

**TEST REPORT
FROM
RFI GLOBAL SERVICES LTD**

Test of: Panasonic
921P (VS84)

To: FCC Part 24: 2007 (Subpart E)

Test Report Serial No:
RFI/RPT1/RP73590JD03A

**This Test Report Is Issued Under The Authority
Of Steve Flocks, Radio Performance Group Service Leader:**



pp

Checked By: Nigel Davison



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Test Dates: 05 June 2008 to 12 June 2008

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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

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2. Equipment Under Test (EUT)

The following information (with the exception of the Date of Receipt) has been supplied by the client:

2.1. 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

2.2. Description of EUT

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

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2.3. Accessories

The following accessories were supplied with the EUT:

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

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

2.4. Support Equipment

No support equipment was used to exercise the EUT during testing.

2.5. Modifications Incorporated in EUT

During the course of testing the EUT was not modified.

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2.6. Additional Information Related to Testing

Power Supply Requirement:	V-Nom 3.7 V, V-Min 3.4 V and V-Max 4.2 V		
Intended Operating Environment:	Within GSM Coverage and UMTS coverage area		
Equipment Category:	Bluetooth, GSM/GPRS, Short Range Device and UMTS FDD I		
Type of Unit:	Portable (Standalone battery powered device) Transceiver		
Channel Spacing:	0.2 MHz		
Modulation Type:	GMSK		
Data Rate:	Variable		
Transmit Frequency Range:	1850 MHz to 1910 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	512	1850.2
	Middle	660	1879.8
	Top	810	1909.8
Receive Frequency Range:	1930 MHz to 1990 MHz		
Receive Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	512	1930.2
	Middle	660	1959.8
	Top	810	1989.8
Maximum Power Output (EIRP):	25.4 dBm		

2.7. Port Identification

Port	Description
1	Charge/Data
2	AV Out
3	USIM
4	Micro-SD

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3. Test Specification, Methods and Procedures

Reference:	FCC Part 24: 2007 Subpart E (Broadband PCS)
Title:	Code of Federal Regulations, Part 24 (47CFR24) Personal Communication Services.

3.1. Methods and Procedures

The methods and procedures used were as detailed in:

ANSI/TIA-603-B-2003

Land Mobile Communications Equipment, Measurements and performance Standards

ANSI C63.2 (1987)

Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

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.

3.2. 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.

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4. Deviations from the Test Specification

There were no deviations from the test specification.

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5. Operation of the EUT during Testing

5.1. Operating Modes

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

- Connected (via wireless link) to a GSM system simulator, operating in GSM transceiver mode.
- Transmitter Modes:
 - Testing was performed at full power on the top, middle and bottom channels of the assigned frequency block.
- Receiver/Idle Modes:
 - Testing was performed with call terminated from the GSM test simulator and the phone left in its Idle mode.

5.2. Configuration and Peripherals

The EUT was tested in the following configuration unless otherwise stated:

- For all tests the EUT was configured with the PHF and AC charger, model JET ZTDAA1, connected. This configuration was tested as it was found to be the worst case configuration after radiated emissions pre-scans were performed with all the other supplied accessories.

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6. Summary of Test Results

Range of Measurements	Specification Reference	Port Type	Compliance Status
Idle Mode AC Conducted Spurious Emissions (150 kHz to 30 MHz)	15.107	AC Mains Input	Complied
Idle Mode Radiated Spurious Emissions	15.109	Enclosure	Complied
Transmitter Effective Isotropic Radiated Power (EIRP)	24.232	Antenna	Complied
Transmitter Frequency Stability (Temperature Variation)	24.235	Antenna	Complied
Transmitter Frequency Stability (Voltage Variation)	24.235	Antenna	Complied
Transmitter Occupied Bandwidth	24.238	Antenna	Complied
Transmitter Out of Band Radiated Emissions	2.1053/24.238	Antenna	Complied
Transmitter Band Edge Radiated Emissions	2.1053/24.238	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

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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.

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7.2. Test Results – FCC Part 24 (Subpart E)

7.2.1. Idle Mode AC Conducted Spurious Emissions

Ambient Temperature: 20°C

Relative Humidity: 49%

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

Results:

Quasi-Peak Detector Measurements on Live and Neutral Lines

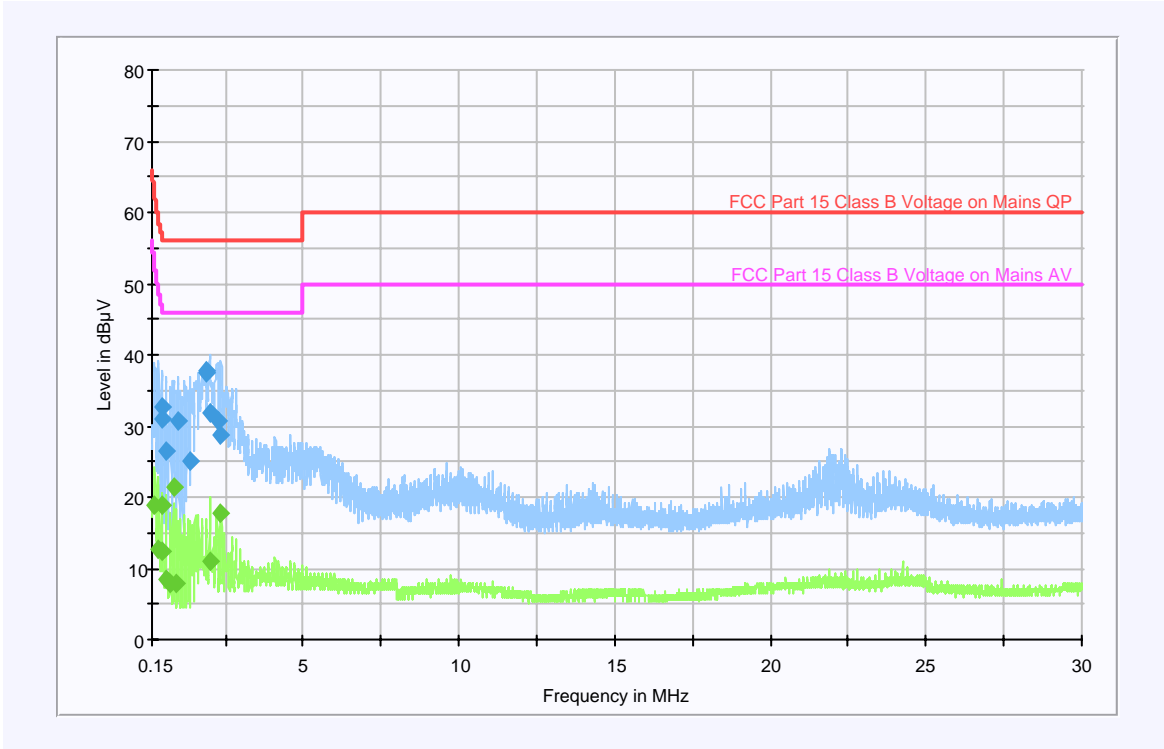
Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.482000	Live	32.7	56.3	23.6	Complied
0.498000	Live	30.9	56.0	25.1	Complied
0.622000	Live	26.6	56.0	29.4	Complied
0.994000	Live	30.6	56.0	25.4	Complied
1.370000	Live	25.1	56.0	30.9	Complied
1.858000	Live	37.7	56.0	18.3	Complied
1.866000	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

Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	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

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Idle Mode AC Conducted Spurious Emissions (Continued)



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7.2.2. 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.

Results:

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

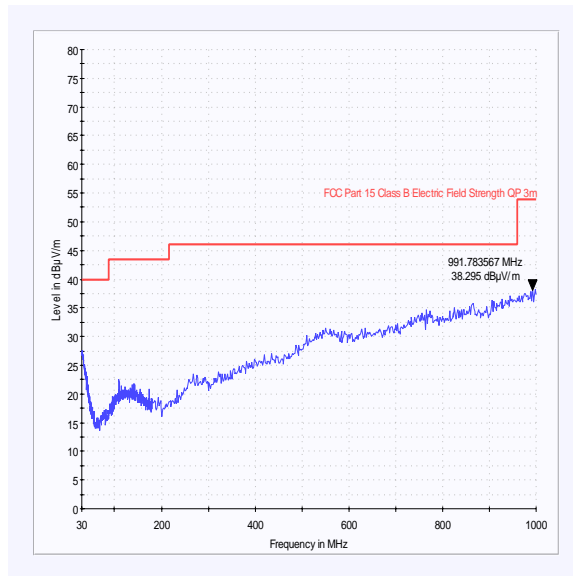
Frequency (MHz)	Antenna Polarity	Quasi Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
991.783	Horizontal	38.3	54.0	15.7	Complied

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.*

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7.2.3. Idle Mode Radiated Spurious Emissions (Continued)

Results:

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

Highest Peak Level:

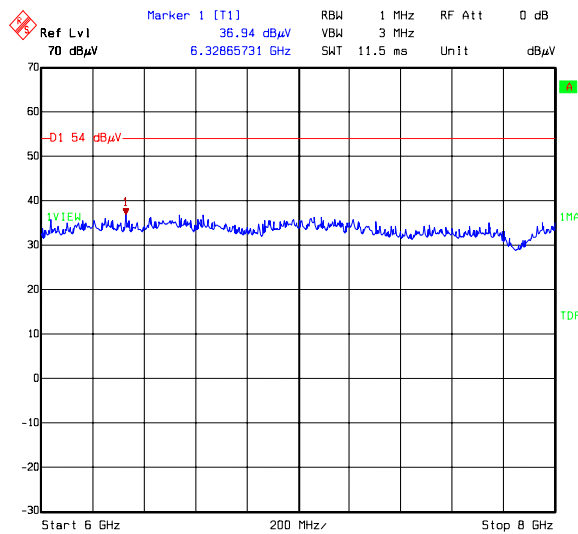
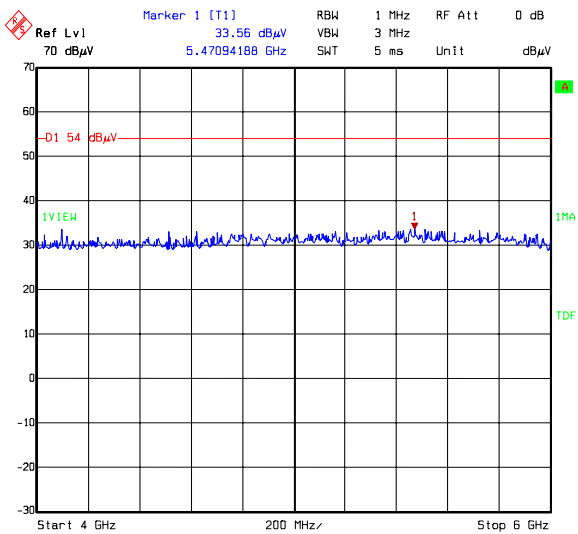
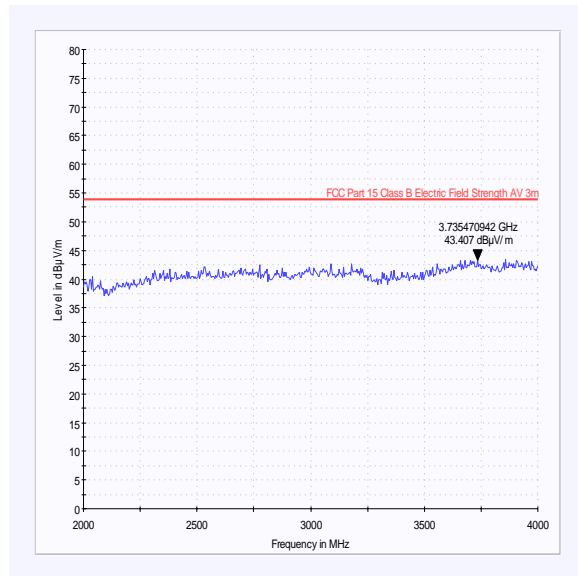
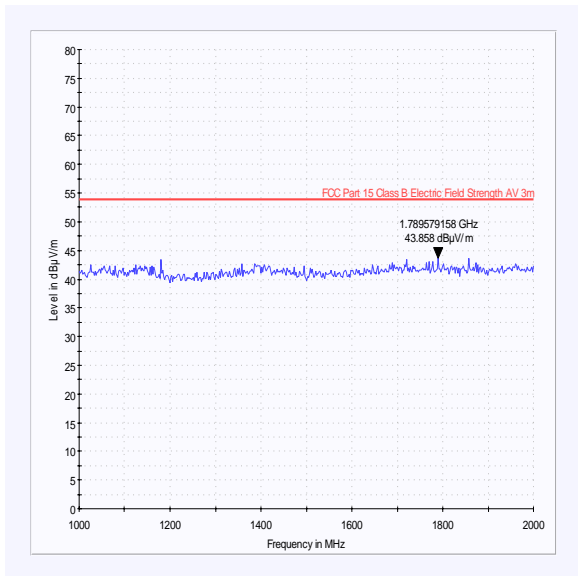
Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1.789579	Vertical	43.4	0.4	43.8	54.0	10.2	Complied

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.

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Idle Mode Radiated Spurious Emissions (Continued)

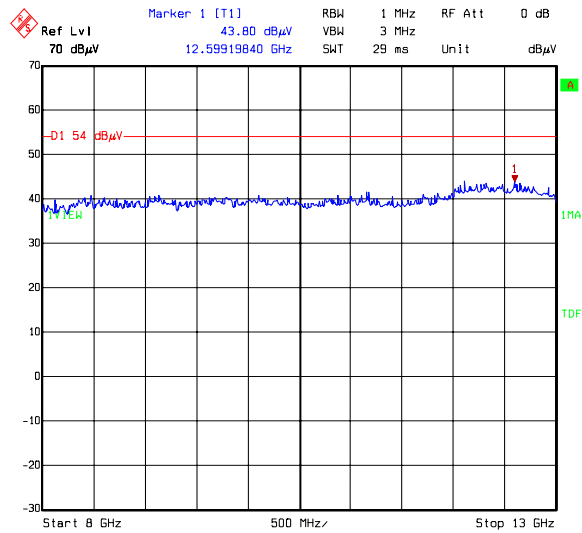


Title: 73590JD03
 Comment A: RECEIVER RADIATED EMISSIONS, IDLE MODE
 Date: 12.JUN.2008 17:05:25

Title: 73590JD03
 Comment A: RECEIVER RADIATED EMISSIONS, IDLE MODE
 Date: 12.JUN.2008 17:22:16

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Idle Mode Radiated Spurious Emissions (Continued)



Title: 73590JD03
Comment A: RECEIVER RADIATED EMISSIONS, IDLE MODE
Date: 12.JUN.2008 17:42:48

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7.2.4. Transmitter Effective Isotropic Radiated Power (EIRP)

Ambient Temperature: 23°C

Relative Humidity: 46%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Part 2.

Results:

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter EIRP (dBm)	Limit EIRP (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	25.2	33.0	7.8	Complied
Middle	1879.8	Horizontal	25.4	33.0	7.6	Complied
Top	1909.8	Horizontal	24.7	33.0	8.3	Complied

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7.2.5. Transmitter Frequency Stability (Temperature Variation)

Ambient Temperature: 22°C

Relative Humidity: 43%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Part 2.

Results:

Bottom Channel (1850.2 MHz)

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
-30	22	1850.200022	1850.0	0.200022	Complied
-20	7	1850.200007	1850.0	0.200007	Complied
-10	39	1850.200039	1850.0	0.200039	Complied
0	28	1850.200028	1850.0	0.200028	Complied
10	35	1850.200035	1850.0	0.200035	Complied
20	32	1850.200032	1850.0	0.200032	Complied
30	38	1850.200038	1850.0	0.200038	Complied
40	30	1850.200030	1850.0	0.200030	Complied
50	26	1850.200026	1850.0	0.200026	Complied

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Transmitter Frequency Stability (Temperature Variation) (Continued)**Results:****Top Channel (1909.8 MHz)**

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-30	28	1909.800028	1910.0	0.199972	Complied
-20	22	1909.800022	1910.0	0.199978	Complied
-10	23	1909.800022	1910.0	0.199978	Complied
0	21	1909.800021	1910.0	0.199979	Complied
10	29	1909.800029	1910.0	0.199971	Complied
20	30	1909.800030	1910.0	0.199970	Complied
30	11	1909.800011	1910.0	0.199989	Complied
40	20	1909.800020	1910.0	0.199980	Complied
50	28	1909.800028	1910.0	0.199972	Complied

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7.2.6. Transmitter Frequency Stability (Voltage Variation)

Ambient Temperature: 23°C

Relative Humidity: 46%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Part 2.

Results:**Bottom Channel (1850.2 MHz)**

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
3.4	32	1850.200032	1850	0.200032	Complied
4.2	36	1850.200036	1850	0.200036	Complied

Top Channel (1909.8 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
3.4	28	1909.800028	1910	0.199972	Complied
4.2	30	1909.800030	1910	0.199970	Complied

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7.2.7. Transmitter Occupied Bandwidth

Ambient Temperature: 22°C

Relative Humidity: 44%

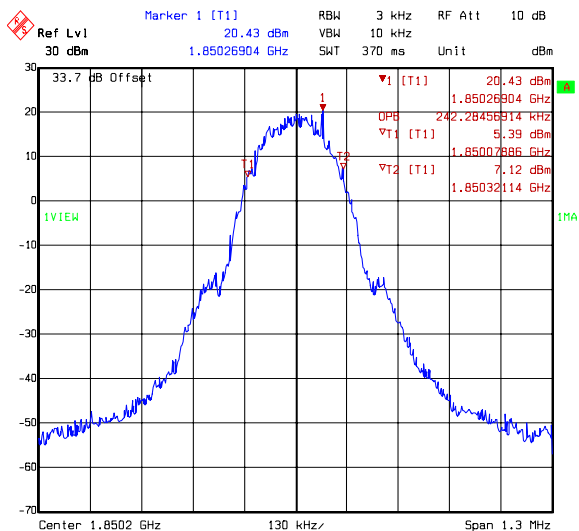
The 99% occupied bandwidth was measured using the channel bandwidth function of the R&S spectrum analyser referencing FCC CFR Part 2.

Results:

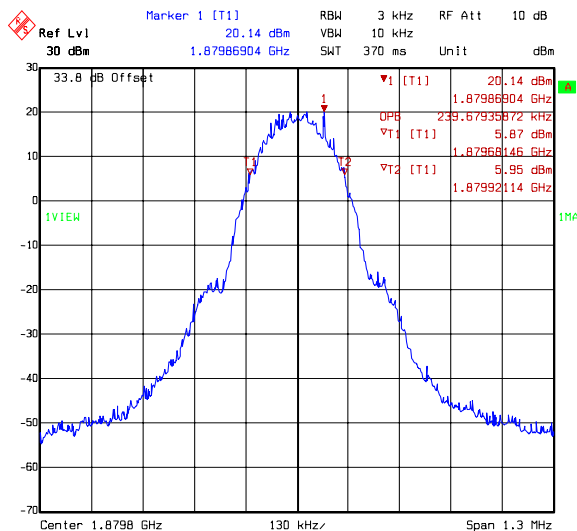
Channel	Frequency (MHz)	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	3.0	10.0	242.285
Middle	1879.8	3.0	10.0	239.679
Top	1909.8	3.0	10.0	239.679

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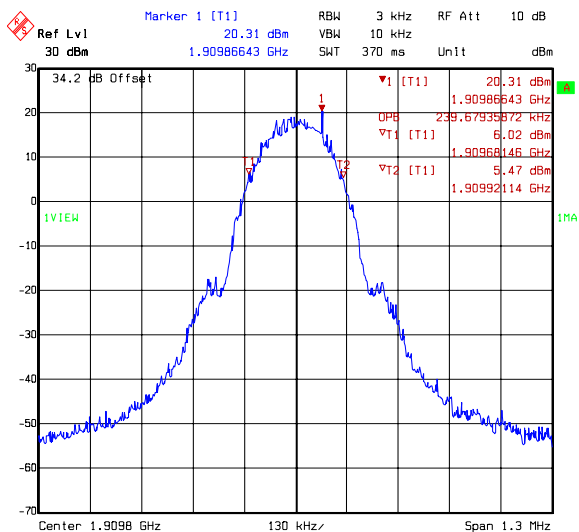
Transmitter Occupied Bandwidth (Continued)



Title: 73590J003
 Comment A: OCCUPIED BANDWIDTH BOTTOM CHANNEL
 Date: 06.JUN.2008 15:48:37



Title: 73590J003
 Comment A: OCCUPIED BANDWIDTH MIDDLE CHANNEL
 Date: 06.JUN.2008 16:43:42



Title: 73590J003
 Comment A: OCCUPIED BANDWIDTH TOP CHANNEL
 Date: 06.JUN.2008 16:36:43

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7.2.8. Transmitter Out of Band Radiated Emissions

Ambient Temperature: 22°C

Relative Humidity: 54%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Parts 2 and 24.238.

Results:

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
3700.307	-33.3	-13.0	19.7	Complied
5550.634	-52.6	-13.0	39.6	Complied
7400.838	-52.9	-13.0	39.9	Complied
9251.124	-48.9	-13.0	35.9	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
3759.716	-32.9	-13.0	19.9	Complied
5639.418	-49.1	-13.0	36.1	Complied
7519.184	-50.4	-13.0	37.4	Complied
9398.864	-49.4	-13.0	36.4	Complied

Top Channel

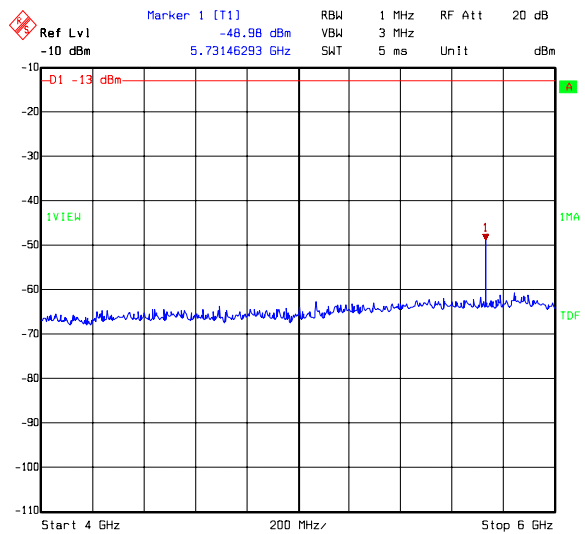
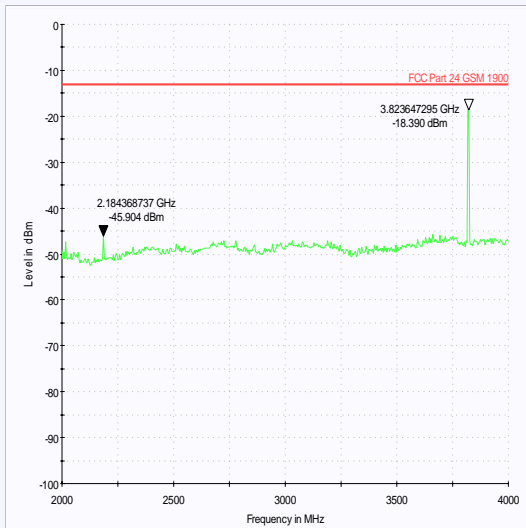
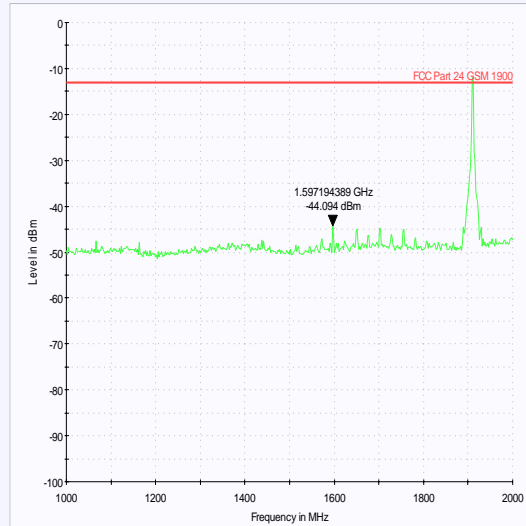
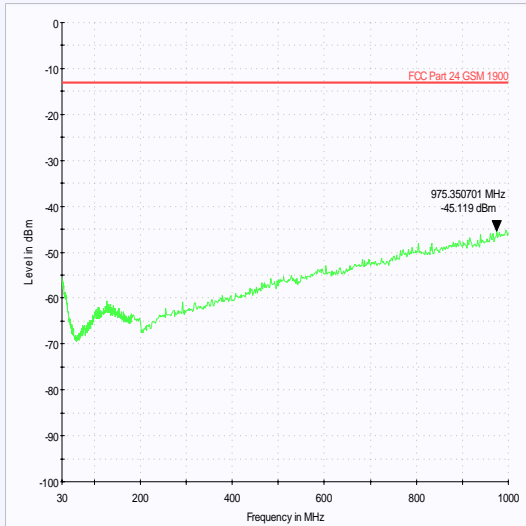
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
3819.584	-34.6	-13.0	21.6	Complied
5729.409	-48.0	-13.0	35.0	Complied
7639.194	-50.0	-13.0	37.0	Complied
9548.902	-52.7	-13.0	39.7	Complied

Note(s):

1. The carrier is shown on plot 2 below.

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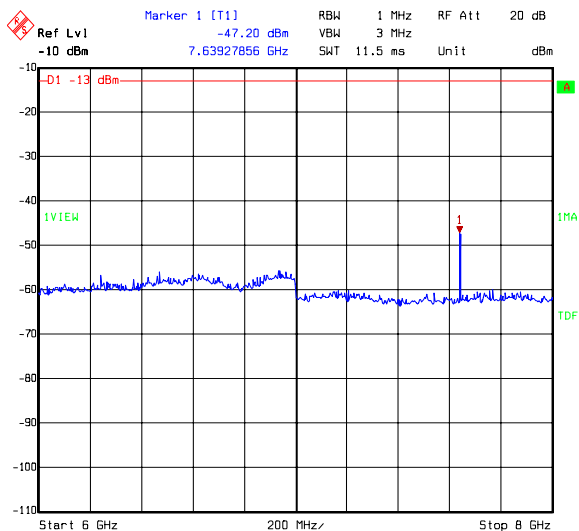
Transmitter Out of Band Radiated Emissions (Continued)



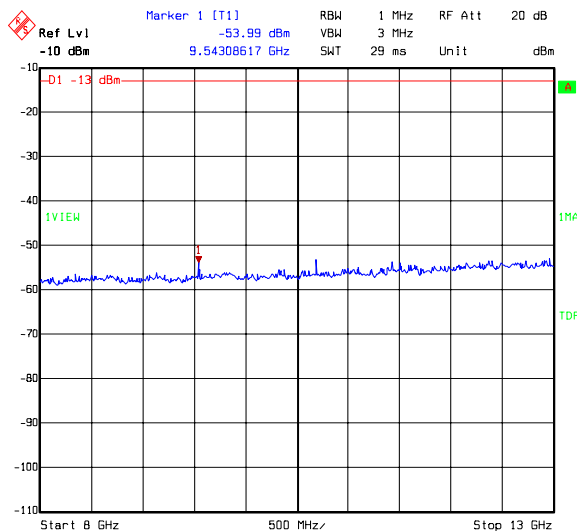
Title: 73590J003
 Comment A: TRANSMITTER RADIATED SPURIOUS EMISSIONS, TOP CHANNEL
 Date: 09.JUN.2008 11:17:09

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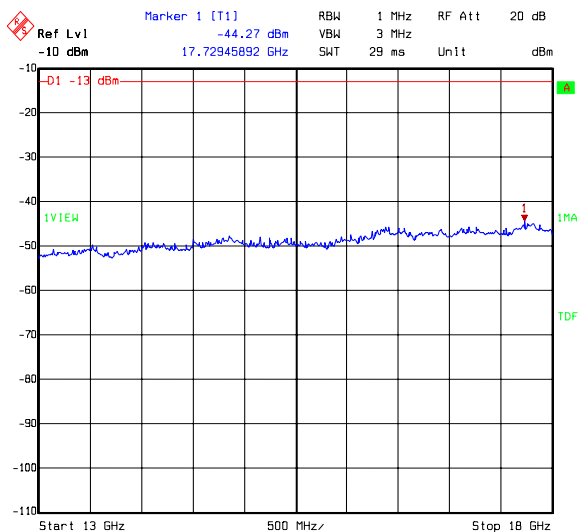
Transmitter Out of Band Radiated Emissions (Continued)



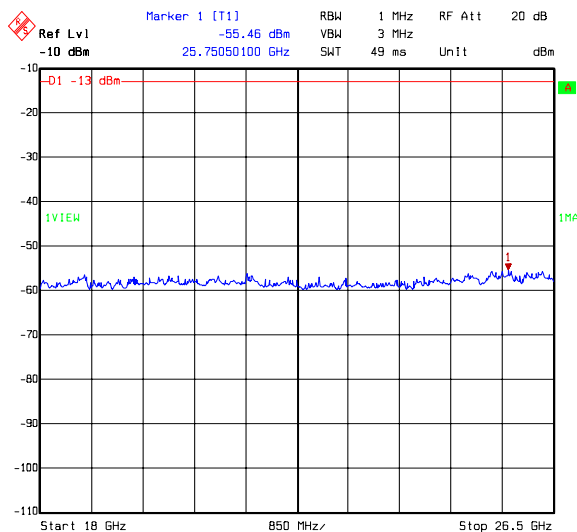
Title: 73590JD03
Comment A: TRANSMITTER RADIATED SPURIOUS EMISSIONS, TOP CHANNEL
Date: 09.JUN.2008 12:23:34



Title: 73590JD03
Comment A: TRANSMITTER RADIATED SPURIOUS EMISSIONS, TOP CHANNEL
Date: 09.JUN.2008 12:49:46



Title: 73590JD03
Comment A: TRANSMITTER RADIATED SPURIOUS EMISSIONS, TOP CHANNEL
Date: 09.JUN.2008 14:10:28



Title: 73590JD03
Comment A: TRANSMITTER RADIATED SPURIOUS EMISSIONS, TOP CHANNEL
Date: 09.JUN.2008 14:21:52

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7.2.9. Transmitter Radiated Emissions at Band Edges

Ambient Temperature: 22°C

Relative Humidity: 48%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Parts 2 and 24.238.

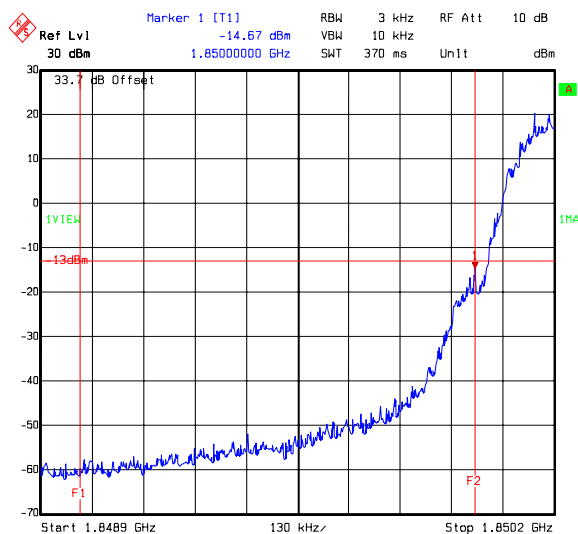
Results:

Bottom Band Edge

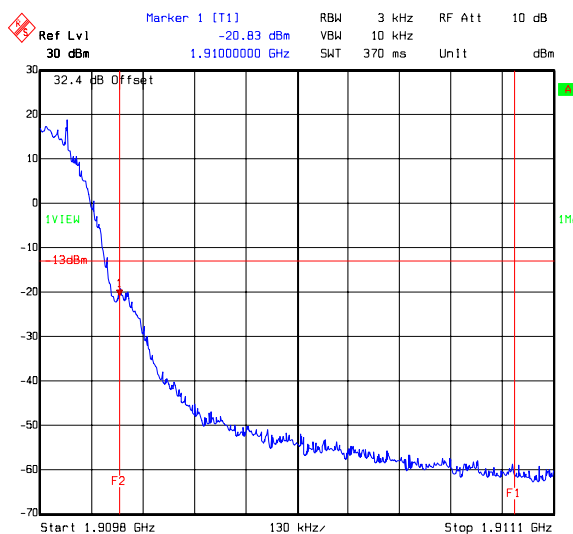
Frequency (MHz)	Spurious Emission (dBm)	Limit (dBm)	Margin (dB)	Result
1850	-14.7	-13.0	1.7	Complied

Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1910	-20.8	-13.0	7.8	Complied



Title: 73590JD03
 Comment A: LOWER BAND EDGE RADIATED EMISSIONS
 Date: 06.JUN.2008 15:17:11



Title: 73590JD03
 Comment A: UPPER BAND EDGE RADIATED EMISSIONS
 Date: 06.JUN.2008 15:09:55

Test of: **Panasonic
921P (VS84)**
To: **FCC Part 24: 2007 (Subpart E)**

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
Effective Isotropic Radiated Power (EIRP)	Not applicable	95%	±2.54 dB
Frequency Stability	Not applicable	95%	±11.4 ppm
Occupied Bandwidth	824 to 849 MHz	95%	±11.4 ppm
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	±4.64 dB
Radiated Spurious Emissions	1 GHz to 26 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 of: Panasonic
921P (VS84)

To: FCC Part 24: 2007 (Subpart E)

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
C1080	Rosenberger Cable 3m	Rosenberger	FA210A1030 M5050	28464-1	24 Apr 2008	12
C1155	Cable	Huber & Suhner	Sucoflex 104PA	1522/4PA	Calibrated before use	-
E013	Environmental Chamber	Sanyo	ATMOS chamber	None	Calibration not required	-

Test of: Panasonic
921P (VS84)

To: FCC Part 24: 2007 (Subpart E)

Test Equipment Used (Continued)

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
G088	Power Supply Unit	Thurlby Thandar	CPX200	100700	Calibration not required	-
M1068	Thermometer	Iso-Tech	RS55	93102884	26 Jun 2007	12
M1093	Communications Test Set	Will tek	4202S	0513018	Calibration not required	-
M1140	Radio Communications Analyser	Anritsu	MT8820A	6K0000647	Calibration not required	-
M1229	Digital Multimeter	Fluke	179	87640015	09 May 2008	12
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
S202	Site 2	RFI	2	S202-15011990	28 Jan 2008	12
S207	Site 7	RFI	7	None	Calibration not required	-
S209	Anechoic Chamber	RFI	9	None	Verified before use	-

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

Test of: Panasonic
921P (VS84)

To: FCC Part 24: 2007 (Subpart E)

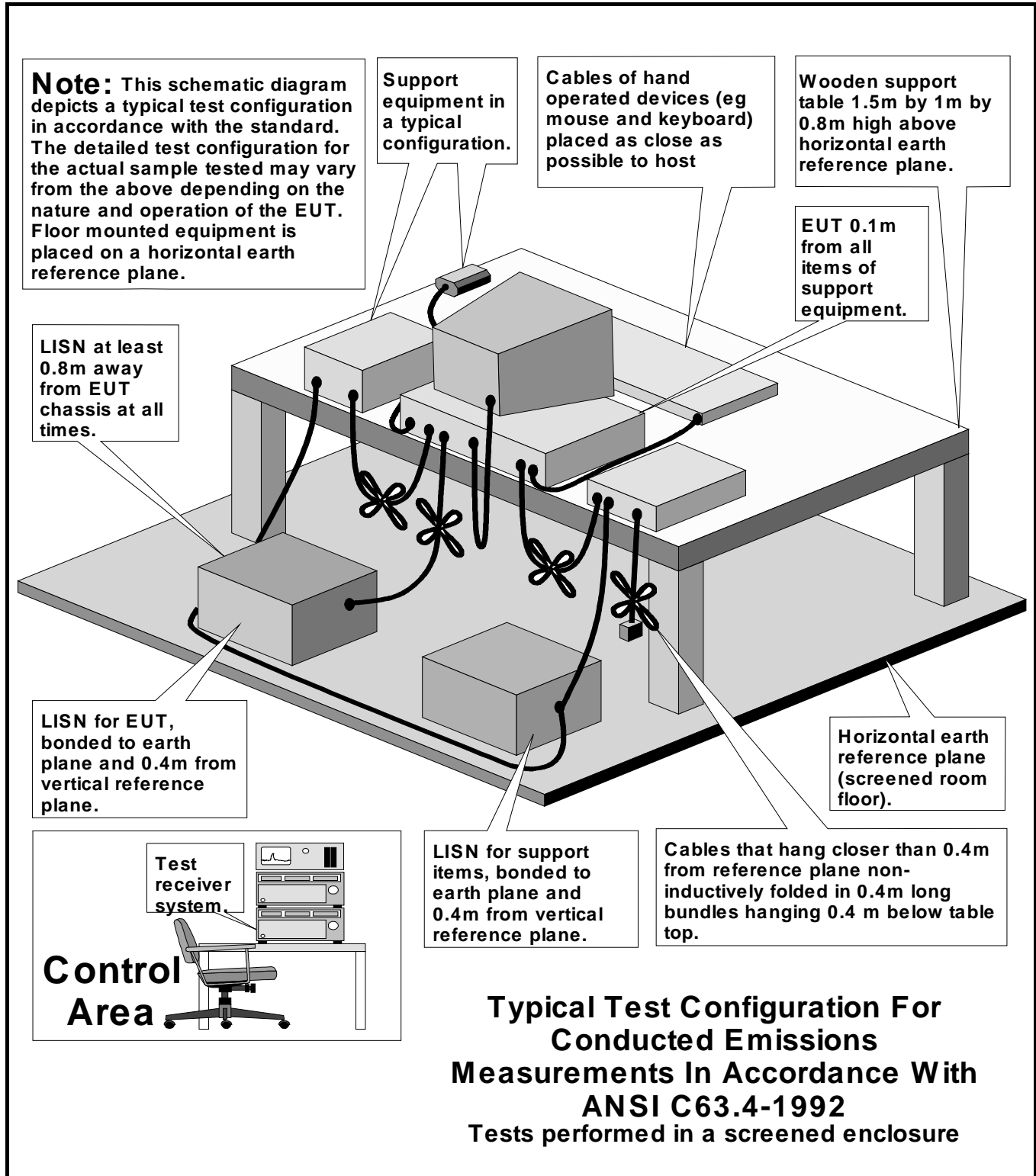
Appendix 2. Test Configuration Drawings

This appendix contains the following drawings:

Drawing Reference Number	Title
DRG\73590JD03\EMICON	Test configuration for measurement of conducted emissions.
DRG\73590JD03\EMIRAD	Test configuration for measurement of radiated emissions.

Test of: Panasonic
 921P (VS84)
 To: FCC Part 24: 2007 (Subpart E)

DRG\73590JD03\EMICON



Test of: Panasonic
921P (VS84)

To: FCC Part 24: 2007 (Subpart E)

DRG\73590JD03\EMIRAD

