York EMC Services

CGE 01
Comb Generator Emitter

Product Technical Information
Comb Generator Emitter: CGE01

The Comb Generator Emitter 01 (CGE01) is a compact, battery powered, reference signal source that generates a broadband radiated and/or conducted output up to 18 GHz. When used as a verification reference source, the known output allows unknowns within systems or components to be measured or calculated. The compact size allows small enclosures to be evaluated when used as a reference source for shielding effectiveness measurements.

The CGE01 can be supplied with a 50 Ω SMA output connector (CGE01C) for direct connection to conducted test systems, or to an external antenna in order to generate test fields for evaluating radiated emission test systems. Alternatively, to achieve the best repeatability and compactness for purely radiated applications, the CGE01 can be supplied with an integrated antenna (CGE01R).

The CGE01 harmonic steps can be switched between 80 MHz and 100 MHz as standard, allowing more frequency points to be measured than is possible with a fixed-frequency source. A 50 MHz/80 MHz step option is available by special request, allowing measurements compliant with chamber validations above 1 GHz according to CISPR 16.

CGE01C with MCN02 and BP01 battery pack

Features

- **Stable output**
  - Repeatable measurements
- **Conducted and radiated options**
  - Evaluation of both conducted and radiated systems
- **50 MHz to 18 GHz output**
  - Applications across a broad frequency spectrum
- **50 MHz step size**
  - Complies with CISPR 16 validation methods
- **Compact and portable**
  - Comparisons between sites and environments
  - Shielding effectiveness measurements even of small enclosures
- **Battery powered**
  - No power or interconnecting cables affecting measurements

Applications

- **CISPR 16 verifications**
- **Shielding effectiveness of small enclosures e.g. PCs, servers, wireless communications equipment**
- **Radiated measurement systems validation and verification**
- **Reference source for:**
  - Daily pre-test verification checks if required by the accreditation authorities
  - Long term performance monitoring
  - Spectrum analyser / receiver pre-checks
- **Investigation of reverberation (mode stirred) chamber behaviour**
- **Characterisation of filter performance**
- **Cable loss measurements**
- **Inter-laboratory test programs**
- **Proficiency test programs**

Manufacturer's calibrations

CAL13	**Conducted** output power, 0 GHz to 18 GHz, measured using a spectrum analyser (**CGE01C only**)
CAL09	**Radiated** field strength, 1 GHz to 18 GHz, measured at 3 m in a FAR using a spectrum analyser (**CGE01R or CGE01C with monocone antenna only**)

Specifications

Frequency range	50 MHz to 18 GHz direct connection into a 50 Ω system 1 GHz to 18 GHz radiated using the integral antenna (CGE01R) or additional monocone antenna (CGE01C)
Step Size	80 MHz or 100 MHz switchable (50 MHz or 80 MHz switchable version available to special order)
Output connector	50 Ω SMA socket (CGE01C only)
Temperature stability	1 GHz to 16 GHz: <0.5 dB or 100 MHz to 18 GHz: <2 dB, at an ambient temperature of 15 °C to 35 °C
Time stability	Typically <1 dB over a 12 month period
Dimensions	CGE01C with battery pack – 76 mm diameter × 64 mm (74 mm incl. connector) CGE01C without battery pack – 76 mm diameter × 18 mm (28 mm incl. connector) CGE01R with battery pack – 76 mm diameter × 92 mm CGE01R without battery pack – 76 mm diameter × 46 mm
Weight	Approx 550 g (including battery)
Power supply	5 V 2 AHr battery pack External input 4.75 V to 7.5 V, 300 mA
Operating time	6.5 hours typical with a fully charged battery pack
Indicators	Mode 1; 80 MHz steps. Mode 2; 50 MHz or 100 MHz steps

Accessories

MCN02	Detachable monocone antenna (1 GHz to 18 GHz optimum when used with CGE01C)
BP01	5 V 2 AHr detachable battery pack

Standard kits: 80 MHz & 100 MHz switchable comb step size

Part Number	Description	Parts included
CGE01KIT01	Standard CGE01C comb generator emitter (**conducted** output) kit	• CGE01C comb generator emitter with SMA output connector • CAL13 – conducted output power measurement, 0 GHz to 18 GHz
CGE01KIT02	Standard CGE01R comb generator emitter (**radiated** output) kit	• CGE01R comb generator emitter with integral antenna • CAL09 – radiated electric field strength measurement, at 3 m in a FAR, 1 GHz to 18 GHz
CGE01KIT03	Enhanced CGE01C comb generator emitter (**conducted** and **radiated** output) kit	• CGE01C comb generator emitter with SMA output connector • MCN02 – detachable monocone antenna • CAL13 – Standard conducted output power measurement, 0 GHz to 18 GHz

Special order kits: 50 MHz & 80 MHz switchable comb step size

Part Number	Description	Parts included
CGE01KIT04	CGE01C comb generator emitter (**conducted** output) kit	• CGE01C comb generator emitter with SMA output connector • CAL13 – conducted output power measurement, 0 GHz to 18 GHz
CGE01KIT05	CGE01R comb generator emitter (**radiated** output) kit	• CGE01R comb generator emitter with integral antenna • CAL09 – radiated electric field strength measurement, at 3 m in a FAR, 1 GHz to 18 GHz
CGE01KIT06	Enhanced, CGE01C comb generator emitter (**conducted** and **radiated** output) kit	• CGE01C comb generator emitter with SMA output connector • MCN02 – detachable monocone antenna • CAL13 – conducted output power measurement, 0 GHz to 18 GHz

All kits are supplied with: BP01 5 V 2 AHr rechargeable battery pack, BCH04 universal input battery charger, hard case, manual.

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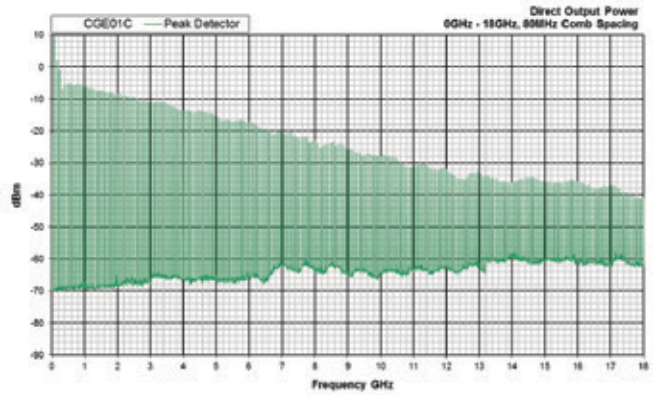
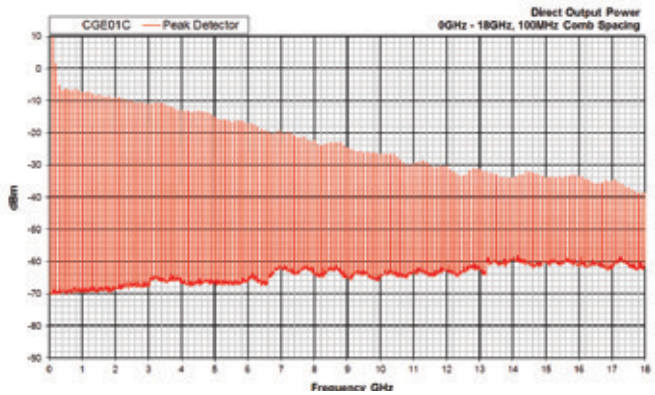
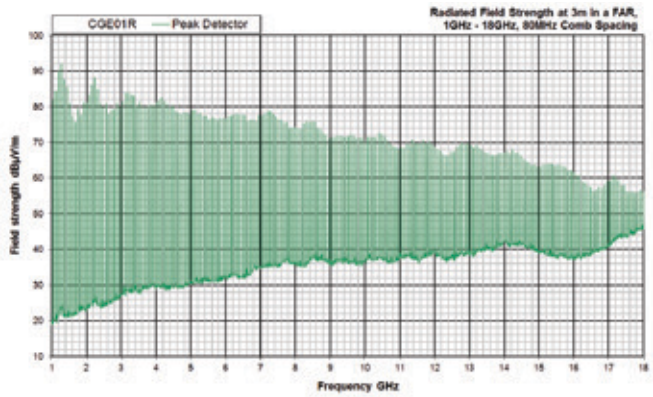
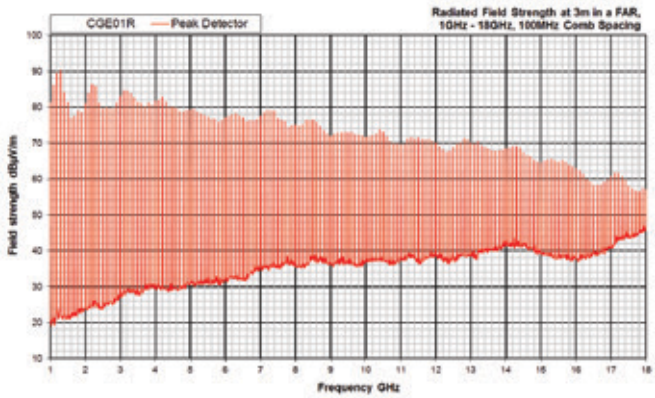
Typical output measurement results





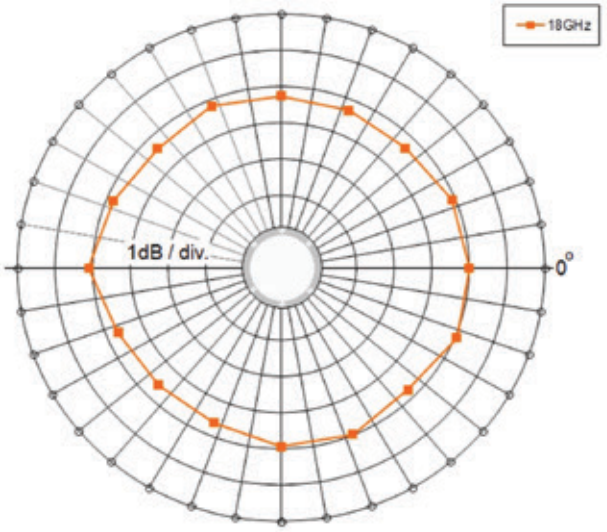




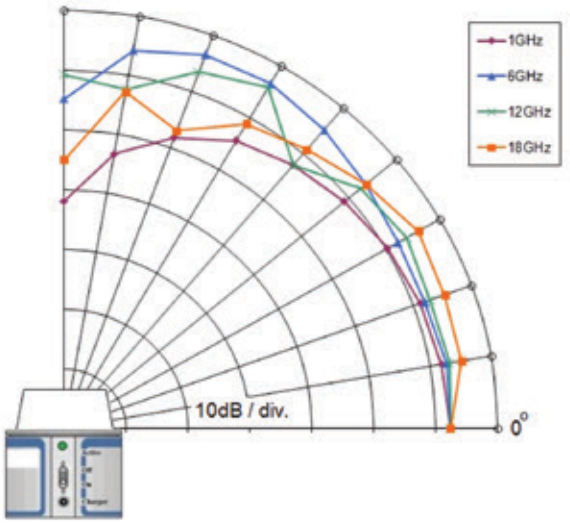
Comb Generator Emitter: CGE01

Radiation pattern

CGE01 horizontal radiation pattern (normalised to 0deg level)



CGE01R vertical radiation pattern (normalised to 0deg level)



0° is in line with the indicator on the CGE

Y8680FLY05

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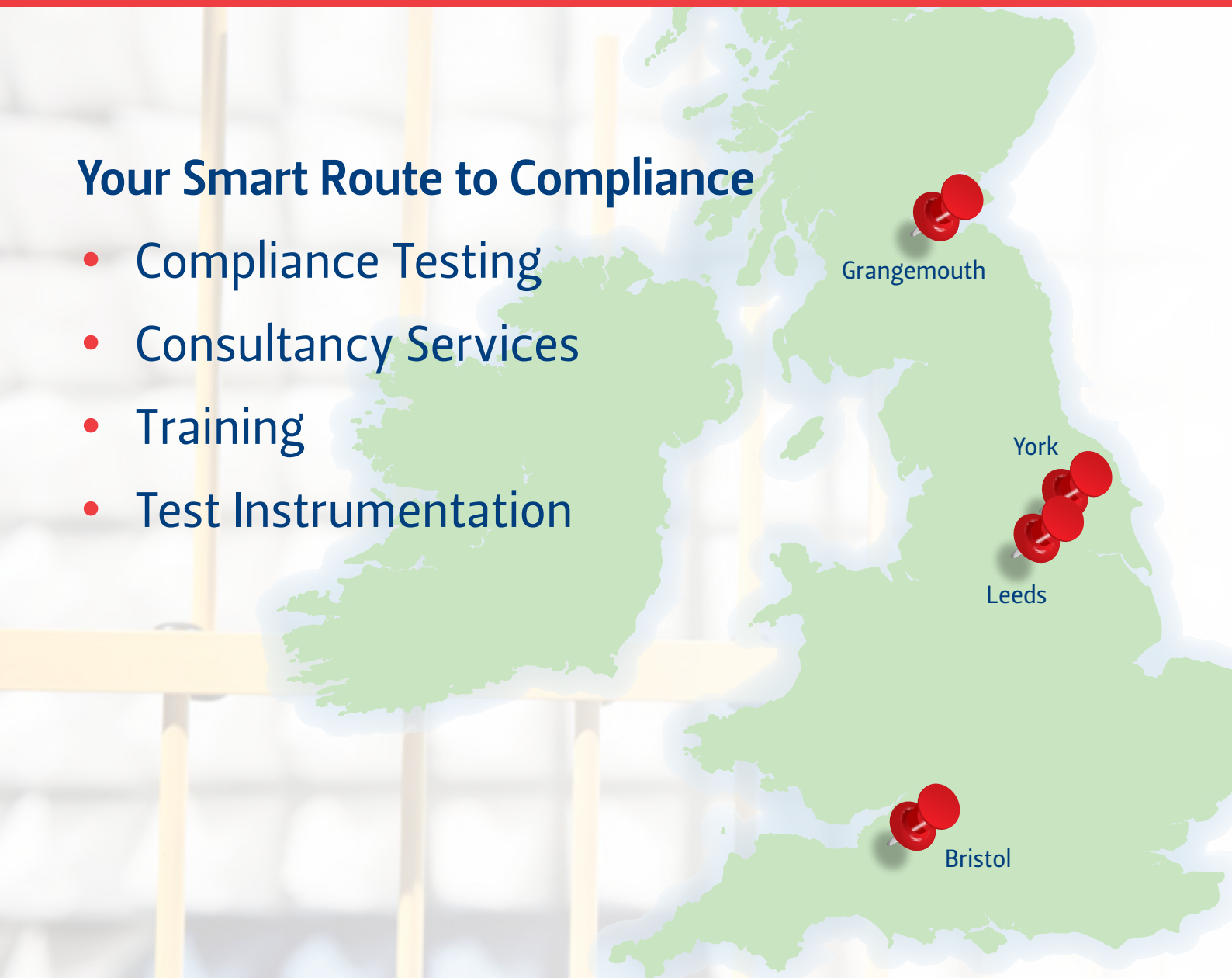

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