

## **5 TEST CONDITIONS AND RESULTS**

### **5.1 Conducted emissions**

For test instruments and accessories used see section 6 Part A 4.

#### **5.1.1 Description of the test location**

Test location:               Shielded Room S2

#### **5.1.2 Photo documentation of the test set-up**



#### **5.1.3 Applicable standard**

According to FCC Part 15, Section 15.207(a):

Except as shown in paragraphs (b) and (c) of this Section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the given limits.

#### **5.1.4 Description of Measurement**

The measurements are performed following the procedures set out in ANSI C63.4 described under item 4.4.3. If the minimum limit margin appears to be less than 20 dB with a peak mode measurement, the emissions are remeasured using a tuned receiver with quasi-peak and average detection and recorded on the data sheets.

## 5.2 Radiated emission of the fundamental wave

For test instruments and accessories used see section 6 Part CPR 3.

### 5.2.1 Description of the test location

Test location: Anechoic Chamber A2

Test distance: 3 metres

### 5.2.2 Photo documentation of the test set-up



### 5.2.1 Applicable standard

According to FCC Part 15C, Section 15.249(a):

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the effective limits.

### 5.2.2 Description of Measurement

The radiated emission of the fundamental wave from the EUT is measured using a spectrum analyser and appropriate linear polarized antennas.

Analyser settings:

Peak measurement:	RBW: 1 MHz	VBW: 1 MHz	Detector: Max peak
AV measurement:	RBW: 1 MHz	VBW: 10 Hz	Detector: Max peak

### 5.3 Spurious emissions radiated

For test instruments and accessories used see section 6 Part SER1, SER 2, SER 3.

#### 5.3.1 Description of the test location

Test location: OATS 1  
Test location: Anechoic Chamber A2  
Test distance: 3 metres

#### 5.3.2 Photo documentation of the test set-up

OATS1 (9 kHz - 30 MHz)



OATS1 (30 - 1000 MHz)



Anechoic chamber



**5.3.3 Applicable standard**

According to FCC Part 15C, Section 15.249 (d):

Emission radiated outside of the specified frequency bands, except harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated limit in FCC Part 15C, Section 15.209, whichever is the lesser attenuation.

**5.3.4 Description of Measurement**

The radiated emissions from the EUT are measured in the frequency range of 9 kHz to 1000 MHz using a tuned receiver and appropriate broadband linearly polarized antennas. The set up of the EUT will be in accordance to ANSI C63.4. In the frequency range above 1 GHz a spectrum analyser is used with appropriate linear polarized antennas. If the emission level in peak mode complies with the average limit then testing will be stopped and peak values of the EUT will be reported, otherwise, the emission will be measured in average mode again and reported. During the test, the EUT was set into continuous transmitting mode modulated.

Instrument settings:

9 kHz - 150 kHz	RBW:	200 Hz
150 kHz - 30 MHz	RBW:	9 kHz
30 MHz – 1000 MHz:	RBW:	120 kHz
1000 MHz – 25 GHz	RBW:	1 MHz

**5.3.5 Test result f < 1 GHz**

Channel 1

Frequency (MHz)	Reading level QP (dB $\mu$ V)	Reading level AV (dB $\mu$ V)	RBW (kHz)	Correction factor (dB/m)	Corrected level QP dB( $\mu$ V/m)	Corrected level AV dB( $\mu$ V/m)	Limit dB( $\mu$ V/m)	Delta (dB)
111.5	12.2		120	12.3	24.5		43.5	-19.0

Note: The correction factor includes cable loss and antenna factor.

## 5.4 20 dB bandwidth

For test instruments and accessories used see section 6 Part MB.

### 5.4.1 Description of the test location

Test location: Anechoic Chamber A2

### 5.4.2 Photo documentation of the test set-up



### 5.4.3 Applicable standard

According to FCC Part 15, Section 15.215(c):

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in Section 15.217 through Section 15.257, must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated.

### 5.4.4 Description of Measurement

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio of -20 dB. The reference level is the level of the highest signal amplitude observed from the transmitter at the fundamental frequency. Alternative is the x-dB-down function of the analyser used. The EBW is than directly shown in the marker display. The measurement is performed with normal modulation and a transfer rate means the worst case.

Spectrum analyser settings:

RBW:	100 kHz	VBW:	300 kHz	Span:	10 MHz
Sweep time:	2.5 ms	Detector:	peak	Trace:	max hold

## 5.6 Receiver radiated emissions

For test instruments and accessories used see section 6 Part SER2 and SER3.

### 5.6.1 Description of the test location

Test location: OATS 1  
Test location: Anechoic Chamber A2  
Test distance: 3 metres

### 5.6.2 Photo documentation of the test set-up

OATS1 (30 - 1000 MHz)



Anechoic chamber

