TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: Panasonic
VS85

To: FCC Part 15.225: 2008 (Subpart C)

Test Report Serial No:
RFI/RPT2/RP74290JD07A

Supersedes Test Report Serial No:
RFI/RPT1/RP74290JD07A

This Test Report Is Issued Under The Authority Of Steve Flooks, Service Leader: 	
Checked By: Steve Flooks 	**Report Copy No: PDF01**
Issue Date: 08 December 2008	**Test Dates: 10 November 2008**

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Registered in England and Wales. Company number:2117901

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Table of Contents

1. Customer Information

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

2. Equipment Under Test (EUT)

2.1. Identification of Equipment Under Test (EUT)

Description:	Cellular Mobile Telephone incorporating Bluetooth and RFID
Brand Name:	Panasonic
Model Name or Number:	VS85
IMEI Number:	004401220651620
FCC ID Number:	UCE208011A

Description:	Micro-SD Memory Card
Brand Name:	Not marked
Model Name or Number:	2GB MicroSD
Cable Length and Type:	N/A
Connected to Port:	Dedicated micro-SD card port

Description:	AC Adaptor
Brand Name:	SoftBank
Model Name or Number:	ZTDAA1
Cable Length and Type:	2.0m multicore
Connected to Port:	Charge/Data port

Description:	Personal Hands Free (stereo)
Brand Name:	SoftBank
Model Name or Number:	Stereo PHF#01
Cable Length and Type:	1.8m / multi-core
Connected to Port:	AV Out port

Identification of Equipment Under Test (EUT) (Continued)

Description:	USB cable
Model Name or Number:	None Stated
Serial Number:	C23
Cable Length:	1.1 metre / multicore
Connected to Port:	Charge/Data port

Description:	DC Charger
Brand Name:	SoftBank
Model Name or Number:	PMJAA1
Cable Length and Type:	2.0m approx / 2 core curl-cord
Connected to Port:	Charge/Data port

2.2. Description of EUT

The equipment under test was a dual mode (W-CDMA FDDI/GSM900/1800/1900MHz) cellular mobile telephone with Bluetooth & RFID.

2.3. Modifications Incorporated in the EUT

During the course of testing the EUT was not modified.

2.4. Support Equipment

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

Description:	Dummy battery
Model Name or Number:	Panasonic
Serial Number:	Dummy battery No. VS85- 13
Cable Length and Type:	0.25 metre / 2 x single core
Connected to Port:	Battery

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

2.5. Additional Information Related to Testing

Power Supply Requirement:	V-Nom	3.7V	V-Min	3.4V	V-Max	4.2V
Tested Temperature Range:	T-Min	-20°C		T-Max	+55°C	
Channel Spacing:	Single channel device					
Transmit Frequency:	13.56 MHz					
Receive Frequency:	13.56 MHz					

3. Test Specification, Methods and Procedures

3.1. Test Specifications

Reference:	FCC Part 15 Subpart C: 2008 (Sections 15.225)
Title:	Code of Federal Regulations, Part 15 (47CFR225) Radio Frequency Devices.

3.2. Methods and Procedures

The methods and procedures used were as detailed in:

ANSI C63.2 (1987)
Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

ANSI C63.4 (2001)
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.

3.3. 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 specification.

5. Operation of the EUT During Testing

5.1. Operating Modes

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

- Idle/Standby
- All transmitter tests with EUT transmitting at full power

5.2. Configuration and Peripherals

The EUT was tested in the following configuration:

- The transmitter was enabled using a bespoke application on a laptop PC supplied by the customer.
- The Micro SD card was present in the EUT during all tests.
- Radiated emissions tests were performed with the Portable Hands Free (PHF) connected as this was found to be the worst case configuration during radiated pre-scans.
- Mains charger was connected to the EUT during Idle mode AC conducted and radiated spurious emissions testing.
- As the EUT is not capable of transmitting while charging, no AC Mains Conducted Emissions (150 kHz to 30 MHz) test was performed in transmit mode.

6. Summary of Test Results

Range of Measurements	Specification Reference	Port Type	Result
Receiver/Idle Mode AC Conducted Emissions (150 kHz to 30 MHz)	C.F.R. 47 FCC Part 15 Section 15.107(a)	AC Mains	Complied
Receiver/Idle Mode Radiated Spurious Emissions	C.F.R. 47 FCC Part 15 Section 15.109 (a), 15.225(d)	Enclosure	Complied
Transmitter Fundamental Field Strength	C.F.R. 47 FCC Part 15 Section 15.225(a)(b)(c)(d)	Antenna	Complied
Transmitter Radiated Spurious Emissions	C.F.R. 47 FCC Part 15 Section 15.209(a), 15.225(d)	Enclosure	Complied
Transmitter Band Edge Radiated Emissions	C.F.R. 47 FCC Part 15 Section 15.209(a) 15.225(c)(d)	Antenna	Complied
Transmitter 20 dB Bandwidth	C.F.R. 47 FCC Part 2 Section 2.1049	Antenna	Complied
Transmitter Frequency Stability (Temperature & Voltage Variation)	C.F.R. 47 FCC Part 15 Section 15.225(e)	Antenna	Complied

6.1. Location of Tests

All the measurements described in this report were performed at the premises of RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.

6.2. Site Registration Numbers

FCC: 209735

7. Measurements, Examinations and Derived Results

7.1. General Comments

7.1.1. This section contains test results only.

7.1.2. 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.

7.2. Test Results

7.2.1. Receiver/Idle Mode AC Mains Conducted Emissions: Section 15.107(a)

Ambient Temperature: 20ºC Relative Humidity: 48%

Results:

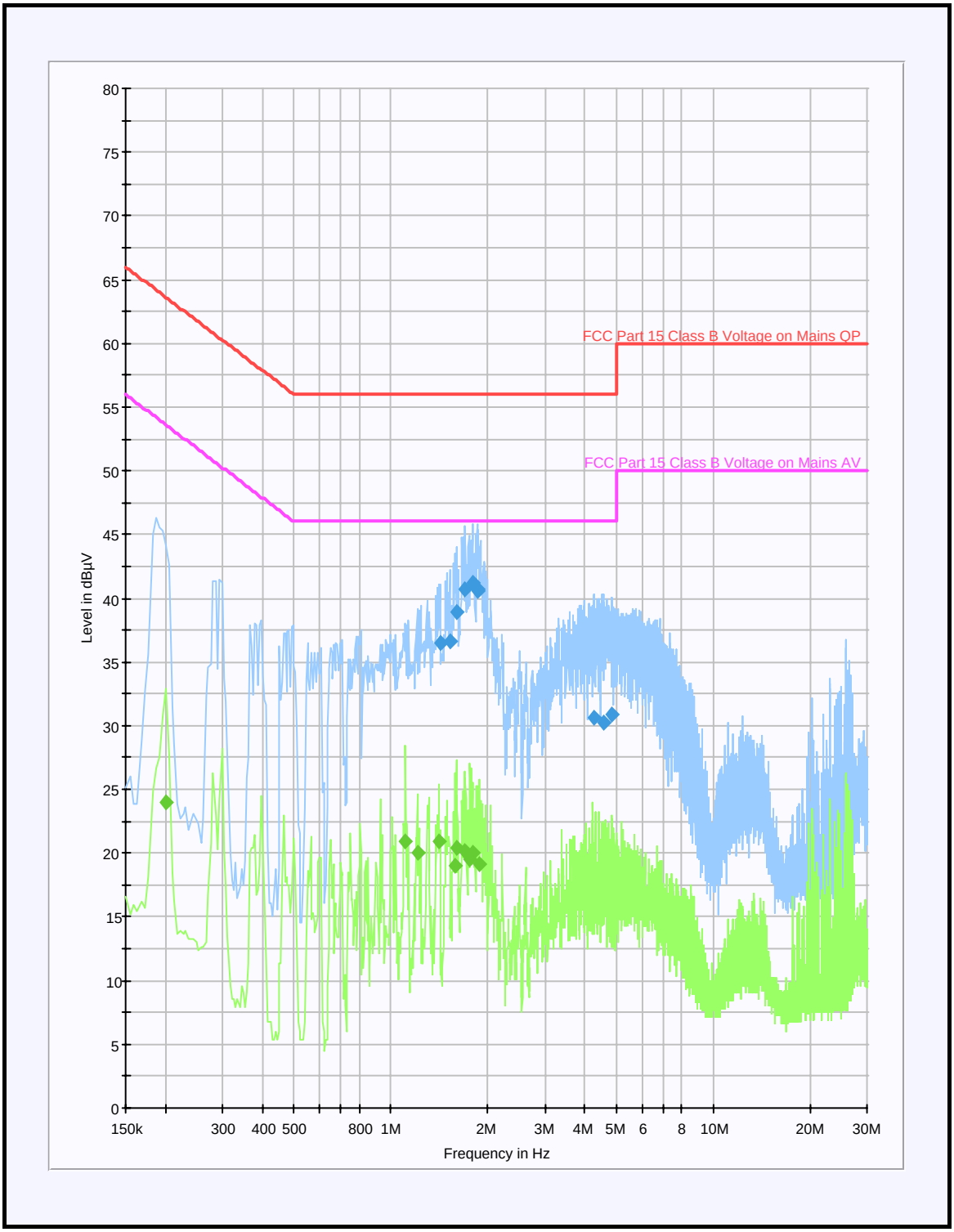
Quasi-Peak Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
1.419000	Live	36.5	56.0	19.5	Complied
1.518000	Live	36.7	56.0	19.3	Complied
1.603500	Live	39.0	56.0	17.0	Complied
1.702500	Live	40.8	56.0	15.2	Complied
1.792500	Live	41.2	56.0	14.8	Complied
1.851000	Live	40.5	56.0	15.5	Complied
1.864500	Live	40.7	56.0	15.3	Complied
4.263000	Live	30.6	56.0	25.4	Complied
4.546500	Live	30.2	56.0	25.8	Complied
4.830000	Live	30.8	56.0	25.2	Complied

Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.199500	Live	24.0	53.6	29.6	Complied
1.108500	Live	20.9	46.0	25.1	Complied
1.207500	Live	20.0	46.0	26.0	Complied
1.405500	Live	20.9	46.0	25.1	Complied
1.576500	Live	19.0	46.0	27.0	Complied
1.590000	Live	20.4	46.0	25.6	Complied
1.684500	Live	20.2	46.0	25.8	Complied
1.761000	Live	19.5	46.0	26.5	Complied
1.792500	Live	20.1	46.0	25.9	Complied
1.878000	Live	19.2	46.0	26.8	Complied

Receiver/Idle Mode AC Mains Conducted Emissions (Continued)



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

7.2.2. Receiver/Idle Mode Radiated Spurious Emissions: Section 15.109(a), 15.225(d)

Ambient Temperature: 21ºC Relative Humidity: 39%

Results:

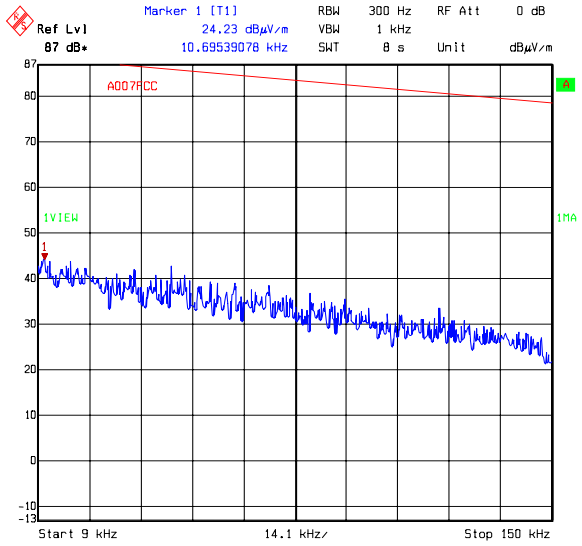
Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
208.679	Horizontal	23.9	43.5	19.6	Complied

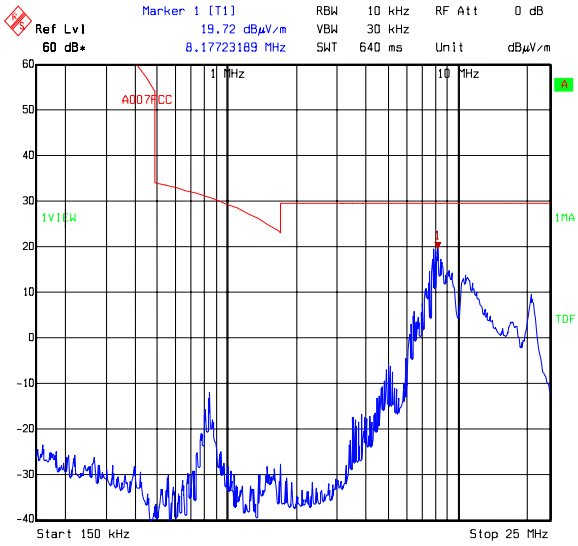
Note(s):

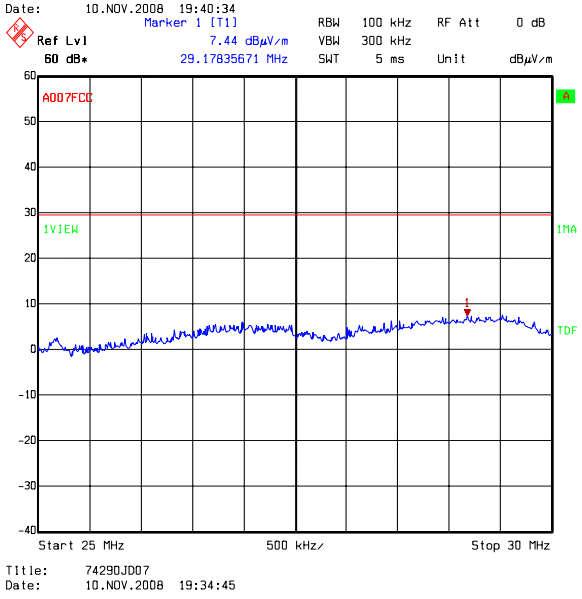
1. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required.

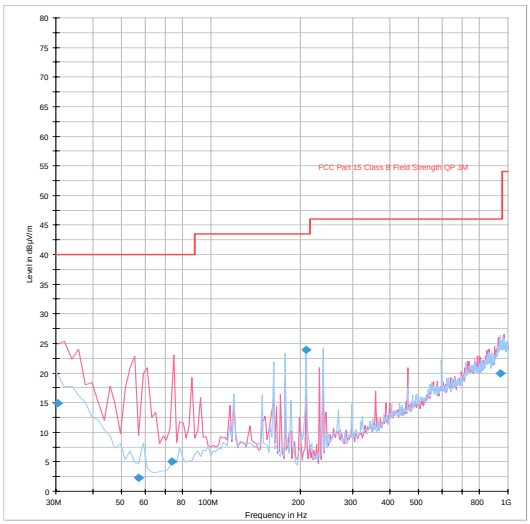
Test of: **Panasonic**
VS85
To: **FCC Part 15.225: 2008 (Subpart C)**

Receiver/Idle Mode Radiated Spurious Emissions (Continued)









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

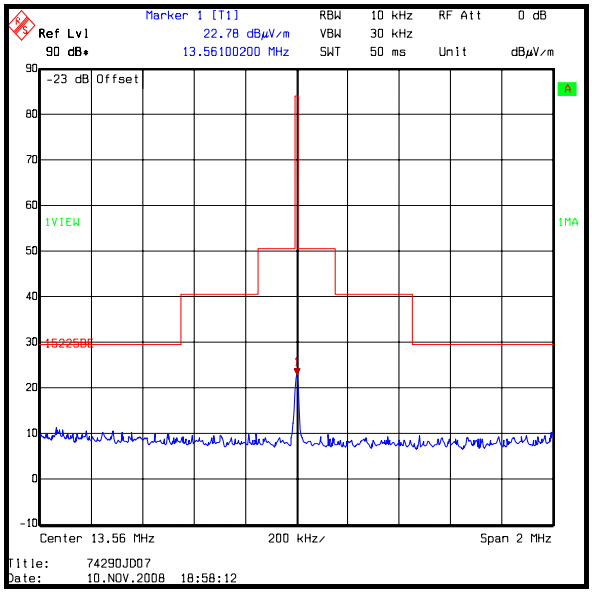
7.2.3. Transmitter Fundamental Field Strength: Section 15.225 (a)(b)(c)(d)

Ambient Temperature: 21ºC Relative Humidity: 39%

7.2.3.1. The limit is specified at a test distance of 30 metres. However, as specified by FCC Section 15.31 (f)(2), measurements may be performed at a closer distance and the measured level corrected to the specified measurement distance by making the measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor. A transducer factor of -23 dB was used on the measuring instrument to extrapolate the results at 3 metres to a distance of 30 metres.

Results: Battery Powered Devices

Frequency (MHz)	Antenna Polarity	Q-P Level (dBµV/m)	Limit at 30 metres (dBµV/m)	Margin (dB)	Result
13.56	90˚ to EUT	22.8	84.0	61.2	Complied



7.2.4. Transmitter Radiated Spurious Emissions: Section 15.209 (a), 15.225(d)

Ambient Temperature: 21ºC Relative Humidity: 39%

Results:

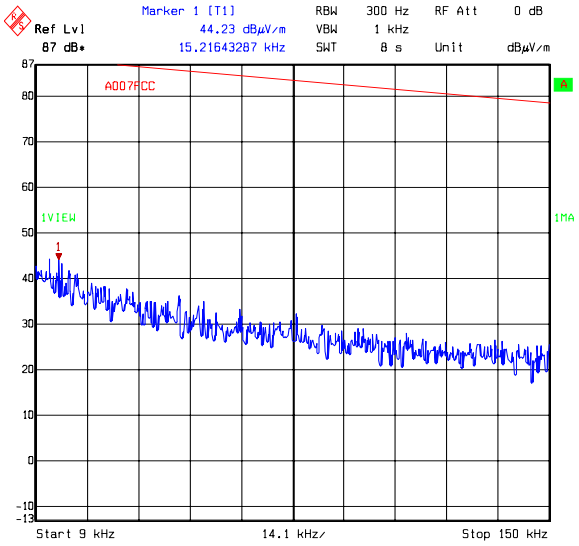
Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
203.395	Horizontal	29.1	43.5	14.4	Complied
474.597	Vertical	31.0	46.0	15.0	Complied
488.146	Vertical	28.3	46.0	17.7	Complied
501.705	Vertical	32.9	46.0	13.1	Complied
515.255	Horizontal	31.4	46.0	14.6	Complied
528.843	Horizontal	33.0	46.0	13.0	Complied
542.363	Horizontal	34.4	46.0	11.6	Complied
555.971	Horizontal	34.3	46.0	11.7	Complied
569.491	Horizontal	31.6	46.0	14.4	Complied
906.044	Vertical	17.9	46.0	28.1	Complied

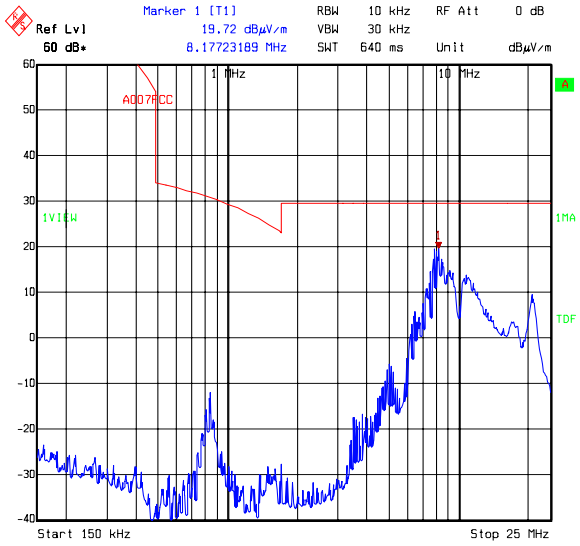
Note(s):

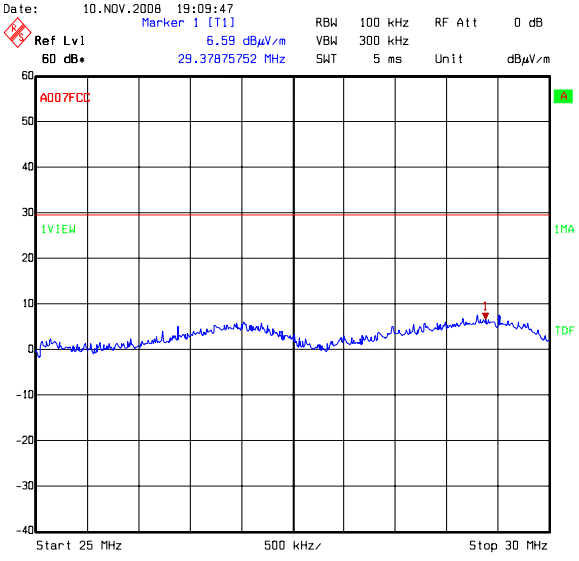
1. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required.

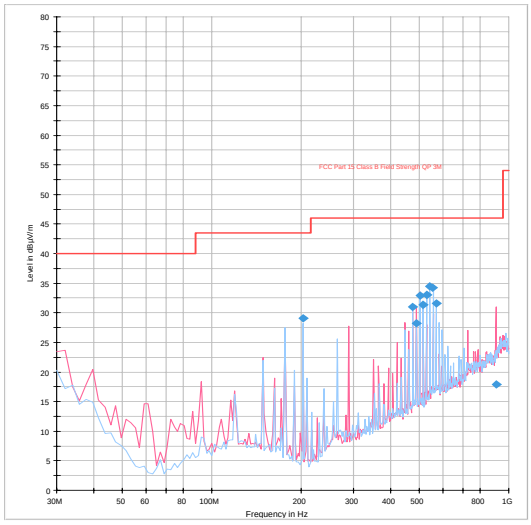
Test of: **Panasonic**
VS85
To: **FCC Part 15.225: 2008 (Subpart C)**

Transmitter Radiated Spurious Emissions (Continued)









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

7.2.5. Transmitter Radiated Emissions at Band Edges: Section 15.209(a) 15.225(c)(d)

Ambient Temperature: 21ºC Relative Humidity: 39%

Results:

Bottom Band Edge

Frequency (MHz)	Q-P Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
13.11	8.6	40.5	31.9	Complied

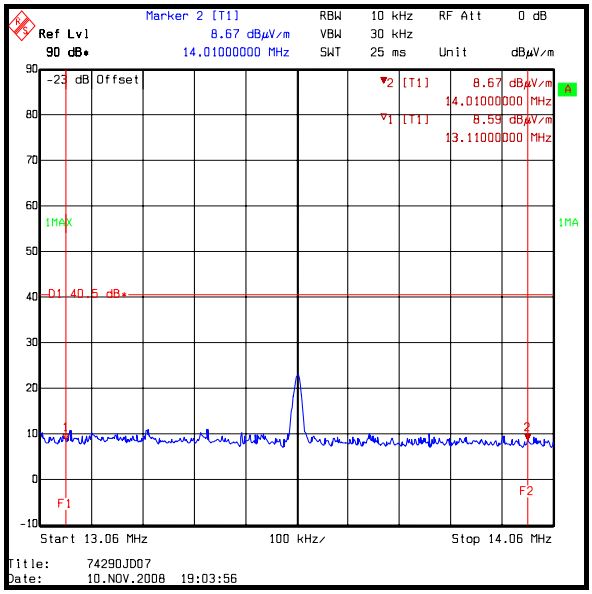
Top Band Edge

Frequency (MHz)	Q-P Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
14.01	8.7	40.5	31.8	Complied

Note(s):

1. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required.

Transmitter Radiated Emissions at Band Edges (Continued)



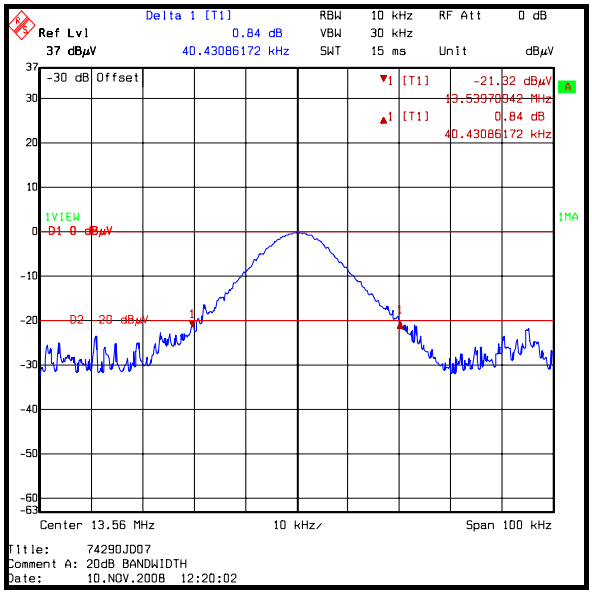
Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

7.2.6.Transmitter 20 dB Bandwidth: Section 2.1049

Ambient Temperature: 21ºC Relative Humidity: 39%

Results:

Transmitter 20 dB Bandwidth (Hz)
40.4



7.2.7. Transmitter Frequency Stability (Temperature & Voltage Variation): Section 15.225 (e)

Ambient Temperature: 21ºC Relative Humidity: 39%

Maximum frequency error of the EUT with variations in ambient temperature

Temp (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (%)	Limit (%)	Margin (%)	Result
-20	13.56	13.560901	901	0.006645	0.01	0.003355	Complied
20	13.56	13.560150	150	0.001106	0.01	0.008894	Complied
50	13.56	13.560501	501	0.003695	0.01	0.006305	Complied

Maximum frequency error of the EUT with variations in nominal operating voltage at an ambient temperature of 20°C

Supply Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (%)	Limit (%)	Margin (%)	Result
3.4	13.56	13.559860	140	0.001032	0.01	0.008968	Complied
3.7	13.56	13.560150	150	0.001106	0.01	0.008894	Complied
4.2	13.56	13.559819	181	0.001335	0.01	0.008665	Complied

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%	±3.25 dB
Occupied Bandwidth	N/A	95%	±0.12 %
Frequency Stability	N/A	95%	±11.37 ppm
Radiated Spurious Emissions	9 kHz to 30 MHz	95%	±3.53 dB
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	±5.26 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.

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
A004	LISN	Rohde & Schwarz	ESH3-Z5	890 604/027	19 May 2008	12
A007	Antenna	Rohde & Schwarz	HFH2-Z2	880 458/020	28 Feb 2008	12
A1792	Pre Amplifier	A.H. Systems Inc	PAM-0118	182	Calibrated before use	-
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	16 Jan 2008	12
A259	Antenna	Chase	CBL6111	1513	25 Jul 2008	12
E013	Environmental Chamber	Sanyo	ATMOS chamber	None	Calibrated before use	-
K0001	Site Reference 4420	Rainford EMC	N/A	N/A	13 Aug 2008	12
M1068	Thermometer	Iso-Tech	RS55	93102884	09 Jul 2008	12
M1229	Digital Multimeter	Fluke	179	87640015	09 May 2008	12
M1242	Spectrum Analyser	Rohde & Schwarz	FSEM30	845986/022	29 Nov 2007	12
M1273	Test Receiver	Rhode & Schwarz	ESIB 26	100275	26 Feb 2008	12
S0520	DC Power Supply Unit	GW instek	GPC-3030	E835141	Calibrated before use	-

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