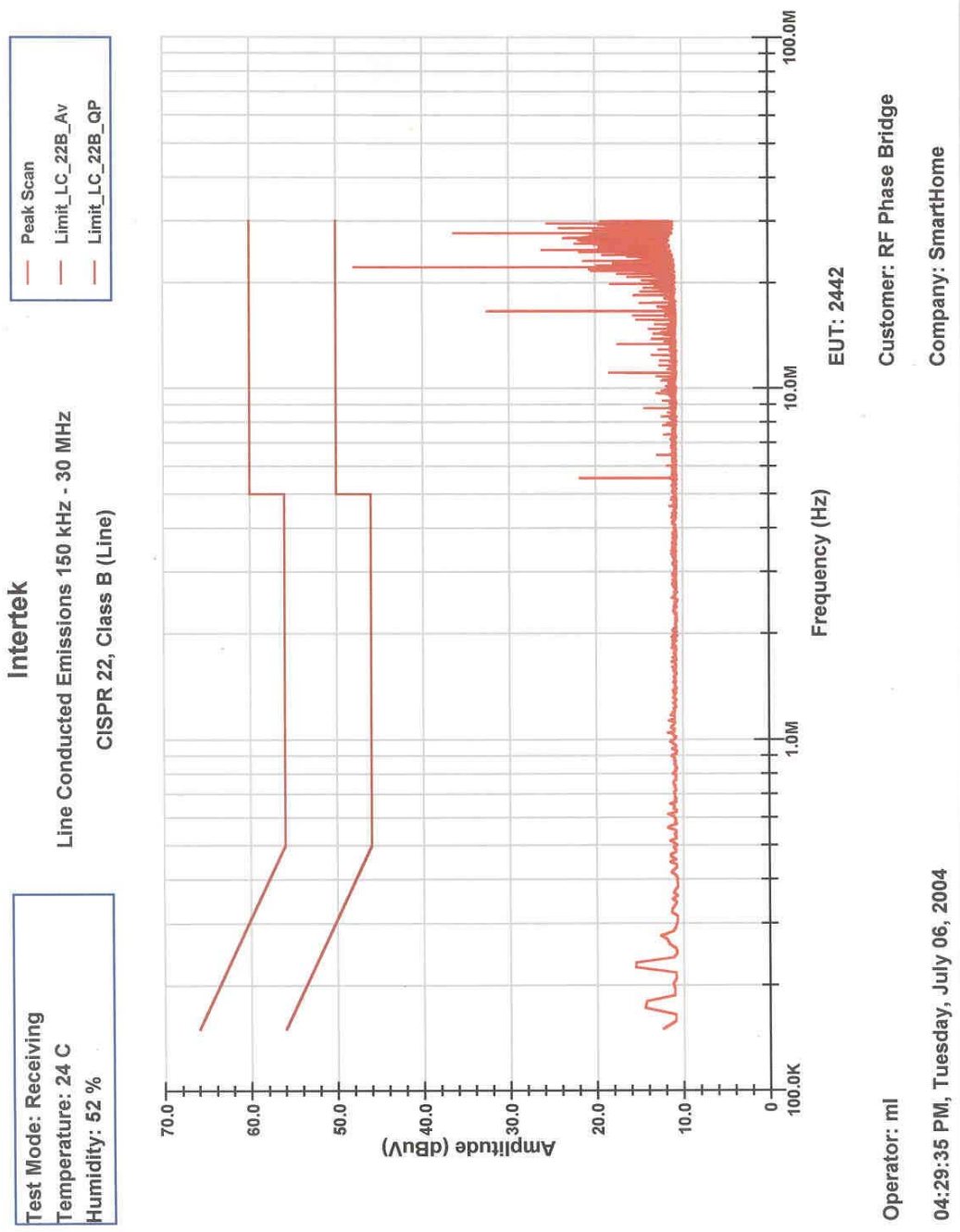
The next two pages are the peak scan made on line and neutral conductors

Test Result	Passed with margin 2.5 dB at 22.1 MHz
--------------------	--

Date of Test: July 6 to 8, 2004

IC Number: 5202A

FCC ID: SBP2442



Date of Test: July 6 to 8, 2004

IC Number: 5202A

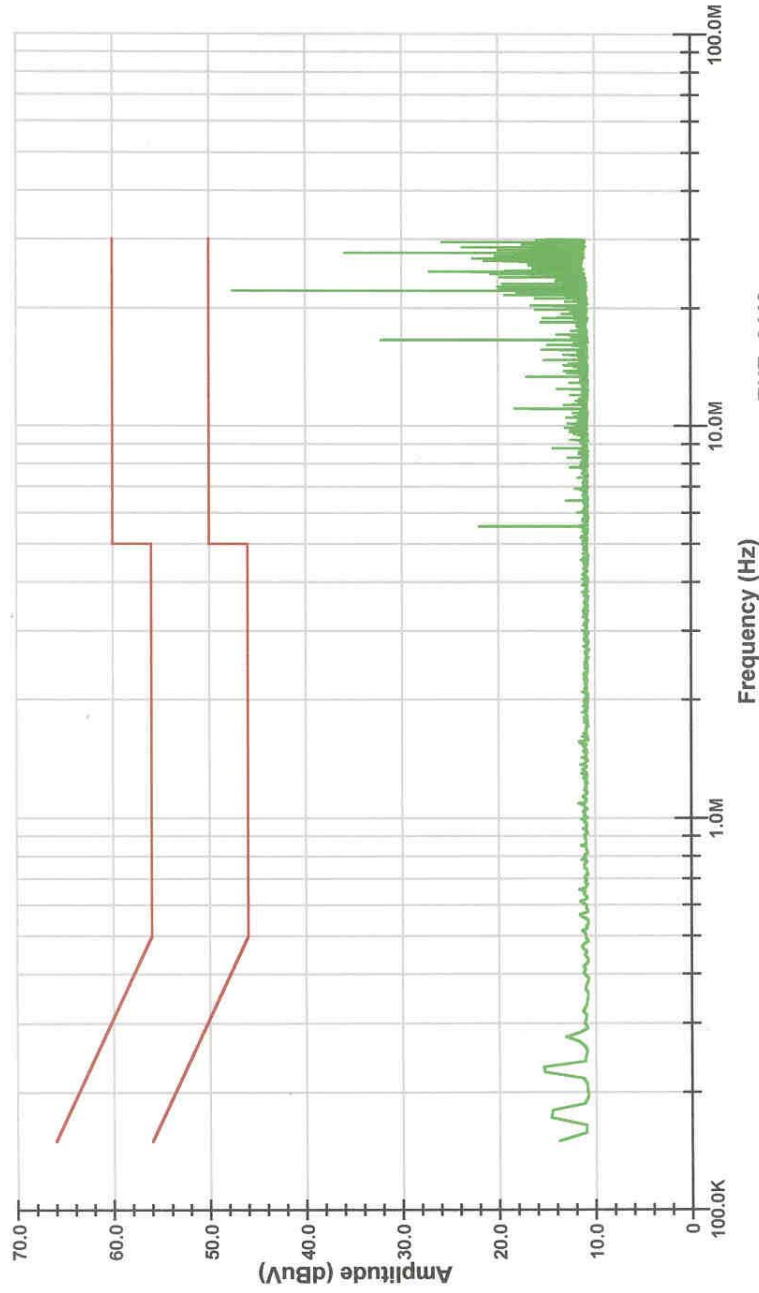
FCC ID: SBP2442

Peak Scan
Limit_LC_22B_Av
Limit_LC_22B_QP

Intertek

Line Conducted Emissions 150 kHz - 30 MHz
CISPR 22, Class B (Neutral)

Test Mode: Receiving
Temperature: 24 C
Humidity: 52 %



EUT: 2442

Customer: RF Phase Bridge
Company: SmartHome

Operator: ml
04:31:18 PM, Tuesday, July 06, 2004

Date of Test: July 6 to 8, 2004

IC Number: 5202A

FCC ID: SBP2442

7.4 Line Conducted Emission Data (15.207)

Standard: FCC part 15.107, Class B
Company: SmartHome, Inc.
Job No. 3062161
Model Name: iAccessLinc 2442
Tested by: Sergey Marker
Date: 7/8/04
Mode: Transmitter

Measurement Uncertainty: 1.94dB
 Temperature: 24°C
 Relative Humidity: 49 %

Measurements made on selected frequencies from neutral conductor are given below:

Frequency MHz	AV (dBμV)	AV Limit (dBμV)	AV Margin (dBμV)	Q. Peak (dBμV)	QP Limit (dBμV)	QP Margin (dBμV)
5.5	20.8	50	-29.2	21.2	60	-38.8
16.6	31.8	50	-18.2	32.0	60	-28.0
22.1	47.1	50	-2.9	47.3	60	-12.7
27.6	35.8	50	-14.2	36.1	60	-23.9
28.6	20.7	50	-29.3	23.9	60	-34.1
29.9	18.4	50	-31.6	21.2	60	-38.8

Measurements made on selected frequencies from line conductor are given below:

Frequency MHz	AV (dBμV)	AV Limit (dBμV)	AV Margin (dBμV)	Q. Peak (dBμV)	QP Limit (dBμV)	QP Margin (dBμV)
5.5	21.1	50	-28.9	21.6	60	-28.4
16.6	32.2	50	-17.8	32.4	60	-27.6
22.1	47.5	50	-2.5	47.9	60	-12.1
27.6	36.2	50	-13.8	36.5	60	-23.5
28.6	22.5	50	-27.5	24.4	60	-35.6
29.9	17.3	50	-32.7	20.3	60	-39.7

- Note 1: a) A complete scan from 0.15 - 30 MHz was made.
 b) Analyzer setting: RBW = 9 kHz, VBW = 30 kHz
 c) Detector mode: Quasi-peak and Average.
 d) All other measurements were more than 10 dB below the limit lines.
 e) Numbers with a minus sign in margin column are below the limit.

The next two pages are the peak scan made on line and neutral conductors

Test Result	Passed with margin 2.5 dB at 22.1 MHz
--------------------	--

Date of Test: July 6 to 8, 2004

IC Number: 5202A

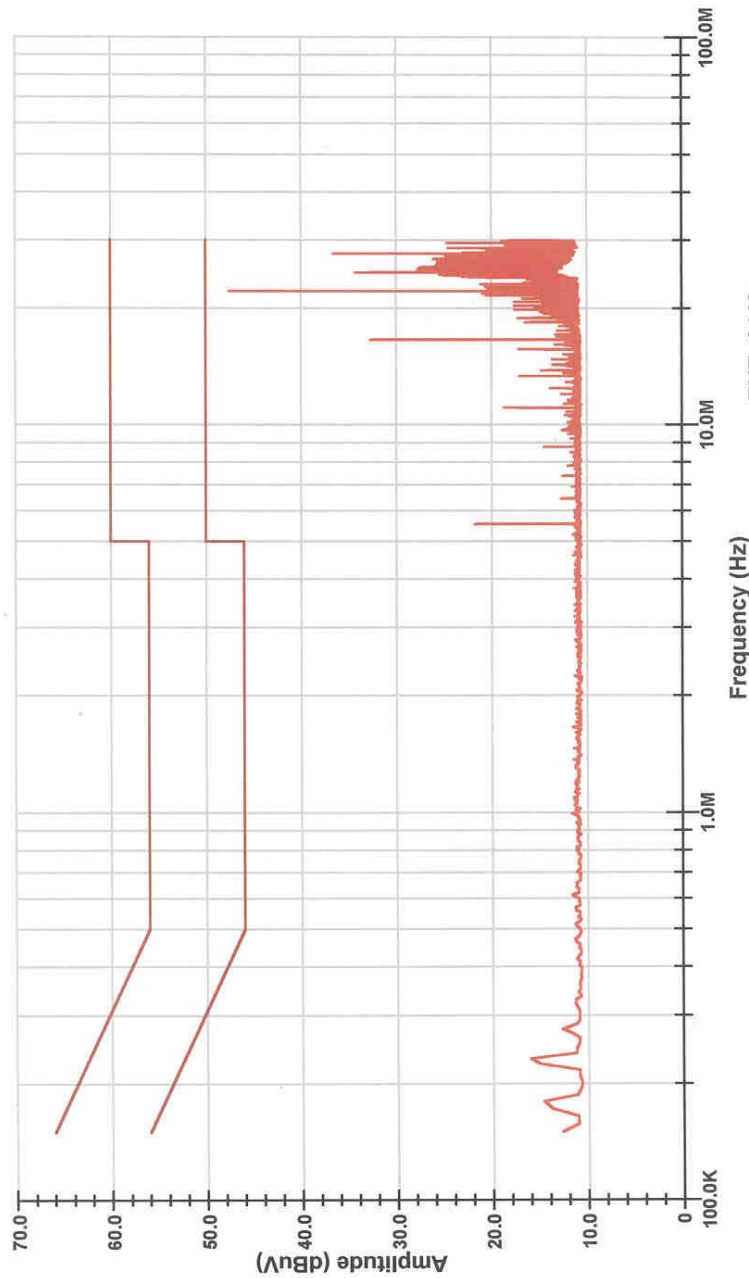
FCC ID: SBP2442

Peak Scan
Limit_LC_22B_Av
Limit_LC_22B_QP

Intertek

Line Conducted Emissions 150 kHz - 30 MHz
CISPR 22, Class B (Line)

Test Mode: Transmitting
Temperature: 24 C
Humidity: 52 %



EUT: 2442

Customer: RF Phase Bridge

Company: SmartHome

Operator: ml

03:55:09 PM, Tuesday, July 06, 2004

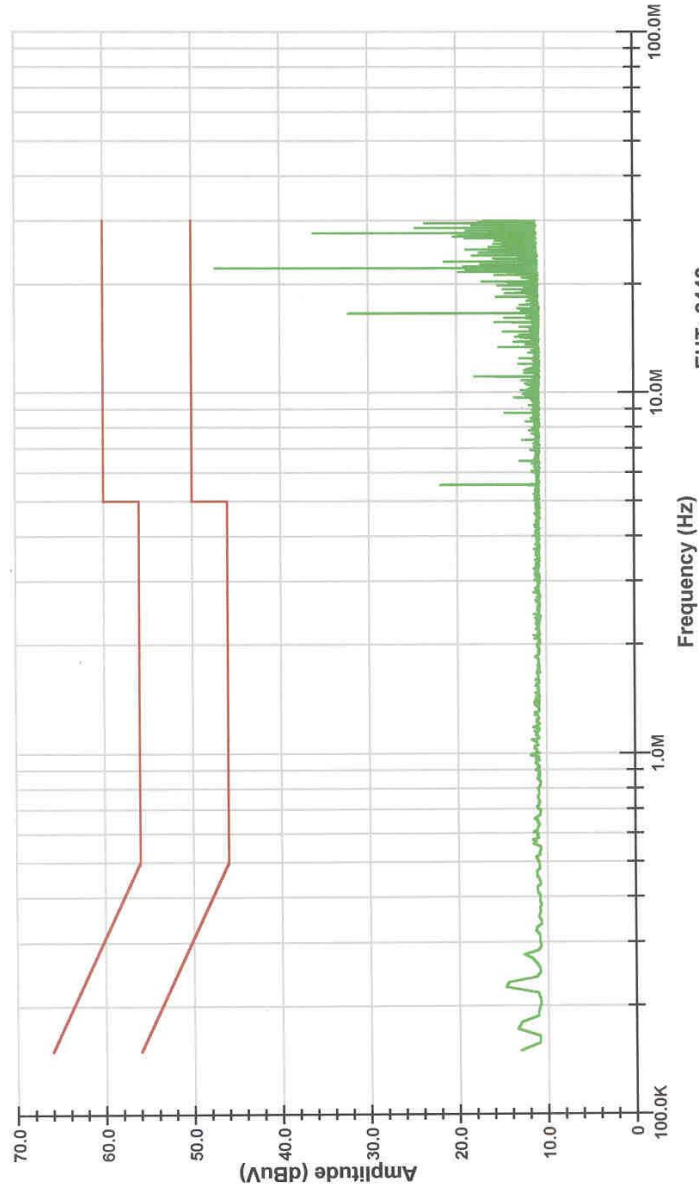
Date of Test: July 6 to 8, 2004

IC Number: 5202A

FCC ID: SBP2442

Intertek
Line Conducted Emissions 150 kHz - 30 MHz
CISPR 22, Class B (Neutral)

Test Mode: Transmitting
Temperature: 24 C
Humidity: 52 %



EUT: 2442

Customer: RF Phase Bridge

Company: SmartHome

Operator: ml

03:57:45 PM, Tuesday, July 06, 2004

Date of Test: July 6 to 8, 2004

IC Number: 5202A

FCC ID: SBP2442

8.0 Occupied Bandwidth

8.1 Test description

Requirement:	FCC §2.1049
Emission Bandwidth:	

8.2 Test Procedure

The measurement antenna was positioned at distance 3 m from the transmitter.

The resolution bandwidth of the spectrum analyzer was set approximately 1 – 10 % of the authorized bandwidth of the transmitter.

The bandwidth is measured at the 99% Power bandwidth.

8.3 Test Results

Please see next page for the occupied bandwidth plot:

Test Result:	The Occupied Bandwidth is 138 kHz
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Date of Test: July 6 to 8, 2004

IC Number: 5202A

FCC ID: SBP2442

09:27:02 JUL 14, 2004

MARKER Δ
138 kHz
-.10 dB

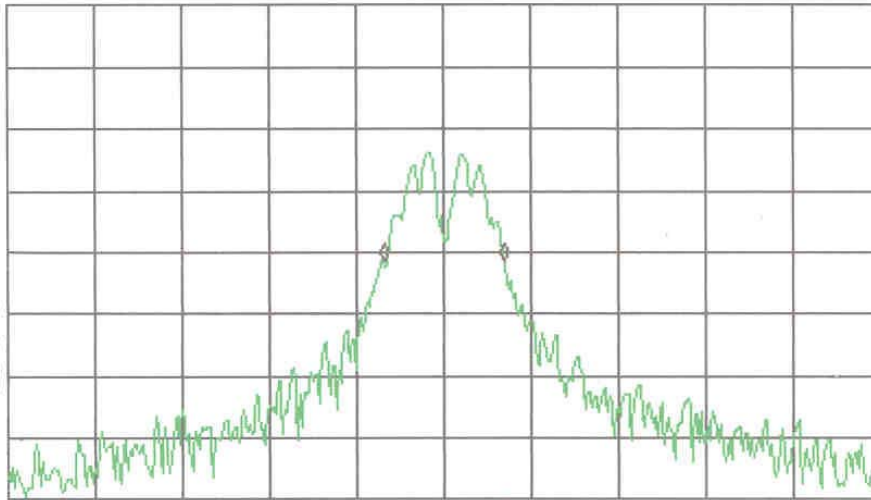
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ 138 kHz
-.10 dB

Last Hrd
Key Menu
SPAN

LOG REF 85.0 dB μ V

10
dB/
ATN
10 dB

WA SB
SC FC
CORR



CENTER 904.213 MHz
#IF BW 10 kHz

AVG BW 10 kHz

SPAN 1.000 MHz
SWP 30.0 msec

99%
PWR BW

%
AM

3rd ORD
MEAS

DELTA
MEAS

PK-PK
MEAS

More
2 of 2

Date of Test: July 6 to 8, 2004

IC Number: 5202A

FCC ID: SBP2442

9.0 TEST EQUIPMENT

Equipment	Manufacturer	Model/Type	Serial #	Cal Int	Cal Due
RF Filter Section	Hewlett Packard	85460A	3448A00267	12	9/09/04
EMI Receiver	Hewlett Packard	8546A	3710A00373	12	9/08/04
Spectrum Analyzer	Rohde & Schwarz	FSP40	036612004	12	2/04/05
BI-Log Antenna	EMCO	3143	9509-1160	12	10/01/04
Log Periodic Antenna	Electro-Metrics	LPA-25	1079	12	7/21/04
Double-ridged Horn Antenna	EMCO	3115	8812-3049	12	4/08/05
Active Loop Antenna	EMCO	6502	3213	12	9/3/04
Pre-Amplifier	Sonoma Inst.	310	185634	12	9/21/04
Pre-Amplifier	Miteq	AMF-4D-001180-24-10P	799159	12	9/06/04
Signal Generator	Hewlett Packard	83732A	3222A00119	12	3/04/05
LISN	FCC	FCC-LISN-50-50-M-H	2012	12	1/23/05