

# TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

Test Report Serial No: RFI/RPT1/RP73590JD05A

This Test Report Is Issued Under The Authority Of Steve Flooks, Radio Performance Group Service Leader:		
Checked By: Nigel Davison	Report Copy No: PDF01	
Issue Date: 10 July 2008	Test Dates: 16 June 2008 to 21 June 2008	

The *Bluetooth*® word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by RFI Global Services Ltd. is under license. Other trademarks and trade names are those of their respective owners.

This report is issued in Adobe Acrobat portable document format (PDF). It is only a valid copy of the report if it is being viewed in PDF format with the following security options not allowed: Changing the document, Selecting text and graphics, Adding or changing notes and form fields. This report may be copied in full. The results in this report apply only to the sample(s) tested.

#### RFI Global Services Ltd

Pavilion A, Ashwood Park, Ashwood Way, Basingstoke, Hampshire RG23 8BG Telephone: +44 (0)1256 312000 Facsimile: +44 (0)1256 312001 Email: info@rfi-global.com Website: www.rfi-global.com

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 2 of 39

Issue Date: 10 July 2008

Test of: Panasonic

921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

This page has been left intentionally blank.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 3 of 39

Issue Date: 10 July 2008

Test of: Panasonic

921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# **Table of Contents**

1. Client Information	4
2. Equipment Under Test (EUT)	5
3. Test Specification, Methods and Procedures	8
4. Deviations from the Test Specification	8
5. Operation and Configuration of the EUT during Testing	9
6. Summary of Test Results	10
7. Measurements, Examinations and Derived Results	11
8. Measurement Uncertainty	34
Appendix 1. Test Equipment Used	35
Appendix 2. Test Configuration Drawings	37

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 4 of 39

Issue Date: 10 July 2008

Test of: Panasonic

921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# 1. Client Information

Company Name:	Panasonic Mobile Comms Dev of Europe Ltd	
Address:	Panasonic House Willoughby Road Bracknell Berkshire RG12 8FP	
Contact Name:	Mr M Hargreaves	

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 5 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# 2. Equipment Under Test (EUT)

The following information (with the exception of the date of receipt) has been supplied by the customer:

#### 2.1. Description of EUT

The equipment under test is a Dual mode (W-CDMA/GSM) Cellular Mobile Telephone with Bluetooth and RFID.

# 2.2. Identification of Equipment Under Test (EUT)

Description:	GSM Mobile Phone
Brand Name:	Panasonic
Model Name or Number:	921P (VS84)
Serial Number:	Sample C10
IMEI Number:	004401220573188
FCC ID Number:	UCE208007A
Country of Manufacture:	Japan
Date of Receipt:	05 June 2008

# 2.3. Modifications Incorporated in the EUT

During the course of testing the EUT was not modified.

#### 2.4. Accessories

The following accessories were supplied with the EUT during testing:

Description:	Mains AC charger
Brand Name:	Kyushi Mitsumi
Model Name or Number:	JET ZTDAA1
Serial Number:	AC Charger #01
Cable Length and Type:	1.5 metre / multicore
Connected to Port	Charger

Description:	Battery
Brand Name:	Sanyo
Model Name or Number:	UF463443(770mAh)
Serial Number:	VS84 Battery #8
Connected to Port	Power

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 6 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# **Accessories (Continued)**

Description:	Personal Hands Free (stereo)	
Brand Name:	Panasonic	
Model Name or Number:	EB-EM003	
Cable Length and Type:	1.8m / multi-core	
Connected to Port	AV Out port	

Description:	Micro-SD Memory Card
Brand Name:	Panasonic
Connected to Port	Dedicated micro-SD card port

# 2.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	Laptop PC	
Model Name or Number:	SONY Vaio PCG-VX7/BD	
Serial Number:	Serial number has been partially erased and cannot be read	
Connected to Port:	USB	

Description:	USB Cable
Model Name or Number:	None Stated
Serial Number:	None Stated
Cable Length and Type:	1.5M
Connected to Port:	USB

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 7 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# 2.6. Additional Information Related to Testing

			-
Power Supply Requirement:	Internal battery Supply of:	3.7V (nominal)	
Intended Operating Environment:	Within GSM Coverage UMTS coverage area		
Equipment Category:	Bluetooth, GSM/GPRS, S	hort Range Device	and UMTS FDD I
Type of Unit:	Portable (Standalone batte Transceiver	Portable (Standalone battery powered device) Transceiver	
Channel Spacing:	1 MHz		
Modulation Type:	Basic Rate: GFSK and	EDR: pi/4 DQPSI	K & 8DQPSK
Data Rate:	Basic Rate: 1 Mbit/s and EDR: 2 Mbit/s & 3 Mbit/s		
Transmit Frequency Range:	2402 MHz to 2480 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	0	2402
	Middle	39	2441
	Тор	78	2480
Receive Frequency Range:	2402 MHz to 2480 MHz		
Receive Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	0	2402
	Middle	39	2441
	Тор	78	2480

# 2.7. Port Identification

Port	Description	Type/Length
1	Charge/Data	N/A
2	AV Out	N/A
3	USIM	N/A
4	Micro-SD	N/A

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 8 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# 3. Test Specification, Methods and Procedures

## 3.1. Test Specification

Reference:	FCC Part 15.247: 2006 Subpart C
Title:	Code of Federal Regulations, Part 15.247 (47CFR15) (Intentional Radiators operating within the band 2400 MHz to 2483.5 MHz)

#### 3.2. Methods and Procedures

The methods and procedures used were as detailed in:

ANSI C63.2 (1996)

Title: American National Standard for Instrumentation - Electromagnetic Noise and Field Strength Instrumentation, 10 Hz to 40 GHz.

ANSI C63.4 (2003)

Title: American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

ANSI C63.5 (1988)

Title: American National Standard for the Calibration of antennas used for Radiated Emission measurements in Electromagnetic Interference (EMI) control.

ANSI C63.7 (1988)

Title: American National Standard Guide for Construction of Open Area Test Sites for performing Radiated Emission Measurements.

CISPR 16-1: (1999)

Title: Specification For Radio Disturbance and Immunity Measuring Apparatus and Methods. Part 1: Radio Disturbance and Immunity Measuring Apparatus.

DA00-705 (2000)

Title: Filing and Frequency Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

#### 3.3. Definition of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the methods & procedures section above. Appendix 1 contains a list of the test equipment used.

# 4. Deviations from the Test Specification

There were no deviations from the test specification.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 9 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# 5. Operation and Configuration of the EUT during Testing

## 5.1. Operating Modes

The EUT was tested in the following operating modes, unless otherwise stated:

- Idle Mode
- Transmit Mode with 2 variants;
  - Static Mode
  - o Hopping Mode

# 5.2. Configuration and Peripherals

The EUT was tested in the following configuration:

- For Transmit tests: Standalone, connected via an air link to a Bluetooth Tester to provide a test mode and normal mode of operation for the sample. The GSM and RFID modules were active but were not set into a test mode.
- For Idle mode tests: Standalone, with the Bluetooth mode active but not transmitting. The GSM and RFID modules were active and set into Rx test mode.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 10 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# 6. Summary of Test Results

Range of Measurements	FCC Part 15 Reference	Port Type	Compliancy Status
Idle Mode AC Conducted Emissions	15.107	AC Mains	Complied
Idle Mode Radiated Spurious Emissions	15.109	Antenna	Complied
Transmitter AC Conducted Emissions	15.207	AC Mains	Complied
Transmitter 20 dB Bandwidth	15.247(a)(1)	Antenna	Complied
Transmitter Carrier Frequency Separation	15.247(a)(1)	Antenna	Complied
Transmitter Average Time of Occupancy	15.247(a)(1)(iii)	Antenna	Complied
Transmitter Maximum Peak Output Power (EIRP)	15.247(b)(1)	Antenna	Complied
Transmitter Radiated Emissions	15.247(d) & 15.209(a)	Antenna	Complied
Transmitter Band Edge Radiated Emissions	15.247(d) & 15.209(a)	Antenna	Complied

# 6.1. Location of Tests

All the measurements described in this report were performed at the premises of RFI Global Services Ltd, Ewhurst Park, Ramsdell, Basingstoke, Hampshire, RG26 5RQ

# **6.2. Site Registration Numbers**

FCC: 90895 IC: 3485

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 11 of 39

Issue Date: 10 July 2008

Test of: Panasonic

921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# 7. Measurements, Examinations and Derived Results

# 7.1. General Comments

This section contains test results only.

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to section 8 for details of measurement uncertainties.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 12 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

#### 7.2. Test Results

#### 7.2.1. Idle Mode Conducted Emissions - Quasi-Peak Detector Measurements

Ambient Temperature: 20°C Relative Humidity: 49%

Tests were performed using the test methods detailed in ANSI C63.4 Section 7.

Tests were performed to identify the maximum emission levels present on the ac mains line of the EUT.

Frequency (MHz)	Line	Level (dBμV)	Limit (dBµV)	Margin (dB)	Result
0.482000	Live	32.7	56.3	23.6	Complied
0.498000	Live	30.9	56.0	25.1	Complied
0.622000	Live	26.6	56.0	29.4	Complied
0.994000	Live	30.6	56.0	25.4	Complied
1.370000	Live	25.1	56.0	30.9	Complied
1.858000	Live	37.7	56.0	18.3	Complied
1.866000	Live	37.4	56.0	18.6	Complied
1.990000	Neutral	32.0	56.0	24.0	Complied
2.242000	Neutral	30.8	56.0	25.2	Complied
2.366000	Neutral	28.8	56.0	27.2	Complied

#### 7.2.2. Idle Mode Conducted Emissions - Average Detector Measurements

Frequency (MHz)	Line	Level (dBμV)	Limit (dBµV)	Margin (dB)	Result
0.246000	Live	18.9	51.9	33.0	Complied
0.354000	Live	12.6	48.9	36.3	Complied
0.474000	Neutral	12.3	46.4	34.1	Complied
0.498000	Live	19.0	46.0	27.0	Complied
0.590000	Neutral	8.4	46.0	37.6	Complied
0.710000	Live	7.9	46.0	38.1	Complied
0.826000	Live	21.3	46.0	24.7	Complied
0.942000	Neutral	7.9	46.0	38.1	Complied
1.994000	Neutral	10.9	46.0	35.1	Complied
2.366000	Live	17.8	46.0	28.2	Complied

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

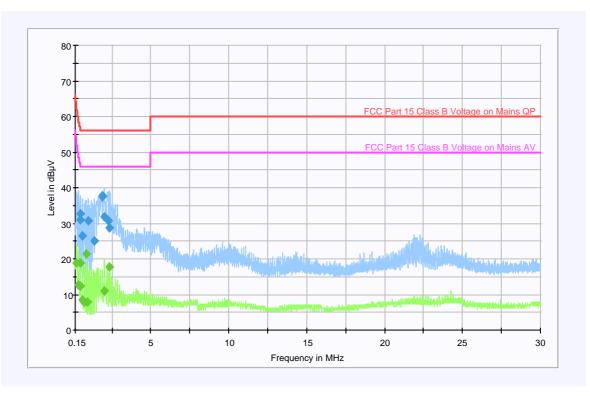
Page: 13 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# **Idle Mode Conducted Emissions (Continued)**



Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 14 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

#### 7.2.3. Idle Mode Radiated Spurious Emissions

Ambient Temperature: 19°C Relative Humidity: 46%

Tests were performed using the test methods detailed in ANSI C63.4 Section 8.

Tests were performed to identify the maximum receiver or standby radiated emission levels.

#### **Results:**

#### Electric Field Strength Measurements (Frequency Range: 30 MHz to 1000 MHz)

Frequency (MHz)	Antenna Polarity	Quasi-Peak Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
991.783	Horizontal	38.3	54.0	15.7	Complied

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 15 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# 7.2.4. Idle Mode Radiated Spurious Emissions (Continued)

#### Electric Field Strength Measurements (Frequency Range: 1 GHz to 13 GHz)

#### **Highest Peak Level:**

Frequency (GHz)	Antenna Polarity	Detector Level (dB <sub>µ</sub> V)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
1.789579	Vertical	43.4	0.4	43.8	74.0	10.2	Complied

#### Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

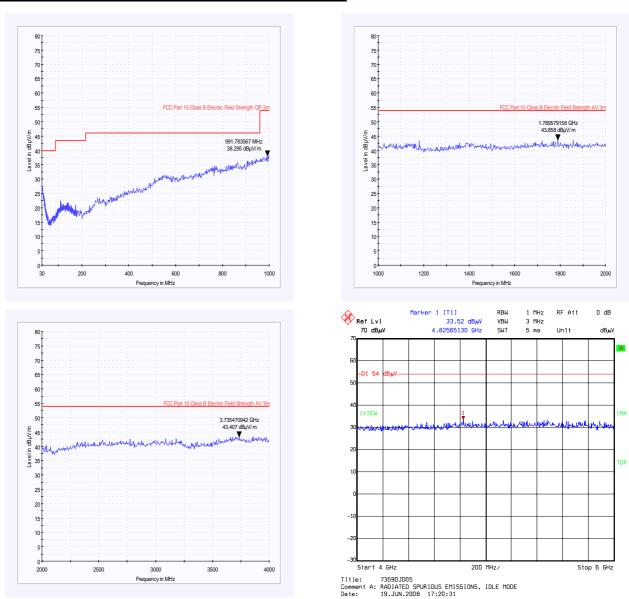
Page: 16 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# **Idle Mode Radiated Spurious Emissions (Continued)**



Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

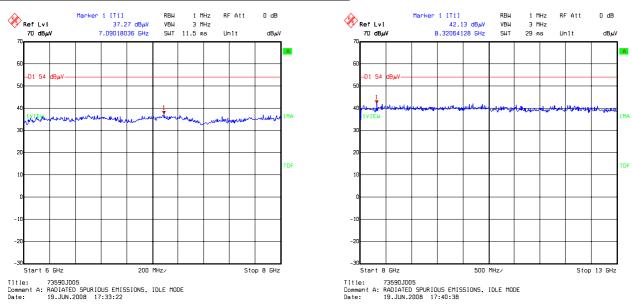
Page: 17 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

## **Idle Mode Radiated Spurious Emissions (Continued)**



Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 18 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# 7.2.5. Transmitter AC Conducted Spurious Emissions

Ambient Temperature: 19°C Relative Humidity: 38%

Tests were performed using the test methods detailed in ANSI C63.4 Section 7.

Tests were performed to identify the maximum emission levels present on the ac mains line of the EUT.

#### **Results:**

#### **Quasi-Peak Detector Measurements on Live and Neutral Lines**

#### **Top Channel**

Frequency (MHz)	Line	Level (dBμV)	Limit (dB <sub>µ</sub> V)	Margin (dB)	Result
0.542000	Live	13.9	56.0	42.1	Complied
0.722000	Live	8.5	56.0	47.5	Complied
1.766000	Live	29.7	56.0	26.3	Complied
1.806000	Neutral	16.0	56.0	40.0	Complied
1.954000	Live	23.6	56.0	32.4	Complied
2.726000	Live	18.5	56.0	37.5	Complied
2.846000	Live	23.2	56.0	32.8	Complied
3.038000	Neutral	14.3	56.0	41.7	Complied
3.082000	Live	24.8	56.0	31.2	Complied
3.270000	Live	26.4	56.0	29.6	Complied

#### **Average Detector Measurements on Live and Neutral Lines**

#### **Top Channel**

Frequency (MHz)	Line	Level (dBμV)	Limit (dB <sub>µ</sub> V)	Margin (dB)	Result
0.186000	Live	16.5	54.2	37.7	Complied
0.370000	Live	8.9	48.5	39.6	Complied
0.554000	Live	5.2	46.0	40.8	Complied
0.566000	Live	5.2	46.0	40.8	Complied
0.734000	Live	4.4	46.0	41.6	Complied
0.738000	Live	5.2	46.0	40.8	Complied
1.630000	Live	8.6	46.0	37.4	Complied
1.806000	Live	6.1	46.0	39.9	Complied
1.954000	Live	5.3	46.0	40.7	Complied
2.894000	Neutral	6.8	54.2	37.7	Complied

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

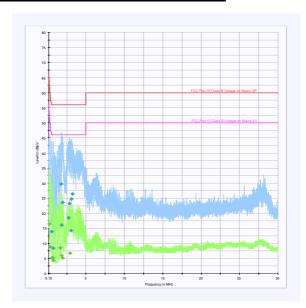
Page: 19 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# **Transmitter AC Conducted Spurious Emissions (Continued)**



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 20 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

#### 7.2.6. Transmitter 20 dB Bandwidth

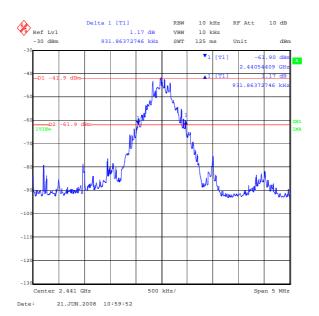
Ambient Temperature: 20°C Relative Humidity: 64%

Tests were performed using the test methods detailed in Public Notice DA 00-705 (March 30, 2000).

Tests were performed to identify the 20 dB bandwidth.

#### **Results:**

Transmitter 20 dB Bandwidth (kHz)	Limit (kHz)	
931.864	None specified	



**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 21 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

#### 7.2.7. Transmitter Carrier Frequency Separation

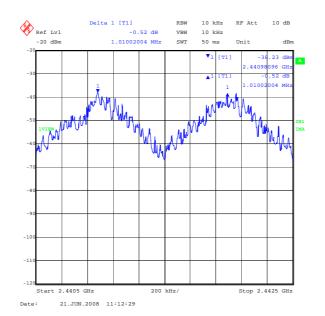
Ambient Temperature: 20°C Relative Humidity: 64%

7.2.7.1.Tests were performed using the test methods detailed in Public Notice DA 00-705 (March 30, 2000).

7.2.7.2. Tests were performed to identify the carrier frequency separation.

#### **Results:**

Transmitter Carrier Frequency Separation (kHz)	Limit ( <sup>2</sup> / <sub>3</sub> of 20 dB BW) (kHz)	Margin (kHz)	Result
1010.020	931.864	78.156	Complied



**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 22 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

#### 7.2.8. Transmitter Average Time of Occupancy

Ambient Temperature: 20°C Relative Humidity: 64%

7.2.8.1.Tests were performed using the test methods detailed in Public Notice DA 00-705 (March 30, 2000).

7.2.8.2.Tests were performed to identify the average time of occupancy in number of channels (79) x 0.4 seconds. The calculated period is 31.6 seconds.

#### Results:

Emission Width (μs)	Number of Hops in 31.6 Seconds	Average Time of Occupancy (s)	Limit (s)	Margin (s)	Result
2883	59	0.1701	0.40	0.2299	Complied

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

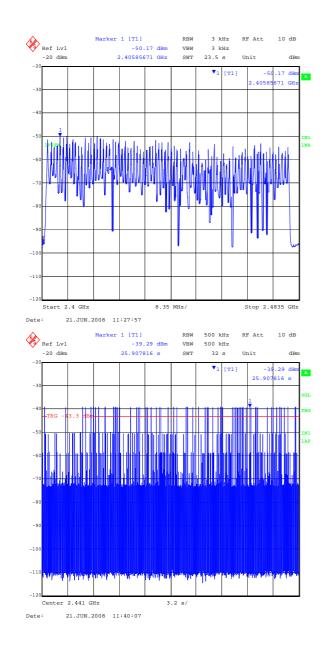
Page: 23 of 39

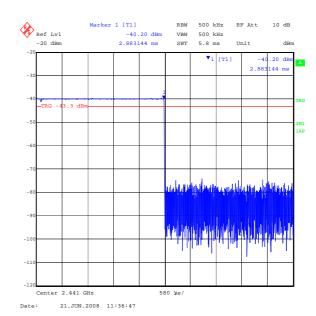
Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# **Transmitter Average Time of Occupancy (Continued)**





**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 24 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

#### 7.2.9. Transmitter Maximum Peak Output Power: (EIRP)

Ambient Temperature: 20°C Relative Humidity: 64%

Tests were performed using the test methods detailed in Public Notice DA 00-705 (March 30, 2000), ANSI TIA-603-C-2004 and FCC CFR Part 2.

Tests were performed to identify the transmitter maximum peak output power (EIRP) of the EUT.

#### **Results:**

#### **Battery Powered Devices**

Channel	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	-2.1	30.0	32.1	Complied
Middle	-2.5	30.0	32.5	Complied
Тор	-3.7	30.0	33.7	Complied

## Note(s):

1. These tests were performed radiated; therefore the EUT antenna gain is encompassed in the final result and not measurable.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 25 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

## 7.2.10. Transmitter Radiated Emissions

Ambient Temperature: 18°C Relative Humidity: 41%

Tests were performed using the test methods detailed in ANSI C63.4 Section 8 and Public Notice DA 00-705 (March 30, 2000).

Tests were performed to identify the maximum transmitter radiated emission levels.

#### Results:

## <u>Electric Field Strength Measurements: 30 MHz to 1000 MHz</u> (<u>Emissions Occurring in the Restricted Bands</u>)

#### **Top Channel**

Frequency	Antenna	Level	Limit	Margin	Result
(MHz)	Polarity	(dBμV/m)	(dBμV/m)	(dB)	
985.210	Vertical	38.0	54.0	16.0	Complied

#### Note(s):

1. The preliminary scans showed similar emission levels for each mode below 1 GHz, therefore final radiated emissions measurements were performed with the EUT set to the top channel only.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

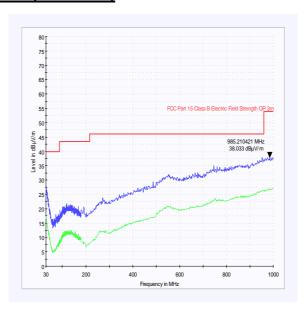
Page: 26 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# **Transmitter Radiated Emissions (Continued)**



Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 27 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

#### **Transmitter Radiated Emissions (Continued)**

Ambient Temperature: 18°C Relative Humidity: 41%

#### **Results:**

<u>Electric Field Strength Measurements: 1 GHz to 26.5 GHz</u> (<u>Emissions Outside the Restricted Bands</u>)

#### **Highest Peak Level:**

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
16.697394	Vertical	29.9	19.4	49.3	54.0	4.7	Complied

#### Note(s):

- 1. The preliminary scans showed similar emission levels for each mode below 1 GHz, therefore final radiated emissions measurements were performed with the EUT set to the top channel only.
- 2. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

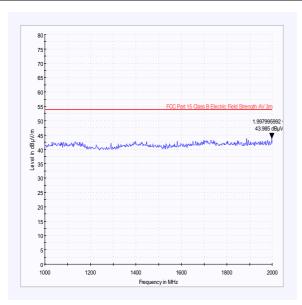
Page: 28 of 39

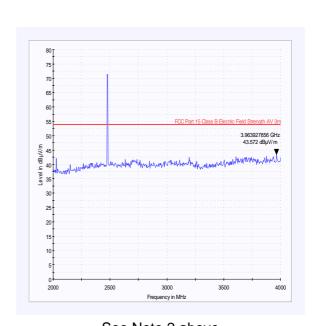
Issue Date: 10 July 2008

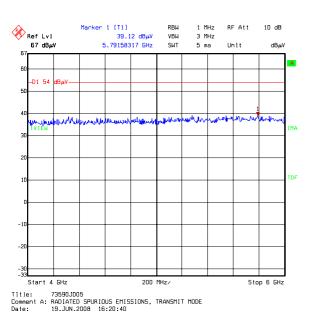
Test of: Panasonic 921P (VS84)

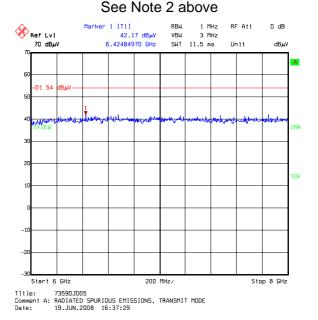
To: FCC Part 15.247: 2006 (Subpart C)

## **Transmitter Radiated Emissions (Continued)**









Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

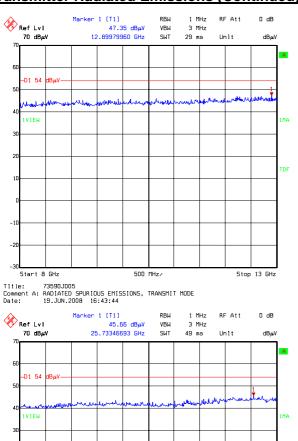
Page: 29 of 39

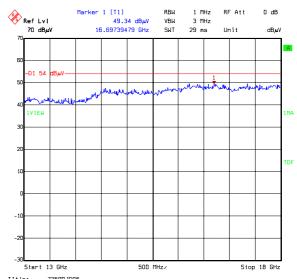
Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

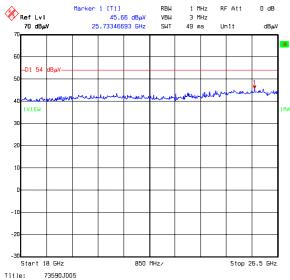
FCC Part 15.247: 2006 (Subpart C) To:

## **Transmitter Radiated Emissions (Continued)**





Title: 73590J005 Comment A: RADIATED SPURIOUS EMISSIONS, TRANSMIT MODE Date: 19.JUN.2008 16:58:04



Title: 73590JD05 Comment A: RADIATED SPURIOUS EMISSIONS, TRANSMIT MODE Date: 19.JUN.2008 17:04:43

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 30 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# 7.2.11. Transmitter Band Edge Radiated Emissions

Ambient Temperature: 20°C Relative Humidity: 64%

Tests were performed using the test methods detailed in ANSI C63.4 Section 8 and Public Notice DA 00-705 (March 30, 2000).

Tests were performed to identify the maximum radiated band edge emissions.

#### **Results:**

#### **Electric Field Strength Measurements**

# **Peak Power Level Hopping Mode:**

Frequency (MHz)	Antenna Polarity	Detector Level (dB <sub>µ</sub> V)	Transducer Factor (dB)	Actual Level (dB <sub>µ</sub> V/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4000	Vertical	27.4	34.8	62.2	83.4*	21.2	Complied
2.4835	Vertical	35.9	34.8	70.7	74.0	3.3	Complied

#### **Average Power Level Hopping Mode:**

Frequency (MHz)	Antenna Polarity	Detector Level (dB <sub>µ</sub> V)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4835	Vertical	15.5	34.8	50.3	54.0	3.7	Complied

#### Note(s):

1. \* -20 dBc limit

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

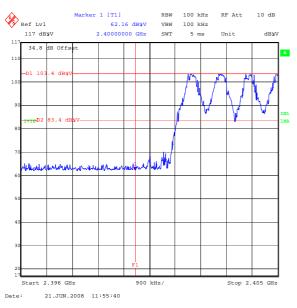
Page: 31 of 39

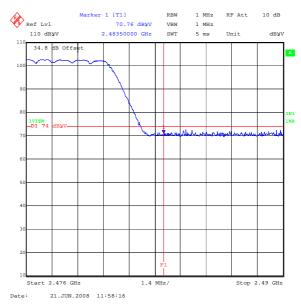
Issue Date: 10 July 2008

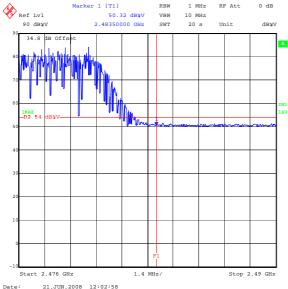
Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# **Transmitter Band Edge Radiated Emissions (Continued)**







**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 32 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# **Transmitter Band Edge Radiated Emissions (Continued)**

#### Results:

#### **Peak Power Level Static Mode:**

Frequency (MHz)	Antenna Polarity	Detector Level (dB <sub>µ</sub> V)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4000	Vertical	33.7	34.8	68.5	84.4*	15.9	Complied
2.4835	Vertical	27.5	34.8	62.3	74.0	11.7	Complied

# **Average Power Level Static Mode:**

Frequency (MHz)	Antenna Polarity	Detector Level (dB <sub>µ</sub> V)	Transducer Factor (dB)	Actual Level (dB <sub>µ</sub> V/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4835	Vertical	18.2	34.8	53.0	54.0	1.0	Complied

# Note(s):

1. \* -20 dBc limit

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

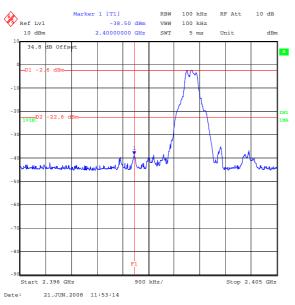
Page: 33 of 39

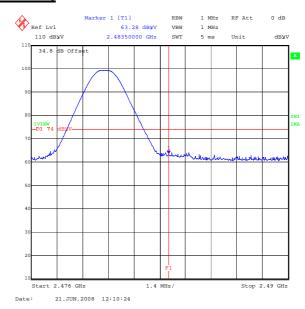
Issue Date: 10 July 2008

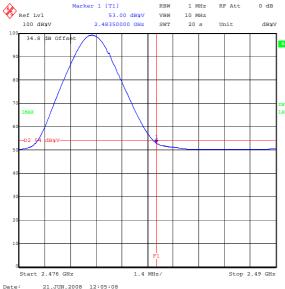
Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# **Transmitter Band Edge Radiated Emissions (Continued)**







**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 34 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# 8. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently, the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor, such that a confidence level of approximately 95% is maintained. For the purposes of this document "approximately" is interpreted as meaning "effectively" or "for most practical purposes".

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	±3.72 dB
Transmitter Maximum Peak Output Power	Not Applicable	95%	±2.94 dB
Conducted Emissions Antenna Port	30 MHz to 40 GHz	95%	±0.46 dB
Transmitter Carrier Frequency Separation	Not Applicable	95%	±11.4 ppm
Transmitter Average Time of Occupancy	Not Applicable	95%	±3.5 ns
20 dB Bandwidth	Not Applicable	95%	± 11.4 ppm
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	±4.64 dB
Radiated Spurious Emissions	1 GHz to 40 GHz	95%	±2.94 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty, the published guidance of the appropriate accreditation body is followed.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 35 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# **Appendix 1. Test Equipment Used**

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
A028	Antenna	Eaton	91888-2	304	08 Jun 2006	36
A031	Antenna	Eaton	91889-2	557	08 Jun 2006	36
A1534	Pre Amplifier	Hewlett Packard	8449B OPT H02	3008A00405	Calibrated before use	-
A1829	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100671	16 Jan 2008	12
A253	Antenna	Flann Microwave	12240-20	128	17 Nov 2006	36
A254	Antenna	Flann Microwave	14240-20	139	17 Nov 2006	36
A255	Antenna	Flann Microwave	16240-20	519	17 Nov 2006	36
A256	Antenna	Flann Microwave	18240-20	400	17 Nov 2006	36
A436	Antenna	Flann	20240-20	330	24 Apr 2006	36
A490	Antenna	Chase	CBL6111A	1590	07 Feb 2008	12
A649	Single Phase LISN	Rohde & Schwarz	ESH3-Z5	825562/008	07 Mar 2008	12
C1025	Cable	Rosenberger	FA210A-1- 020m	FA00B 7564	Calibrated before use	-
C1080	Rosenberger Cable 3m	Rosenberger	FA210A1030 M5050	28464-1	24 Apr 2008	12
C1112	Cable	Semflex, Inc.	X116BFSX10 080	None	Calibrated before use	-
M1093	Communications Test Set	Will tek	4202S	0513018	Calibration not required	-
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	19 Feb 2008	12
M1149	Bluetooth Test Set	Anritsu	MT8852A	6K00001529	Calibration not required	-
M1242	Spectrum Analyser	Rohde & Schwarz, Inc.	FSEM30	845986/022	29 Nov 2007	12
M1379	Test Receiver	Rohde and Schwarz	ESIB7	100330	02 Aug 2007	12

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 36 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# **Test Equipment Used (Continued)**

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
M1447	CBT	Rohde and Schwarz	1153.9000.35	100329	24 Jan 2008	12
M1448	FSP	Rohde and Schwarz	1164.4391.13	100323	14 Jan 2008	12
M166	Thermometer/Barom eter/Hygrometer	EuroCom	None	None	18 Jun 2008	12
S202	Site 2	RFI	2	S202- 15011990	28 Jan 2008	12
S209	Anechoic Chamber	RFI	9	None	Verified before use	-
S216	Site 16	RFI	16	None	Calibration not required	-

NB In accordance with UKAS requirements, all the measurement equipment is on a calibration schedule.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

Page: 37 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

# **Appendix 2. Test Configuration Drawings**

This appendix contains the following drawings:

Drawing Reference Number	Title
DRG\73590JD05\EMICON	Test configuration for measurement of conducted emissions.
DRG\73590JD05\EMIRAD	Test configuration for measurement of radiated emissions.

**Test Report** 

Serial No: RFI/RPT1/RP73590JD05A

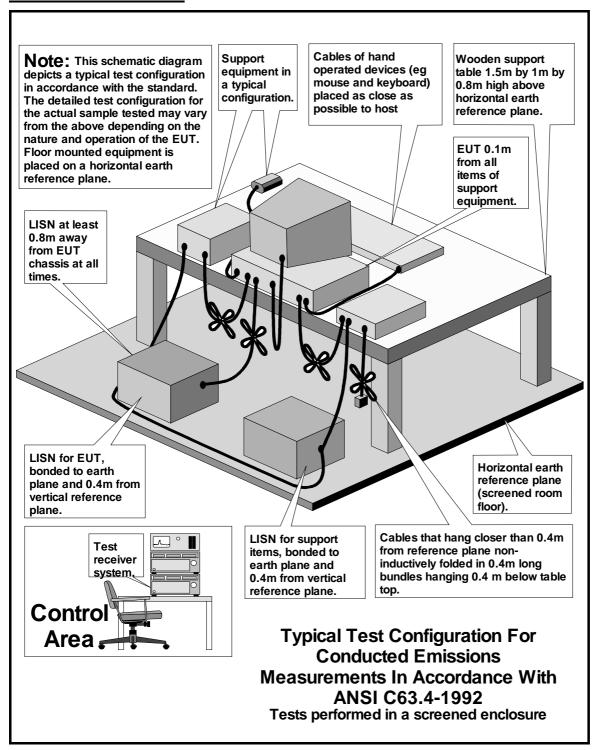
Page: 38 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

#### DRG\73590JD05\EMICON



Test Report

Serial No: RFI/RPT1/RP73590JD05A

Page: 39 of 39

Issue Date: 10 July 2008

Test of: Panasonic 921P (VS84)

To: FCC Part 15.247: 2006 (Subpart C)

#### DRG\73590JD05\EMIRAD

