



# **Annex I: Radiated Emissions ( $f < 30\text{MHz}$ )**

Test Description

Test report reference: 4\_Phoen\_0206\_ERF\_FCCc

Date: 2006-07-07

## **1 Test Results**

### **1.1 Spurious radiated emissions (f<30MHz)**

**Standard** FCC Part 15, 10-1-05  
Subpart C

**The test was performed according to:** ANSI C 63.4, 2003

#### **1.1.1 Test Description**

The test set-up was made in accordance to the general provisions of ANSI C 63.4-2003. The Equipment Under Test (EUT) was set up on a non-conductive table in the anechoic chamber.

The radiated emissions measurements were made in a typical installation configuration. The measurement procedure is implemented into the EMI test software ES-K1 from R&S. The Loop antenna HFH2-Z2 is used.

The measurement is performed in two steps:

**Step 1:** pre measurement

- Anechoic chamber
- Antenna distance: 10m
- Detector: Peak-Maxhold
- Frequency range: 0.009 - 0.15 and 0.15 – 30 MHz
- Frequency steps: 0.1 kHz and 5 kHz
- IF-Bandwidth: 0.2 kHz and 10 kHz
- Measuring time / Frequency step: 100 ms

Intention of this step is, to determine the radiated EMI-profile of the EUT. With this data, to reduce the number of final measurements, a data reduction with the following parameters is performed:

- Offset for acceptance analysis: Limit line – 10 dB
- Maximum number of final measurements: 12

**Step 2:** final measurement

- Open area test side
- Antenna distance: according to the Standard

- Detector: Quasi-Peak
- Frequency range: 0.009 – 30 MHz
- Frequency steps: measurement at frequencies detected in step 1
- IF-Bandwidth: 200 Hz - 10 kHz
- Measuring time / Frequency step: 100 ms

### 1.1.2 Test Requirements / Limits

FCC part 15, subpart C, §15.209

Frequency in MHz	Limit (µV/m)	Measurement distance (m)	Limit(dBµV/m @10m)
0.009 – 0.49	2400/F(kHz)	300	Limit (dBµV/m) +30dB
0.49 – 1.705	24000/F(kHz)	30	Limit (dBµV/m) +10dB
1.705 - 30	30	30	Limit (dBµV/m) +10dB

Used conversion factor:  $\text{Limit(dB}\mu\text{V/m)} = 20 * \text{LOG}(\text{Limit}(\mu\text{V/m})/1\mu\text{V/m})$

### 1.1.3 Test Protocol

Temperature: 24 °C  
 Air Pressure: 1020 hPa  
 Humidity: 31 %

Op. Mode	Setup	Port
op-mode 1	Setup_a01	Enclosure

Polarisation	Frequency MHz	Corrected value dBµV/m			Limit dBµV/m	Limit dBµV/m	Limit dBµV/m	Delta to limit dB	Delta to limit dB
		QP	Peak	AV	QP	Peak	AV	QP/Peak	AV
0°									
90°									

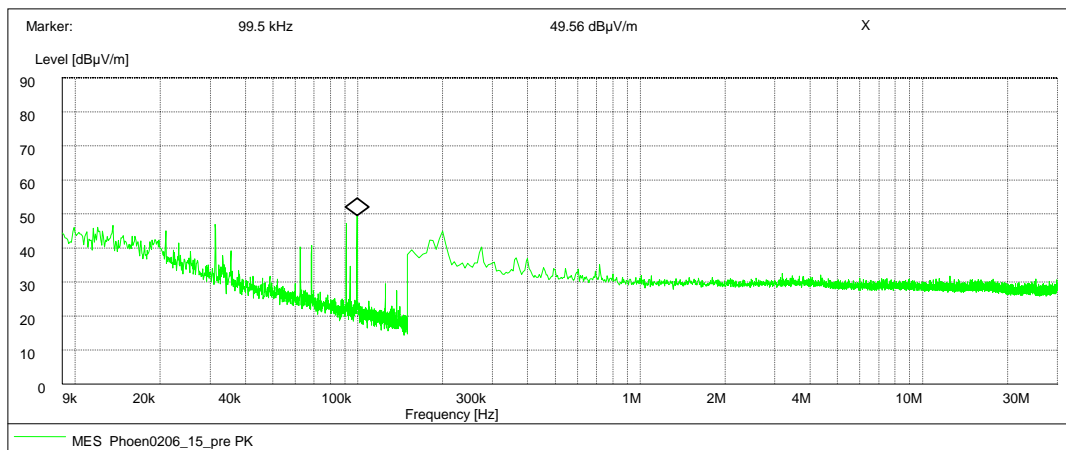
Remark: No (further) spurious emissions in the range 20 dB below the limit found.  
 The peak at 99.5kHz is generated by the loop antenna's power supply.  
 Step 2 was not performed.

### 1.1.4 Test result: Spurious radiated emissions

FCC Part 15, Subpart C	Op. Mode	Result
	op-mode 1	passed

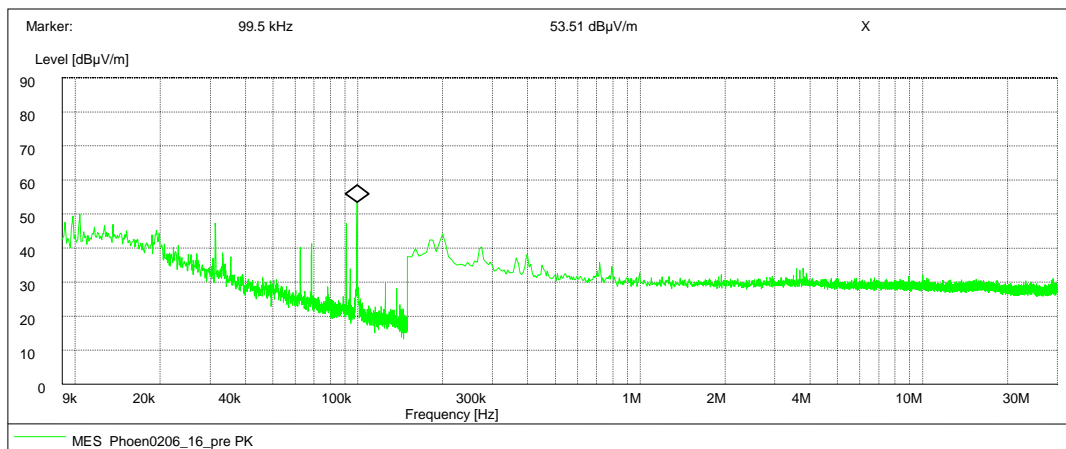
## 2 Annex measurement plots

### 2.1 Radiated emissions ( $f < 30\text{MHz}$ )



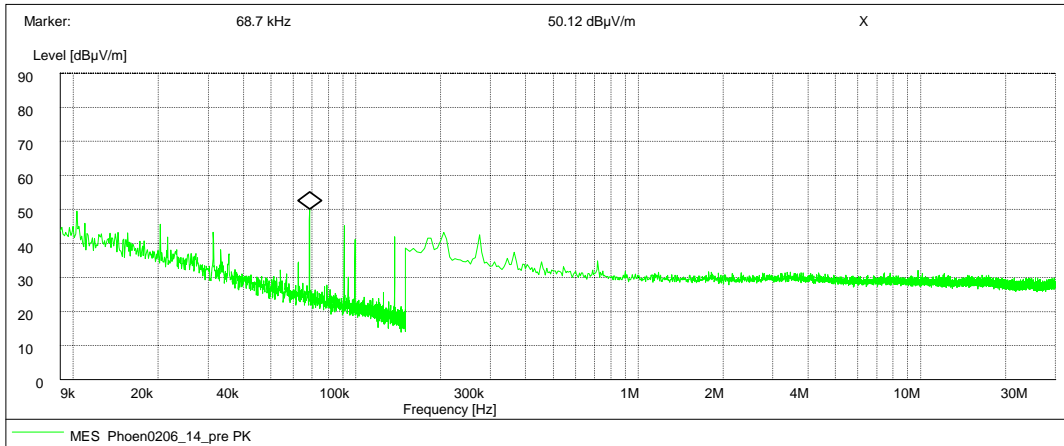
Antenna position 90°

EUT position vertical (top side)

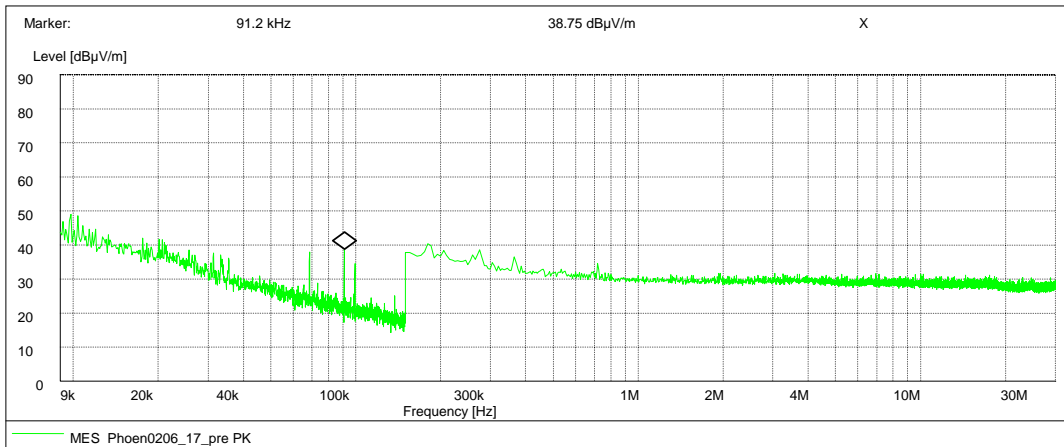


Antenna position 90°

EUT position horizontal (right side)



Antenna position 0°  
EUT position vertical (top side)



Antenna position 0°  
EUT position horizontal (right side)