

YRS 03  
York Reference Source



# Product Technical Information

## York Reference Source: YRS03

The **YRS03** is a multi-mode, broadband **noise and comb** source that is capable of producing a continuous noise output or a comb of frequencies within the **10 MHz to 6 GHz** range, with the step size being selected by the user. The noise generator enables observation of details over the full spectral range, while the comb generator allows for the reference signal output and noise floor to be viewed simultaneously, and the frequency accuracy of measurement of equipment to be checked.

The YRS03 is a compact and battery powered, allowing operation as an electrically small source, which minimises the effect of the YRS03 itself when characterising the electromagnetic environment. The YRS03 is housed in a metal enclosure so that it can be mounted in direct contact with a metal ground plane as may be required by some tests.

The YRS03 is supplied with a 50  $\Omega$  N-type output connector for direct connection to conducted measurement systems. For radiated operation, antennas can be attached to the unit's output connector.



YRS03 with accessories

Three antennas, one monocone and two monopole optimised for different frequency bands, are available. The YRS03 is an ideal source for carrying out checks on Open Area Test Sites (OATS) and fully- or semi-anechoic chambers.

## Features

- **Selectable noise or comb output**
  - Flexibility across a range of applications
- **Stable output**
  - Repeatable measurements
- **10 MHz to 6 GHz output**
  - Applications across a broad frequency spectrum
- **Conducted and radiated options**
  - Evaluation of both conducted and radiated systems
- **Compact and portable**
  - Comparisons between sites and environments
- **Battery powered**
  - No power or interconnecting cable effects on measurements

## Applications

- **Investigation, characterisation and comparison of different measurement environments such as OATS, FAR or SAC.**
- **Validation and verification of radiated and conducted measurement systems, such as:**
  - Open Area Test Sites (OATS)
  - Fully Anechoic Rooms (FAR)
  - Semi-Anechoic Chambers (SAC)
  - Gigahertz Transverse ElectroMagnetic (GTEM) cells
- **Reference source for:**
  - Daily pre-test checks as required by the accreditation authorities e.g. ISO 17025, DEF STAN 59-411
  - Long term performance monitoring
  - Cable position investigation
  - Investigation of screened room behaviour
  - Characterisation of filter performance
  - Cable loss measurements
- **Measuring amplifier gain and bandwidth**
- **Spectrum analyser/receiver pre-check**
- **Inter-laboratory test programs**
- **Proficiency test programs**

## Manufacturer's calibrations

<b>CAL17</b>	<b>Radiated</b> field strength, 30 MHz to 1 GHz, measured at 3 m OR 10 m on an OATS using a spectrum analyser or receiver. All modes.
<b>CAL18</b>	<b>Radiated</b> field strength, 30 MHz to 1 GHz, measured at 3 m in a FAR using a spectrum analyser or receiver. All modes.
<b>CAL19</b>	<b>Conducted</b> output power, 30 MHz to 6 GHz, measured using a spectrum analyser. All modes.
<b>CAL21</b>	<b>Radiated</b> field strength, 1 GHz to 6 GHz, measured at 3 m in a FAR using a spectrum analyser or receiver. Noise, 20 MHz and 40 MHz comb modes.

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## Specifications: Noise mode

<b>Frequency range</b>	10 MHz to 6 GHz direct connection into 50 $\Omega$ system 30 MHz to 6 GHz radiated using MON03 monopole and MCN03 monocone antennas
<b>Temperature stability</b>	< +/-1 dB, at an ambient temperature of 15 °C to 30 °C < +/-1.5 dB, at an ambient temperature of 5 °C to 40 °C
<b>Time stability</b>	<1 dB typical over a 12 month period
<b>Operating time</b>	6.5 hours typical with alkaline cells

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## Specifications: Comb modes

<b>Frequency range</b>	10 MHz to 6 GHz direct connection into 50 $\Omega$ system 30 MHz to 1 GHz radiated using TLM02 and MON03 monopole antennas
<b>Comb signal step size</b>	Selectable between: 5 MHz            5 MHz, 10 MHz, ... 3 GHz min. 10 MHz          10 MHz, 20 MHz, ... 3 GHz min. 20 MHz          20 MHz, 40 MHz, ... 6 GHz min. 40 MHz          40 MHz, 80 MHz, ... 6 GHz min.
<b>Temperature stability</b>	Amplitude: < +/-1 dB, at an ambient temperature of 15 °C to 30 °C < +/-1.5 dB, at an ambient temperature of 5 °C to 40 °C Frequency: < +/- 0.5 ppm from 5 °C to 40 °C
<b>Time stability</b>	<1 dB typical over 12 month period < +/-1 ppm typical over a 12 month period
<b>Operating time</b>	14 hours typical with alkaline cells

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## Other

<b>Output connector</b>	50 $\Omega$ N-type socket
<b>Dimensions</b>	120 mm x 120 mm x 60 mm (79 mm including connector)
<b>Weight</b>	1 kg (including cells)
<b>Power supply</b>	4 x 1.5 V cells (AA or equivalent). Alkaline or rechargeable.
<b>Indicators</b>	Active, low battery
<b>Controls</b>	Rotary switch for mode selection including OFF

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## Standard kits

Part Number	Description	Parts included
<b>YRS03KIT01</b>	Standard YRS03 reference source kit with antenna	<ul style="list-style-type: none"> <li>• YRS03 reference source</li> <li>• MCN03 – 1 GHz to 6 GHz (optimum) monocone antenna</li> </ul>
<b>YRS03KIT02</b>	Enhanced YRS03 reference source kit with multiple antennas	<ul style="list-style-type: none"> <li>• YRS03 reference source</li> <li>• MCN03 – 1 GHz to 6 GHz (optimum) monocone antenna</li> <li>• TLM02 – 30 MHz to 300 MHz (optimum) 270 mm long top-loaded monopole antenna</li> <li>• MON03 – 200 MHz to 1 GHz (optimum) 270 mm long monopole antenna</li> </ul>
<b>YRS Combination Kit</b>	Enhanced YRS02 and YRS03 reference source kit with multiple antennas and LISN adaptor with output range from 5 kHz to 6 GHz	<ul style="list-style-type: none"> <li>• YRS02 reference source</li> <li>• YRS03 reference source</li> <li>• TLM02 – 30 MHz to 300 MHz (optimum) 270 mm long top-loaded monopole antenna</li> <li>• MON03 – 200 MHz to 1 GHz (optimum) 270 mm long monopole antenna</li> <li>• MCN03 – 1 GHz to 6 GHz (optimum) monocone antenna</li> <li>• LSA03 – LISN adapter with IEC 320 style connector</li> <li>• CAL16 – 9 kHz to 1 GHz output power measured using a spectrum analyser, all modes (YRS02 only)</li> </ul>

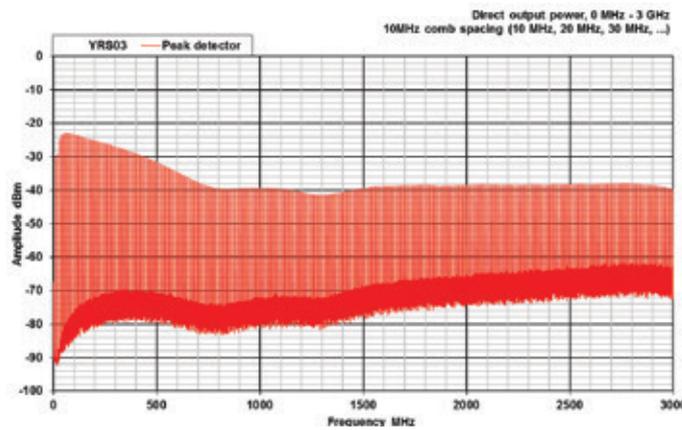
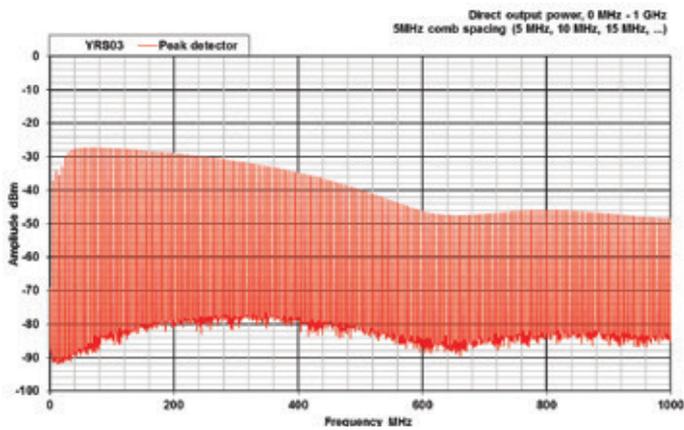
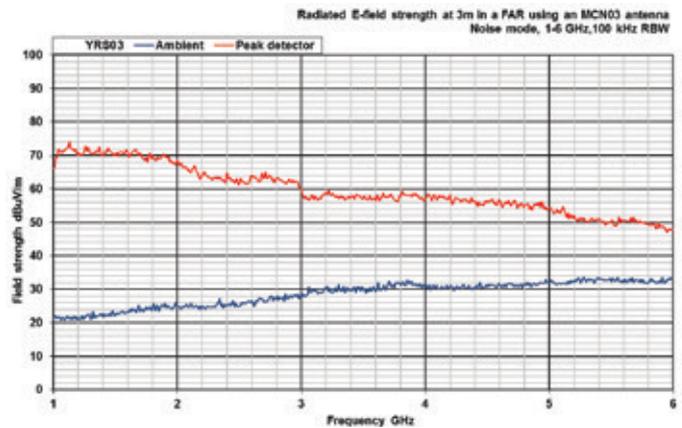
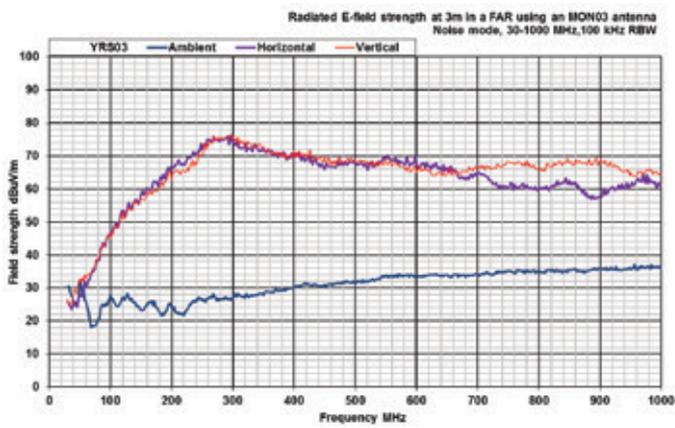
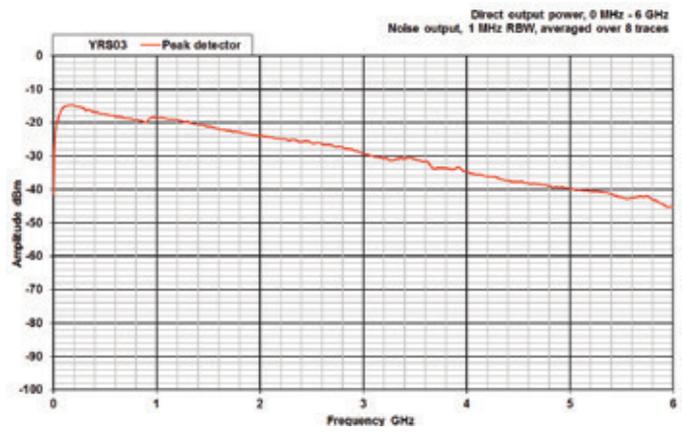
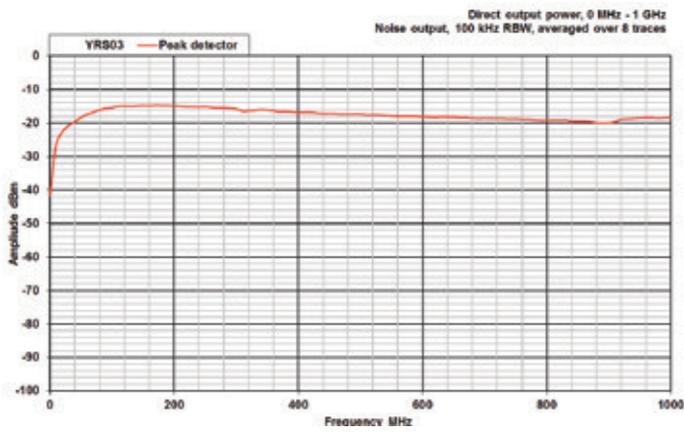
**All kits are supplied with:** Alkaline batteries; hard case; manual; CAL19 – 30 MHz to 6 GHz output power measurements in all modes using a spectrum analyser or receiver.

## Accessories

<b>TLM01</b>	200 MHz to 1 GHz (optimum) 100 mm top-loaded monopole antenna
<b>TLM02</b>	30 MHz to 300 MHz (optimum) 270 mm long top-loaded monopole antenna
<b>MON03</b>	200 MHz to 1 GHz (optimum) 270 mm monopole antenna
<b>MCN03</b>	1 GHz to 6 GHz (optimum) 120 mm diameter monocone antenna
<b>LSA03</b>	LISN adapter with IEC 320 style connector
<b>NIA01</b>	ISN adapter with RJ11/RJ14/RJ25/RJ45 style connection

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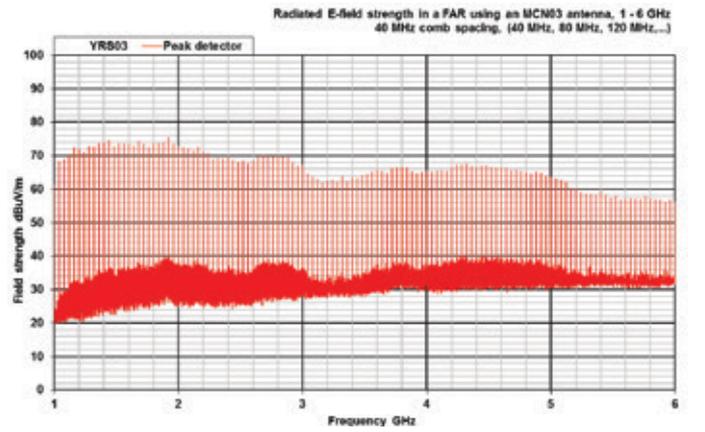
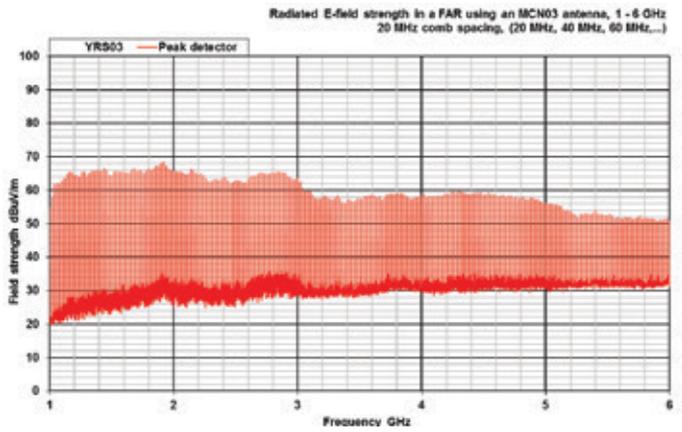
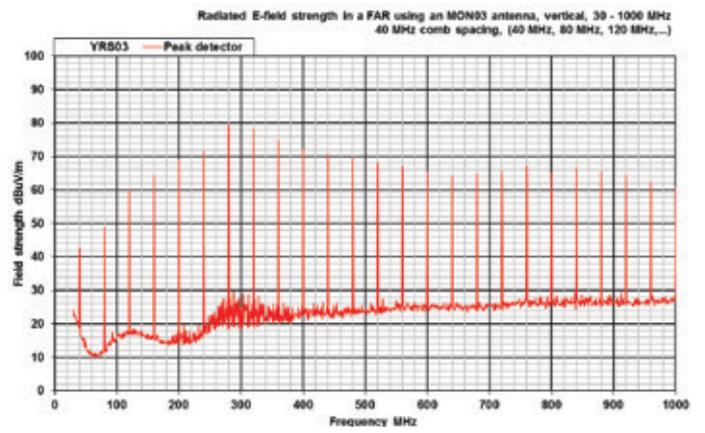
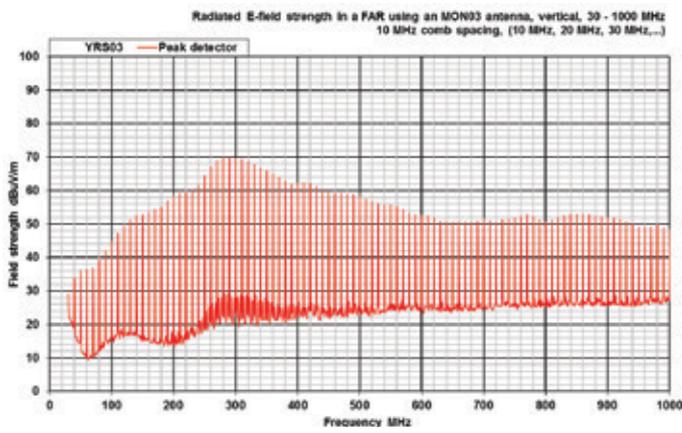
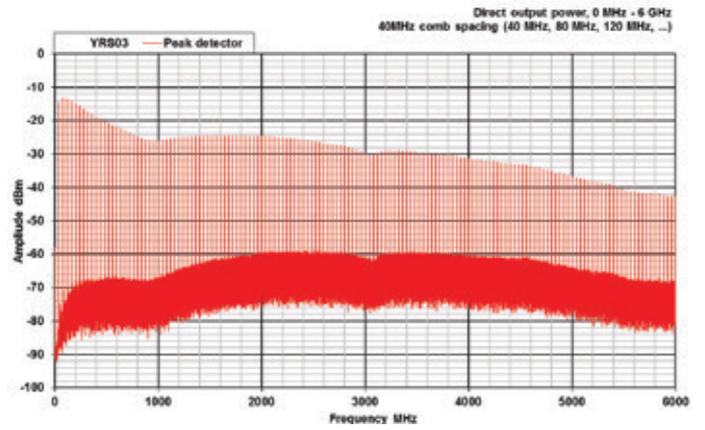
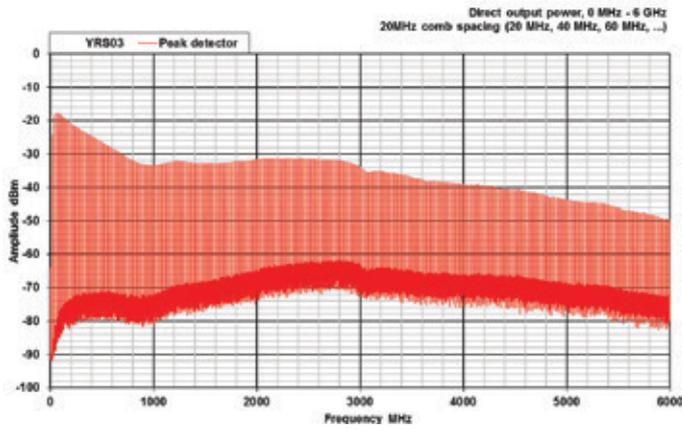
## Typical output measurement results



Note: Artefacts below the peak level are due to image scaling.

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## Typical output measurement results



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