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Ultra Wideband (UWB);
RF conformance testing of radar level gauging applications in stillpipes TLPR

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Contents

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

Modal verbs terminology

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Introduction

The radar level gauges covered by the present document do not use the signal form of time domain UWB short pulses. Instead, they use the frequency domain based FMCW and/or SFCW waveforms. Thus the emission bandwidth generated by the FMCW and/or SFCW radars is strictly controlled by the equipment itself.

The specified requirements in the present document describe the worst case scenario (i.e. the possible highest emissions outgoing to the environment and incoming from interferer signal sources [10]) and is seen as a feasible test method to prove compliance of radar level gauging applications in stillpipes.

The background and related applications have been described in ETSI TR 102 750 [i.2] where the applications have been considered indoor like systems.

The purpose of revision of the present document is to update the previous version ETSI TS 102 692 (V1.1.1) [i.10] to cover the essential requirements of article 3.2 of the Directive 2014/53/EU [i.3].

1 Scope

The present document specifies the requirements for radar level gauging applications in stillpipes using UWB technology operating in the frequency range of 9 GHz to 10,6 GHz.

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 referenced document (including any amendments) applies.

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

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

[1] CISPR 16-1 (2003): "Specification for radio disturbance and immunity measuring apparatus and methods - Part 1: Radio disturbance and immunity measuring apparatus".

[2] ANSI C63.5 (2006): "American National Standard for Electromagnetic Compatibility - Radiated Emission Measurements in Electromagnetic Interference (EMI) Control - Calibration of Antennas (9 kHz to 40 GHz)".

[3] Void.

[4] ISO 4266-1 (2002): "Petroleum and liquid petroleum products -- Measurement of level and temperature in storage tanks by automatic methods -- Part 1: Measurement of level in atmospheric tanks".

[5] API MPMS 3.1A and 3.1B: "Manual of Petroleum Measurement Standards, Chapter 3: Tank Gauging", Section 1A: "Standard Practice for the Manual Gauging of Petroleum and Petroleum Products", published on 1 of August 2005; Tank Gauging Section 1B: "Standard Practice for Level Measurement of Liquid Hydrocarbons in Stationary Tanks by Automatic Tank Gauging", published on 1 of June 2001.

[6] Void.

[7] 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".

[8] ETSI TR 102 273 (all parts) (V1.2.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Improvement on Radiated Methods of Measurement (using test site) and evaluation of the corresponding measurement uncertainties".

[9] Void.

[10] ETSI TS 103 361 (V1.1.1): "Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Receiver technical requirements, parameters and measurement procedures to fulfil the requirements of the Directive 2014/53/EU".