



TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: NTT docomo Wireless Charger Pad DE-PAD002AAA & PSU DE-PAA002AAA

To: FCC Parts 15.207 and 15.209

Test Report Serial No.:
RFI-RPT-RP87471JD04C V2.0

Version 2.0 Supersedes All Previous Versions

| | | |
|--|--|--|
| This Test Report Is Issued Under The Authority Of John Newell, Group Quality Manager: | |  |
| Checked By: | Ian Watch | |
| Signature: |  | |
| Date of Issue: | 15 June 2012 | |

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1. Customer Information





| | |
|----------------------|--|
| Company Name: | Panasonic Mobile Communications Development of Europe Ltd. |
| Address: | Panasonic House Willoughby Road Bracknell Berkshire RG12 8FP United Kingdom |

2. Summary of Testing

2.1. General Information

| | |
|---------------------------------|--|
| Specification Reference: | 47CFR15.207 and 47CFR15.209 |
| Specification Title: | Code of Federal Regulations Volume 47 (Telecommunications) 2011: Part 15 Subpart C (Intentional Radiators) - Sections 15.207 and 15.209 |
| Site Registration: | 209735 |
| Location of Testing: | RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH. |
| Test Date: | 23 May 2012 |

2.2. Summary of Test Results

| FCC Reference (47CFR) | Measurement | Result |
|---|------------------------------------|---|
| Part 15.207 | Transmitter AC Conducted Emissions |  |
| Part 15.209 | Transmitter Radiated Emissions |  |
| Key to Results | | |
|  = Complied  = Did not comply | | |

2.3. Methods and Procedures

| | |
|-------------------|---|
| Reference: | ANSI C63.4 (2009) |
| Title: | American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz |

2.4. Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above.

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

| | |
|---------------------------------|---------------------------------------|
| Brand Name: | NTT docomo |
| Model Name or Number: | Charger Pad Type Number: DE-PAD002AAA |
| Serial Number: | N/A |
| Hardware Version Number: | Not Known |
| Software Version Number: | N/A |

| | |
|---------------------------------|---------------------------------------|
| Brand Name: | NTT docomo |
| Model Name or Number: | Charger PSU Type Number: DE-PAA002AAA |
| Serial Number: | N/A |
| Hardware Version Number: | Not Known |
| Software Version Number: | N/A |

3.2. Description of EUT

The equipment under test was a Wireless Charger and PSU for a mobile phone.

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Additional Information Related to Testing

| | | |
|----------------------------------|--------------------|---------------|
| Tested Technology: | Wireless Charger | |
| Mode | Charging | |
| Power Supply Requirement: | Nominal | 120 VAC 60 Hz |
| Modulation Type: | AM | |
| Transmit Frequency Range: | 125 kHz to 131 kHz | |

3.5. Support Equipment

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

| | |
|------------------------------|---|
| Description: | Dual Mode UMTS/GSM Mobile Phone with WLAN, Bluetooth and RFID |
| Brand Name: | NTT docomo |
| Model Name or Number: | EB-4056 |
| Serial Number: | 351808050018796 |

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating mode(s):

- Charging mode.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration(s):

- Tests were performed with the mobile phone handset located in its' normal position on the wireless charger pad.
- Connected to a 120 VAC 60 Hz single phase supply.
- AC conducted emissions tests were performed with the EUT connected to a 120 VAC 60 Hz single phase supply via a LISN.

5. Measurements, Examinations and Derived Results

5.1. General Comments

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 6 Measurement Uncertainty* for details.

5.2. Test Results**5.2.1. Transmitter AC Conducted Spurious Emissions****Test Summary:**

| | | | |
|-------------------------------|----------------------|-------------------|-------------|
| Test Engineer: | Andrew Edwards | Test Date: | 23 May 2012 |
| Test Sample Serial No: | Not marked or stated | | |

| | |
|--------------------------|-------------------------------------|
| FCC Part: | 15.207 |
| Test Method Used: | As detailed in ANSI C63.4 Section 7 |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 28 |
| Relative Humidity (%): | 48 |

Results: Live / Quasi Peak

| Frequency (MHz) | Line | Level (dB μ V) | Limit (dB μ V) | Margin (dB) | Result |
|-----------------|------|--------------------|--------------------|-------------|----------|
| 0.159000 | Live | 57.7 | 65.5 | 7.8 | Complied |
| 0.159000 | Live | 57.6 | 65.5 | 7.9 | Complied |
| 0.181500 | Live | 57.0 | 64.4 | 7.4 | Complied |
| 0.249000 | Live | 52.4 | 61.8 | 9.4 | Complied |
| 0.298500 | Live | 50.4 | 60.3 | 9.9 | Complied |
| 0.402000 | Live | 45.2 | 57.8 | 12.6 | Complied |
| 0.492000 | Live | 40.4 | 56.1 | 15.7 | Complied |
| 2.647500 | Live | 33.5 | 56.0 | 22.5 | Complied |
| 27.717000 | Live | 43.8 | 60.0 | 16.2 | Complied |

Results: Live / Average

| Frequency (MHz) | Line | Level (dB μ V) | Limit (dB μ V) | Margin (dB) | Result |
|-----------------|------|--------------------|--------------------|-------------|----------|
| 0.406500 | Live | 32.1 | 47.7 | 15.6 | Complied |
| 2.539500 | Live | 26.6 | 46.0 | 19.4 | Complied |
| 3.993000 | Live | 26.0 | 46.0 | 20.0 | Complied |
| 10.288500 | Live | 32.6 | 50.0 | 17.4 | Complied |
| 10.531500 | Live | 25.0 | 50.0 | 25.0 | Complied |
| 10.774500 | Live | 25.7 | 50.0 | 24.3 | Complied |
| 23.356500 | Live | 25.6 | 50.0 | 24.4 | Complied |
| 23.685000 | Live | 25.7 | 50.0 | 24.3 | Complied |
| 23.847000 | Live | 26.7 | 50.0 | 23.3 | Complied |
| 27.901500 | Live | 35.2 | 50.0 | 14.8 | Complied |

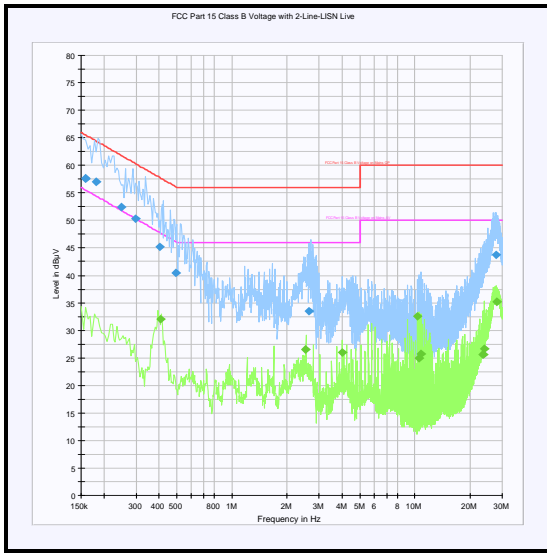
Transmitter AC Conducted Spurious Emissions (continued)**Results: Neutral / Quasi Peak**

| Frequency (MHz) | Line | Level (dB μ V) | Limit (dB μ V) | Margin (dB) | Result |
|-----------------|---------|--------------------|--------------------|-------------|----------|
| 0.150000 | Neutral | 60.7 | 66.0 | 5.3 | Complied |
| 0.172500 | Neutral | 59.0 | 64.8 | 5.8 | Complied |
| 0.208500 | Neutral | 57.2 | 63.3 | 6.1 | Complied |
| 0.217500 | Neutral | 56.8 | 62.9 | 6.1 | Complied |
| 0.240000 | Neutral | 54.8 | 62.1 | 7.3 | Complied |
| 0.253500 | Neutral | 54.2 | 61.6 | 7.4 | Complied |
| 0.285000 | Neutral | 52.7 | 60.7 | 8.0 | Complied |
| 0.289500 | Neutral | 52.4 | 60.5 | 8.1 | Complied |
| 0.330000 | Neutral | 50.5 | 59.5 | 9.0 | Complied |
| 0.334500 | Neutral | 50.5 | 59.3 | 8.8 | Complied |

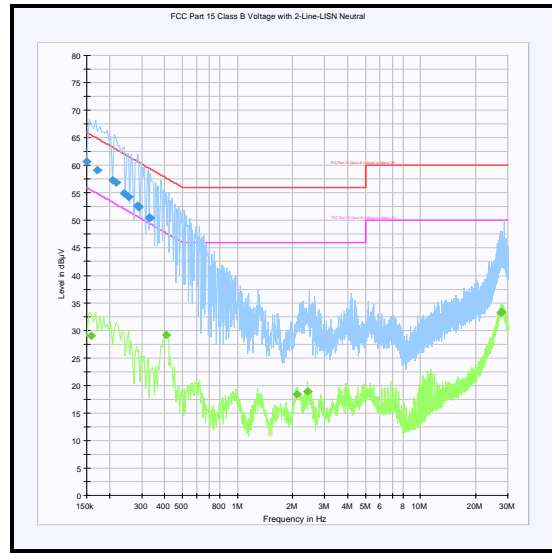
Results: Neutral / Average

| Frequency (MHz) | Line | Level (dB μ V) | Limit (dB μ V) | Margin (dB) | Result |
|-----------------|---------|--------------------|--------------------|-------------|----------|
| 0.159000 | Neutral | 29.0 | 55.5 | 26.5 | Complied |
| 0.406500 | Neutral | 29.2 | 47.7 | 18.5 | Complied |
| 2.112000 | Neutral | 18.3 | 46.0 | 27.7 | Complied |
| 2.409000 | Neutral | 18.9 | 46.0 | 27.1 | Complied |
| 27.519000 | Neutral | 33.3 | 50.0 | 16.7 | Complied |
| 27.879000 | Neutral | 33.4 | 50.0 | 16.6 | Complied |

Transmitter AC Conducted Spurious Emissions (continued)



Live



Neutral

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

5.2.2. Transmitter Radiated Spurious Emissions**Test Summary:**

| | | | |
|-------------------------------|----------------------|-------------------|-------------|
| Test Engineer: | Andrew Edwards | Test Date: | 23 May 2012 |
| Test Sample Serial No: | Not marked or stated | | |

| | |
|--------------------------|-------------------------------------|
| FCC Part: | 15.209 |
| Test Method Used: | As detailed in ANSI C63.4 Section 8 |
| Frequency Range: | 9 kHz to 1000 MHz |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 31 |
| Relative Humidity (%): | 41 |

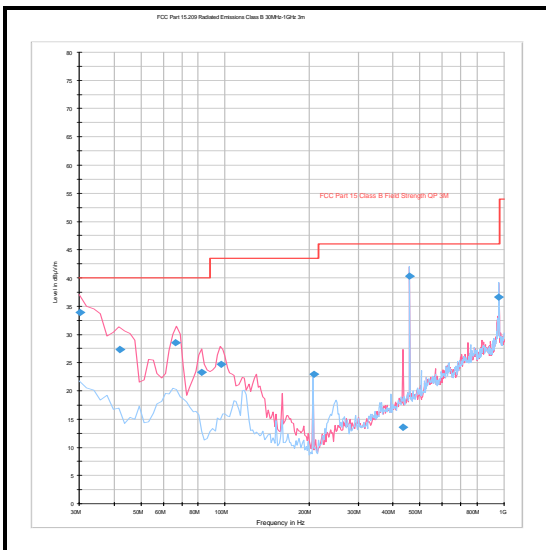
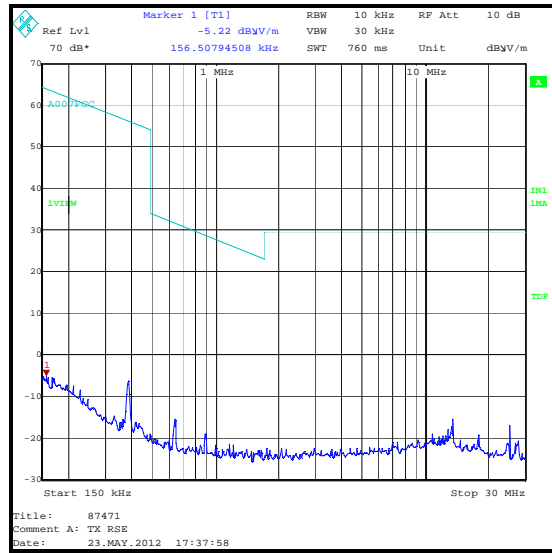
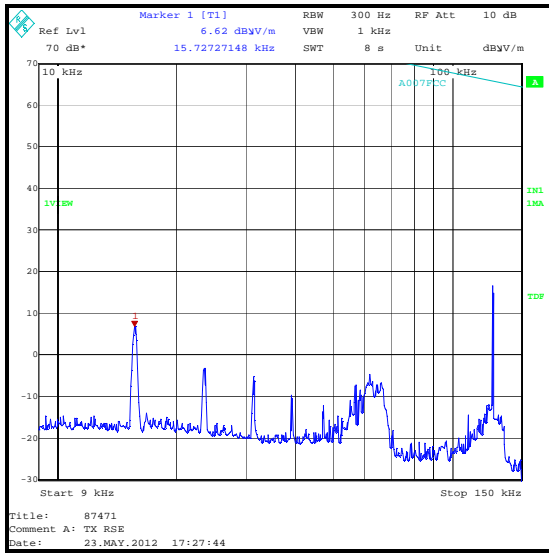
Results: Quasi Peak

| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 30.168 | Vertical | 33.9 | 40.0 | 6.1 | Complied |
| 42.053 | Vertical | 27.3 | 40.0 | 12.7 | Complied |
| 66.708 | Vertical | 28.6 | 40.0 | 11.4 | Complied |
| 82.432 | Vertical | 23.3 | 40.0 | 16.7 | Complied |
| 97.020 | Vertical | 24.7 | 43.5 | 18.8 | Complied |
| 208.063 | Vertical | 23.0 | 43.5 | 20.5 | Complied |
| 458.796 | Vertical | 40.3 | 46.0 | 5.7 | Complied |
| 955.383 | Vertical | 36.6 | 46.0 | 9.4 | Complied |

Note(s):

- Limits below 30 MHz are specified at a test distance of 30 metres, whilst below 0.49 MHz they are specified at a test distance of 300 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 using the square of an inverse linear distance extrapolation factor (40dB/decade).
- A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required. A distance extrapolation factor of 40 dB was used.
- The emission shown at approximately 125 kHz is the charger frequency of the EUT. All other emissions on the 9 kHz to 150 kHz plot were investigated and found to be radiating from the test site turntable.
- All other emissions shown on the pre-scan plots were investigated and found to be >20 dB below the applicable limit or below the measurement system noise floor.
- Measurements in the range 30 MHz to 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

Transmitter Radiated Spurious Emissions (continued)



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

6. 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 |
| Radiated Spurious Emissions | 0.009 MHz to 1000 MHz | 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.

Appendix 1. Test Equipment Used

| RFI No. | Instrument | Manufacturer | Type No. | Serial No. | Date Calibration Due | Cal. Interval (months) |
|---------|----------------|-----------------|----------|------------|----------------------|------------------------|
| A067 | LISN | Rohde & Schwarz | ESH3-Z5 | 890603/002 | 02 Jun 2012 | 12 |
| A1830 | Pulse Limiter | Rohde & Schwarz | ESH3-Z2 | 100668 | 25 Feb 2013 | 12 |
| A1834 | Attenuator | Hewlett Packard | 8491B | 10444 | 29 Jan 2013 | 12 |
| A553 | Antenna | Chase | CBL6111A | 1593 | 15 Feb 2013 | 12 |
| G0543 | Amplifier | Sonoma | 310N | 230801 | 13 Jul 2012 | 3 |
| K0001 | 5m RSE Chamber | Rainford EMC | N/A | N/A | 29 May 2012 | 12 |
| M1273 | Test Receiver | Rohde & Schwarz | ESIB 26 | 100275 | 03 Feb 2013 | 12 |
| M1379 | Test Receiver | Rohde & Schwarz | ESIB7 | 100330 | 20 Sep 2012 | 12 |
| M1568 | Magnetic Loop | Rohde & Schwarz | HFH2-Z2 | 879284/2 | 08 Feb 2013 | 12 |

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