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BASIC EMC PUBLICATION
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**Electromagnetic compatibility (EMC) –
Part 4-3: Testing and measurement techniques – Radiated, radio-frequency,
electromagnetic field immunity test**

**Compatibilité électromagnétique (CEM) –
Partie 4-3: Techniques d'essai et de mesure – Essai d'immunité aux champs
électromagnétiques rayonnés aux fréquences radioélectriques**

WORLDWIDE



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Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test

INTERPRETATION SHEET 1

This interpretation sheet has been prepared by SC 77B: High frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

The text of this interpretation sheet is based on the following documents:

ISH	Report on voting
77B/568/ISH	77B/573/RVD

Full information on the voting for the approval of this interpretation sheet can be found in the report on voting indicated in the above table.

IEC 61000-4-3 contains quick checks embedded in the field calibration process (subclause 6.2), in which the operator tests whether the amplifier is able to produce the desired RF power without saturation.

Step j) of the calibration process as per 6.2.1 describes this check for the constant field strength calibration method:

- j) *Confirm that the test system (e.g. the power amplifier) is not in saturation. Assuming that E_c has been chosen as 1,8 times E_t , perform the following procedure at each calibration frequency:*
 - j-1) *Decrease the output from the signal generator by 5,1 dB from the level needed to establish a forward power of P_C , as determined in the above steps (-5,1 dB is the same as $E_c / 1,8$);*
 - j-2) *Record the new forward power delivered to the antenna;*
 - j-3) *Subtract the forward power measured in step j-2 from P_C . If the difference is between 3,1 and 5,1 dB, then the amplifier is not saturated and the test system sufficient for testing. If the difference is less than 3,1 dB, then the amplifier is saturated and is not suitable for testing.*

The corresponding check within the constant power calibration method as per 6.2.2 is defined as step m):

- m) *Confirm that the test system (e. g. the power amplifier) is not in saturation. Assuming that E_c has been chosen as 1,8 times E_t , perform the following procedure at each calibration frequency:*
 - m-1) *Decrease the output from the signal generator by 5,1 dB from the level needed to establish a forward power of P_C , as determined in the above steps (-5,1 dB is the same as $E_c / 1,8$);*

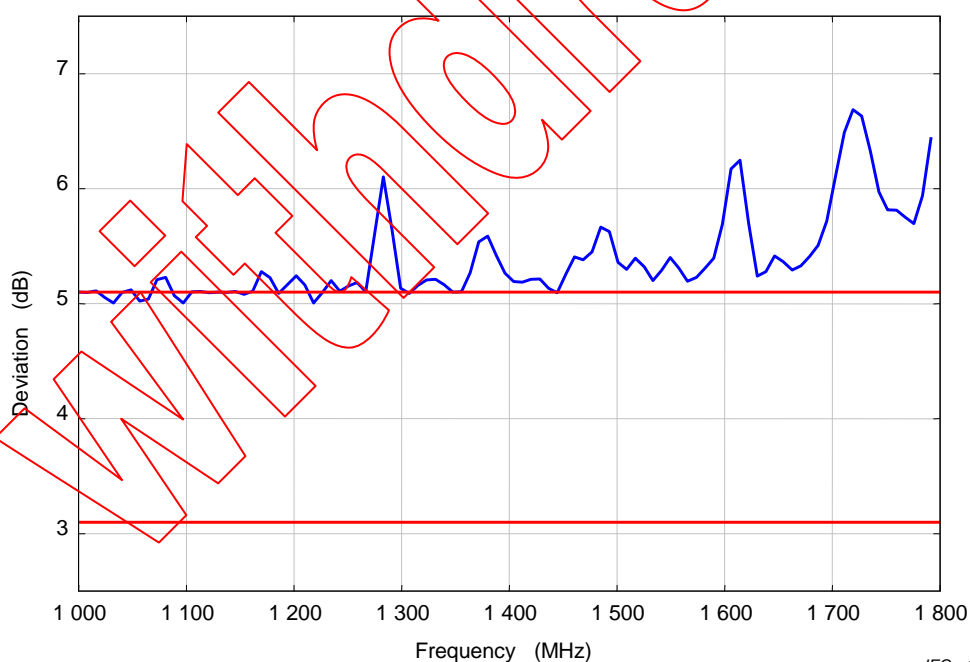
m-2) Record the new forward power delivered to the antenna;

m-3) Subtract the forward power measured in step m-2 from P_C . If the difference is between 3,1 dB and 5,1 dB, then the amplifier is not saturated and the test system is sufficient for testing. If the difference is less than 3,1 dB, then the amplifier is saturated and is not suitable for testing.

Some amplifiers show deviations of more than 5,1 dB without causing any problems during testing. That behaviour is caused by their special functional principle (above all travelling wave tube amplifiers). Figures 1 and 2 show some measurement results obtained from a semiconductor amplifier as well as from a TWT amplifier.

The text described in j-3, respectively m-3, unfortunately gives no clear answers on the usability of these amplifiers.

After discussion at the 20th meeting of SC 77B/WG 10 on October, 22 - 26, 2007, the experts of WG 10 unanimously expressed their opinion that j-3 and m-3 are to be interpreted such that amplifiers showing a deviation of more than 5,1 dB are suitable for testing. E.g. the amplifiers having a characteristic as shown in Figures 1 and 2 can be used to perform tests according to IEC 61000-4-3.



IEC 1342/08

Target field strength is 30 V/m.

Figure 1 – Deviation as defined in step j-3 for a 200 W TWT-amplifier

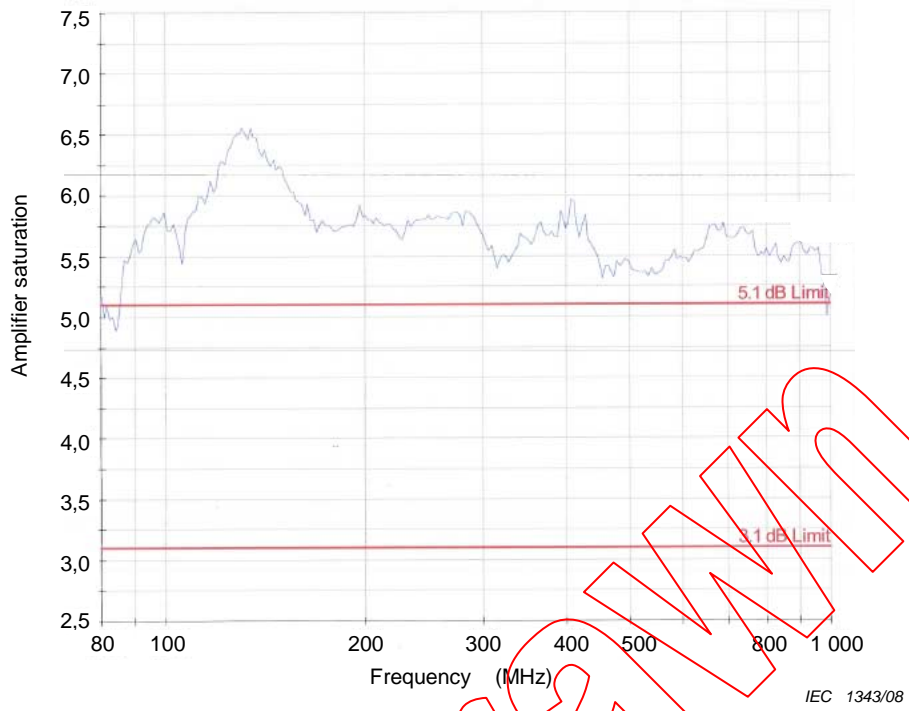


Figure 2 – Deviation as defined in step j-3 for a semiconductor amplifier

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMAGNETIC COMPATIBILITY (EMC) –**Part 4-3: Testing and measurement techniques –
Radiated, radio-frequency, electromagnetic field immunity test**

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International Standard IEC 61000-4-3 has been prepared by subcommittee 77B: High frequency phenomenon, of IEC technical committee 77: Electromagnetic compatibility.

It forms part 4-3 of IEC 61000. It has the status of a basic EMC publication in accordance with IEC Guide 107, *Electromagnetic compatibility – Guide to the drafting of electromagnetic compatibility publications*.

The test frequency range may be extended up to 6 GHz to take account of new services. The calibration of the field as well as the checking of power amplifier linearity of the immunity chain are specified.

This consolidated version of IEC 61000-4-3 consists of the third edition (2006) [documents 77B/485/FDIS and 77B/500/RVD] and its amendment 1 (2007) [documents 77B/546/FDIS and 77B/556/RVD].

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience.

It bears the edition number 3.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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