

APPLICATION FOR CERTIFICATION

On Behalf of

Sonos, Inc

Zone Player

Model No. : ZP120

Contains TX module : FCC ID: SBVRM001

Prepared for : Sonos, Inc
223 E. De La Guerra St. Santa Barbara,
CA 93101, U.S.A.

Prepared by : Audix Technology Corporation
EMC Department
No. 53-11, Tin-Fu Tsun, Lin-Kou,
Taipei, Taiwan.

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Date of Test : Nov. 12, 2007
Date of Report : Dec. 05, 2007

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TEST REPORT CERTIFICATION

Applicant : Sonos, Inc
 Manufacturer : Tech-Full Computer (Changshu) Co., Ltd.
 EUT Description : Zone Player
 Contains TX module : FCC ID: SBVRM001
 (A) MODEL NO. : ZP120
 (B) SERIAL NO. : N/A
 (C) BRAND : SONOS
 (D) POWER SUPPLY : ~115/230V, 50-60Hz, 2A
 (E) TEST VOLTAGE : AC 120V/60Hz

Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C, MAY 2007
AND ANSI C63.4/2003

(FCC CFR 47 Part 15C, §15.205, §15.209 and §15.247)

The device described above was tested by Audix Technology Corporation to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart C limits.

The measurement results are contained in this test report and Audix Technology Corporation is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology Corporation.

Date of Test: Nov. 12, 2007

Prepared by: Tina Huang Dec. 06, 2007
(Tina Huang/Assistant)

Test Engineer: Ben Cheng Dec. 02, 2007
(Ben Cheng/Section Manager)

Approved & Authorized Signer: Leon Liu Dec. 7 2007
(Leon Liu/Vice President)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Zone Player This device is a digital music system using a wired or wireless connection.
Model Number	:	ZP120
Contains TX module	:	FCC ID: SBVRM001
Brand Name	:	SONOS
Applicant	:	Sonos, Inc 223 E.De La Gureera St. Santa Barbara, CA 93101, U.S.A.
Manufacturer	:	Tech-Full Computer (Changshu) Co., Ltd. High Tech Ind. Park, Changsu, No. 8 Jinzhou Rd., Jiangsu Province, P.R.M. China 2155000
High Frequency of Used	:	11.289MHz、 100MHz、 25MHz、 25MHz for Main Controller 40 MHz for Wireless LAN Card
Wireless LAN Card	:	Alpha, M/N WMP-N06 Frequency Range: IEEE 802.11b/g, IEEE 802.11n, HT20:2412-2462MHz
Interfaces of EUT	:	<ul style="list-style-type: none"> •10/100 Base-T Ethernet RJ45 x2 •Analog Audio In – L/R (RCA x2) •Analog Subwoofer Out (RCA x1) •Speaker (Right/Left channel) •Wireless Ethernet (Mini-PCI x1) •AC In x1
AC Power Cord (2Pin)	:	Non-Shielded, Detachable, 1.8m
Date of Receipt of Sample	:	Nov. 12, 2007
Date of Test	:	Nov. 12, 2007

Remark:

This EUT is an upgrade version of original FCC ID SBVRM001. The difference is to add different antenna.

1.2. Tested Supporting System Details

1.2.1. PARTNER NOTEBOOK PC

Model Number	:	PP2130
Serial Number	:	5Y32KSQZ40ME
FCC ID	:	By DoC
BSMI ID	:	3912A556
Manufacturer	:	LG (Brand: Compaq)
RJ45 LAN Cable *1EA	:	Non-Shielded, Detachable, 20m
Power Adapter	:	COMPAQ, M/N PA-1650-02C
		DC Cord: Shielded, Undetachable, 1.8m
		AC Cord: Non-Shielded, Detachable, 1.8m

1.2.2. AUDIO INPUT/OUTPUT LOAD

Model Number	:	N/A
Serial Number	:	N/A
Manufacturer	:	Sonos
Audio Cable-In *1EA	:	Non-Shielded, Detachable, 1.8m
Audio Cable-Out *2EA	:	Non-Shielded, Detachable, 1.8m

1.2.3. ETHERNET TERMINATOR (100 OHM)

Model Number	:	N/A
Serial Number	:	N/A
Manufacturer	:	Sonos
RJ45 LAN Cable *1EA	:	Non-Shielded, Detachable, 1.8m

1.2.4. SPEAKER LOAD (8 OHM)*2EA

Model Number	:	N/A
Serial Number	:	N/A
Manufacturer	:	Sonos
Audio Cable *2EA	:	Non-Shielded, Detachable, 1.8m

1.3. Description of Test Facility

Name of Firm : **Audix Technology Corporation**
EMC Department
 No. 53-11, Tin-Fu Tsun, Lin-Kou,
 Taipei, Taiwan

Test Location & Facility : **Semi-Anechoic Chamber**
 (AC) No. 53-11, Tin-Fu Tsun, Lin-Kou,
 Taipei, Taiwan.

May 15, 2006 File on
 Federal Communication Commission
 Registration Number: 90993

NVLAP Lab. Code : 200077-0
 (NVLAP is a NATA accredited body under Mutual Recognition Agreement)

1.4. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Radiation Test (Distance: 3m)	30MHz~300MHz	±2.91dB
	300MHz~1000MHz	±2.94dB
	Above 1GHz	± 5.02dB

Remark : Uncertainty = $ku_c(y)$

2. RADIATED EMISSION MEASUREMENT

2.1. Test Equipment

The following test equipment was used during the radiated emission measurement:

2.1.1. For Frequency 30MHz~1000MHz (at Semi-Anechoic Chamber)

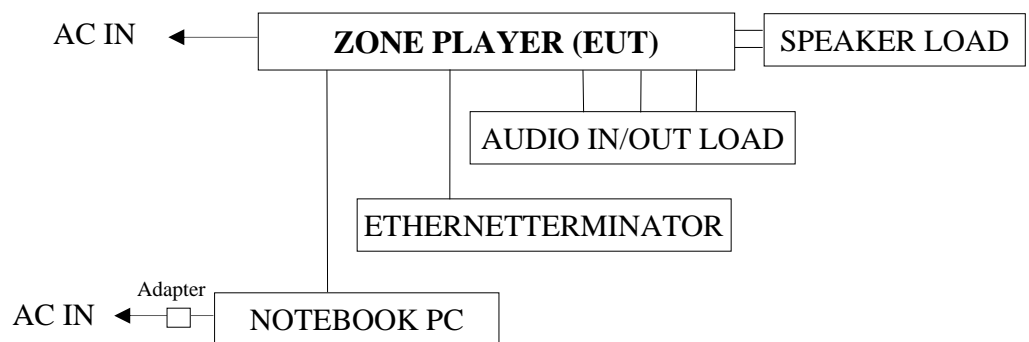
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E7405A	MY42000134	Jun. 27, 07'	Jun. 26, 08'
2.	Test Receiver	R & S	ESCS30	100265	Sep. 04, 07'	Sep. 03, 08'
3.	Pre-Amplifier	HP	8447D	2944A06305	Mar. 03, 07'	Mar. 02, 08'
4.	Biconical Antenna	CHASE	VBA6106A	1264	Apr. 11, 07'	Apr. 10, 08'
5.	Log Periodic Antenna	Schwarzbeck	UHALP91 08-A	0139	Apr. 11, 07'	Apr. 10, 08'

2.1.2. For Frequency Above 1GHz (at Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E7405A	MY42000134	Jun. 27, 07'	Jun. 26, 08'
2.	Pre-Amplifier	HP	8449B	3008A01284	Jun. 22, 07'	Jun. 21, 08'
3.	2.4GHz Notch Filter	EWT	EWT-14-0 070	G2	Dec. 08, 06'	Dec. 07, 07'
4.	Horn Antenna	EMCO	3115	9112-3775	May 23, 07'	May 22, 08'
5.	Horn Antenna	EMCO	3116	2653	Oct. 04, 07'	Oct. 03, 08'

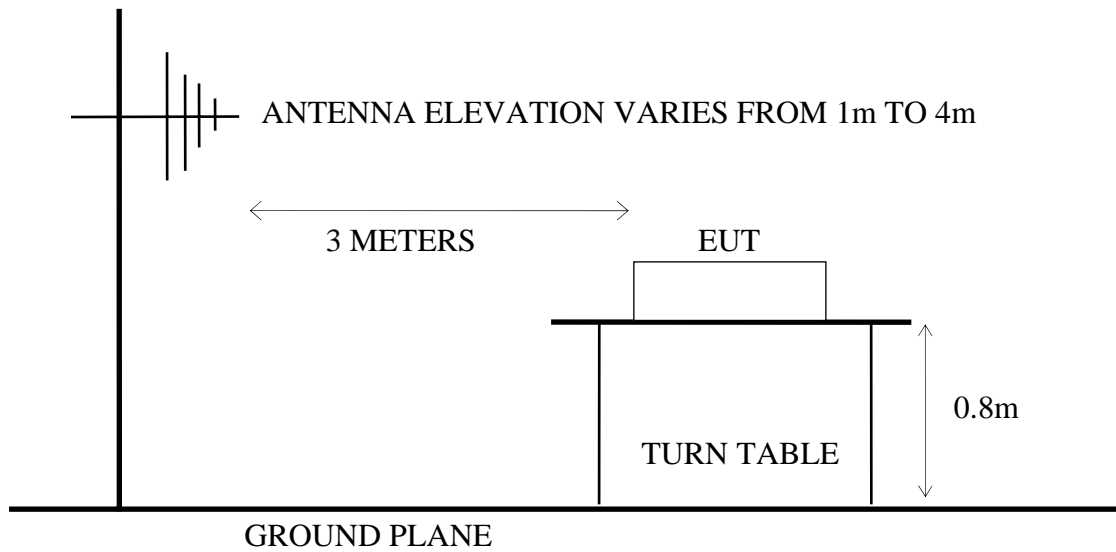
2.2. Test Setup

2.2.1. Block Diagram of connection between EUT and simulators



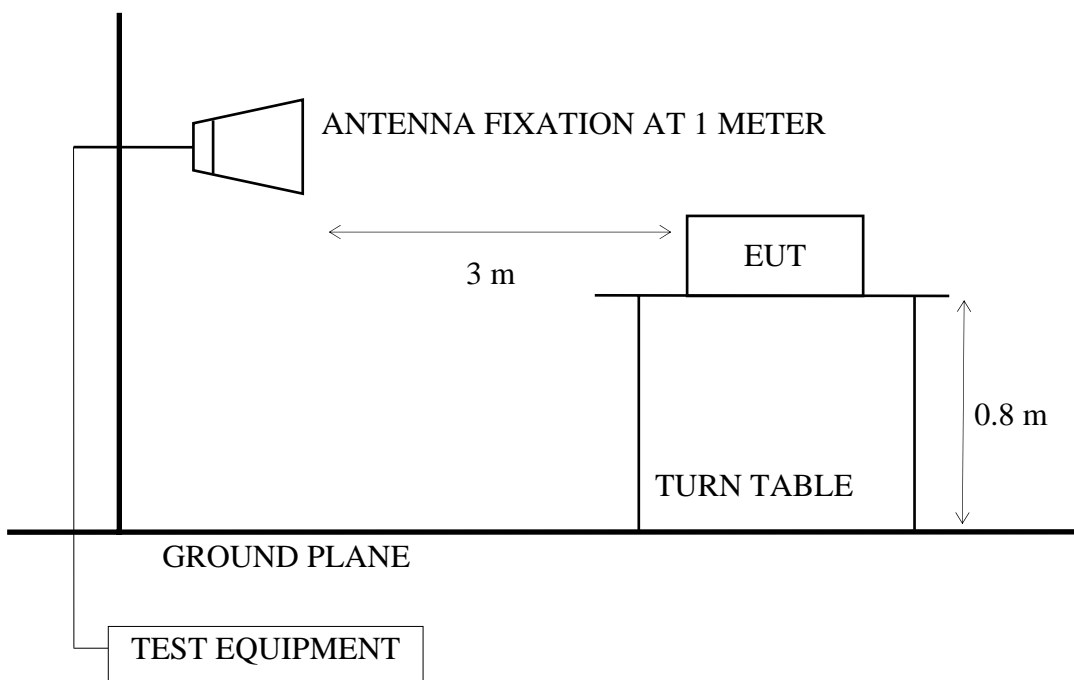
2.2.2. Semi-Anechoic Chamber (3m) Setup Diagram for 30-1000MHz

ANTENNA TOWER



2.2.3. Semi-Anechoic Chamber (3m) Setup Diagram for above 1GHz

ANTENNA TOWER



2.3. Radiated Emission Limits (§15.209)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS	
		$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0
Above 1000	3	74.0 $\text{dB}\mu\text{V/m}$ (Peak) 54.0 $\text{dB}\mu\text{V/m}$ (Average)	

- Remark :
- (1) Emission level ($\text{dB}\mu\text{V/m}$) = 20 log Emission level ($\mu\text{V/m}$)
 - (2) The tighter limit applies at the edge between two frequency bands.
 - (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 - (4) The limits in this table are based on CFR 47 Part 15.205(a)(b) and Part 15.209 (a).
 - (5) The over 1GHz limit, FCC limit is used based on CFR 47 Part 15.35 (b) and Part 15.205(b) & Part 15.209(e) and Part 15.207(c).

2.4. Operating Condition of EUT

- 2.4.1. Setup the EUT and simulator as shown on 2.2.
- 2.4.2. Turn on the power of all equipment.
- 2.4.3. Run the notebook PC test software “dsp-write” to set EUT (Zone Player) transmitter channel through RJ45 Ethernet during the testing.

2.5. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT was set 3 meters away from the receiving antenna which was mounted on an antenna tower. The antenna moved up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna such as calibrated biconical and log- periodical antenna or horn antenna were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to FCC ANSI C63.4-2003 regulation.

The bandwidth of the R&S Test Receiver ESCS30 was set at 120kHz. (For 30MHz to 1000MHz)

The resolution bandwidth and video bandwidth of spectrum analyzer is 1MHz for peak detection (PK) at frequency above 1GHz.

The resolution bandwidth of spectrum analyzer is 1MHz and the video bandwidth is 10Hz for average detection (AV) at frequency above 1GHz.

The frequency range from 30MHz to 25GHz (Up to 10th harmonics from fundamental frequency) was checked.

2.6. Radiated Emission Measurement Results

PASSED. All the emissions not reported below are too low against the official limits.

EUT : Zone Player M/N : ZP120

Test Date : Nov. 12, 2007 Temperature : 23 Humidity : 45%

For Frequency Range 30MHz~1000MHz:

The EUT with following test modes were performed during this section testing and all the test results are listed in section 2.6.1.

No.	Frequency Range	Test Mode	Test Frequency	Reference Test Data No.	
				Horizontal	Vertical
1.	IEEE 802.11g	Transmit	2412MHz (CH1)	# 8	# 7
2.			2437MHz (CH6)	# 8	# 7
3.			2462MHz (CH11)	# 8	# 7
4.		Receive	2437MHz (CH6)	# 8	# 7
5.	IEEE 802.11n	Transmit	2412MHz (CH1)	# 7	# 8
6.			2437MHz (CH6)	# 8	# 7
7.			2462MHz (CH11)	# 7	# 8
8.		Receive	2437MHz (CH6)	# 7	# 8

* Above all final readings were measured with Quasi-Peak detector.

For Frequency above 1GHz:

The EUT with following test modes were performed during this section testing and all the test results are listed in section 2.6.2.

No.	Frequency Range	Test Mode	Test Frequency
1.	IEEE 802.11g	Transmit	2412MHz (CH1)
2.			2437MHz (CH6)
3.			2462MHz (CH11)
4.		Receive	2437MHz (CH6)
5.	IEEE 802.11n	Transmit	2412MHz (CH1)
6.			2437MHz (CH6)
7.			2462MHz (CH11)
8.		Receive	2437MHz (CH6)

* Above all final readings were measured with Peak detector and Average detector.

For Restricted Bands:

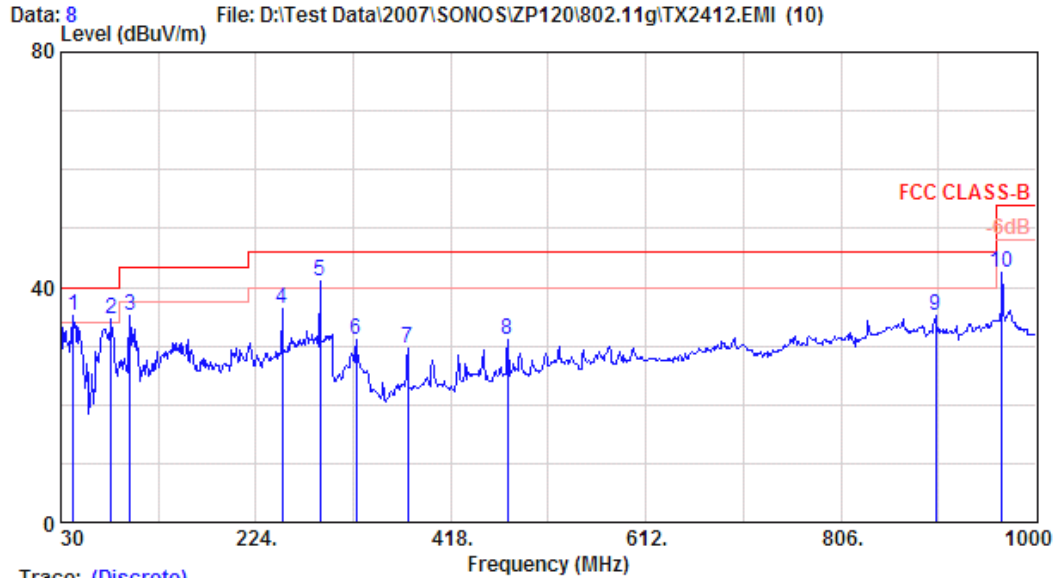
The EUT was tested in restricted bands and all the test results are listed in section 2.6.3. (The restricted bands defined in part 15.205(a))

No.	Frequency Range	Test Mode	Test Frequency	Reference Test Data No.			
				Horizontal		Vertical	
				Peak	Average	Peak	Average
1.	IEEE 802.11g	Transmit	2412MHz (CH1)	# 2	# 3	# 1	# 4
2.			2462MHz (CH11)	# 7	# 6	# 8	# 5
3.	IEEE 802.11n		2412MHz (CH1)	# 2	# 3	# 1	# 4
4.			2462MHz (CH11)	# 6	# 7	# 5	# 8

2.6.1. 30MHz~ 1000MHz Frequency Range Measurement Result



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Trace: (Discrete)

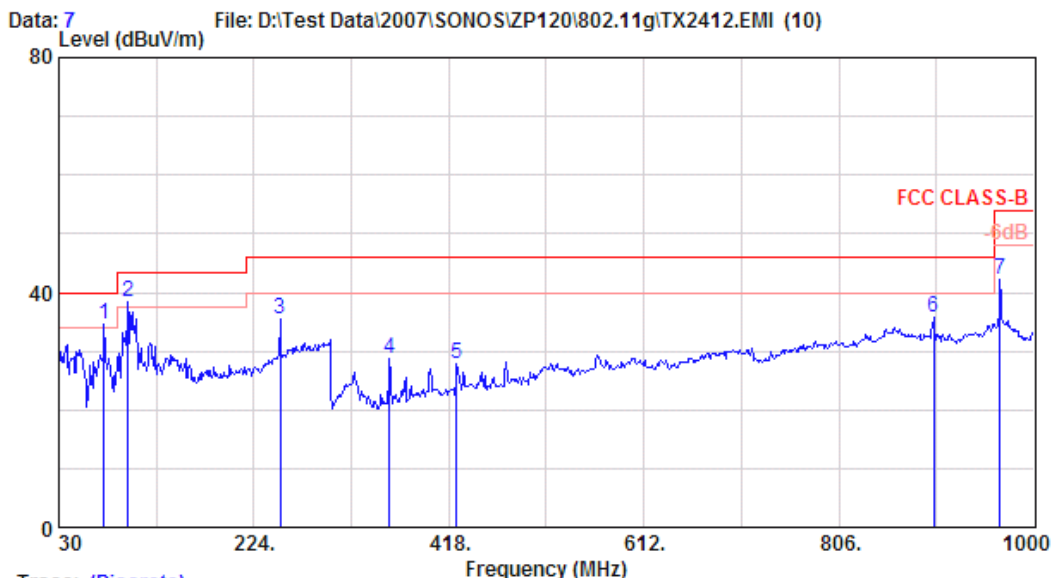
Site no. : A/C Chamber Data no. : 8
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC CLASS-B
 Env. / Ins. : 23°C,45% / E7405A Engineer : Jarwei Wang
 EUT : ZONE PLAYER M/N:ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2412MHz

	Ant.	Cable	Emission		Limits	Margin	Remark
Freq. (MHz)	Factor (dB/m)	Loss (dB)	Reading (dBµV)	Level (dBµV/m)	(dBµV/m)	(dB)	
1	42.610	19.86	1.30	13.86	35.02	40.00	4.98
2	80.440	13.81	1.89	18.93	34.62	40.00	5.38
3	98.870	16.96	2.10	16.04	35.10	43.50	8.40
4	250.190	23.83	3.50	8.90	36.23	46.00	9.77
5	288.020	25.85	3.80	11.34	41.00	46.00	5.00
6	323.910	15.10	4.14	11.87	31.11	46.00	14.89
7	375.320	17.15	4.60	7.72	29.47	46.00	16.53
8	474.260	18.48	5.85	6.77	31.10	46.00	14.90
9	900.090	24.96	7.37	2.97	35.30	46.00	10.70
10	966.050	26.89	7.70	7.84	42.44	54.00	11.56

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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Trace: (Discrete)

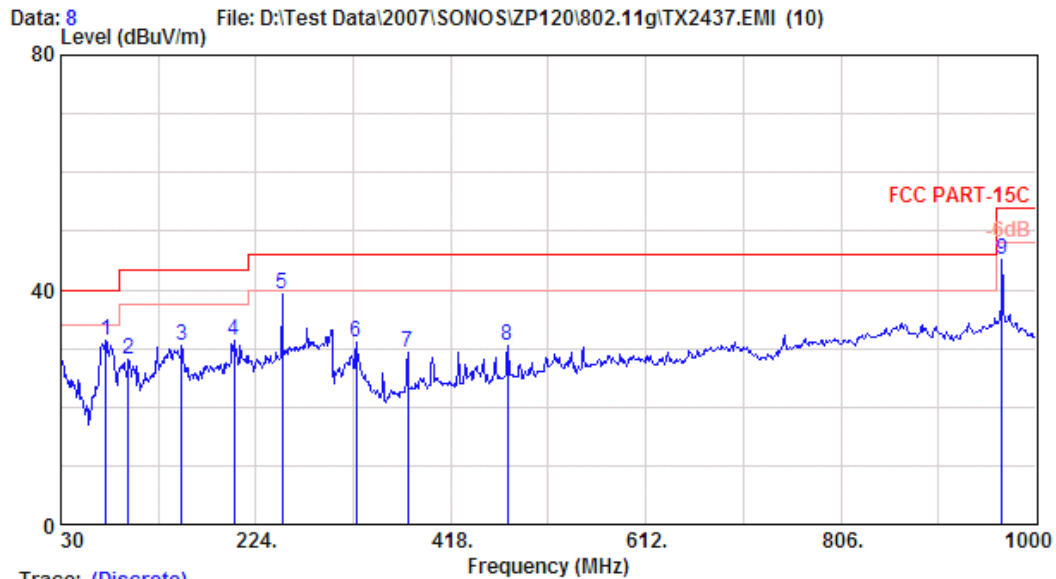
Site no. : A/C Chamber Data no. : 7
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC CLASS-B
 Env. / Ins. : 23°C,45% / E7405A Engineer : Jarwei Wang
 EUT : ZONE PLAYER M/N:ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2412MHz

	Ant. Cable		Emission		Limits	Margin	Remark
Freq. (MHz)	Factor (dB/m)	Loss (dB)	Reading (dBµV)	Level (dBµV/m)			
1	74.620	12.72	1.80	46.45	34.63	40.00	5.37
2	98.870	16.96	2.10	45.58	38.33	43.50	5.17
3	250.190	23.83	3.50	33.86	35.45	46.00	10.55
4	358.830	16.02	4.40	34.68	28.81	46.00	17.19
5	425.760	17.19	5.10	32.22	27.85	46.00	18.15
6	900.090	24.96	7.37	30.39	35.72	46.00	10.28
7	966.050	26.89	7.70	34.46	42.25	54.00	11.75

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
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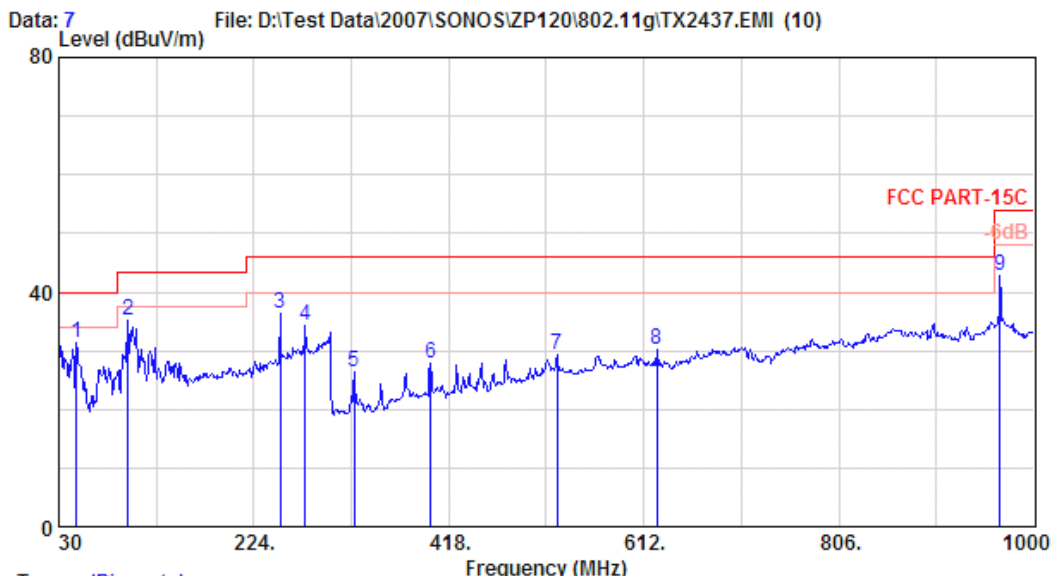
Site no. : A/C Chamber Data no. : 8
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Jarwei Wang
 EUT : ZONE PLAYER M/N:ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2437MHz

	Ant. Factor	Cable Loss	Reading	Emission Level	Limits	Margin	Remark
Freq. (MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
1	12.72	1.80	16.95	31.46	40.00	8.54	
2	16.75	2.05	9.26	28.06	43.50	15.44	
3	20.63	2.60	7.38	30.61	43.50	12.89	
4	22.04	3.10	6.32	31.47	43.50	12.03	
5	23.83	3.50	11.85	39.18	46.00	6.82	
6	15.10	4.14	11.79	31.03	46.00	14.97	
7	17.15	4.60	7.44	29.19	46.00	16.81	
8	18.48	5.85	6.09	30.41	46.00	15.59	
9	26.89	7.70	10.52	45.11	54.00	8.89	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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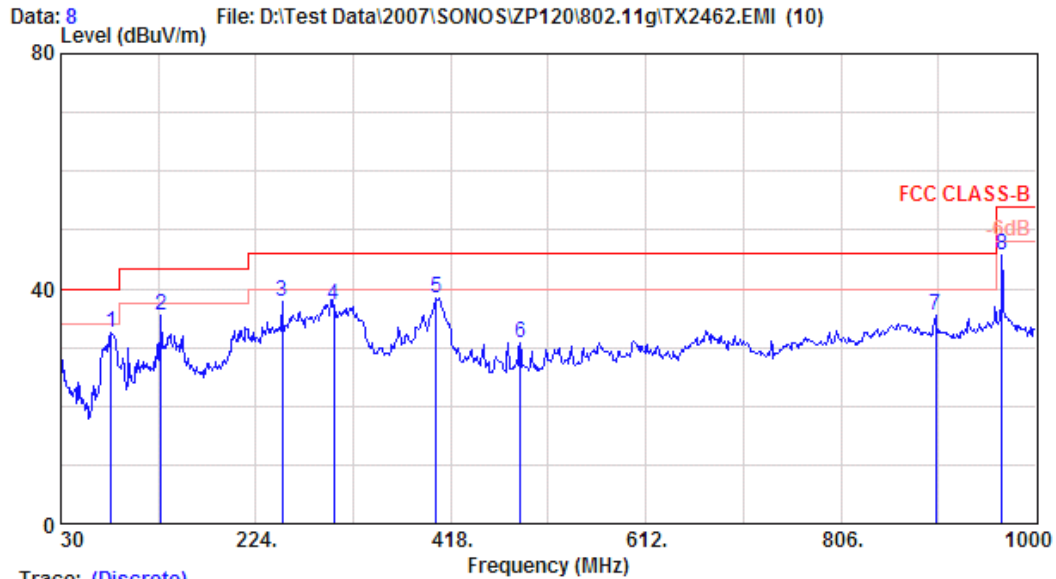
Site no. : A/C Chamber Data no. : 7
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Jarwei Wang
 EUT : ZONE PLAYER M/N:ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2437MHz

	Ant. Cable		Emission		Limits	Margin	Remark
Freq. (MHz)	Factor (dB/m)	Loss (dB)	Reading (dBµV)	Level (dBµV/m)			
1	47.460	17.87	1.40	12.18	31.45	40.00	8.55
2	98.870	16.96	2.10	15.97	35.03	43.50	8.47
3	250.190	23.83	3.50	9.05	36.38	46.00	9.62
4	275.410	25.25	3.70	5.21	34.16	46.00	11.84
5	323.910	15.10	4.14	7.03	26.27	46.00	19.73
6	399.570	17.69	4.80	5.37	27.86	46.00	18.14
7	525.670	19.66	6.90	2.83	29.39	46.00	16.61
8	624.610	21.31	6.20	2.78	30.29	46.00	15.71
9	966.050	26.89	7.70	8.16	42.75	54.00	11.25

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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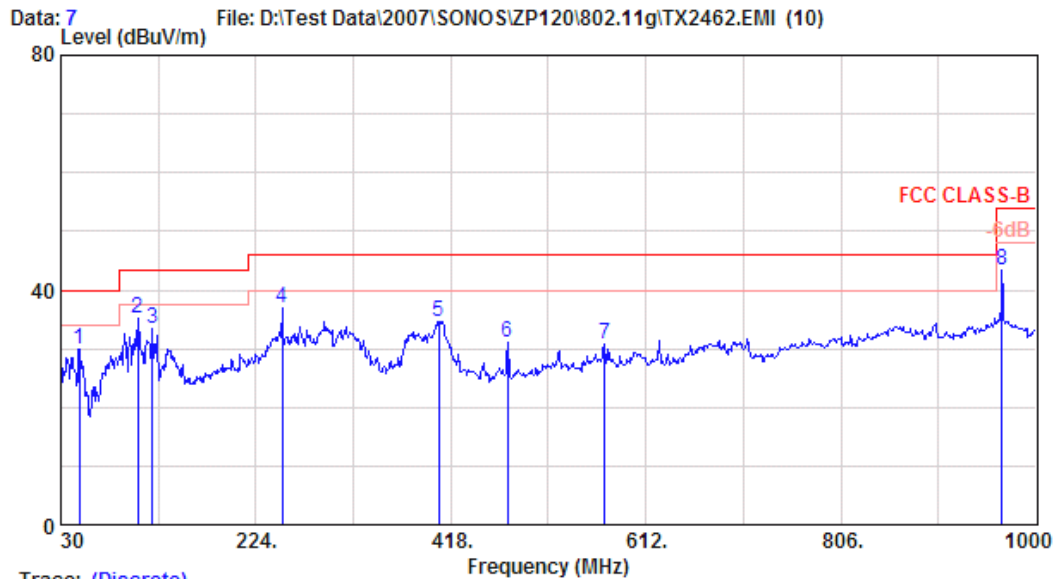
Site no.	: A/C Chamber	Data no.	: 8
Dis. / Ant.	: 3m VBA6106A/UHALP9108A	Ant. pol.	: HORIZONTAL
Limit	: FCC CLASS-B		
Env. / Ins.	: 23°C, 45% / E7405A	Engineer	: Jarwei Wang
EUT	: ZONE PLAYER M/N:ZP120 (3000ba)		
Power Rating	: 120Vac/60Hz		
Test Mode	: TX2462MHz		

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission		Limits (dBµV/m)	Margin (dB)	Remark
				Level (dBµV/m)				
1	80.440	13.81	1.89	16.97	32.66	40.00	7.34	
2	129.910	19.73	2.40	13.23	35.36	43.50	8.14	
3	250.190	23.83	3.50	10.41	37.73	46.00	8.27	
4	301.600	14.59	3.90	18.74	37.23	46.00	8.77	
5	403.450	17.54	4.90	15.93	38.36	46.00	7.64	
6	486.870	18.67	6.20	6.04	30.92	46.00	15.08	
7	900.090	24.96	7.37	3.01	35.34	46.00	10.66	
8	966.050	26.89	7.70	11.14	45.74	54.00	8.26	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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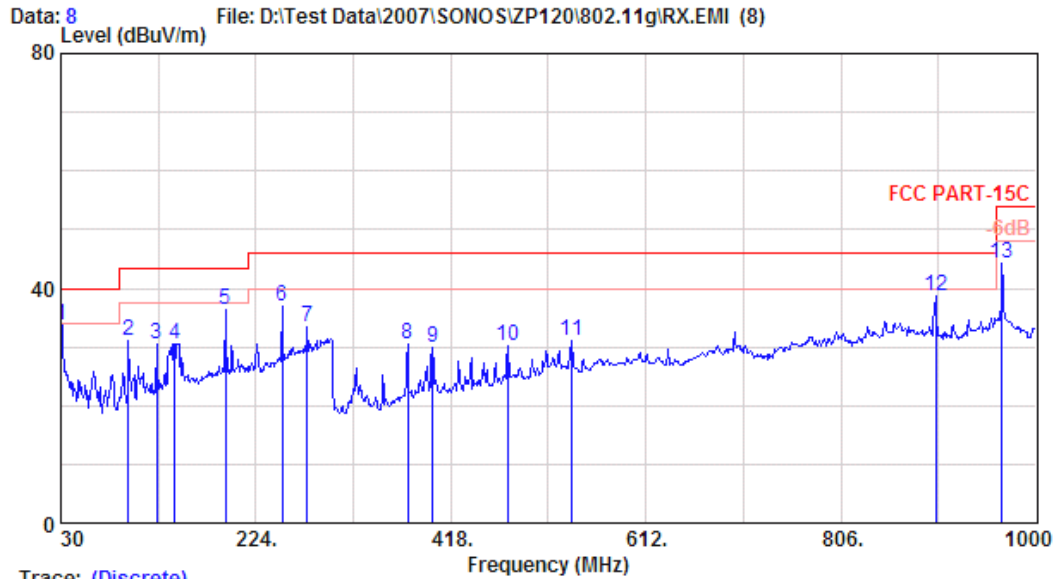
Site no.	: A/C Chamber	Data no.	: 7
Dis. / Ant.	: 3m VBA6106A/UHALP9108A	Ant. pol.	: VERTICAL
Limit	: FCC CLASS-B		
Env. / Ins.	: 23°C, 45% / E7405A	Engineer	: Jarwei Wang
EUT	: ZONE PLAYER M/N:ZP120 (3000ba)		
Power Rating	: 120Vac/60Hz		
Test Mode	: TX2462MHz		

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission		Limits (dBµV/m)	Margin (dB)	Remark
				Level (dBµV/m)				
1	48.430	17.32	1.40	11.17	29.89	40.00	10.11	
2	106.630	17.77	2.20	15.21	35.18	43.50	8.32	
3	121.180	19.15	2.30	12.10	33.55	43.50	9.95	
4	250.190	23.83	3.50	9.52	36.85	46.00	9.15	
5	406.360	17.35	4.90	12.45	34.70	46.00	11.30	
6	474.260	18.48	5.85	6.81	31.13	46.00	14.87	
7	571.260	21.14	6.50	3.23	30.87	46.00	15.13	
8	966.050	26.89	7.70	8.92	43.51	54.00	10.49	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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 Email:ttemc@ttemc.



Trace: (Discrete)

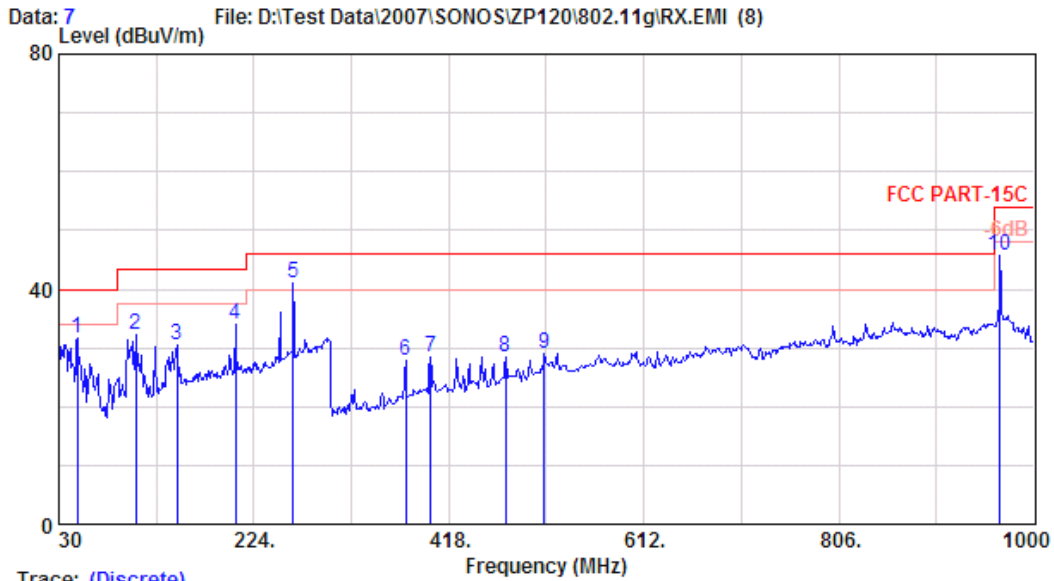
Site no.	: A/C Chamber	Data no.	: 8
Dis. / Ant.	: 3m VBA6106A/UHALP9108A	Ant. pol.	: HORIZONTAL
Limit	: FCC PART-15C		
Env. / Ins.	: 23°C, 45% / E7405A	Engineer	: Jarwei Wang
EUT	: ZONE PLAYER M/N: ZP120 (3000ba)		
Power Rating	: 120Vac/60Hz		
Test Mode	: RX2437MHz		

	Ant. Factor	Cable Loss	Reading	Emission Level	Limits	Margin	Remark
Freq. (MHz)	(dB/m)	(dB)	(dBµV)	(dBµV/m)	(dBµV/m)	(dB)	
1	24.86	1.10	7.84	33.80	40.00	6.20	
2	16.75	2.05	12.22	31.02	43.50	12.48	
3	19.38	2.30	8.82	30.50	43.50	13.00	
4	20.27	2.50	7.76	30.54	43.50	12.96	
5	21.70	3.00	11.65	36.34	43.50	7.16	
6	23.83	3.50	9.54	36.87	46.00	9.13	
7	25.25	3.70	4.55	33.50	46.00	12.50	
8	17.15	4.60	8.82	30.57	46.00	15.43	
9	17.69	4.80	7.26	29.75	46.00	16.25	
10	18.48	5.85	5.82	30.15	46.00	15.85	
11	19.41	7.10	4.59	31.10	46.00	14.90	
12	24.96	7.37	6.33	38.65	46.00	7.35	
13	26.89	7.70	9.63	44.23	54.00	9.77	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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Trace: (Discrete)

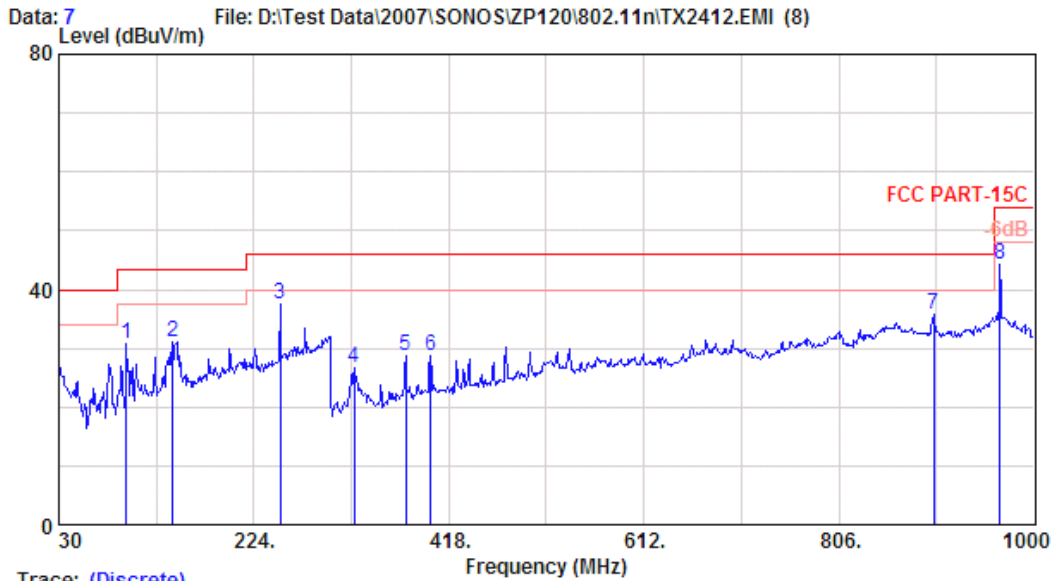
Site no. : A/C Chamber Data no. : 7
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Jarwei Wang
 EUT : ZONE PLAYER M/N: ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : RX2437MHz

	Ant. Cable		Emission		Limits	Margin	Remark
Freq. (MHz)	Factor (dB/m)	Loss (dB)	Reading (dBµV)	Level (dBµV/m)			
1	48.430	17.32	1.40	12.83	31.55	40.00	8.45
2	106.630	17.77	2.20	12.22	32.19	43.50	11.31
3	147.370	20.53	2.58	7.26	30.37	43.50	13.13
4	205.570	21.94	3.10	8.93	33.97	43.50	9.53
5	262.800	24.58	3.60	12.88	41.06	46.00	4.94
6	375.320	17.15	4.60	6.02	27.77	46.00	18.23
7	399.570	17.69	4.80	6.08	28.56	46.00	17.44
8	474.260	18.48	5.85	4.20	28.53	46.00	17.47
9	513.060	19.95	6.80	2.25	28.99	46.00	17.01
10	966.050	26.89	7.70	11.23	45.83	54.00	8.17

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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Trace: (Discrete)

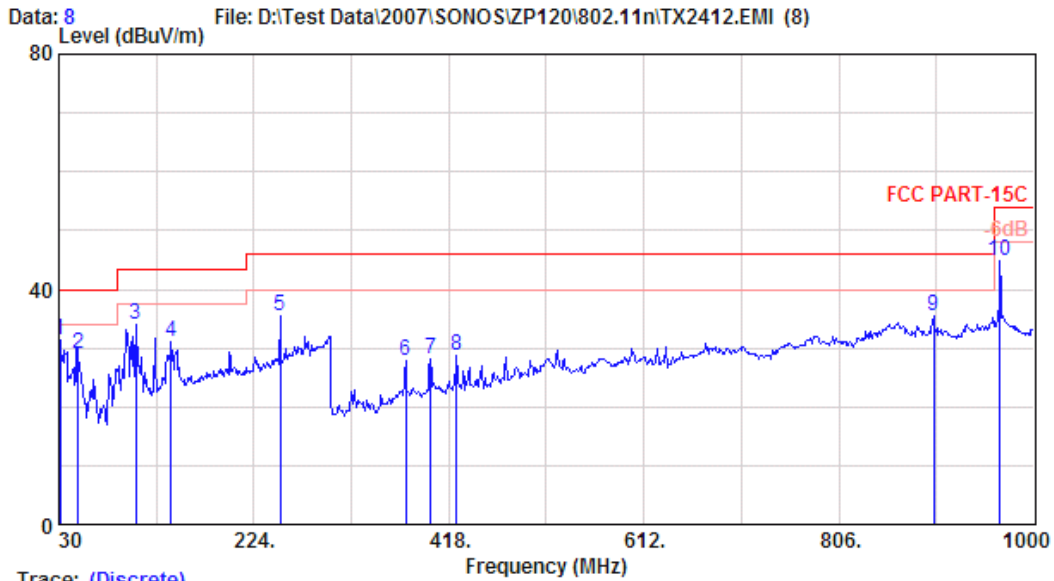
Site no. : A/C Chamber Data no. : 7
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N: ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2412MHz

	Ant.	Cable	Emission		Limits	Margin	Remark
Freq. (MHz)	Factor (dB/m)	Loss (dB)	Reading (dBµV)	Level (dBµV/m)	(dBµV/m)	(dB)	
1	96.930	16.75	2.05	12.08	30.88	43.50	12.62
2	143.490	20.27	2.50	8.33	31.10	43.50	12.40
3	250.190	23.83	3.50	10.11	37.44	46.00	8.56
4	323.910	15.10	4.14	7.43	26.67	46.00	19.33
5	375.320	17.15	4.60	6.86	28.61	46.00	17.39
6	399.570	17.69	4.80	6.32	28.81	46.00	17.19
7	900.090	24.96	7.37	3.42	35.75	46.00	10.25
8	966.050	26.89	7.70	9.57	44.16	54.00	9.84

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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Trace: (Discrete)

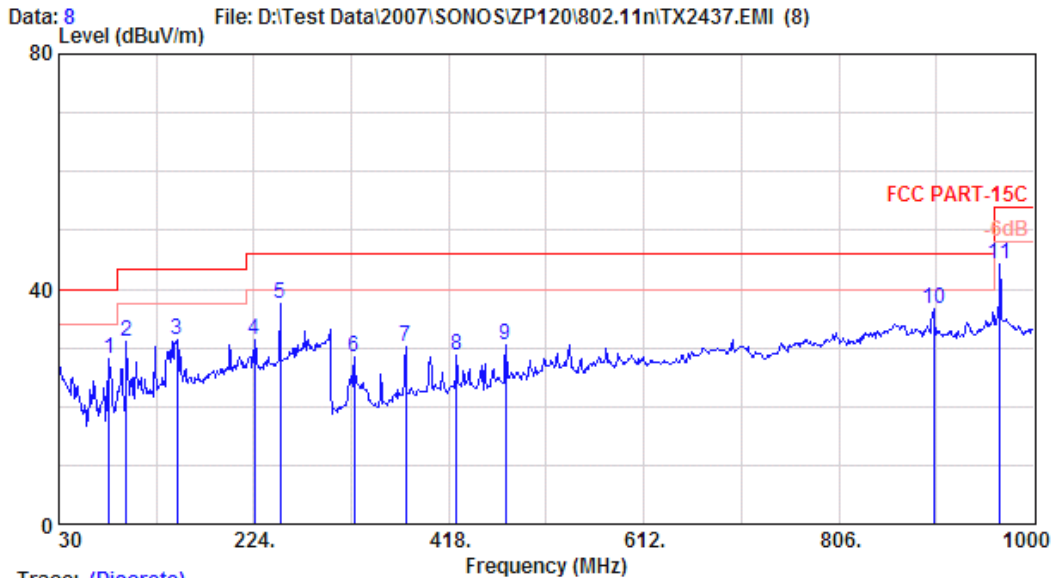
Site no. : A/C Chamber Data no. : 8
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N: ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2412MHz

	Ant.	Cable	Emission				
Freq. (MHz)	Factor (dB/m)	Loss (dB)	Reading (dBµV)	Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	30.970	24.81	1.10	5.53	31.44	40.00	8.56
2	49.400	16.83	1.50	10.60	28.93	40.00	11.07
3	106.630	17.77	2.20	13.92	33.89	43.50	9.61
4	141.550	20.25	2.50	8.29	31.04	43.50	12.46
5	250.190	23.83	3.50	8.12	35.45	46.00	10.55
6	375.320	17.15	4.60	6.15	27.90	46.00	18.10
7	399.570	17.69	4.80	5.64	28.13	46.00	17.87
8	425.760	17.19	5.10	6.54	28.83	46.00	17.17
9	900.090	24.96	7.37	3.04	35.37	46.00	10.63
10	966.050	26.89	7.70	10.13	44.72	54.00	9.28

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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Trace: (Discrete)

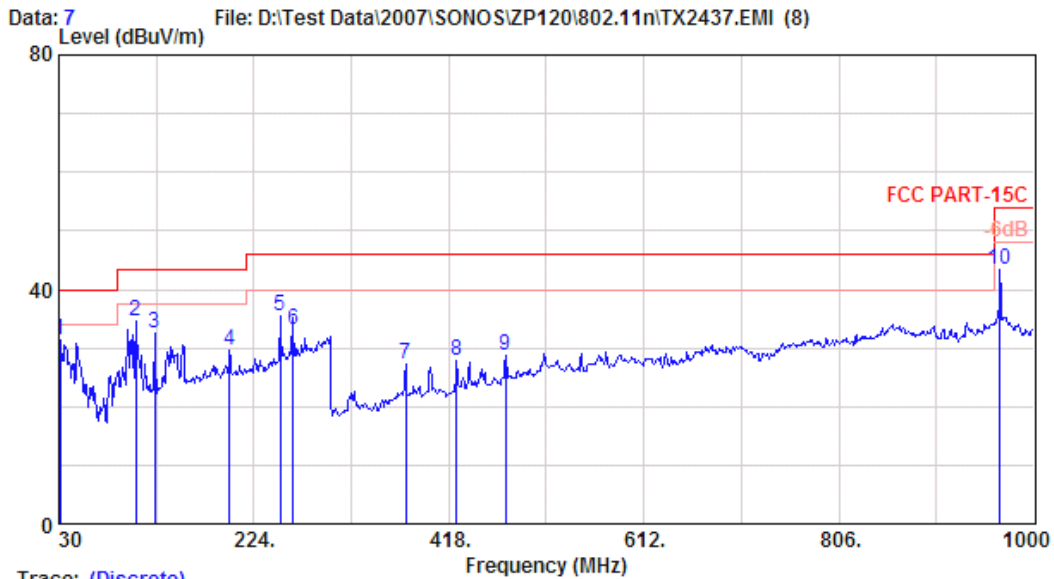
Site no. : A/C Chamber Data no. : 8
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C
 Env. / Ins. : 23°C,45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N:ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2437MHz

	Ant.	Cable	Emission				Margin	Remark
Freq. (MHz)	Factor (dB/m)	Loss (dB)	Reading (dBµV)	Level (dBµV/m)	Limits (dBµV/m)	(dB)		
1	13.81	1.89	12.51	28.21	40.00	11.79		
2	16.75	2.05	12.39	31.19	43.50	12.31		
3	20.53	2.58	8.19	31.30	43.50	12.20		
4	21.95	3.30	6.11	31.36	46.00	14.64		
5	23.83	3.50	10.11	37.44	46.00	8.56		
6	15.10	4.14	9.11	28.35	46.00	17.65		
7	17.15	4.60	8.47	30.21	46.00	15.79		
8	17.19	5.10	6.53	28.82	46.00	17.18		
9	18.48	5.85	6.13	30.46	46.00	15.54		
10	24.96	7.37	4.43	36.76	46.00	9.24		
11	26.89	7.70	9.76	44.35	54.00	9.65		

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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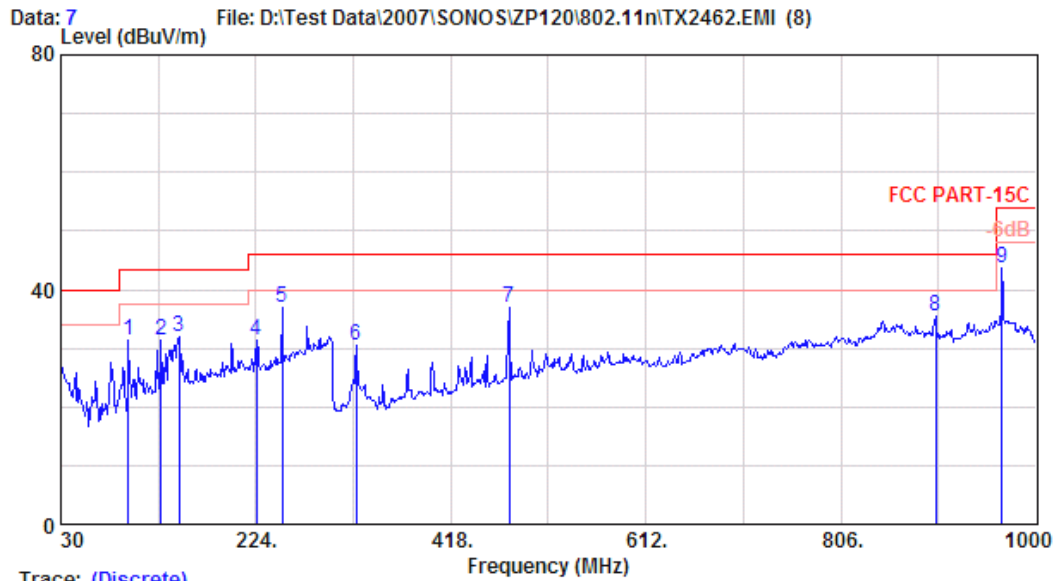
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 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N: ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2437MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	30.970	24.81	1.10	5.44	31.35	40.00	8.65	
2	106.630	17.77	2.20	14.64	34.61	43.50	8.89	
3	125.060	19.38	2.30	10.72	32.41	43.50	11.10	
4	199.750	22.09	3.00	4.52	29.61	43.50	13.89	
5	250.190	23.83	3.50	8.19	35.52	46.00	10.48	
6	262.800	24.58	3.60	4.93	33.10	46.00	12.90	
7	375.320	17.15	4.60	5.42	27.16	46.00	18.84	
8	425.760	17.19	5.10	5.58	27.87	46.00	18.13	
9	474.260	18.48	5.85	4.48	28.81	46.00	17.19	
10	966.050	26.89	7.70	8.63	43.23	54.00	10.77	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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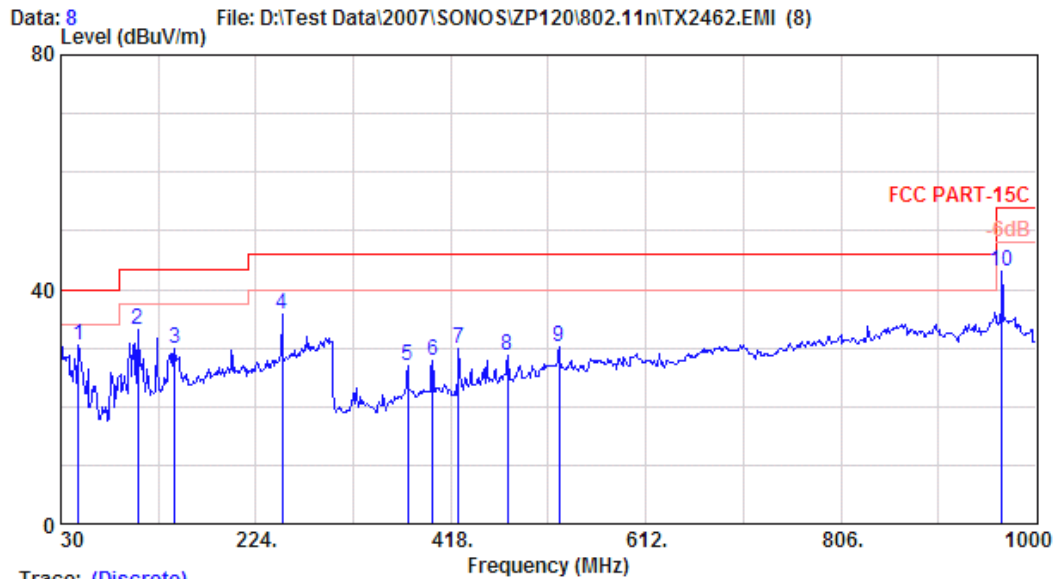
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 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C
 Env. / Ins. : 23°C,45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N:ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2462MHz

	Ant.	Cable	Emission					
Freq. (MHz)	Factor (dB/m)	Loss (dB)	Reading (dBµV)	Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark	
1	96.930	16.75	2.05	12.64	31.44	43.50	12.06	
2	129.910	19.73	2.40	9.30	31.43	43.50	12.07	
3	147.370	20.53	2.58	8.86	31.98	43.50	11.52	
4	224.970	21.95	3.30	6.11	31.37	46.00	14.63	
5	250.190	23.83	3.50	9.60	36.93	46.00	9.07	
6	323.910	15.10	4.14	11.23	30.47	46.00	15.53	
7	476.200	18.55	6.00	12.50	37.05	46.00	8.95	
8	900.090	24.96	7.37	3.12	35.44	46.00	10.56	
9	966.050	26.89	7.70	9.00	43.59	54.00	10.41	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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Trace: (Discrete)

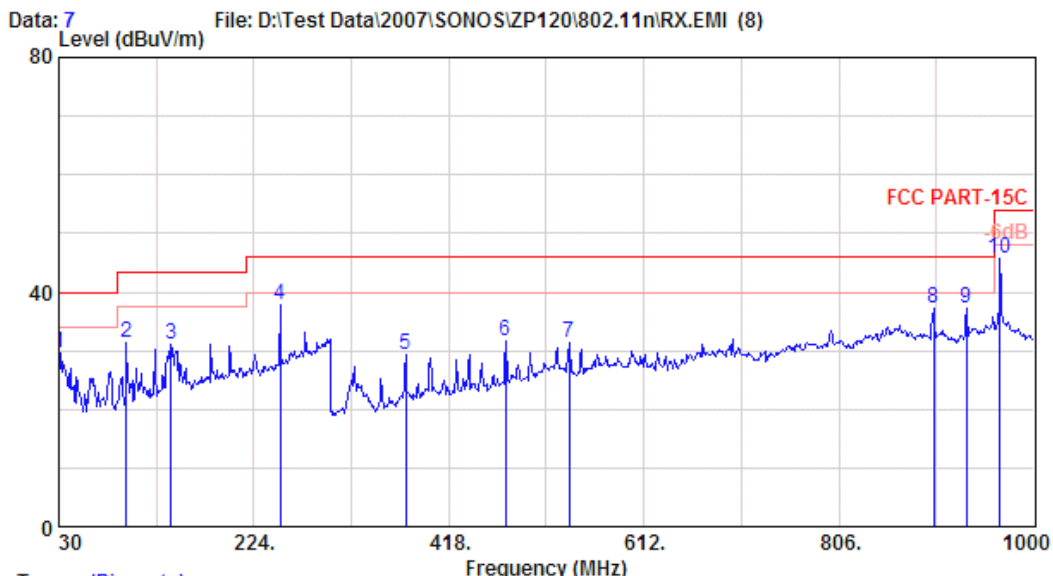
Site no. : A/C Chamber Data no. : 8
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N: ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2462MHz

	Ant.	Cable	Emission				
Freq. (MHz)	Factor (dB/m)	Loss (dB)	Reading (dBµV)	Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	47.460	17.87	1.40	11.28	30.55	40.00	9.45
2	106.630	17.77	2.20	13.02	32.99	43.50	10.51
3	143.490	20.27	2.50	7.18	29.96	43.50	13.54
4	250.190	23.83	3.50	8.34	35.67	46.00	10.33
5	375.320	17.15	4.60	5.29	27.04	46.00	18.96
6	399.570	17.69	4.80	5.36	27.85	46.00	18.15
7	425.760	17.19	5.10	7.56	29.84	46.00	16.16
8	474.260	18.48	5.85	4.41	28.74	46.00	17.26
9	525.670	19.66	6.90	3.61	30.17	46.00	15.83
10	966.050	26.89	7.70	8.52	43.11	54.00	10.89

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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Trace: (Discrete)

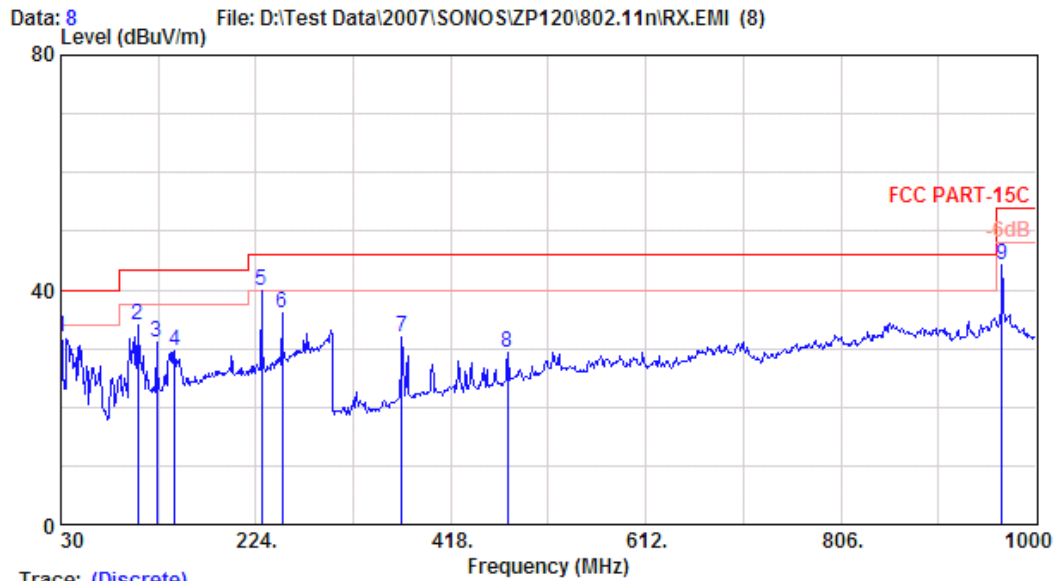
Site no. : A/C Chamber Data no. : 7
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N: ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : RX2437MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	30.000	24.86	1.10	3.73	29.69	40.00	10.31	
2	96.930	16.75	2.05	12.55	31.35	43.50	12.15	
3	141.550	20.25	2.50	8.36	31.11	43.50	12.39	
4	250.190	23.83	3.50	10.43	37.76	46.00	8.24	
5	375.320	17.15	4.60	7.61	29.36	46.00	16.64	
6	474.260	18.48	5.85	7.28	31.60	46.00	14.40	
7	537.310	19.41	7.10	4.85	31.36	46.00	14.64	
8	900.090	24.96	7.37	4.89	37.22	46.00	8.78	
9	933.070	25.23	7.50	4.52	37.25	46.00	8.75	
10	966.050	26.89	7.70	11.09	45.68	54.00	8.32	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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 Email:ttemc@ttemc.



Trace: (Discrete)

Site no. : A/C Chamber Data no. : 8
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N: ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : RX2437MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	30.000	24.86	1.10	6.09	32.04	40.00	7.96	
2	106.630	17.77	2.20	14.09	34.05	43.50	9.45	
3	125.060	19.38	2.30	9.38	31.07	43.50	12.43	
4	143.490	20.27	2.50	6.69	29.46	43.50	14.04	
5	229.820	22.08	3.30	14.57	39.95	46.00	6.05	
6	250.190	23.83	3.50	8.71	36.04	46.00	9.96	
7	369.500	16.93	4.60	10.49	32.02	46.00	13.98	
8	474.260	18.48	5.85	4.97	29.30	46.00	16.70	
9	966.050	26.89	7.70	9.55	44.14	54.00	9.86	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

2.6.2. Above 1GHz Frequency Range Measurement Results

Date of Test : Nov. 12, 2007 Temperature : 23

EUT : Zone Player Humidity : 45%

Test Mode : IEEE 802.11g, Transmitting Mode, Frequency: 2412MHz (CH1)

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB μ V	Meter Reading Horizontal dB μ V/m	Emission Level Horizontal dB μ V/m	Limits dB	Margin
Peak	1440.160	25.38	5.26	10.09	40.73	74.00	33.27
Average	1440.160	25.38	5.26	6.81	37.45	54.00	16.55
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB μ V	Meter Reading Vertical dB μ V/m	Emission Level Vertical dB μ V/m	Limits dB	Margin
Peak	1440.160	25.38	5.26	6.16	36.80	74.00	37.20
Average	1440.160	25.38	5.26	1.52	32.16	54.00	21.84

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.

Date of Test : Nov. 12, 2007 Temperature : 23

EUT : Zone Player Humidity : 45%

Test Mode : IEEE 802.11g, Transmitting Mode, Frequency: 2437MHz (CH6)

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB μ V	Meter Reading Horizontal dB μ V/m	Emission Level Horizontal dB μ V/m	Limits dB	Margin
Peak	2031.520	27.86	5.90	8.94	42.70	74.00	31.30
Average	2031.520	27.86	5.90	5.65	39.41	54.00	14.59
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB μ V	Meter Reading Vertical dB μ V/m	Emission Level Vertical dB μ V/m	Limits dB	Margin
Peak	2031.520	27.86	5.90	6.51	40.27	74.00	33.73
Average	2031.520	27.86	5.90	1.84	35.60	54.00	18.40

Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.

Date of Test : Nov. 12, 2007 Temperature : 23

EUT : Zone Player Humidity : 45%

Test Mode : IEEE 802.11g, Transmitting Mode, Frequency: 2462MHz (CH11)

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB μ V	Meter Reading Horizontal dB μ V/m	Emission Level Horizontal dB μ V/m	Limits dB	Margin
Peak	2246.560	28.32	6.16	8.03	42.51	74.00	31.49
Average	2246.560	28.32	6.16	2.28	36.76	54.00	17.24

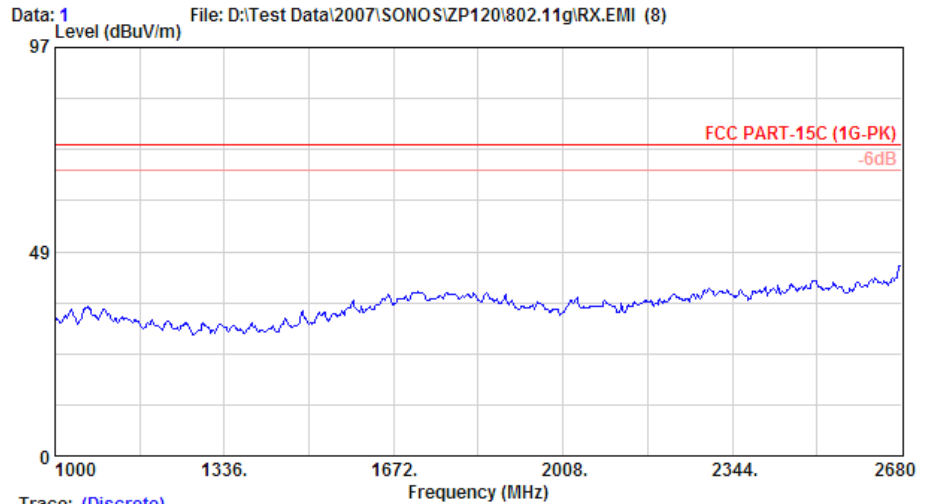
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB μ V	Meter Reading Vertical dB μ V/m	Emission Level Vertical dB μ V/m	Limits dB	Margin
Peak	2241.520	28.31	6.16	8.51	42.98	74.00	31.02
Average	2241.520	28.31	6.16	2.96	37.43	54.00	16.57

Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.

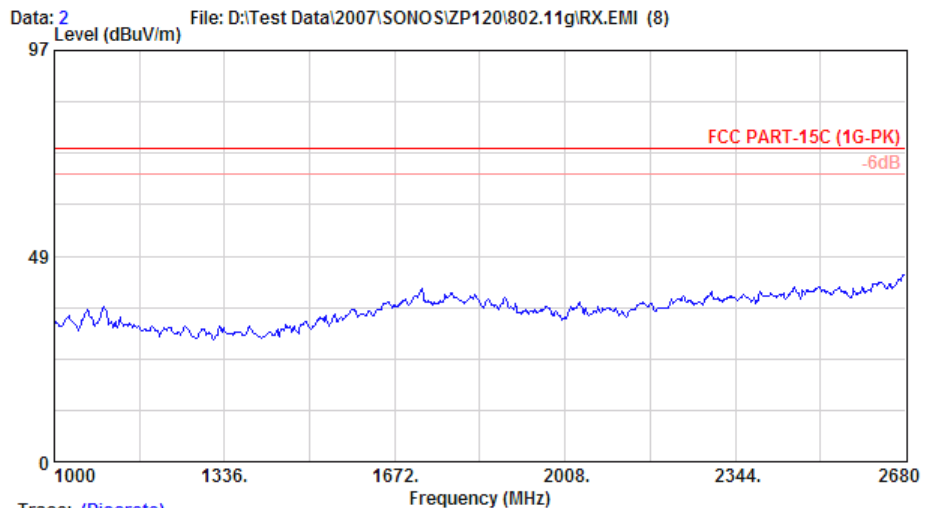
Date of Test : Nov. 12, 2007 Temperature : 23

EUT : Zone Player Humidity : 45%

Test Mode : IEEE 802.11g, Receiving Mode, Frequency: 2437MHz (CH6)



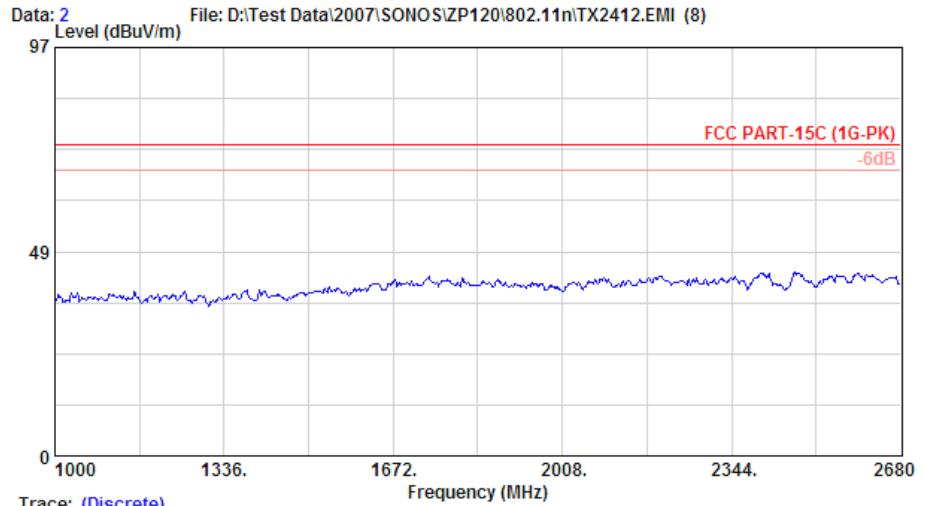
Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Jarwei Wang
 EUT : ZONE PLAYER M/N:ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : RX2437MHz



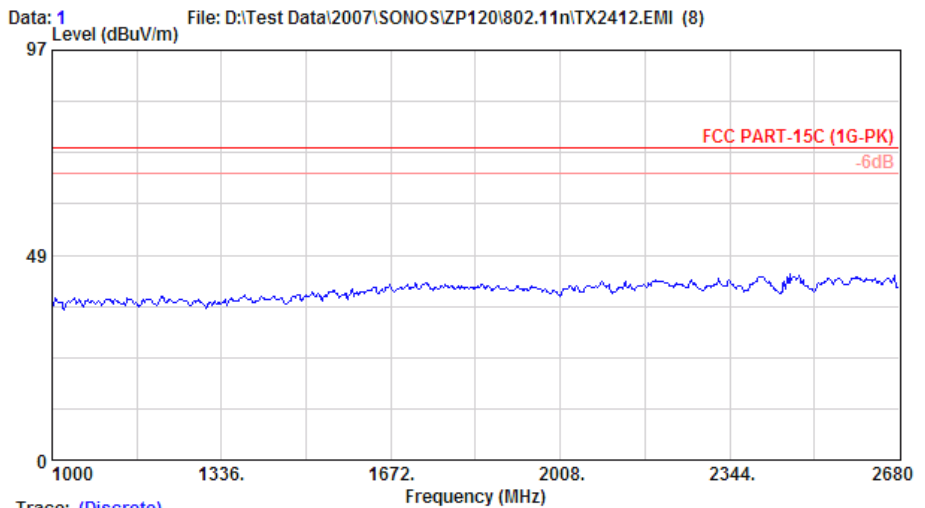
Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Jarwei Wang
 EUT : ZONE PLAYER M/N:ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : RX2437MHz

Remark : Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.

Date of Test : Nov. 12, 2007 Temperature : 23
 EUT : Zone Player Humidity : 45%
 Test Mode : IEEE 802.11n, Transmit Mode, Frequency: 2412MHz (CH1)



Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N: ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2412MHz



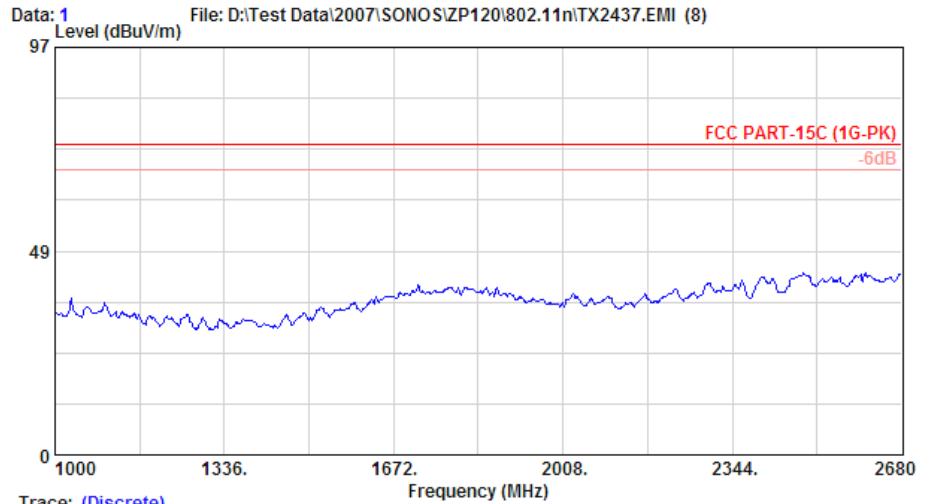
Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N: ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2412MHz

Remark : Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.

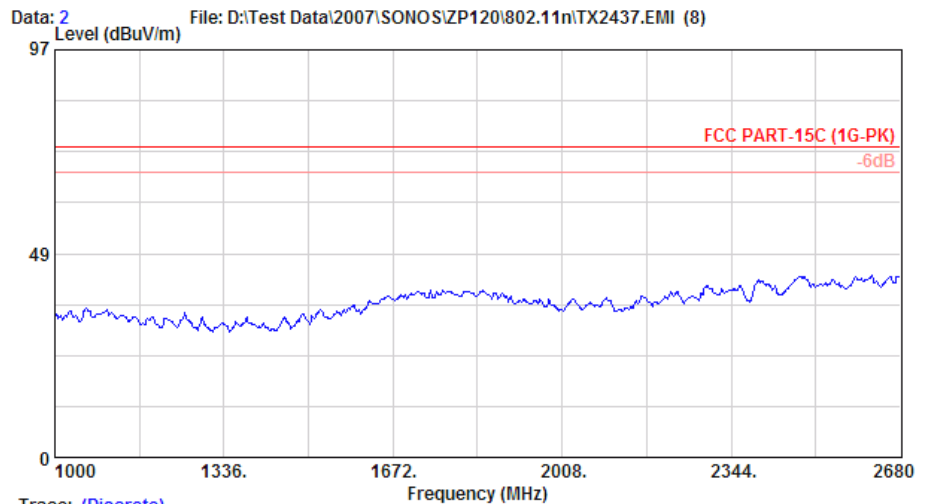
Date of Test : Nov. 12, 2007 Temperature : 23

EUT : Zone Player Humidity : 45%

Test Mode : IEEE 802.11n, Transmit Mode, Frequency: 2437MHz (CH6)



Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N: ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2437MHz



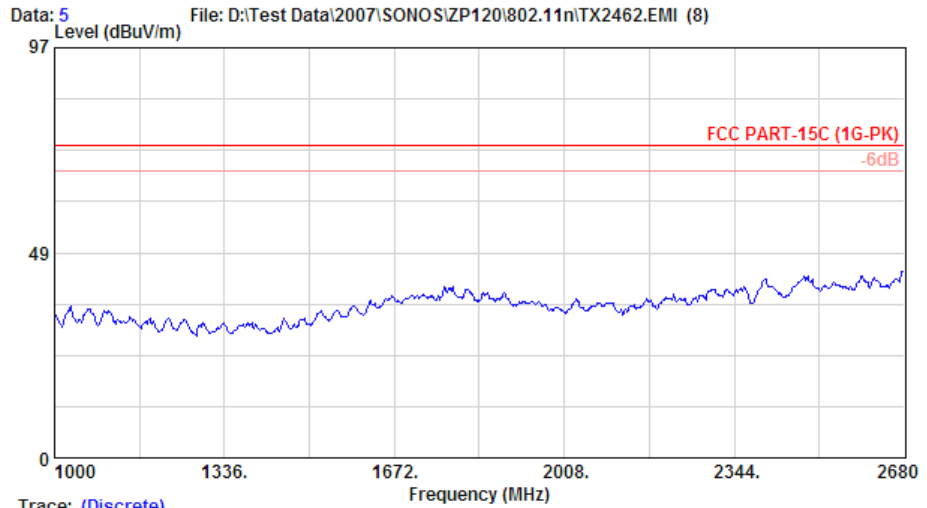
Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N: ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2437MHz

Remark : Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.

Date of Test : Nov. 12, 2007 Temperature : 23

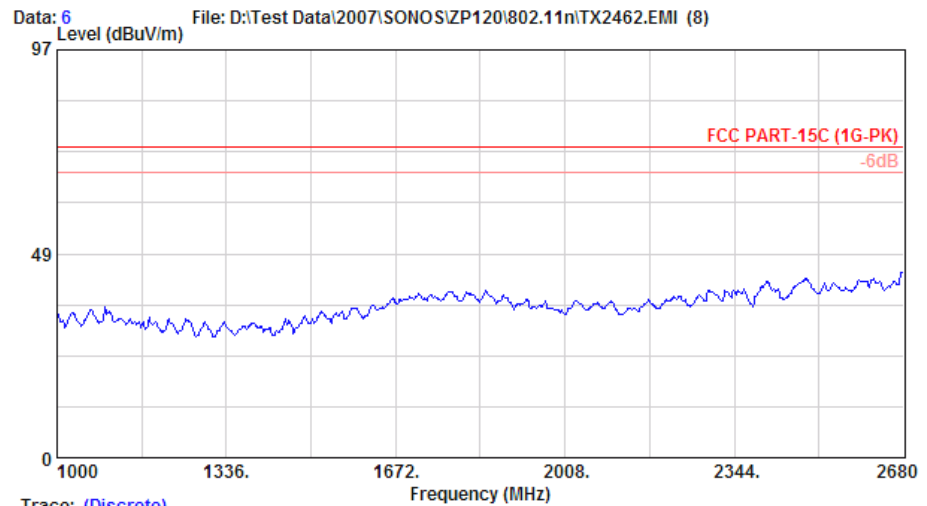
EUT : Zone Player Humidity : 45%

Test Mode : IEEE 802.11n, Transmit Mode, Frequency: 2462MHz (CH11)



Trace: (Discrete)

Site no. : A/C Chamber	Data no. : 5
Dis. / Ant. : 3m 3115	Ant. pol. : HORIZONTAL
Limit : FCC PART-15C (1G-PK)	
Env. / Ins. : 23°C, 45% / E7405A	Engineer : Ada Huang
EUT : ZONE PLAYER M/N:ZP120(3000ba)	
Power Rating : 120Vac/60Hz	
Test Mode : TX2462MHz	

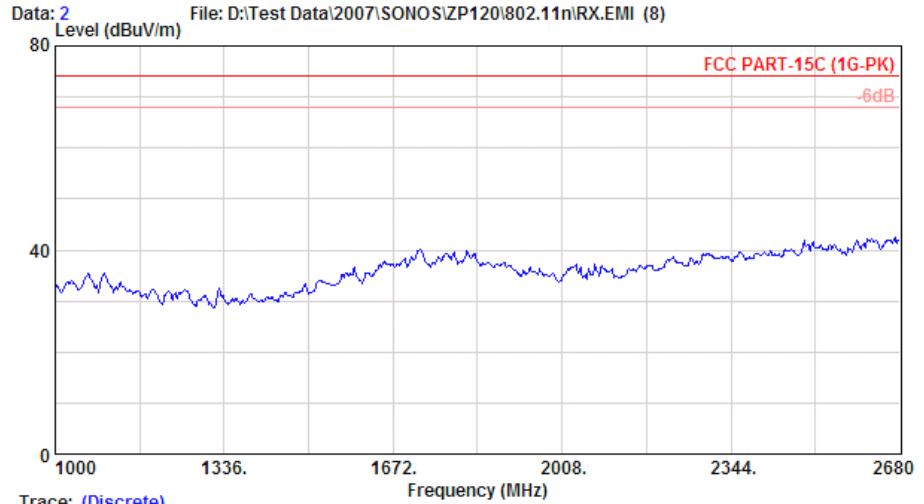


Trace: (Discrete)

Site no. : A/C Chamber	Data no. : 6
Dis. / Ant. : 3m 3115	Ant. pol. : VERTICAL
Limit : FCC PART-15C (1G-PK)	
Env. / Ins. : 23°C, 45% / E7405A	Engineer : Ada Huang
EUT : ZONE PLAYER M/N:ZP120(3000ba)	
Power Rating : 120Vac/60Hz	
Test Mode : TX2462MHz	

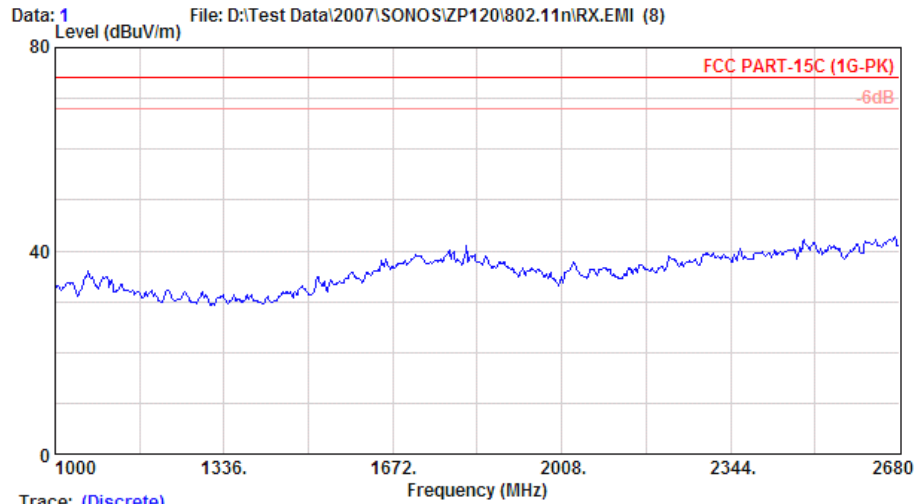
Remark : Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.

Date of Test : Nov. 12, 2007 Temperature : 23
 EUT : Zone Player Humidity : 45%
 Test Mode : IEEE 802.11n, Receive Mode, Frequency: 2437MHz (CH6)



Trace: (Discrete)

Site no.	: A/C Chamber	Data no.	: 2
Dis. / Ant.	: 3m 3115	Ant. pol.	: HORIZONTAL
Limit	: FCC PART-15C (1G-PK)		
Env. / Ins.	: 23°C, 45% / E7405A	Engineer	: Ada Huang
EUT	: ZONE PLAYER M/N:ZP120(3000ba)		
Power Rating	: 120Vac/60Hz		
Test Mode	: RX2437MHz		



Trace: (Discrete)

Site no.	: A/C Chamber	Data no.	: 1
Dis. / Ant.	: 3m 3115	Ant. pol.	: VERTICAL
Limit	: FCC PART-15C (1G-PK)		
Env. / Ins.	: 23°C, 45% / E7405A	Engineer	: Ada Huang
EUT	: ZONE PLAYER M/N:ZP120(3000ba)		
Power Rating	: 120Vac/60Hz		
Test Mode	: RX2437MHz		

Remark : Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.

2.6.3.Restricted Bands Measurement Results

Date of Test : Nov. 12, 2007 Temperature : 23
 EUT : Zone Player Humidity : 45%
 Test Mode : IEEE 802.11g, Transmit Mode, Frequency: 2412MHz (CH1)

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB μ V	Meter Reading Horizontal dB μ V/m	Emission Level Horizontal dB μ V/m	Limits dB	Margin
Peak *	2384.850	28.59	6.33	7.60	42.52	74.00	31.48
Average *	2382.600	28.58	6.33	-4.44	30.47	54.00	23.53

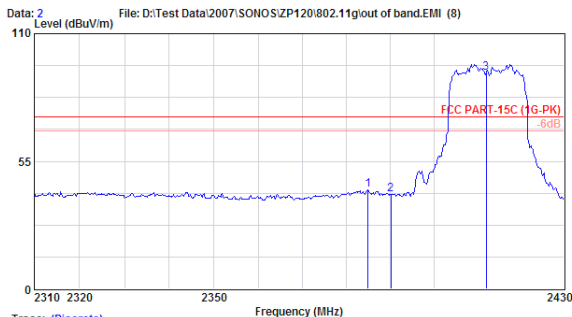
Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Low frequency section (spurious in the restricted band 2310-2390MHz).
 3. ‘*’ The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



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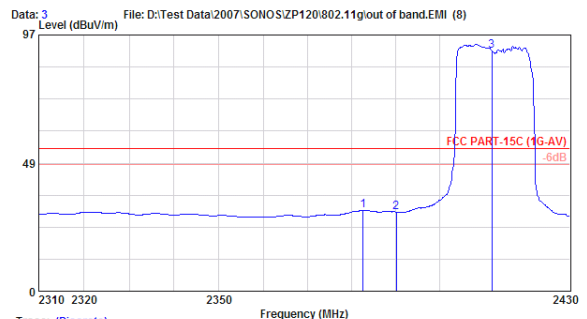
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 Email:ttenc@ttenc.com



Trace: (Discrete) File: D:\Test Data\2007\SONOS\ZP120\802.11g\out of band.EMI (8)
 Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Jarwei Wang
 EUT : ZONE PLAYER M/N:ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2412MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2384.850	28.59	6.33	7.60	42.53	74.00	31.47	Peak
2	2390.100	28.59	6.34	5.84	40.78	74.00	33.22	Peak
3	2412.000	28.64	6.36	58.08	93.09	74.00	-19.09	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Trace: (Discrete) File: D:\Test Data\2007\SONOS\ZP120\802.11g\out of band.EMI (8)
 Site no. : A/C Chamber Data no. : 3
 Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Jarwei Wang
 EUT : ZONE PLAYER M/N:ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2412MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2382.600	28.58	6.33	-4.44	30.48	54.00	23.52	Average
2	2390.100	28.59	6.34	-4.99	29.94	54.00	24.06	Average
3	2412.000	28.64	6.36	55.99	91.00	54.00	-37.00	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Nov. 12, 2007 Temperature : 23
 EUT : Zone Player Humidity : 45%
 Test Mode : IEEE 802.11g, Transmit Mode, Frequency: 2412MHz (CH1)

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB μ V	Meter Reading Vertical dB μ V/m	Emission Level Vertical dB μ V/m	Limits dB	Margin
Peak *	2388.240	28.59	6.34	7.45	42.38	74.00	31.62
Average *	2382.600	28.58	6.33	-4.47	30.44	54.00	23.56

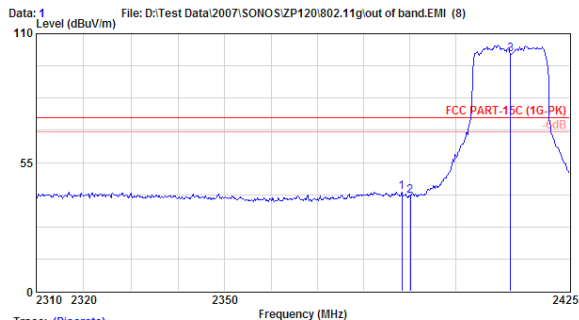
Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Low frequency section (spurious in the restricted band 2310-2390MHz).
 3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



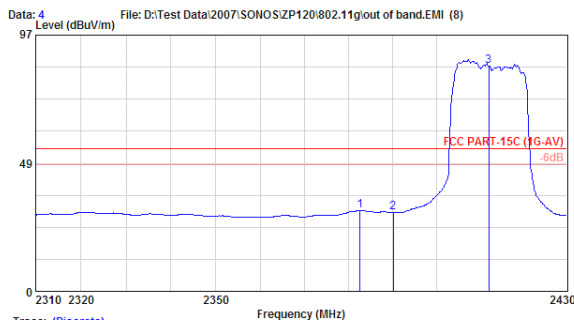
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 Email:ttenc@ttenc.com



Trace: (Discrete) File: D:\Test Data\2007\SONOS\ZP120\802.11g\out of band.EMI (8)
 Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Jarwei Wang
 EUT : ZONE PLAYER M/N: ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2412MHz



Trace: (Discrete) File: D:\Test Data\2007\SONOS\ZP120\802.11g\out of band.EMI (8)
 Site no. : A/C Chamber Data no. : 4
 Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Jarwei Wang
 EUT : ZONE PLAYER M/N: ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2412MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2388.240	28.59	6.34	7.45	42.39	74.00	31.61	Peak
2	2390.040	28.59	6.34	5.82	40.75	74.00	33.25	Peak
3	2412.000	28.64	6.36	65.98	100.99	74.00	-26.99	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2382.600	28.58	6.33	-4.47	30.44	54.00	23.56	Average
2	2390.100	28.59	6.34	-5.04	29.90	54.00	24.10	Average
3	2412.000	28.64	6.36	50.21	85.22	54.00	-31.22	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Nov. 12, 2007 Temperature : 23
 EUT : Zone Player Humidity : 45%
 Test Mode : IEEE 802.11g, Transmit Mode, Frequency: 2462MHz (CH11)

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB μ V	Meter Reading Horizontal dB μ V/m	Emission Level Horizontal dB μ V/m	Limits dB	Margin
Peak *	2483.525	28.77	6.45	2.70	37.92	74.00	36.08
Average *	2483.525	28.77	6.45	-7.27	27.95	54.00	26.05

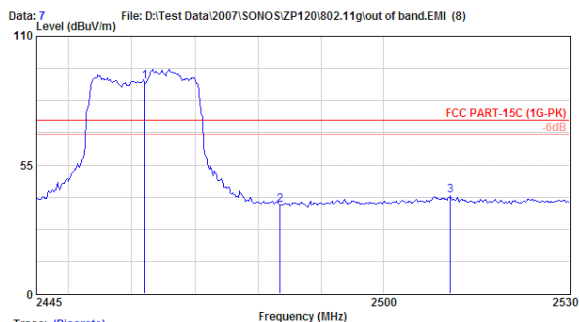
Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Low frequency section (spurious in the restricted band 2483.5-2500MHz).
 3. ‘*’ The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



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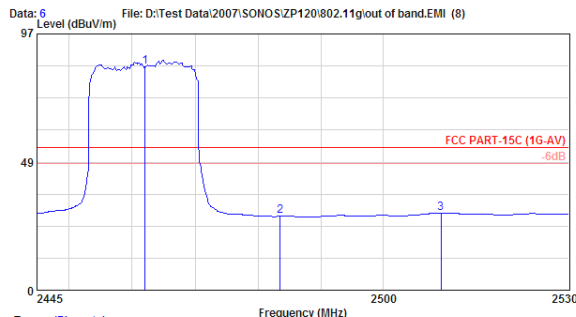
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Trace: (Discrete)
 Site no. : A/C Chamber Data no. : 7
 Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Jarwei Wang
 EUT : ZONE PLAYER M/N:ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2462MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2462.020	28.74	6.42	55.38	90.54	74.00	-16.54	Peak
2	2483.525	28.77	6.45	2.70	37.92	74.00	36.08	Peak
3	2510.780	28.86	6.48	6.51	41.86	74.00	32.14	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Trace: (Discrete)
 Site no. : A/C Chamber Data no. : 6
 Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Jarwei Wang
 EUT : ZONE PLAYER M/N:ZP120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2462MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2462.020	28.74	6.42	49.28	84.43	54.00	-30.43	Average
2	2483.525	28.77	6.45	-7.27	27.95	54.00	26.05	Average
3	2509.285	28.83	6.48	-6.01	29.30	54.00	24.70	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Nov. 12, 2007 Temperature : 23

EUT : Zone Player Humidity : 45%

Test Mode : IEEE 802.11g, Transmit Mode, Frequency: 2462MHz (CH11)

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB μ V	Meter Reading Vertical dB μ V/m	Emission Level Vertical dB μ V/m	Limits dB	Margin
Peak *	2483.525	28.77	6.45	4.41	39.63	74.00	34.37
Average *	2483.640	28.77	6.45	-6.68	28.54	54.00	25.46

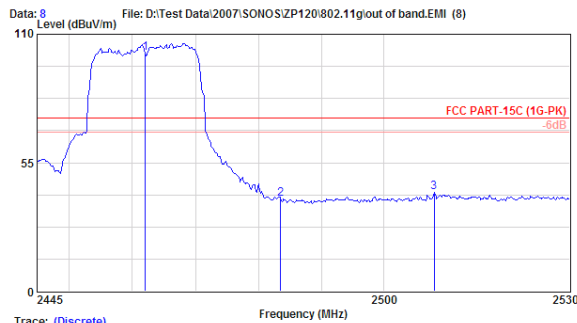
- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Low frequency section (spurious in the restricted band 2483.5-2500MHz).
 3. ‘*’ The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



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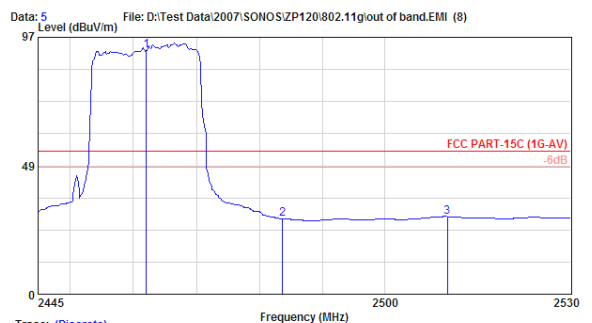
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Trace: (Discrete)
 Site no. : A/C Chamber Data no. : 8
 Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Jarwei Wang
 EUT : ZONE PLAYER M/N:2P120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2412MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2462.020	28.74	6.42	66.79	101.95	74.00	-27.95	Peak
2	2483.525	28.77	6.45	4.41	39.63	74.00	34.37	Peak
3	2508.135	28.83	6.48	7.12	42.44	74.00	31.56	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Trace: (Discrete)
 Site no. : A/C Chamber Data no. : 5
 Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Jarwei Wang
 EUT : ZONE PLAYER M/N:2P120 (3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2462MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2462.020	28.74	6.42	56.72	91.88	54.00	-37.88	Average
2	2483.640	28.77	6.45	-6.68	28.54	54.00	25.46	Average
3	2510.090	28.83	6.48	-6.01	29.31	54.00	24.69	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Nov. 12, 2007 Temperature : 23

EUT : Zone Player Humidity : 45%

Test Mode : IEEE 802.11n, Transmit Mode, Frequency: 2412MHz (CH1)

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB μ V	Meter Reading Horizontal dB μ V/m	Emission Level Horizontal dB μ V/m	Limits dB	Margin
Peak *	2389.350	28.59	6.34	19.74	54.67	74.00	19.33
Average *	2390.100	28.59	6.34	2.18	37.11	54.00	16.89

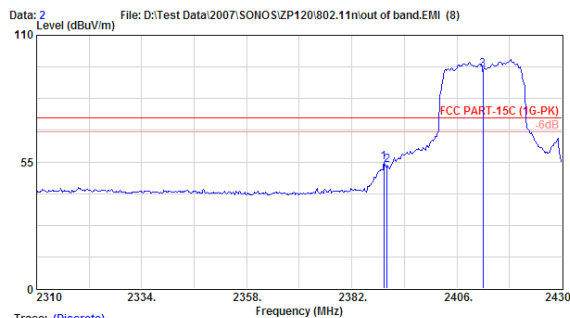
- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Low frequency section (spurious in the restricted band 2310-2390MHz).
 3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



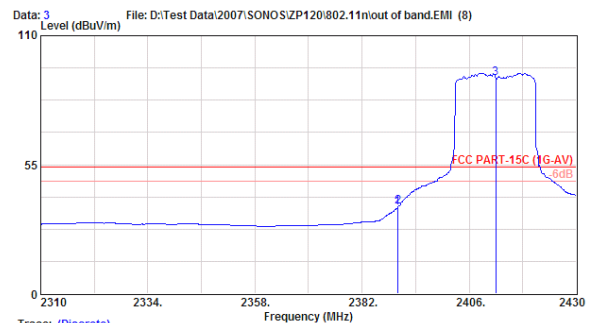
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Trace: (Discrete)
 Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N:ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2412MHz



Trace: (Discrete)
 Site no. : A/C Chamber Data no. : 3
 Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N:ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2412MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Emission Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2389.350	28.59	6.34	19.74	54.68	74.00	19.32	Peak
2	2390.100	28.59	6.34	18.63	53.56	74.00	20.44	Peak
3	2412.000	28.64	6.36	60.03	95.04	74.00	-21.04	Peak

- Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Emission Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2389.950	28.59	6.34	1.76	36.70	54.00	17.30	Average
2	2390.100	28.59	6.34	2.18	37.11	54.00	16.89	Average
3	2412.000	28.64	6.36	57.02	92.03	54.00	-38.03	Average

- Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Nov. 12, 2007 Temperature : 23
 EUT : Zone Player Humidity : 45%
 Test Mode : IEEE 802.11g, Transmit Mode, Frequency: 2412MHz (CH1)

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB μ V	Meter Reading Vertical dB μ V/m	Emission Level Vertical dB μ V/m	Limits dB	Margin
Peak *	2389.800	28.59	6.34	29.53	64.46	74.00	9.54
Average *	2389.950	28.59	6.34	11.07	46.00	54.00	8.00

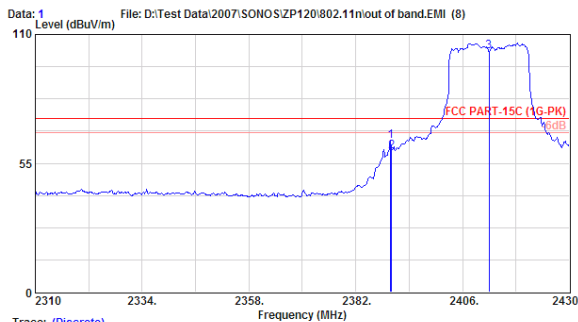
Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Low frequency section (spurious in the restricted band 2310-2390MHz).
 3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



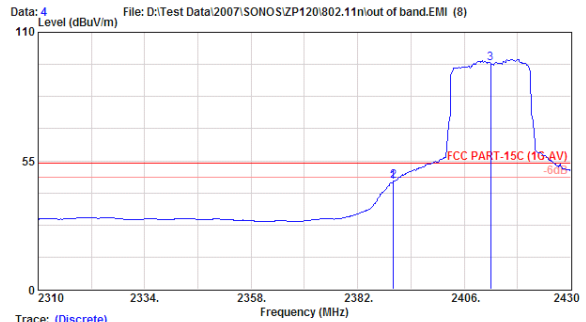
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Trace: (Discrete)
 Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N:ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2412MHz



Trace: (Discrete)
 Site no. : A/C Chamber Data no. : 4
 Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N:ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2412MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Emission Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2389.800	28.59	6.34	29.53	64.46	74.00	9.54	Peak
2	2390.100	28.59	6.34	25.05	59.98	74.00	14.02	Peak
3	2412.000	28.64	6.36	67.94	102.95	74.00	-28.95	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Emission Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2389.950	28.59	6.34	11.07	46.00	54.00	8.00	Average
2	2390.100	28.59	6.34	11.37	46.30	54.00	7.70	Average
3	2412.000	28.64	6.36	61.73	96.74	54.00	-42.74	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Nov. 12, 2007 Temperature : 23
 EUT : Zone Player Humidity : 45%
 Test Mode : IEEE 802.11n, Transmit Mode, Frequency: 2462MHz (CH11)

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB μ V	Meter Reading Horizontal dB μ V/m	Emission Level Horizontal dB μ V/m	Limits dB	Margin
Peak *	2484.870	28.77	6.45	19.69	54.91	74.00	19.09
Average *	2483.550	28.77	6.45	3.59	38.81	54.00	15.19

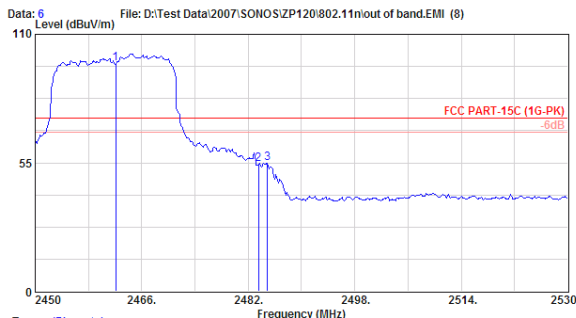
- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Low frequency section (spurious in the restricted band 2483.5-2500MHz).
 3. "*" The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



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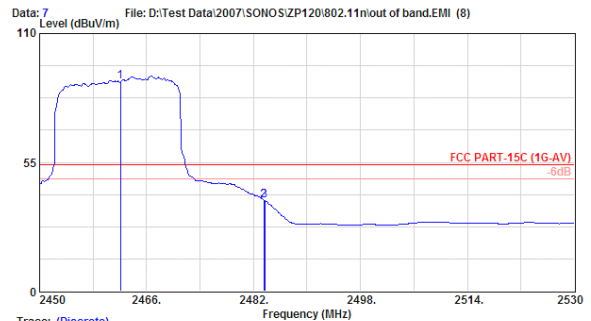
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Site no. : A/C Chamber Data no. : 6
 Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N:ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2462MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 2462.100	28.74	6.42	62.36	97.52	74.00	-23.52	Peak
2 2483.550	28.77	6.45	19.13	54.35	74.00	19.65	Peak
3 2484.870	28.77	6.45	19.69	54.91	74.00	19.09	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : A/C Chamber Data no. : 7
 Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N:ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2462MHz

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 2462.100	28.74	6.42	54.28	89.44	54.00	-35.44	Average
2 2483.550	28.77	6.45	3.59	38.82	54.00	15.18	Average
3 2483.660	28.77	6.45	3.26	38.49	54.00	15.51	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Nov. 12, 2007 Temperature : 23
 EUT : Zone Player Humidity : 45%
 Test Mode : IEEE 802.11g, Transmit Mode, Frequency: 2462MHz (CH11)

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB μ V	Meter Reading Vertical dB μ V/m	Emission Level Vertical dB μ V/m	Limits dB	Margin
Peak *	2483.990	28.77	6.45	23.71	58.93	74.00	15.07
Average *	2483.550	28.77	6.45	14.71	49.93	54.00	4.07

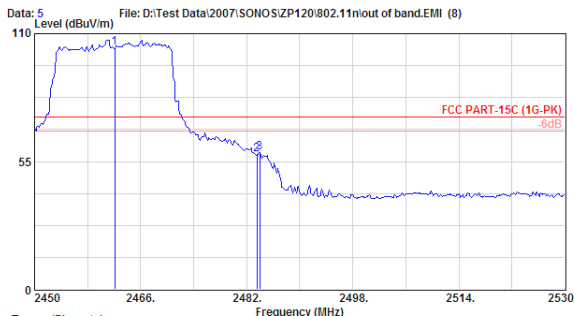
- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Low frequency section (spurious in the restricted band 2483.5-2500MHz).
 3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



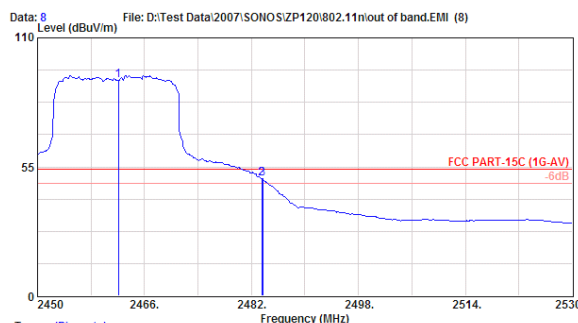
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Trace: (Discrete)
 Site no. : A/C Chamber Data no. : 5
 Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N: ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2462MHz



Trace: (Discrete)
 Site no. : A/C Chamber Data no. : 8
 Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : 23°C, 45% / E7405A Engineer : Ada Huang
 EUT : ZONE PLAYER M/N: ZP120(3000ba)
 Power Rating : 120Vac/60Hz
 Test Mode : TX2462MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2462.100	28.74	6.42	68.75	103.91	74.00	-29.91	Peak
2	2483.550	28.77	6.45	22.62	57.84	74.00	16.16	Peak
3	2483.990	28.77	6.45	23.71	58.94	74.00	15.06	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1	2462.100	28.74	6.42	56.74	91.90	54.00	-37.90	Average
2	2483.550	28.77	6.45	14.71	49.93	54.00	4.07	Average
3	2483.660	28.77	6.45	14.58	49.81	54.00	4.19	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

3. DEVIATION TO TEST SPECIFICATIONS

【NONE】