



**VHF air-ground Digital Link (VDL) Mode 4 radio equipment;  
Technical characteristics and methods of measurement  
for ground-based equipment;  
Part 5: Harmonized EN covering the essential requirements of  
article 3.2 of the R&TTE Directive**

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Reference

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## Foreword

This draft Harmonized European Standard (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI standards EN Approval Procedure.

The present document has been produced by ETSI in response to mandate M/405 from the European Commission issued under Directive 98/34/EC [i.1] as amended by Directive 98/48/EC [i.2].

The title and reference to the present document are intended to be included in the publication in the Official Journal of the European Union of titles and references of Harmonized Standard under the Directive 1999/5/EC [i.3].

The requirements relevant to Directive 1999/5/EC [i.3] are summarized in annex A.

The present document provides the technical procedures and limits for compliance with article 3.2 of the R&TTE directive for the ground equipment only. The present document is part 5 of a multi-part deliverable covering the VHF air-ground Digital Link (VDL) Mode 4 radio equipment; Technical characteristics and methods of measurement for ground-based equipment, as identified below:

- Part 1: "EN for ground equipment";
- Part 2: "General description and data link layer";
- Part 3: "Additional broadcast aspects";
- Part 4: "Point-to-point functions";
- Part 5: " Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive ".**

<b>Proposed national transposition dates</b>	
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

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## Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**may not**", "**need**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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## 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.3]. The modular structure is shown in ETSI EG 201 399 [i.4].

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# 1 Scope

The present document applies to Very High Frequency (VHF) Digital Link (VDL) Mode 4 ground-based radio transmitters and receivers for air-ground communications operating in the VHF band, using Gaussian-filtered Frequency Shift Keying (GFSK) Modulation with 25 kHz channel spacing and capable of tuning to any of the 25 kHz channels from 112,000 MHz to 136,975 MHz as defined in ICAO VHF Digital Link (VDL) Standards and Recommended Practices (SARPs) [i.5].

Manufacturers should note that in future the tuning range for the ground transceivers may also cover any 25 kHz channel from 108,000 MHz to 111,975 MHz.

The present document is intended to cover the provisions of Directive 1999/5/EC [i.3] (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 [i.3] 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>.

Compliance with relevant aviation regulations may also be required before equipment within the scope of the present document can enter into service.

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## 2 References

### 2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

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

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

The following referenced documents are necessary for the application of the present document.

- [1] ETSI EN 301 842-1 (V1.4.0) (12-2014): "VHF air-ground Digital Link (VDL) Mode 4 radio equipment; Technical characteristics and methods of measurement for ground-based equipment; Part 1: EN for ground equipment".
- [2] ETSI EN 300 113-1 (V1.7.1) (11-2011): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Land mobile service; Radio equipment intended for the transmission of data (and/or speech) using constant or non-constant envelope modulation and having an antenna connector; Part 1: Technical characteristics and methods of measurement".

### 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

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

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] 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 and of rules on Information Society services.
- [i.2] Directive 98/48/EC of the European Parliament and of the Council of 20 July 1998 amending Directive 98/34/EC laying down a procedure for the provision of information in the field of technical standards and regulations.
- [i.3] 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).
- [i.4] ETSI EG 201 399: "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of Harmonized Standards for application under the R&TTE Directive".
- [i.5] ICAO Annex 10 to the Convention on International Civil Aviation: "Aeronautical Telecommunications, Volume III: Communication Systems, Part I: Digital Data Communication Systems, Chapter 6", inc. Amendment 88-A (applicable from 14/11/2013).
- [i.6] ISO/IEC 7498-1 (1994): "Information technology - Open Systems Interconnection - Basic Reference Model: The Basic Model".
- [i.7] ISO/IEC 10731 (1994): "Information technology - Open Systems Interconnection - Basic Reference Model - Conventions for the definition of OSI services".
- [i.8] ETSI TR 100 028 (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".
- [i.9] ETSI TR 100 028-2 (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics Part 2".
- [i.10] ETSI EN 301 842 (all parts): "VHF air-ground Digital Link (VDL) Mode 4 radio equipment; Technical characteristics and methods of measurement for ground-based equipment".

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## 3 Definitions and abbreviations

### 3.1 Definitions

#### 3.1.1 Basic reference model definitions

The present document is based on the concepts developed in the open systems interconnect basic reference model and makes use of the following terms defined in ISO/IEC 7498-1 [i.6]:

- layer,
- sublayer,
- entity,
- service,
- service access point,
- service data unit,
- physical layer,
- data link layer.



### 3.1.2 Service conventions definitions

The present document makes use of the following terms defined in ISO/IEC 10731 [i.7]:

- service provider,
- service user,
- service primitive,
- request,
- indication,
- confirm.

### 3.1.3 General definitions

For the purposes of the present document, the terms and definitions given in the R&TTE Directive [i.3] and the following apply:

**adjacent channel power:** amount of the modulated RF signal power which falls within a given adjacent channel

NOTE: Adjacent channel power includes discrete spurious, signal sidebands, and noise density (including phase noise) at the transmitter output.

**Automatic Dependent Surveillance-Broadcast (ADS-B):** surveillance application transmitting parameters, such as position, track and ground speed, via a broadcast mode data link for use by any air and ground users requiring it

NOTE: ADS-B is a surveillance service based on aircraft self-determination of position/velocity/time and automatic, periodic or random, broadcast of this information along with auxiliary data such as aircraft identity (ID), communications control parameters, etc. ADS-B is intended to support multiple high-level applications and associated services such as cockpit display of traffic information, traffic alert and collision avoidance functionality, enhanced traffic management in the air and on the ground, search and rescue support and others.

**Bit Error Rate (BER):** ratio between the number of erroneous bits received and the total number of bits received

**data rate:** maximum amount of data that can be transmitted in a specified amount of time, typically expressed as bits per second

NOTE: The nominal data rate for VDL Mode 4 is 19 200 bits/s.

**environmental profile:** range of environmental conditions under which equipment within the scope of the present document is required to comply with the provisions of the present document

**ground base station:** aeronautical station equipment, in the aeronautical mobile service, for use with an external antenna and intended for use at a fixed location

**integral antenna equipment:** radio communications equipment with an antenna integrated into the equipment without the use of an external connector and considered to be part of the equipment

NOTE: An integral antenna may be internal or external to the equipment. In equipment of this type, a 50  $\Omega$  RF connection point is provided for test purposes.

**non-integral antenna equipment:** radio communications equipment with a connector intended for connection to an antenna

**reference signal level:** signal level used in the receiver performance specifications except otherwise stated

**station:** VDL Mode 4 Specific Services (VSS)-capable entity

NOTE: A station may be either a mobile station or a ground station. A station is a physical entity that transmits and receives bursts over the RF interface (either A/G or A/A) and comprises, at a minimum: a physical layer, media access control sublayer, and a unique VSS address. A station which is also a DLS station has the same address.

**VDL Mode 4:** VHF data link using a Gaussian Filtered Frequency Shift Keying modulation scheme and self-organizing time division multiple access

**VDL Mode 4 station:** physical entity that transmits and receives VDL Mode 4 bursts over the RF interface (either A/G or A/A) and comprises, as a minimum: a physical layer, Media Access Control sublayer and a VSS sublayer

NOTE: A VDL Mode 4 station may either be a mobile VDL Mode 4 station or a ground VDL Mode 4 station.

**VDL Station:** VDL-capable entity that transmits and receives VDL bursts over the RF interface (either A/G or A/A) and comprises, as a minimum: a physical layer, Media Access Control sublayer and a VSS sublayer

NOTE: A station may either be a mobile station or a ground station. A station is a physical entity that transmits and receives frames over the air/ground (A/G) interface and comprises, at a minimum: a physical layer, media access control sublayer, and a unique DLS address. The particular initiating process (i.e. DLE or LME) in the station cannot be determined by the source DLS address. The particular destination process cannot be determined by the destination DLS address. These can be determined only by the context of these frames as well as the current operational state of the DLEs.

**VDL System:** VDL-capable entity comprising one or more stations and the associated VDL management entity

NOTE: A system may either be a mobile system or a ground system.

## 3.2 Abbreviations

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

A/A	Air-to-Air
A/G	Air/Ground
ADS-B	Automatic Dependent Surveillance-Broadcast
BER	Bit Error Rate
DLE	Data Link Entity
DLS	Data Link Service
GFSK	Gaussian Filtered Frequency Shift Keying
ICAO	International Civil Aviation Organization
ID	IDentity
IPR	Intellectual Property Rights
ISO	International Organization for Standardization
LME	Link Management Entity
R&TTE	Radio equipment and Telecommunications Terminal Equipment
RF	Radio Frequency
SARPs	Standards And Recommended Practices
VDL	VHF Digital Link
VHF	Very High Frequency
VSS	VDL Mode 4 Specific Services

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## 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 Receiver requirements

#### 4.2.1.0 Reference Signal

The reference signal level applied at the receiver input for all the receiver requirements below described, unless otherwise stated, shall be as specified in clause 6.1.3 of ETSI EN 301 842-1 [1].

#### 4.2.1.1 Sensitivity

##### 4.2.1.1.1 Definition

The radio receiver sensitivity is defined as the power level at the receiver input at which the Bit Error Ratio (BER) is as specified in clause 6.1.2 of ETSI EN 301 842-1 [1].

##### 4.2.1.1.2 Limits

The sensitivity shall be as specified in ETSI EN 301 842-1 [1], clause 6.1.4.

#### 4.2.1.2 Adjacent Channel Rejection

##### 4.2.1.2.1 Definition

The adjacent channel rejection is a measure of the capability of the receiver to receive a wanted modulated signal without exceeding a given degradation due to the presence of an unwanted signal which differs in frequency from the wanted signal by an amount equal to the adjacent channel separation for which the equipment is intended.

##### 4.2.1.2.2 Limits

The adjacent channel rejection shall be as specified in ETSI EN 301 842-1 [1], clause 6.1.5.

#### 4.2.1.3 Co-channel interference

##### 4.2.1.3.1 Definition

The level of Co-channel interference is a measure of the capability of the receiver to receive a wanted signal without exceeding a given degradation due to the presence of an unwanted modulated signal at the same carrier frequency.

##### 4.2.1.3.2 Limits

The co-channel interference level shall be as specified in ETSI EN 301 842-1 [1], clause 6.1.12.

#### 4.2.1.4 Conducted spurious emission

##### 4.2.1.4.1 Definition

Conducted spurious emissions from the receiver are signals at any frequency, emitted from the antenna port.

##### 4.2.1.4.2 Limits

The conducted spurious emission - measured by its power level at the antenna connector - shall be as specified in ETSI EN 301 842-1 [1], clause 6.1.13.

#### 4.2.1.5 In-band Intermodulation

##### 4.2.1.5.1 Definition

In-band intermodulation refers to the BER performance which shall be achieved in the presence of two interfering signals, displaced in frequency, from the desired signal.

##### 4.2.1.5.2 Limits

The in-band intermodulation shall be as specified in ETSI EN 301 842-1 [1], clause 6.1.1.

#### 4.2.1.6 Cabinet radiation

##### 4.2.1.6.1 Definition

The receiver cabinet radiation is the effective radiated power when radiated by the cabinet and structure of the receiver.

##### 4.2.1.6.2 Limits

The receiver cabinet radiation limits shall be as specified in clause 6.1.15 of ETSI EN 301 842-1 [1].

### 4.2.2 Transmitter requirements

#### 4.2.2.1 Manufacturer's declared output power

##### 4.2.2.1.1 Definition

The manufacturer's declared output power of the transmitter is the mean output power of the transmitter.

##### 4.2.2.1.2 Limits

The manufacturer's declared output power shall be as specified in clause 6.2.4 of ETSI EN 301 842-1 [1].

#### 4.2.2.2 RF power rise time

##### 4.2.2.2.1 Definition

The RF power rise time is the time taken for the transmitter power level to reach no less than 90 % of the mean output power level measured during signal transmission.

##### 4.2.2.2.2 Limits

The RF power rise time shall be as specified in clause 6.2.5 of ETSI EN 301 842-1 [1].

#### 4.2.2.3 RF power release time

##### 4.2.2.3.1 Definition

The RF power release time is the time taken for the transmitted power level to decay by a given value below the manufacturer declared output power level.

##### 4.2.2.3.2 Limits

The RF power release time shall be as specified in clause 6.2.6 of ETSI EN 301 842-1 [1].

#### 4.2.2.4 Conducted Spurious emissions

##### 4.2.2.4.1 Definition

Conducted spurious emissions from the transmitter are signals at any frequency, emitted from the antenna port.

##### 4.2.2.4.2 Limits

The conducted spurious emissions is measured by their power levels at the antenna connector and they limits shall be as specified in clause 6.2.7 of ETSI EN 301 842-1 [1].

#### 4.2.2.5 Adjacent channel power

##### 4.2.2.5.1 Definition

The adjacent channel power is the RF power measured over the channel bandwidth of adjacent channels.

##### 4.2.2.5.2 Limits

The adjacent channel power shall be as specified in clause 6.2.8 of ETSI EN 301 842-1 [1].

#### 4.2.2.6 Wide-band noise

##### 4.2.2.6.1 Definition

The wide-band noise is the RF power measured over the 25 kHz channel bandwidth for channels other than the adjacent channels.

##### 4.2.2.6.2 Limits

The adjacent channel power shall be as specified in clause 6.2.9 of ETSI EN 301 842-1 [1].

#### 4.2.2.7 Frequency Error

##### 4.2.2.7.1 Definition

The frequency error is the specified range of values that a selected frequency may take.

##### 4.2.2.7.2 Limits

The frequency error shall be as specified in clause 6.2.10 of ETSI EN 301 842-1 [1].

NOTE: In ETSI EN 301 842-1 [1], this is referred to as 'Frequency Tolerance'.

#### 4.2.2.8 Load VSWR capability

##### 4.2.2.8.1 Definition

The load VSWR capability is the ability of the transmitter to maintain the limits of wide-band noise and adjacent channel power when a 2:1 mismatch to the transmitter output terminals is applied by a length of feeder, which is varied in electrical length by up to half a wavelength.

##### 4.2.2.8.2 Limits

The adjacent channel power shall be as specified in clause 6.2.11 of ETSI EN 301 842-1 [1].

#### 4.2.2.9 Cabinet radiation

##### 4.2.2.9.1 Definition

The transmitter cabinet radiation is the effective radiated power when radiated by the cabinet and structure of the transmitter.

##### 4.2.2.9.2 Limits

The transmitter cabinet radiation shall be as specified in clause 6.2.12 of ETSI EN 301 842-1 [1].

### 4.2.3 Transceiver requirements

#### 4.2.3.1 Receiver to transmitter turnaround time

##### 4.2.3.1.1 Definition

The time between the termination of the receiver function, and the capability to begin transmission of the transmitter power stabilization sequence.

##### 4.2.3.1.2 Limits

The receiver to transmitter turnaround time shall be as specified in clause 6.3.3 of ETSI EN 301 842-1 [1].

#### 4.2.3.2 Transmitter to receiver turnaround time

##### 4.2.3.2.1 Definition

The time between the completion of the transition, and the capability of receiving and demodulating with nominal performance an incoming signal.

#### 4.2.3.2.2 Limits

The transmitter to receiver turnaround time shall be as specified in clause 6.3.4 of ETSI EN 301 842-1 [1].

## 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 the tables below.

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated 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)). Principles for the calculation of measurement uncertainty are contained in TR 100 028 [i.8], in particular in annex D of the ETSI TR 100 028-2 [i.9].

Tables 1, 2 and 3 are based on such expansion factors.

**Table 1: Transmitter measurement uncertainty: maximum values**

Measurement uncertainties	Maximum values
Manufacturer's declared output power (normal and extreme test conditions)	$\pm 0,75$ dB
RF power rise and release time	$\pm 20$ % of the limits values
Conducted spurious emissions: below 1 GHz	$\pm 3$ dB
between 1 GHz and 4 GHz	$\pm 6$ dB
Adjacent channel power	$\pm 2,5$ dB
Wide band noise	$\pm 2,5$ dB
Frequency error	$\pm 1 \times 10^{-9}$
Load VSWR capability	1:1,2
Cabinet radiation	$\pm 6$ dB

**Table 2: Receiver measurement uncertainty: maximum values**

Measurement uncertainties	Maximum values
Sensitivity	±3 dB
Co-channel interference	±3 dB
Adjacent channel rejection	±4 dB
in-band intermodulation	±3 dB
Conducted spurious emissions below 1 GHz	±3 dB
between 1 GHz and 4 GHz	±6 dB
Cabinet radiation	±6 dB

**Table 3: Transceiver measurement uncertainty: maximum values**

Measurement uncertainties	Maximum values
Receiver to transmitter turn-around time	±20 % of the limits values
Transmitter to receiver turn-around time	±20 % of the limits values

## 5.3 Essential radio test suites

### 5.3.1 Tests on the Receiver

#### 5.3.1.1 Sensitivity

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 301 842-1 [1], clause 9.1.2.

#### 5.3.1.2 Adjacent Channel Rejection

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 301 842-1 [1], clause 9.1.3.

#### 5.3.1.3 Co-channel interference

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 301 842-1 [1], clause 9.1.9.

#### 5.3.1.4 Conducted spurious emission

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 301 842-1 [1], clause 9.1.10.

#### 5.3.1.5 In-band Intermodulation

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 301 842-1 [1], clause 9.1.11.

### 5.3.2 Tests on the Transmitter

#### 5.3.2.1 Manufacturer's declared output power

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 301 842-1 [1], clause 9.2.2.

#### 5.3.2.2 RF power rise time

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 301 842-1 [1], clause 9.2.3.

### 5.3.2.3 RF power release time

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 301 842-1 [1], clause 9.2.4.

### 5.3.2.4 Conducted Spurious emissions

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 301 842-1 [1], clause 9.2.5.

### 5.3.2.5 Adjacent channel power

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 301 842-1 [1], clause 9.2.6.

### 5.3.2.6 Wide-band noise

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 301 842-1 [1], clause 9.2.7.

### 5.3.2.7 Frequency Error

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 301 842-1 [1], clause 9.2.8.

NOTE: In other parts of the ETSI EN 301 842 series [i.10], this is referred to as 'Frequency Tolerance'.

### 5.3.2.8 Load VSWR capability

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 301 842-1 [1], clause 9.2.9.

## 5.4 Other test suites

### 5.4.1 Receiver Cabinet Radiation

To demonstrate conformance, the equipment shall pass the test procedure described in in ETSI EN 300 113-1 [2], clause 8.10.1b) and c), and 8.10.3.

### 5.4.2 Transmitter Cabinet Radiation

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 300 113-1 [2], clause 7.5.1b) and c), and 7.5.3.

### 5.4.3 Transceiver: Receiver to transmitter turn-around time

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 301 842-1 [1], clause 9.3.1.

### 5.4.4 Transceiver: Transmitter to receiver turn-around time

To demonstrate conformance, the equipment shall pass the test procedure described in ETSI EN 301 842-1 [1], clause 9.3.2.



## 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 technical 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)**

<b>Harmonized Standard ETSI EN 301 842-5</b>						
The following technical requirements and test specifications are relevant to the presumption of conformity under the article 3.2 of the R&TTE Directive [i.3]						
Requirement Reference			Requirement Conditionality		Test Specification	
No	Description	Reference: Clause No	U/C	Condition	E/O	Reference: Clause No
1	Sensitivity	4.2.1.1	C	Note 1	E	5.3.1.1
2	Adjacent Channel Rejection	4.2.1.2	C	Note 1	E	5.3.1.2
3	Co-channel interference	4.2.1.3	C	Note 1	E	5.3.1.3
4	Receiver Conducted spurious emission	4.2.1.4	C	Note 1	E	5.3.1.4
5	In-band Intermodulation	4.2.1.5	C	Note 1	E	5.3.1.5
6	Receiver Cabinet radiation	4.2.1.6	C	Note 1	O	5.4.1
7	Manufacturer's declared power output	4.2.2.1	C	Note 2	E	5.3.2.1
8	RF power rise time	4.2.2.2	C	Note 2	E	5.3.2.2
9	RF power release time	4.2.2.3	C	Note 2	E	5.3.2.3
10	Transmitter Conducted spurious emissions	4.2.2.4	C	Note 2	E	5.3.2.4
11	Adjacent channel power	4.2.2.5	C	Note 2	E	5.3.2.5
12	Wide-band noise	4.2.2.6	C	Note 2	E	5.3.2.6
13	Frequency error	4.2.2.7	C	Note 2	E	5.3.2.7
14	Load VSWR capability	4.2.2.8	C	Note 2	E	5.3.2.8
15	Transmitter Cabinet radiation	4.2.2.9	C	Note 2	O	5.4.2
16	Receiver to transmitter turnaround time	4.2.3.1	C	Note 3	O	5.4.3
17	Transmitter to receiver turnaround time	4.2.3.2	C	Note 3	O	5.4.4
NOTE 1: This requirement applies only to equipment with a receive capability.						
NOTE 2: This requirement applies only to equipment with a transmit capability.						
NOTE 3: This requirement applies to only to equipment with a receive and transmit capability.						

**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.

**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 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.

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## History

<b>Document history</b>			
V1.1.0	March 2015	EN Approval Procedure	AP 20150716: 2015-03-18 to 2015-07-16