R&S® ESPI Precompliance EMI Test Receiver

Datasheet

Introduction

R&S® ESPI EMI precompliance test receiver is an EMI receiver used in EMI testing according to newest standards, and an all-round spectrum analyzer as well as.

R&S® ESPI，Pulse weighting with quasi-peak, average and RMS average detector in accordance with the latest CISPR 16-1-1 edition.

ESPI3：9 kHz～3 GHz

ESPI7：9 kHz～7 GHz

The R&S ESP13 and R&S ESP17，which are suitable for all commercial EMI standards in line with CISPR, EN, ETS,FCC, ANSI C63.4, VCCI and VDE, have been specially designed for precompliance measurements in development. Both models are designed on the basis of modern spectrum analyze series R&S® FSP. They combine the full function of sophisticated analyzer with conventional testing receiver in a unique form, which establish new standard for multiple function and performance in precompliance test. The final compliance test will then be purely a formality. This kind of combination makes R&S ESPI well qualified for general task in spectrum analysis and special EMI diagnosis，which provides an ideal instrument for any development laboratories or other organization which does not need to perform an absolute certification test that complies with the strict CISPR requirement. The aim is to perform EMC diagnostic measurements on the devices under test as quickly as possible and as accurately as necessary and to document the results.

Characteristics of Products

Due to a common platform system, the user has the additional benefits of the R&S FSP spectrum analyzer family which is already in place. These benefits by far exceed the capabilities and functions of conventional precompliance test equipment. The R&S ESPI defines the vital criteria, such as functionality, measurement speed and accuracy for middle-end equipment, which can meet the requirement of EMC test in R&D process.

Fitted with the optional preselector/preamplifier (R&S ESPI-B2), all R&S ESPI models feature an excellent dynamic range compared with other precompliance solutions and are, therefore, able to perform precise interference measurements with pulse repetition frequencies (PRF) from 10 Hz in line with CISPR 16-1-1.

Main Features

√ Peak, average, quasi-peak, RMS and CISPR average (max. 3 detectors simultaneously

√ Preselector and 20 Db preamplifier is optionally available

√ As per EMI measurement bandwidths of CISPR: 200Hz，9kHz，120kHz，1MHz

√ Correct pulse weighting in line with CISPR 16-1-1 from 10 Hz pulse repetition frequency.

√ For all commercial EMI standards such as CISPR、EN、ETS,、FCC、ANSIC63.4、VCCI and VDE

√ Built-in automatic test routines for preliminary EMI test and final EMI test

√ Preliminary test, data screening (peak lists), function evaluation of final test.

√ Quickly obtain the frequency point with large amplitude through previewing measurement

---Measurement time is from 100us to100s in receiver mode

--- Measurement time is 16000s in analyzer mode

√ Fast measurements in the time domain：minimum sweep time 1us

Total Measurement Uncertainty

---Spectrum analyzer mode：0.5 dB (without preselection)

---Receiver mode：<1.5 dB

√ Displayed average noise level (DANL)：-155 dBm(1 Hz). f<1GHz

√ Phase noise of typ.145dBe(1Hz) at an offset of 10 MHz providing optimum conditions for ACPR measurements on WCDMA system

√ NF = 21.5 dB(12 dB with preamplifier)

√ User-programmable scan tables

√ Display of results and comparison with standard-conforming limit lines

√ Correction values for cable loss, coupling networks and antennas included as transducer factor

√ Data reduction and modification of a frequency list for weighted final measurement

√ Bargraph display for different types of detectors

√ Overload indication

√ Built-in AF demodulator

√ Brilliant 21 cm TFT color display

√ Split-screen display with independent settings and up to 3 traces per screen

√ Interface：GPIB，Centronics，RS-232-C，LAN(Optional)

Spectrum Analyzer

√ Resolution bandwidths from 10 Hz to 10 MHz (in 1/3/10 sequence)

√ RMS detector for measurements on digitally modulated signals

√ Test routines for TOI. ACPR. OBW, amplitude statistics

√ Gated sweep for measurements on TDMA signals

Multiple Applications

√ EMI Diagnostic measurement in R&D stage, production, quality guarantee, maintenance and repair.

√ Pre-cerfication and post-certification tests that meet all civil EMI standards

√ Conduct quick and easy immunity test in mobile applications

√ Evaluate field-strength coverage at a fast measurement speed.

√ Used as a spectrometer, including selective input

Brilliant Performance

√ Low measurement uncertainty(Receiver mode)<1.5dB)
√ Preselectable filter and internal 20 dB preamplifier (optional)
√ Unprecedented measurement speed (Measurement time starts from 100 μs)
√ Low noise level (with preamplifier NF=12dB)
√ Programmable scan tables, up to 10 sub-frequency ranges
√ Predefined limit lines and correction factors
√ Correction factors and correction factors combination
√ Automatic range adjustment and overload detection
√ Spectrometer
√ Built-in audio demodulator and amplifier
√ Battery or AC power supply operation

Field-strength Test Receiver（Optional R&S ESPI-K50）

√ External trigger input
√ Additional channel filter, bandwidth from 5.6 MHz to 8 MHz, meet the signal requirement of DVB-T. ISDB-T and ATSC.
√ High sample speed (Disperse frequency point is more than 100ksamples/s)
√ Channel list measurement (Maximum 1000 channels)
√ AM/FM demodulation analyzing (optional R&S FSP-K7)

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