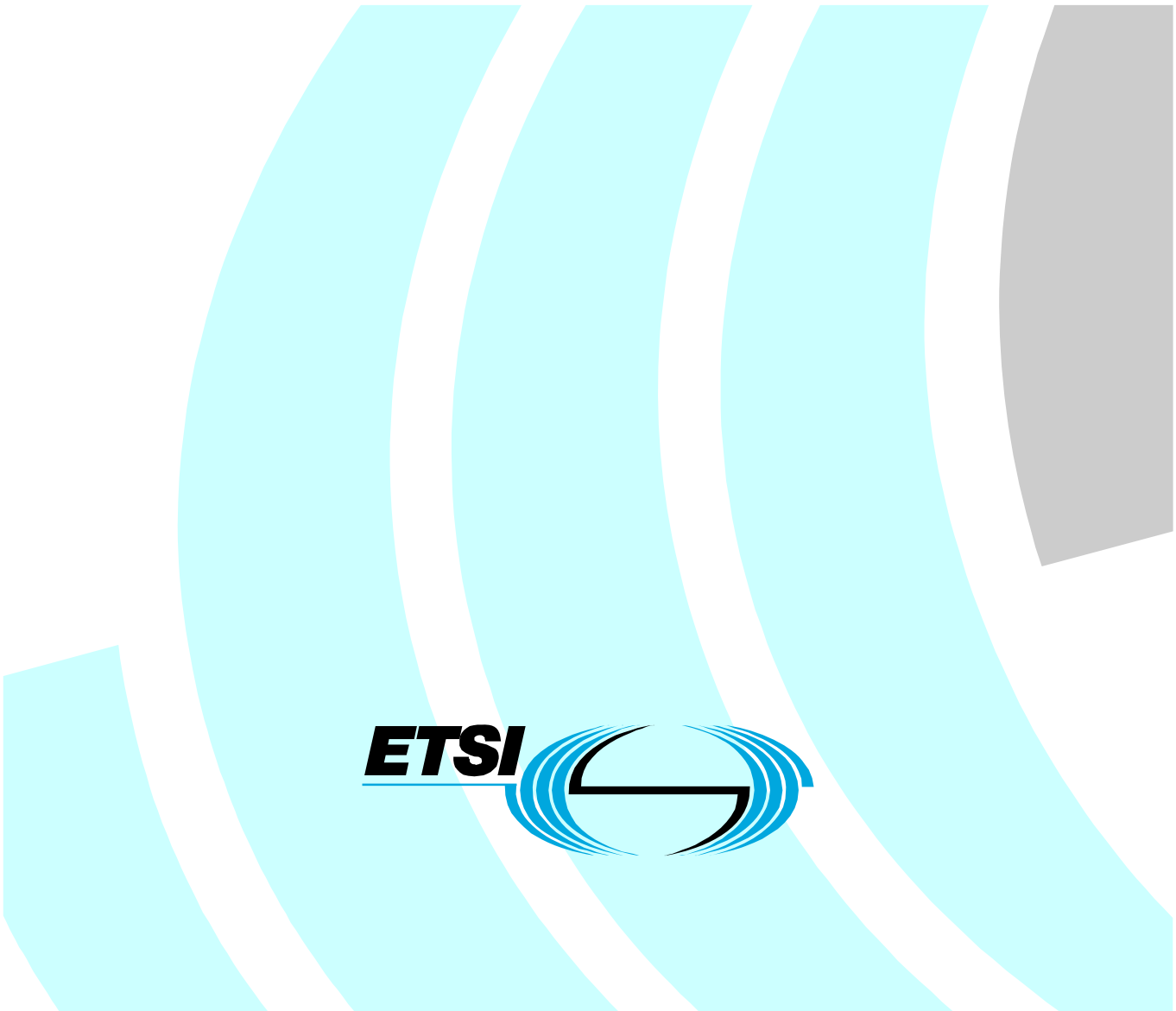
Draft ETSI EN 300 296-2 V1.2.1 (2008-07)

Harmonized European Standard (Telecommunications series)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment using integral antennas intended primarily for analogue speech; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive



Reference
REN/ERM-TGDMR-272-2

Keywords
analogue, mobile, PMR, radio, regulation, speech

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Contents

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Foreword

This Harmonized European Standard (Telecommunications series) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the Public Enquiry phase of the ETSI standards Two-step Approval Procedure.

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC (as amended) laying down a procedure for the provision of information in the field of technical standards and regulations [i.2].

The present document is intended to become a Harmonized Standard, the reference of which will be published in the Official Journal of the European Communities referencing the Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity ("the R&TTE Directive") [i.1].

Technical specifications relevant to Directive 1999/5/EC [i.1] are given in annex A.

The present document is part 2 of a multi-part deliverable covering the Land Mobile Service; Radio equipment using integral antennas intended primarily for analogue speech, as identified below:

Part 1: "Technical characteristics and methods of measurement";

Part 2: "Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive".

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	18 months after doa

Introduction

The present document is part of a set of standards developed by ETSI and is designed to fit in a modular structure to cover all radio and telecommunications terminal equipment within the scope of the R&TTE Directive [i.1]. The modular structure is shown in EG 201 399 [i.3].

1 Scope

The present document covers the minimum characteristics considered necessary in order to avoid harmful interference and to make acceptable use of the available frequencies.

The present document applies to equipment with integral antennas, used in angle modulation systems in the land mobile service, operating on radio frequencies between 30 MHz and 1 000 MHz, with channel separations of 12,5 kHz, 20 kHz and 25 kHz, and is intended primarily for analogue speech.

In the present document different requirements are given for the different radio frequency bands, channel separations, environmental conditions and types of equipment, where appropriate.

The present document is complementary to EN 300 086 [i.4], which covers radio equipment with an internal or external RF connector, for use in the land mobile service.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
  - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
  - for informative references.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

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NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

[1] ETSI EN 300 296-1 (V1.2.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment using integral antennas intended primarily for analogue speech; Part 1: Technical characteristics and methods of measurement".

[2] ETSI TR 100 028 (V1.4.1) (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

2.2 Informative references

The following referenced documents are not essential to the use of the ETSI deliverable but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

[i.1] Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications equipment and the mutual recognition of their conformity (R&TTE Directive).

[i.2] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations.

[i.3] ETSI EG 201 399 (V2.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive".

[i.4] ETSI EN 300 086: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment with an internal or external RF connector intended primarily for analogue speech".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in Directive 1999/5/EC [i.1] and EN 300 296-1 [1] apply.

3.2 Symbols

For the purposes of the present document, the symbols given in EN 300 296-1 [1] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 300 296-1 [1] apply.

4 Technical specifications

4.1 Environmental profile

The technical requirements of the present document apply under the environmental profile for operation of the equipment, which shall be determined by the environmental class of the equipment. The equipment shall comply with all the technical requirements of the present document at all times when operating within the boundary limits of the required operational environmental profile.

4.2 Transmitter requirements

4.2.1 Frequency error

4.2.1.1 Definition

The frequency error is defined in EN 300 296-1 [1], clause 7.1.1.

4.2.1.2 Limit

The frequency error shall not exceed the limits in EN 300 296-1 [1], table 1, clause 7.1.3.

4.2.1.3 Methods of measurement

The measurement as specified in EN 300 296-1 [1], clause 7.1.2, shall be carried out.

4.2.2 Effective radiated power

4.2.2.1 Definition

The effective radiated power is defined in EN 300 296-1 [1], clause 7.2.1.

4.2.2.2 Limit

The effective radiated power shall not exceed the limits in EN 300 296-1 [1], clause 7.2.3.

4.2.2.3 Methods of measurement

The measurement as specified in EN 300 296-1 [1], clause 7.2.2, shall be carried out.

4.2.3 Maximum permissible frequency deviation

4.2.3.1 Definition

The maximum permissible frequency deviation is defined in EN 300 296-1 [1], clause 7.3.1.

4.2.3.2 Limit

The maximum permissible frequency deviation shall not exceed the limits in EN 300 296-1 [1], clause 7.3.3.

4.2.3.3 Methods of measurement

The measurement as specified in EN 300 296-1 [1], clause 7.3.2, shall be carried out.

4.2.4 Adjacent and alternate channel power

4.2.4.1 Definition

The adjacent and alternate channel power is defined in EN 300 296-1 [1], clause 7.4.1.

4.2.4.2 Limit

The adjacent and alternate channel power shall not exceed the limits in EN 300 296-1 [1], clause 7.4.3.

4.2.4.3 Methods of measurement

The measurement as specified in EN 300 296-1 [1], clause 7.4.2, shall be carried out.

4.2.5 Radiated unwanted emissions in the spurious domain

4.2.5.1 Definition

The spurious emissions are defined in EN 300 296-1 [1], clause 7.5.1.

4.2.5.2 Limit

The spurious emissions shall not exceed the limits in EN 300 296-1 [1], clause 7.5.3.

4.2.5.3 Methods of measurement

The measurement as specified in EN 300 296-1 [1], clause 7.5.2, shall be carried out.

4.3 Receiver requirements

4.3.1 Average usable sensitivity (field strength, speech)

4.3.1.1 Definition

The average useable sensitivity (speech, field strength) is defined in EN 300 296-1 [1], clause 8.1.1.

4.3.1.2 Limit

The average useable sensitivity (speech, field strength) shall not exceed the limits in EN 300 296-1 [1], clause 8.1.3.

4.3.1.3 Method of measurement

The measurement as specified in EN 300 296-1 [1], clause 8.1.2, shall be carried out.

4.3.2 Co-channel rejection

4.3.2.1 Definition

The co-channel rejection is defined in EN 300 296-1 [1], clause 8.3.1.

4.3.2.2 Limit

The co-channel rejection shall not exceed the limits in EN 300 296-1 [1], clause 8.3.3.

4.3.2.3 Method of measurement

The measurement as specified in EN 300 296-1 [1], clause 8.3.2, shall be carried out.

4.3.3 Adjacent channel selectivity

4.3.3.1 Definition

The adjacent channel selectivity is defined in EN 300 296-1 [1], clause 8.4.1.

4.3.3.2 Limit

The adjacent channel selectivity shall not exceed the limits in EN 300 296-1 [1], clause 8.4.3.

4.3.3.3 Method of measurement

The measurement as specified in EN 300 296-1 [1], clause 8.4.2, shall be carried out.

4.3.4 Spurious response rejection

4.3.4.1 Definition

The spurious response rejection is defined in EN 300 296-1 [1], clause 8.5.1.

4.3.4.2 Limit

The spurious response rejection shall not exceed the limits in EN 300 296-1 [1], clause 8.5.3.

4.3.4.3 Method of measurement

The measurement as specified in EN 300 296-1 [1], clause 8.5.2, shall be carried out.

4.3.5 Intermodulation response rejection

4.3.5.1 Definition

The intermodulation response rejection is defined in EN 300 296-1 [1], clause 8.6.1.

4.3.5.2 Limit

The intermodulation response rejection shall not exceed the limits in EN 300 296-1 [1], clause 8.6.3.

4.3.5.3 Method of measurement

The measurement as specified in EN 300 296-1 [1], clause 8.6.2, shall be carried out.

4.3.6 Blocking or desensitization

4.3.6.1 Definition

The blocking or desensitization is defined in EN 300 296-1 [1], clause 8.7.1.

4.3.6.2 Limit

The blocking or desensitization shall not exceed the limits in EN 300 296-1 [1], clause 8.7.3.

4.3.6.3 Method of measurement

The measurement as specified in EN 300 296-1 [1], clause 8.7.2, shall be carried out.

4.3.7 Spurious radiations

4.3.7.1 Definition

The spurious radiations are defined in EN 300 296-1 [1], clause .8.2.1.

4.3.7.2 Limit

The spurious radiations shall not exceed the limits in EN 300 296-1 [1], clause 8.2.3.

4.3.7.3 Method of measurement

The measurement as specified in EN 300 296-1 [1], clause 8.2.2, shall be carried out.

5 Testing for compliance with technical requirements

5.1 Environmental conditions for testing

5.1.1 Normal and extreme test-conditions

Measurements shall be made under normal test conditions, and also, where stated, under extreme test conditions.

The test conditions and procedures shall be as specified in EN 300 296-1 [1], clauses 5.1, 5.3 and 5.4.

5.1.2 Test power source

The test power source shall meet the requirements of EN 300 296-1 [1], clause 5.2.

5.1.3 Choice of samples for test suites

Measurement shall be performed, according to the present document, on samples of equipment defined in EN 300 296-1 [1], clause 4.1.

5.2 Interpretation of the measurement results

The interpretation of the results recorded in a test report for the measurements described in the present document shall be as follows:

- the measured value related to the corresponding limit shall be used to decide whether an equipment meets the requirements of the present document;
- the value of the measurement uncertainty for the measurement of each parameter shall be included in the test report;
- the value of the measurement uncertainty shall be, for each measurement, equal to or lower than the figures given in clause 9, table 9, in EN 300 296-1 [1].

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with TR 100 028 [2] and shall correspond to an expansion factor (coverage factor) k = 1,96 or k = 2 (which provide confidence levels of respectively 95 % and 95,45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

The particular expansion factor used for the evaluation of the measurement uncertainty shall be stated.

The absolute measurement uncertainties are given in clause 9 in EN 300 296-1 [1].

5.3 Essential radio test suites

Essential test suites are referred to in annex III of R&TTE Directive [i.1].

5.3.1 Frequency error

The measurement as specified in EN 300 296-1 [1], clause 7.1.2, shall be carried out.

5.3.2 Effective radiated power

The measurement as specified in EN 300 296-1 [1], clause 7.2.2, shall be carried out.

5.3.3 Maximum frequency deviation

The measurement as specified in EN 300 296-1 [1], clause 7.3.2, shall be carried out.

5.3.4 Adjacent and alternate channel power

The measurement as specified in EN 300 296-1 [1], clause 7.4.2, shall be carried out.

5.3.5 Radiated unwanted emission in the spurious domain

The measurement as specified in EN 300 296-1 [1], clause 7.5.2, shall be carried out.

5.3.6 Spurious radiations

The measurement as specified in EN 300 296-1 [1], clause 8.2.2, shall be carried out.

5.4 Other test specifications

The following radio test suites shall be used to assess the performance of equipment.

5.4.1 Average usable sensitivity (speech, field strength)

The measurement as specified in EN 300 296-1 [1], clause 8.1.2, shall be carried out.

5.4.2 Co-channel rejection

The measurement as specified in EN 300 296-1 [1], clause 8.3.2, shall be carried out.

5.4.3 Adjacent channel selectivity

The measurement as specified in EN 300 296-1 [1], clause 8.4.2, shall be carried out.

5.4.4 Spurious response rejection

The measurement as specified in EN 300 296-1 [1], clause 8.5.2, shall be carried out.

5.4.5 Intermodulation response rejection

The measurement as specified in EN 300 296-1 [1], clause 8.6.2, shall be carried out.

5.4.6 Blocking or desensitization

The measurement as specified in EN 300 296-1 [1], clause 8.7.2, shall be carried out.

Annex A (normative): HS Requirements and conformance Test specifications Table (HS-RTT)

The HS Requirements and conformance Test specifications Table (HS-RTT) in table A.1 serves a number of purposes, as follows:

- it provides a statement of all the requirements in words and by cross reference to (a) specific clause(s) in the present document or to (a) specific clause(s) in (a) specific referenced document(s);
- it provides a statement of all the test procedures corresponding to those requirements by cross reference to (a) specific clause(s) in the present document or to (a) specific clause(s) in (a) specific referenced document(s);
- it qualifies each requirement to be either:
  - Unconditional: meaning that the requirement applies in all circumstances; or
  - Conditional: meaning that the requirement is dependent on the manufacturer having chosen to support optional functionality defined within the schedule;
- in the case of Conditional requirements, it associates the requirement with the particular optional service or functionality;
- it qualifies each test procedure to be either:
  - Essential: meaning that it is included with the Essential Radio Test Suite and therefore the requirement shall be demonstrated to be met in accordance with the referenced procedures;
  - Other: meaning that the test procedure is illustrative but other means of demonstrating compliance with the requirement are permitted.

Table A.1: HS Requirements and conformance Test specifications Table (HS-RTT)

Harmonized Standard EN 300 296-2 The following requirements and test specifications are relevant to the presumption of conformity under the article 3.2 of the R&TTE Directive						
Requirement			**Requirement Conditionality**		**Test Specification**	
No	**Description**	**Reference: Clause No**	**U/C**	**Condition**	**E/O**	**Reference: Clause No**
1	Transmitter frequency error	4.2.1	U		E	5.3.1
2	Transmitter effective radiated power	4.2.2	U		E	5.3.2
3	Transmitter maximum frequency deviation	4.2.3	U		E	5.3.3
4	Transmitter adjacent and alternate channels power	4.2.4	U		E	5.3.4
5	Transmitter radiated unwanted emissions in the spurious domain	4.2.5	U		E	5.3.5
6	Receiver spurious radiations	4.3.7	U		E	5.3.6
7	Receiver average useable sensitivity	4.3.1	C	Applies only to equipment using listen-before-transmit.	O	5.4.1

Harmonized Standard EN 300 296-2 The following requirements and test specifications are relevant to the presumption of conformity under the article 3.2 of the R&TTE Directive						
Requirement			**Requirement Conditionality**		**Test Specification**	
No	**Description**	**Reference: Clause No**	**U/C**	**Condition**	**E/O**	**Reference: Clause No**
8	Receiver co-channel rejection	4.3.2	C	Applies only to equipment using listen-before-transmit.	O	5.4.2
9	Receiver adjacent channel selectivity	4.3.3	C	Applies only to equipment using listen-before-transmit.	O	5.4.3
10	Receiver spurious response rejection	4.3.4	C	Applies only to equipment using listen-before-transmit.	O	5.4.4
11	Receiver inter-modulation response	4.3.5	C	Applies only to equipment using listen-before-transmit.	O	5.4.5
12	Receiver blocking or desensitization	4.3.6	C	Applies only to equipment using listen-before-transmit.	O	5.4.6

Key to columns:

Requirement:

No A unique identifier for one row of the table which may be used to identify a requirement or its test specification.

Description A textual reference to the requirement.

Clause Number Identification of clause(s) defining the requirement in the present document unless another document is referenced explicitly.

Requirement Conditionality:

U/C Indicates whether the requirement is to be *unconditionally* applicable (U) or is *conditional* upon the manufacturers claimed functionality of the equipment (C).

Condition Explains the conditions when the requirement shall or shall not be applicable for a technical requirement which is classified "conditional".

Test Specification:

E/O Indicates whether the test specification forms part of the Essential Radio Test Suite (E) or whether it is one of the Other Test Suite (O).

NOTE: All tests whether "E" or "O" are relevant to the requirements. Rows designated "E" collectively make up the Essential Radio Test Suite; those designated "O" make up the Other Test Suite; for those designated "X" there is no test specified corresponding to the requirement. The completion of all tests classified "E" as specified with satisfactory outcomes is a necessary condition for a presumption of conformity. Compliance with requirements associated with tests classified "O" or "X" is a necessary condition for presumption of conformity, although conformance with the requirement may be claimed by an equivalent test or by manufacturer's assertion supported by appropriate entries in the technical construction file.

Clause Number Identification of clause(s) defining the test specification in the present document unless another document is referenced explicitly. Where no test is specified (that is, where the previous field is "X") this field remains blank.

Annex B (informative): The EN title in the official languages

Language	EN title
Bulgarian	
Czech	
Danish	
Dutch	
English	Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment using integral antennas intended primarily for analogue speech; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive
Estonian	
Finnish	
French	
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Hungarian	
Icelandic	
Italian	
Latvian	
Lithuanian	
Maltese	
Norwegian	
Polish	
Portuguese	
Romanian	
Slovak	
Slovenian	
Spanish	
Swedish	

History

Document history		
Edition 1	December 1994	Publication as ETS 300 296
Amendment 1	March 1997	Amendment 1 to 1st Edition of ETS 300 296
V1.1.1	March 2001	Publication
V1.2.1	July 2008	Public Enquiry PE 20081122: 2008-07-25 to 2008-11-24

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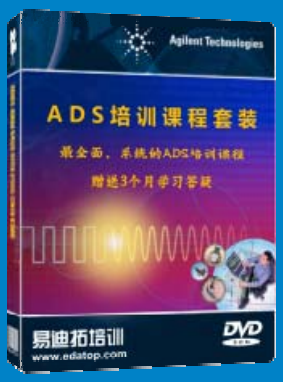

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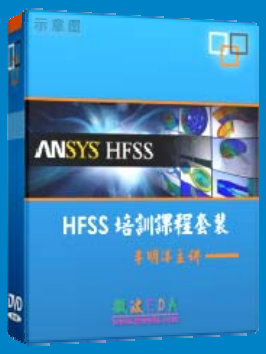

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课程网址：http://www.edatop.com/peixun/cst/24.html

HFSS 天线设计培训课程套装

套装包含 6 门视频课程和 1 本图书，课程从基础讲起，内容由浅入深，理论介绍和实际操作讲解相结合，全面系统的讲解了 HFSS 天线设计的全过程。是国内最全面、最专业的 HFSS 天线设计课程，可以帮助您快速学习掌握如何使用 HFSS 设计天线，让天线设计不再难…

课程网址：http://www.edatop.com/peixun/hfss/122.html

13.56MHz NFC/RFID 线圈天线设计培训课程套装

套装包含 4 门视频培训课程，培训将 13.56MHz 线圈天线设计原理和仿真设计实践相结合，全面系统地讲解了 13.56MHz 线圈天线的工作原理、设计方法、设计考量以及使用 HFSS 和 CST 仿真分析线圈天线的具体操作，同时还介绍了 13.56MHz 线圈天线匹配电路的设计和调试。通过该套课程的学习，可以帮助您快速学习掌握 13.56MHz 线圈天线及其匹配电路的原理、设计和调试…

详情浏览：http://www.edatop.com/peixun/antenna/116.html

我们的课程优势：

※ 成立于 2004 年，10 多年丰富的行业经验，

※ 一直致力并专注于微波射频和天线设计工程师的培养，更了解该行业对人才的要求

※ 经验丰富的一线资深工程师讲授，结合实际工程案例，直观、实用、易学

联系我们：

※ 易迪拓培训官网：http://www.edatop.com

※ 微波 EDA 网：http://www.mweda.com

※ 官方淘宝店：http://shop36920890.taobao.com