

Final draft **ETSI EN 301 357-2** V1.3.1 (2006-05)

Candidate Harmonized European Standard (Telecommunications series)

**Electromagnetic compatibility
and Radio spectrum Matters (ERM);
Cordless audio devices in the range 25 MHz to 2 000 MHz;
Part 2: Harmonized EN covering essential requirements
of article 3.2 of the R&TTE Directive**



Reference

REN/ERM-TG17WG3-007-2

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Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This Candidate 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 Vote 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.

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 [1] 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").

Technical specifications relevant to Directive 1999/5/EC are given in annex

The present document is part 2, of a multi-part deliverable covering Cordless audio devices in the range 25 MHz to 2 000 MHz, as identified below:

Part 1: "Technical characteristics and test methods";

Part 2: "Harmonized EN covering essential requirements of 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. The modular structure is shown in EG 201 399.

1 Scope

The present document covers Cordless audio devices considered by definition short-range devices.

- The present document applies to cordless audio consumer radio microphones, in ear monitoring equipment using either 300 kHz bandwidth analogue modulation; or
- 300 kHz, 600 kHz; or
- 1200 kHz digital FDMA modulation; and
- Band II LPD (low power devices) using 200 kHz bandwidth and analogue modulation.

The frequency bands for this equipment may differ from country to country as specified in their national regulations. All equipment is intended to be used with integral antennas.

The types of equipment covered by the present document are as follows:

- cordless headphones;
- cordless loudspeakers;
- consumer radio microphones;
- in-ear monitoring;
- in-vehicle cordless;
- personal cordless;
- broadband multi channel audio systems;
- Band II LPD.

The present document is intended to cover the provisions of Directive 1999/5/EC [1] (R&TTE Directive), article 3.2, which states that "... radio equipment shall be so constructed that it effectively uses the spectrum allocated to terrestrial/space radio communications and orbital resources so as to avoid harmful interference".

In addition to the present document, other ENs that specify technical requirements in respect of essential requirements under other parts of Article 3 of the R&TTE Directive may apply to equipment within the scope of the present document.

NOTE: A list of such ENs is included on the web site <http://www.newapproach.org>.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- 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.
- For a non-specific reference, the latest version applies.

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

- [1] 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 (R&TTE Directive).

- [2] ETSI EN 301 357-1 (V1.3.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Cordless audio devices in the range 25 MHz to 2 000 MHz; Part 1: Technical characteristics and test methods".
- [3] ETSI EN 301 489-1 (V1.6.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements".
- [4] ETSI TR 100 028 (all parts - V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

artificial antenna: tuned reduced-radiating dummy load equal to the nominal impedance specified by the applicant

integral antenna: antenna, with or without a connector, designed as, and declared as by the manufacturer, an indispensable part of the equipment

integral antenna for Band II LPD only: permanent fixed antenna, which may be built-in, designed as an indispensable part of the equipment

necessary bandwidth: is, for a given class of emission, the width of the frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions

NOTE: However, the necessary bandwidths of most digital modulation formats are presently not referred to ITU-R Recommendations of SM series.

port: any connection point on or within the Equipment Under Test (EUT) intended for the connection of cables to or from that equipment

radiated measurements: measurements that involve the absolute measurement of a radiated electromagnetic field

spurious emission: emission on a frequency or frequencies which are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products and frequency conversion products.

3.2 Symbols

For the purposes of the present document, the following symbols apply:

μW	micro Watt
Ω	ohm
dBc	dB relative to the carrier level
E	field strength
GHz	Giga Hertz
kHz	kilo Hertz
MHz	Mega Hertz
mW	milli Watt
nW	nano Watt

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

EUT	Equipment Under Test
FDMA	Frequency Division Multiple Access
LPD	Low Power Device

4 Technical requirements 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 declared by the supplier. The equipment shall comply with all the technical requirements of the present document at all times when operating within the boundary limits of the declared operational environmental profile.

4.2 Conformance requirements

4.2.1 Transmitter requirements for Band II LPD

4.2.1.1 Basic requirements for Band II LPB

The Band II LPD shall meet the basic requirements according to EN 301 357-1 [2], clause 8.1.

4.2.1.2 Effective radiated power, occupied bandwidth, channel spacing, frequency error and transmitter timeout

The effective radiated power, occupied bandwidth, channel spacing, frequency error and transmitter timeout, as defined in EN 301 357-1 [2], clause 8.2.1, shall not exceed the limits in EN 301 357-1 [2], clause 8.2.1.4.

4.2.1.3 Radiated spurious emissions

The radiated spurious emissions as defined in EN 301 357-1 [2], clause 8.2.1.6, shall not exceed the limits in EN 301 357-1 [2], clause 8.2.1.6.3.

NOTE: For combined equipment such as Band II LPD implemented in cellular phones or in other telecommunication equipment falling under the R&TTE Directive, the ERP measurement of spurious emissions may be made according to the matching EN standards for the main equipment. Refer to EN 301 357-1 [2], clause 8.2.1.6.4.

4.2.2 Frequency error

The frequency error, as defined in EN 301 357-1 [2], clause 8.3.1, shall not exceed the limits in EN 301 357-1 [2], clause 8.3.3, table 3.

This clause does not apply to Band II LPD.

4.2.3 Carrier power

The carrier power, as defined in EN 301 357-1 [2], clause 8.4.1, shall not exceed the limits in EN 301 357-1 [2], clause 8.4.3, table 5.

This clause does not apply to Band II LPD.

4.2.4 Channel bandwidth

The channel bandwidth, as defined in EN 301 357-1 [2], clause 8.5.1, shall not exceed the limits in EN 301 357-1 [2], clause 8.5.4, table 7, figures 3 and 4.

This clause does not apply to Band II LPD.

4.2.5 Spurious emissions and cabinet radiation

The spurious emissions and cabinet radiation, as defined in EN 301 357-1 [2], clause 8.6, shall not exceed the limits in EN 301 357-1 [2], clause 8.6.3, table 9.

This clause does not apply to Band II LPD.

4.2.6 Cordless audio transmitter shutoff

The transmitter shutoff time, as defined in EN 301 357-1 [2], clause 8.7, shall not exceed the limits in EN 301 357-1 [2], clause 8.7.3.

This clause does not apply to Band II LPD.

4.2.7 Receiver spurious emissions and cabinet radiation

The spurious emissions and cabinet radiation, as defined in EN 301 357-1 [2], clause 9.1, shall not exceed the limits in EN 301 357-1 [2], clause 9.1.5.

This clause does apply to cordless audio devices with integrated receiver and to combined equipments as Band II LPD integrated into a receiver.

5 Testing for compliance with technical requirements

5.1 Environmental conditions for testing

Tests defined in the present document shall be carried out at representative points within the boundary limits of the declared operational environmental profile.

Where technical performance varies subject to environmental conditions, tests shall be carried out under a sufficient variety of environmental conditions (within the boundary limits of the declared operational environmental profile) to give confidence of compliance for the affected technical requirements.

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 will 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 recorded value of the measurement uncertainty shall be, for each measurement, equal to or lower than the figures in table 5.1.

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with TR 100 028 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 characterising the actual measurement uncertainties are normal (Gaussian)).

Table 5.1 is based on such expansion factors.

Table 5.1: Maximum measurement uncertainty

Parameter	Uncertainty
Radiated spurious emissions	< ± 6 dB
Spurious emissions and cabinet radiation	< ± 6 dB
Receiver spurious emissions and cabinet radiation	< ± 6 dB

5.3 Essential radio test suites

5.3.1 Transmitter test suites for Band II LPD

All tests specified in EN 301 357-1 [2], clause 8.2 shall be carried out for Band II LPD.

These tests cover the following transmitter test suites for Band II LPD.

Effective radiated power, occupied bandwidth, channel spacing, frequency error, transmitter timeout and radiated spurious emissions.

5.3.2 Frequency error

The test specified in EN 301 357-1 [2], clause 8.3 shall be carried out for general cordless audio devices.

5.3.3 Carrier power

The test specified in EN 301 357-1 [2], clause 8.4 shall be carried out for general cordless audio devices.

5.3.4 Channel bandwidth

The test specified in EN 301 357-1 [2], clause 8.5 shall be carried out for general cordless audio devices.

5.3.5 Radiated spurious emissions and cabinet radiation

The test specified in EN 301 357-1 [2], clause 8.6 shall be carried out for general cordless audio devices.

5.3.6 Cordless audio transmitter shutoff

The test specified in EN 301 357-1 [2], clause 8.7 shall be carried out for general cordless audio devices.

5.3.7 Receiver spurious emissions and cabinet radiation

The test specified in EN 301 357-1 [2], clause 9.1 shall be carried out for general cordless audio devices.

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

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the HS-RTT proforma in this annex so that it can be used for its intended purposes and may further publish the completed HS-RTT.
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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 essential requirements in words and by cross reference to a specific clause in the present document or to a specific clause in a specific referenced document;
- it provides a statement of all the test procedures corresponding to those essential requirements by cross reference to specific clause(s) in the present document or to a specific clause(s) in 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.
- when the schedule is completed in respect of a particular equipment including the testing outcomes, including a completed version of table E.1 it provides a means to assert the "presumption of conformity" with the HS.

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

Harmonized Standard EN 301 357-2						
The following essential requirements and test specifications are relevant to the presumption of conformity under Article 3.2 of the R&TTE Directive						
Essential Requirement			Requirement Conditionality		Test Specification	
No	Description	Reference: Clause No	U/C	Condition	E/O	Reference: Clause No
1	Transmitter requirements for Band II LPD	4.2.1	U	For Band II LPD and combined devices.	E	5.3.1
2	Frequency error	4.2.2	U	For cordless audio devices in the range 25 MHz to 2 000 MHz	E	5.3.2
3	Carrier power	4.2.3	U	For cordless audio devices in the range 25 MHz to 2 000 MHz	E	5.3.3
4	Channel bandwidth	4.2.4	U	For cordless audio devices in the range 25 MHz to 2 000 MHz	E	5.3.4
5	Spurious emissions and cabinet radiation	4.2.5	U	For cordless audio devices in the range 25 MHz to 2 000 MHz	E	5.3.5
6	Cordless audio transmitter shutoff	4.2.6		For cordless audio devices in the range 25 MHz to 2 000 MHz	E	5.3.6
7	Receiver spurious emissions and cabinet radiation	4.2.7	U	For cordless audio devices in the range 25 MHz to 2 000 MHz	E	5.3.7

Key to columns:**Essential 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.

Reference: Clause Number

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

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. All tests classified "E" shall be performed as specified with satisfactory outcomes is a necessary condition for a presumption of conformity.

Reference:

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
Czech	Elektromagnetická kompatibilita a rádiové spektrum (ERM) – Bezšňůrová zvuková zařízení v rozsahu 25 MHz až 2 000 MHz – Část 2: Harmonizovaná EN pokrývající základní požadavky článku 3.2 Směrnice R&TTE
Danish	
Dutch	Elektromagnetische compatibiliteit en radiospectrumkwesties (ERM); Draadloze audioapparaten in het gebied van 25 MHz tot 2000 MHz; Radiomicrofoons en in-het-oor monitoring systemen voor consumentengebruik, werkend in de geharmoniseerde CEPT-band 863 MHz tot 865 MHz; Deel 2: Geharmoniseerde EN onder artikel 3.2 van de R&TTE Richtlijn
English	Electromagnetic compatibility and Radio spectrum Matters (ERM); Cordless audio devices in the range 25 MHz to 2 000 MHz; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive.
Estonian	Elektromagnetilise ühilduvuse ja raadiospektri küsimused (ERM); Raadiosagedusalas 25 MHz kuni 2000 MHz töötavad juhtmeta audioseadmed; Osa 2: Harmoneeritud EN R&TTE direktiivi artikli 3.2 põhinõuete alusel
Finnish	Sähkömagneettinen yhteensopivuus ja radiospektriasiat (ERM); Taajuusalueella 25 MHz - 2000 MHz toimivat langattomat audiolaitteet; Osa 2: Yhdenmukaistettu standardi (EN), joka kattaa R&TTE-direktiivin artiklan 3.2 mukaiset olennaiset vaatimukset
French	Télécommunications - Compatibilité électromagnétique et spectre radioélectrique (ERM) - Appareils à faible portée (SRD) - Caractéristiques techniques pour les équipements SDR utilisant la bande de technologie ultra large (UWB) - Analyse des matériaux de construction et classification des applications opérant dans la bande de fréquence de 2,2 GHz à 8 GHz. Partie 2 : EN harmonisée couvrant l'article 3.2 de la Directive R&TTE
German	
Greek	Ηλεκτρομαγνητική Συμβατότητα και Θέματα Ραδιοφάσματος (ERM) – Ακόρδονες συσκευές ακουστικών συχνοτήτων στην περιοχή 25 MHz ως 2 000 MHz – Καταναλωτικά ραδιομικρόφωνα και ενδοωτικά συστήματα παρακολούθησης που λειτουργούν στην εναρμονισμένη κατά CEPT ζώνη 863 MHz ως 865 MHz – Μέρος 2: Εναρμονισμένο EN για την κάλυψη του άρθρου 3.2 της Οδηγίας R&TTE
Hungarian	
Icelandic	Þættir sem varða rafsegulsviðssamhæfi og fjarskiptatíðni (ERM); Hliðræn snúrulaus víðbandshljómtæki sem búin eru innbyggðum loftnetum og starfa á tíðnisviðinu 25 MHz til 2000 MHz; 2. hluti: Samræmdur Evrópustaðall skv. 2. mgr. 3. gr. í tilskipun 1999/5/EC um fjarskiptabúnað og endabúnað til fjarskipta
Italian	
Latvian	"Elektromagnētiskā saderība un radiofrekvenču spektra jautājumi (ERM). Bezvadu skaņas iekārtas diapazonā no 25 MHz līdz 2000 MHz. 2.daļa: Harmonizēts Eiropas standarts (EN), kas atbilst R&TTE Direktīvas 3.2.punktam"
Lithuanian	Elektromagnetinio suderinamumo ir radijo dažnių spektro dalykai. Belaidžiai garsiniai įtaisai, veikiančys nuo 25 MHz iki 2 000 MHz dažnių juostoje. 2 dalis. Darnusis Europos standartas, apimantis esminius 1999/5/EC* direktyvos 3.2 straipsnio reikalavimus
Maltese	Kompatibilità elettromanjetika u materji relatati ma' spettru radjofoniku (ERM); Apparati awdjo bla wajers fil-medda 25 MHz sa 2 000 MHz; Parti 2: EN armonizzata taht l-artiklu 3.2 tad-Direttiva R&TTE
Norwegian	Elektromagnetisk kompatibilitet og Radiospektrum spørsmål (ERM); Snorløst lydutstyr i området 25 MHz til 2000 MHz; Del2: Harmonisert EN som dekker de grunnleggende krav i R&TTE-direktivets erikkel 3.2
Polish	
Portuguese	
Slovak	Elektromagnetická kompatibilita a záležitosti rádiového spektra (ERM). Bezšňůrové zariadenia na prenos zvuku v rozsahu od 25 MHz do 2 000 MHz. Časť 2: Harmonizovaná EN vzťahujúca sa na základné požiadavky podľa článku 3.2 smernice R&TTE
Slovenian	Elektromagnetna združljivost in zadeve v zvezi z radijskim spektrom (ERM) – Brezvrvične avdio naprave, delujoče v območju od 25 MHz do 2000 MHz – 2. del: Harmonizirani EN, ki zajema bistvene zahteve člana 3.2 direktive R&TTE
Spanish	
Swedish	Elektromagnetisk kompatibilitet och radiospektrumfrågor (ERM); Sladdlösa audioapparater i området 25 MHz till 2000 MHz; Del 2: Harmoniserad EN omfattande väsentliga krav enligt artikel 3.2 i R&TTE-direktivet

Annex C (informative): Bibliography

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

History

Document history				
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V1.3.1	May 2006	Vote	V 20060721:	2006-05-22 to 2006-07-21

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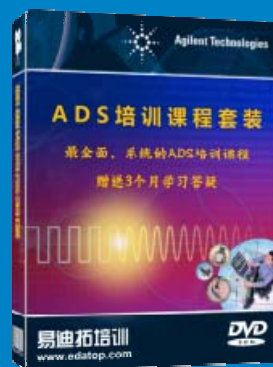
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该套装是迄今国内最全面、最权威的 ADS 培训教程,共包含 10 门 ADS 学习培训课程。课程是由具有多年 ADS 使用经验的微波射频与通信系统设计领域资深专家讲解,并多结合设计实例,由浅入深、详细而又全面地讲解了 ADS 在微波射频电路设计、通信系统设计和电磁仿真设计方面的内容。能让您在最短的时间内学会使用 ADS,迅速提升个人技术能力,把 ADS 真正应用到实际研发工作中去,成为 ADS 设计专家...



课程网址: <http://www.edatop.com/peixun/ads/13.html>



HFSS 学习培训课程套装

该套课程套装包含了本站全部 HFSS 培训课程,是迄今国内最全面、最专业的 HFSS 培训教程套装,可以帮助您从零开始,全面深入学习 HFSS 的各项功能和在多个方面的工程应用。购买套装,更可超值赠送 3 个月免费学习答疑,随时解答您学习过程中遇到的棘手问题,让您的 HFSS 学习更加轻松顺畅...

课程网址: <http://www.edatop.com/peixun/hfss/11.html>

CST 学习培训课程套装

该培训套装由易迪拓培训联合微波 EDA 网共同推出,是最全面、系统、专业的 CST 微波工作室培训课程套装,所有课程都由经验丰富的专家授课,视频教学,可以帮助您从零开始,全面系统地学习 CST 微波工作的各项功能及其在微波射频、天线设计等领域的设计应用。且购买该套装,还可超值赠送 3 个月免费学习答疑...

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>