

CGE01 – Comb Generator Emitter



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A harmonic spectrum reference signal source with a comb output characteristic generating radiated and conducted emissions up to 18GHz with 50, 80 or 100MHz step size options. The 50MHz step size allows measurements compliant with chamber validations above 1GHz according to CISPR16.

- Stable output
 - ✓ Repeatable measurements
- Conducted and radiated output options
 - ✓ Evaluation of both conducted and radiated systems
- 50MHz to 18GHz output
 - ✓ Applications across a broad frequency spectrum
- 50MHz step size
 - ✓ Complies with CISPR16 validation methods
- Compact and portable
 - ✓ Comparisons between sites and environments
 - ✓ Shielding effectiveness measurements even of small enclosures
- Battery powered
 - ✓ No power or interconnecting cable effects on measurements

The Comb Generator Emitter (CGE) was originally developed by York EMC Services for the evaluation of shielding effectiveness for small enclosures. In recent years however, the continuing increase in operating frequencies of ICT equipment has made the CGE increasingly relevant as manufacturers seek to determine the characteristics of both their equipment and EMC measurement facilities at GHz frequencies.

The CGE01 is a broadband comb generator emitter with a useable output from 50MHz to 18GHz. In contrast to the comparison noise emitters (CNE), the comb generator approach has been adopted because it lends itself more to higher frequency applications. At higher frequencies the comb spectrum gives a higher output at specific frequencies which enable measurements to be made at those frequencies. It also allows a much smaller physical construction due to reduced power consumption enabling it to be used for shielding effectiveness measurements on small enclosures.

Radiated Emissions

Available either with an integral monocone antenna or with a detachable monocone antenna the CGE01 can be used as a reference source for radiated emissions. The unit is battery powered so that it can be operated as an independent source without the effect of power or interconnecting cables, which would modify the fields generated. Additionally though, for making shielding effectiveness measurements of small enclosures, the actual emitter can be separated from the battery pack and operated remotely via a cable carrying only DC power. The CGE is housed in a plated metal cylindrical enclosure, thus ensuring uniformity of the field and can be orientated to give vertical or horizontal polarisation. Additionally external antennas can be attached to the output when required.

Conducted emissions

The CGE01C is supplied with a 50Ω SMA connector allowing it to be used either for the investigation of conducted systems or to be used with an external antenna. The known output allows unknowns within systems or components to be measured or calculated.






Applications

- Shielding effectiveness of small enclosures:
 - Desktop PC's
 - Servers
 - Wireless comms equipment
- Radiated measurement systems validation and verification
- Reference source for:
 - Daily pre-test checks if required by the accreditation authorities
 - Long-term performance monitoring
 - Spectrum analyser/receiver pre-check
- Investigation of reverberation (mode stirred) chamber behaviour
- Characterisation of filter performance
- Cable loss measurements
- Measuring amplifier gain and bandwidth

Specifications

Frequency Range	50MHz to 18GHz direct connection into a 50Ω system 50MHz to 18GHz radiated using an integral antenna
Step size	80 or 100MHz switchable 50 or 80MHz switchable version available to special order
Output connector	50Ω SMA socket
Temperature stability	15°C to 35°C <0.5dB 1 to 16GHz, <2dB 100MHz to 18GHz
Time stability	Typically <1dB over a 12 month period
Dimensions	76mm diameter x 64mm (74mm including connector) – CGE01C with battery pack 76mm diameter x 18mm (28mm including connector) – CGE01C without battery pack 76mm diameter x 92mm – CGE01R with battery pack 76mm diameter x 46mm – CGE01R without battery pack
Weight	0.55kg (including battery)
Power supply:	5V 2Ahr battery pack. External input 5.00V ± 0.25V, 300mA
Operating time	6.5 hours typical with fully charged battery pack.
Indicators	Active, lower step size – green LED Active, higher step size – red LED

Standard Order Kits

Part Number CGE01KIT01 	Description Standard CGE01C comb generator emitter (conducted output) kit with battery charger	Parts Included <ul style="list-style-type: none"> ● CGE01C conducted reference signal source ● BP01 rechargeable battery pack ● Universal input battery charger ● Hard case ● Standard test CAL13
Part Number CGE01KIT02 	Description Standard CGE01R comb generator emitter (radiated output) kit with integral monocone antenna and battery charger	Parts Included <ul style="list-style-type: none"> ● CGE01R radiated reference signal source with integral antenna ● BP01 rechargeable battery pack ● Universal input battery charger ● Hard case ● Standard test CAL09
Part Number CGE01KIT03 	Description Enhanced CGE01C comb generator emitter (conducted output) kit with detachable monocone antenna and battery charger	Parts Included <ul style="list-style-type: none"> ● CGE01C conducted reference signal source ● MCN01 detachable monocone antenna optimised 1–26GHz ● BP01 rechargeable battery pack ● Universal input battery charger ● Hard case ● Standard test CAL13

Accessories

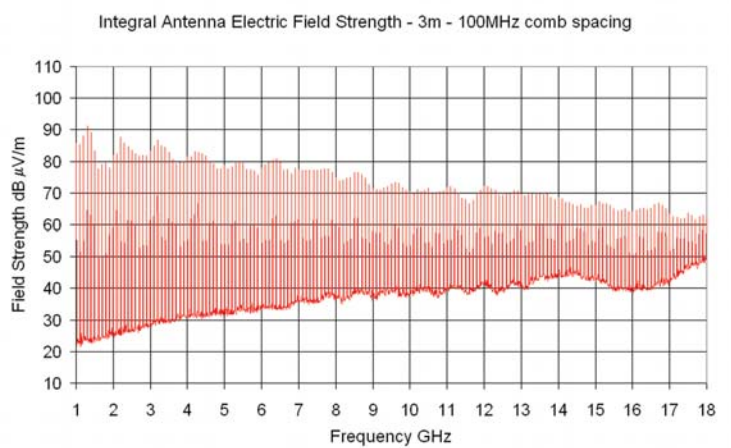
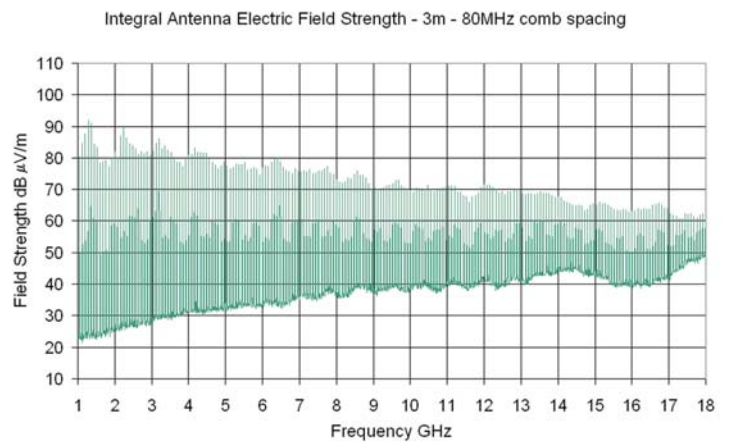
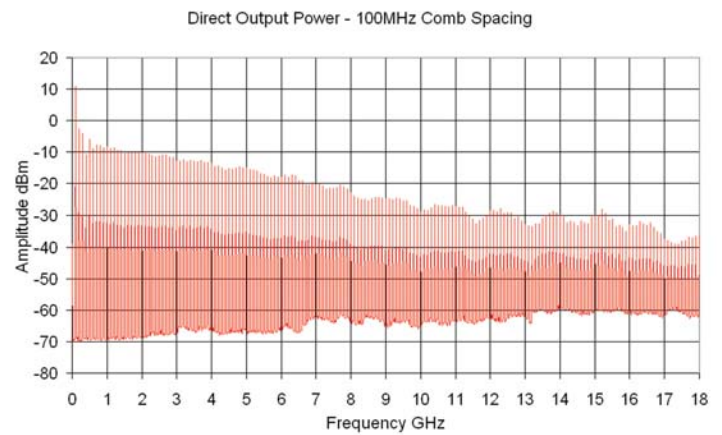
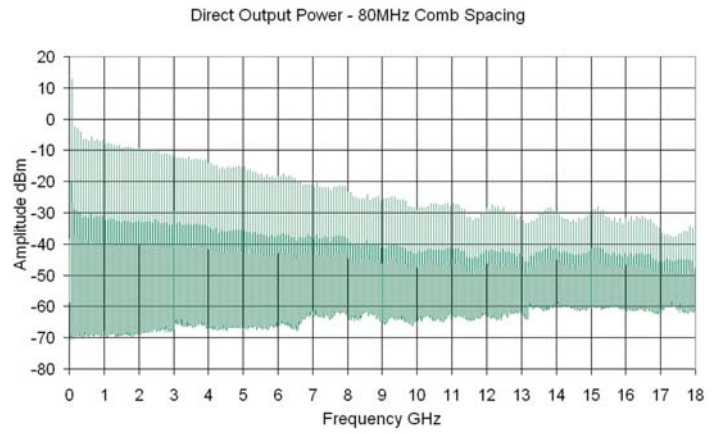
Antenna	MCN01	Detachable monocone antenna optimised 1–26GHz
Battery pack	BP01	5V 2Ahr battery pack



Output Measurement Results

Direct output	CAL13	0 to 18GHz power measurement using spectrum analyser
Radiated output	CAL09	1 to 18GHz electric field strength in FAR using a spectrum analyser at 1m

Typical Output Measurement Results



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