GENERAL PURPOSE COMB GENERATOR

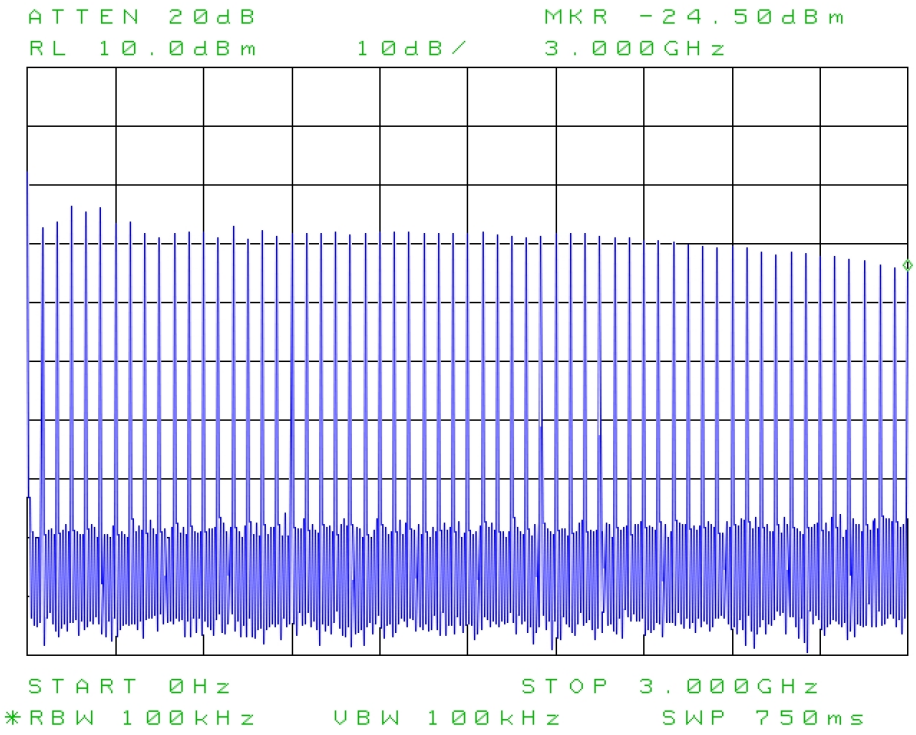
1 Introduction

The TBCG5 is a general purpose harmonic comb generator with a switchable base frequency of 200 MHz, 100 MHz or 50 MHz. It generates a flat comb spectrum up to 3 GHz and is usable up to 8 GHz. The comb generator is powered via a USB C socket on the rear panel.
The TBCG5 is designed and characterized to serve as a versatile lab tool for measuring cable resonances, shielding effectiveness, filters, crosstalk, EMC test setups and more. Comb generators are commonly utilized as a general purpose source for wideband RF signals or narrow pulses with a fast rise time.

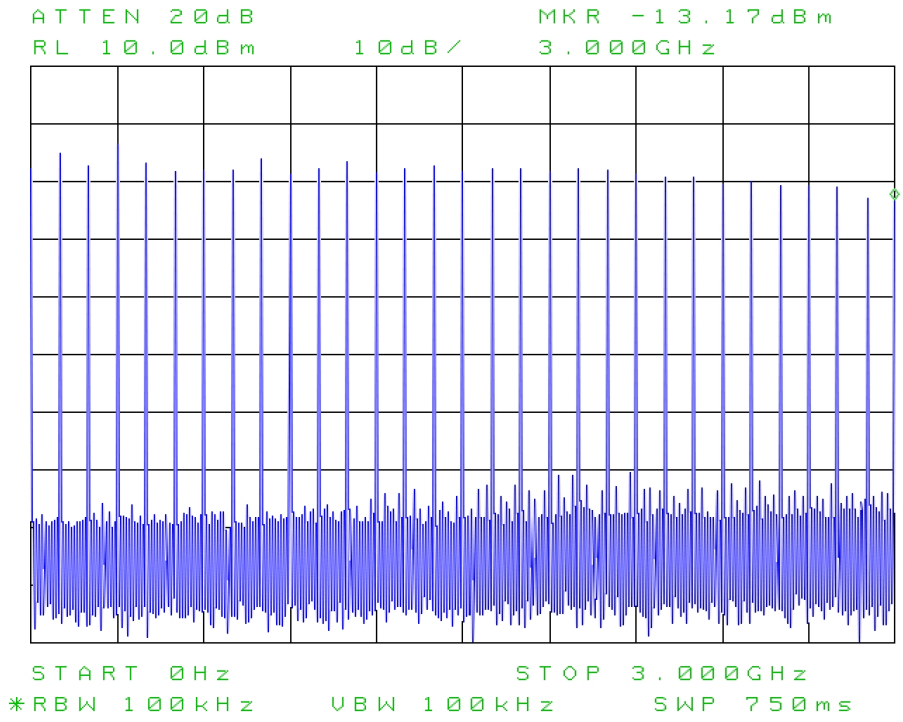
2 Specification

Base frequencies: 50 MHz, 100 MHz, 200 MHz, selected via slide-switch on front panel
Characterized comb spectrum: 5 MHz - 3 GHz
Typ. output amplitude of 200 MHz comb spectrum: - 5 dBm +/- 3 dB (above 6th harmonic)
Typ. output amplitude of 100 MHz comb spectrum: - 10 dBm +/- 3 dB (above 6th harmonic)
Typ. output amplitude of 50 MHz comb spectrum: - 20 dBm +/- 3 dB (above 6th harmonic)
Spectrum flatness from 50 MHz to 3 GHz: < 10 dB typ. (for spectral lines above the 6th harmonic)
Pulse rise time: < 150 ps
Output: 50 Ohm, SMA female
Power supply: USB C
Current consumption: 120 mA
Dimensions, L x W x H: 56 mm x 81mm x 33 mm
Weight: 95g

3 Measurement plots

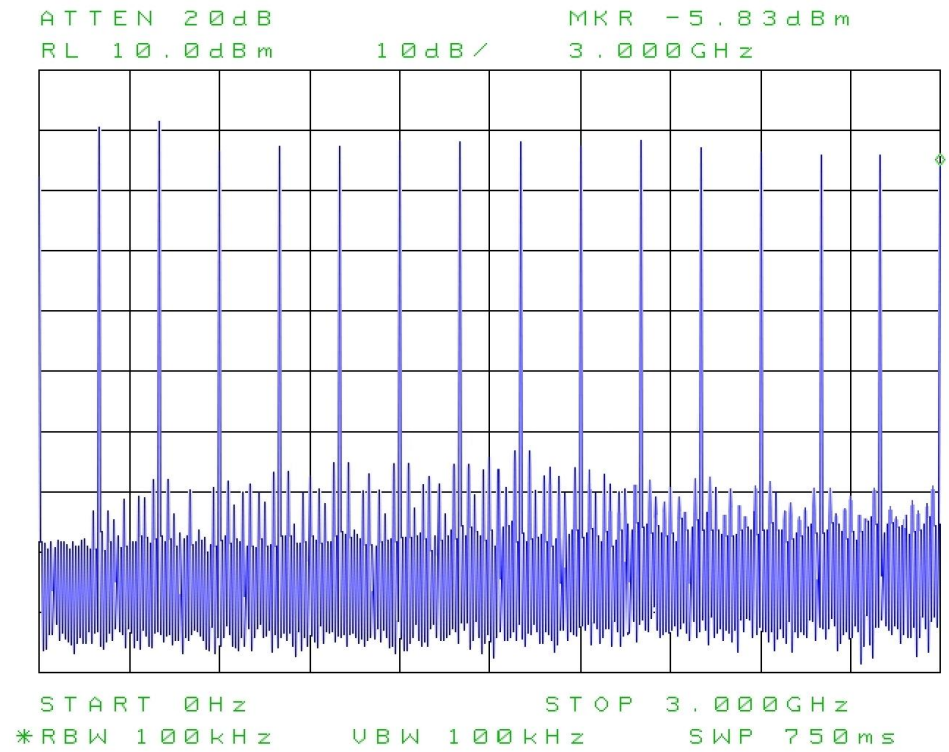


Picture 1: typ. comb spectrum, 0 – 3 GHz, 50 MHz base frequency

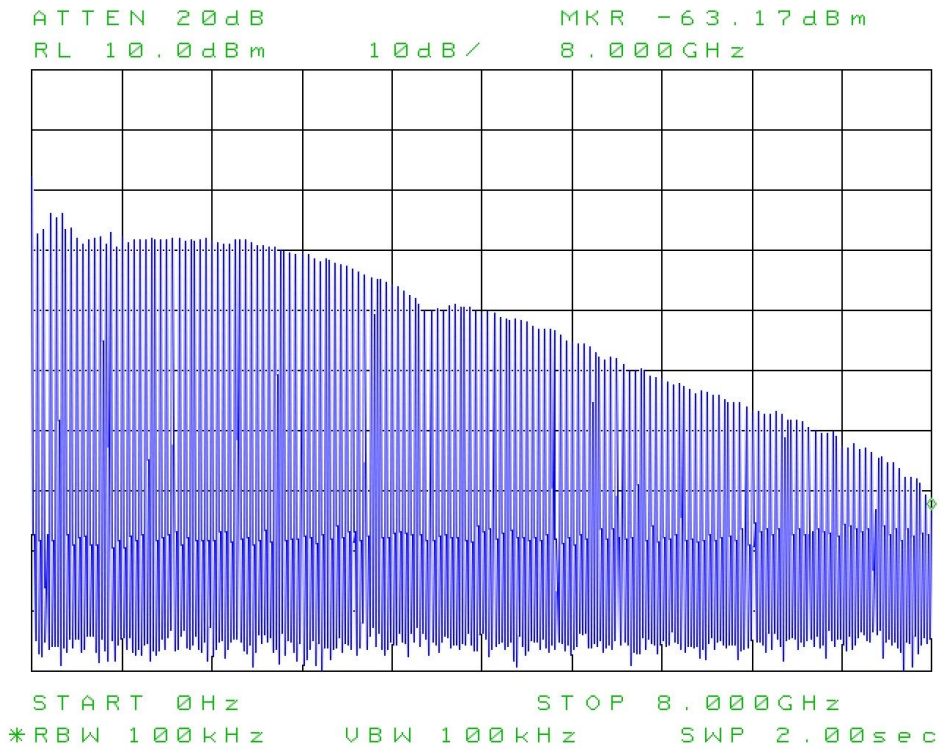


Picture 2: typ. comb spectrum, 0 – 3 GHz, 100 MHz base frequency

GENERAL PURPOSE COMB GENERATOR

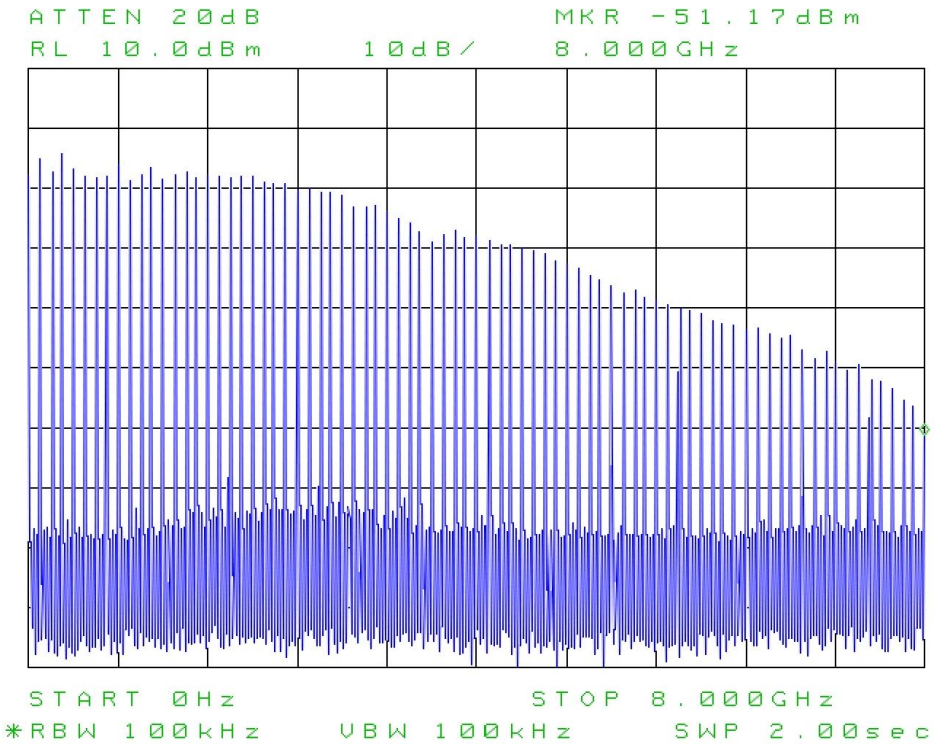


Picture 3: typ. comb spectrum, 0 – 3 GHz, 200 MHz base frequency

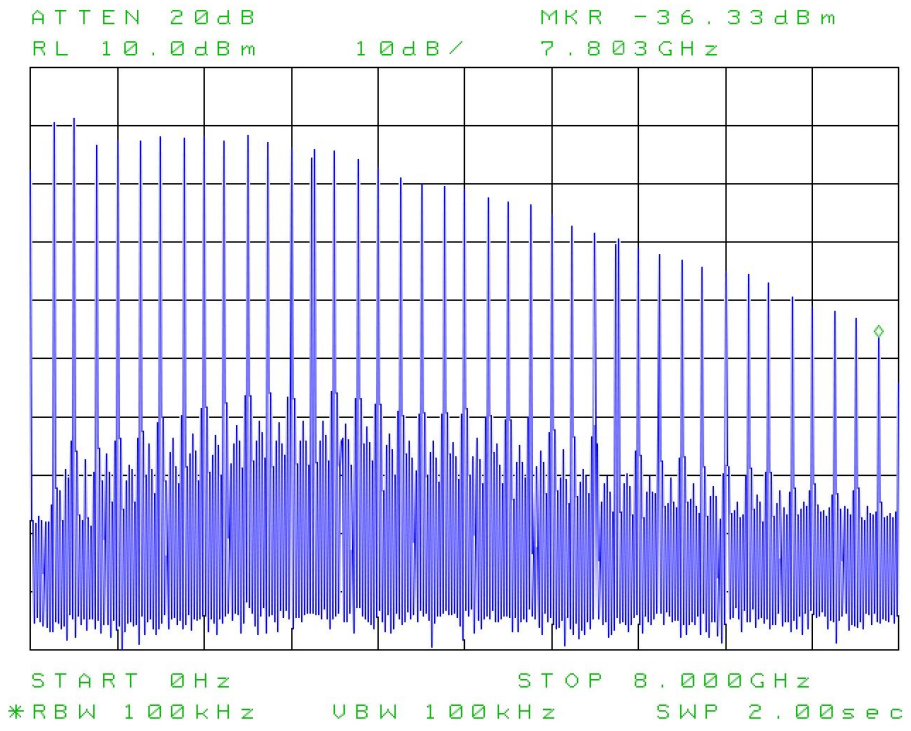


Picture 4: typ. comb spectrum, 0 – 8 GHz, 50 MHz base frequency

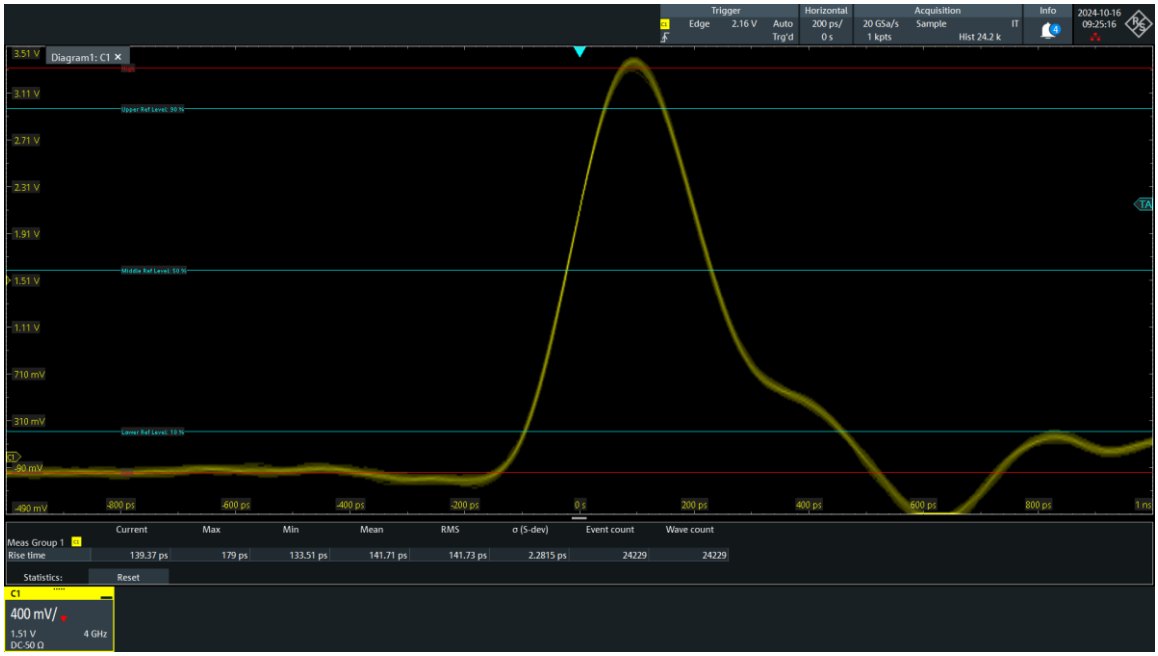
GENERAL PURPOSE COMB GENERATOR



Picture 5: typ. comb spectrum, 0 – 8 GHz, 100 MHz base frequency



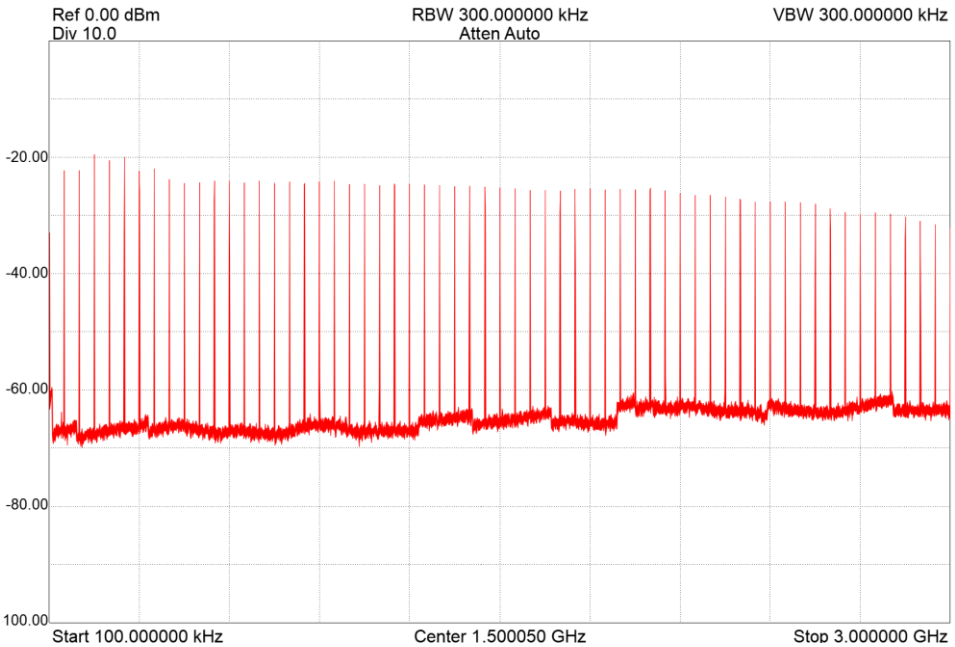
Picture 6: typ. comb spectrum, 0 – 8 GHz, 200 MHz base frequency



Picture 7: output pulse, 20 MHz base frequency, 50Ω termination

4 Spectrum flatness

To improve spectral amplitude flatness and output matching, add a 6 dB or 10 dB attenuator to the RF output of the comb generator.



Picture 8: comb spectrum, 0 – 3 GHz, 50 MHz base frequency, 6 dB attenuator at RF output

5 Ordering Information

Part Number	Description
TBCG5	General purpose comb generator USB-A to USB-C cable

6 History

Version	Date	Author	Changes
V 1.0	28.06.2026	Mayerhofer	Creation of the document

TekBox Digital Solutions Vietnam Pte. Ltd.
www.tekbox.com
Factory 4, F4, Lot I-3B-1, Saigon Hi-Tech Park, Tan Phu Ward, District 9, Ho Chi Minh City, Vietnam