



TEKBOX TBCG3-CN Comb Generator User Manual

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DIGITAL SOLUTIONS

TBCG3-CN Comb Generator User Manual

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Introduction



Picture 1: TBCG3-CN comb generator

The TBCG3-CN produces a comb spectrum with approximately 8 dB flatness in the frequency range up to 1.5 GHz and has a 50 Ohm output with a female N- connector. The housing is milled from solid aluminum. A 1/4" – 20 UNC thread in the comb panel accepts standard tripod bolts.

Specification

Specified bandwidth: 1.5 GHz
 Flatness of the comb spectrum: 8 dB typically
 Output impedance: 50 Ohm
 Output power: 66 dBμV @ 10 MHz f comb; decreasing 6 dB with every fcomb/2
 Amplitude stability: < 0.2 dB; <0.1 dB after 15 minutes
 Aging: < 0.5 dB over 12 months
 Output connector: N-female
 Selectable, fixed comb frequencies: 100 kHz, 500 kHz, 1 MHz, 5 MHz, 10 MHz
 Frequency stability: 50 ppm
 External excitation input: 5 kHz – 300 MHz @ square input signal; 3.3 Vpp max
 100 kHz – 300 MHz @ sinus input signal; 3.3 Vpp max
 Input impedance: 50 Ohm
 Input connector: SMA-female
 Current consumption: 70 mA
 Indicators: Power On LED, Low Battery LED
 Power supply: 4 x AA NiMH (e.g. Varta Mignon 2700, not supplied)
 Charger: external; Ansmann ACS110
 Operation time: battery capacity / 70 mA
 Temperature range: -20°C to +45 °C
 Housing diameter: 180 mm
 Housing height: 60 mm
 Weight: 1250 g

3 Spectrum plots, fcomb: 10 MHz, 5 MHz, 1 MHz, 500 kHz, 100 kHz

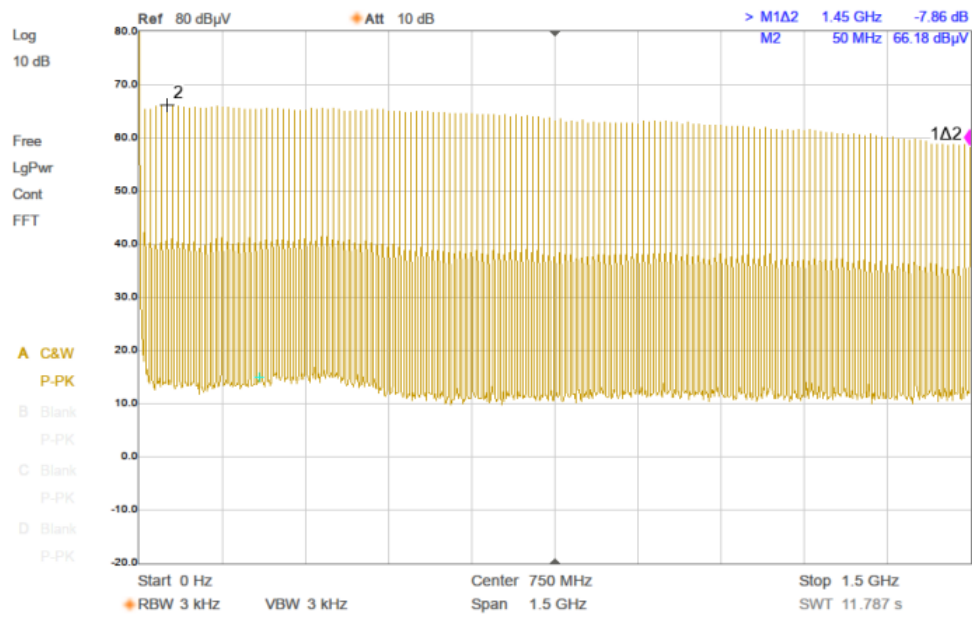


Figure 1 - f_{comb} : 10 MHz; 66 dB μ V @ 50 MHz; spectrum flatness up to 1.5 GHz: -8dB

TBCG3-CN Comb Generator

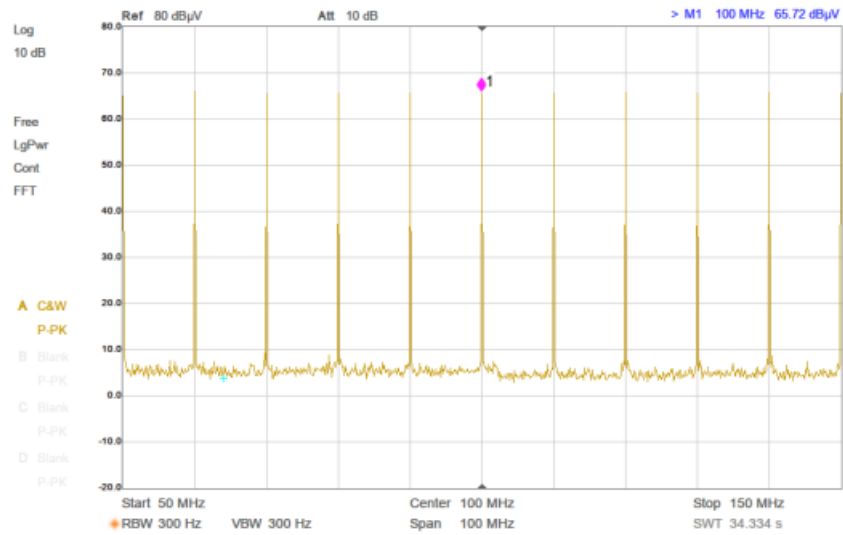


Figure 2 – zoomed; f_{comb} : 10 MHz; span: 50 MHz – 150 MHz

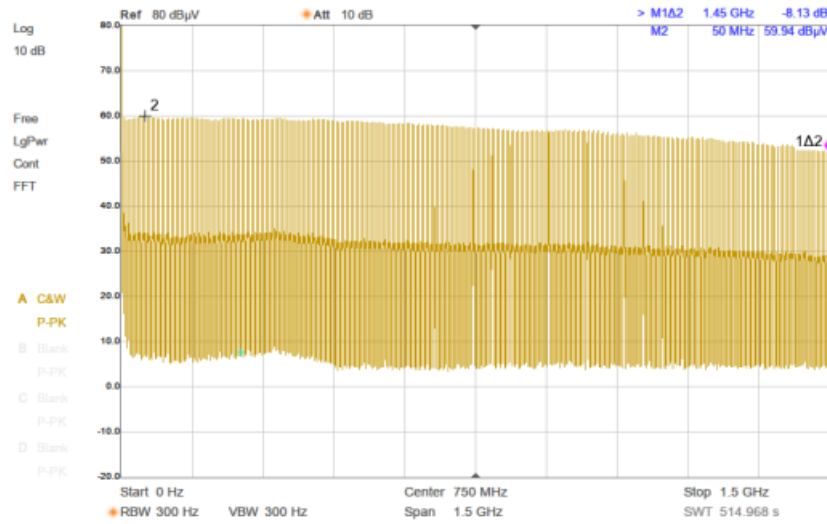


Figure 3 - f_{comb} : 5 MHz; 60 dB μ V @ 50 MHz; spectrum flatness up to 1.5 GHz: -8dB

TBCG3-CN Comb Generator

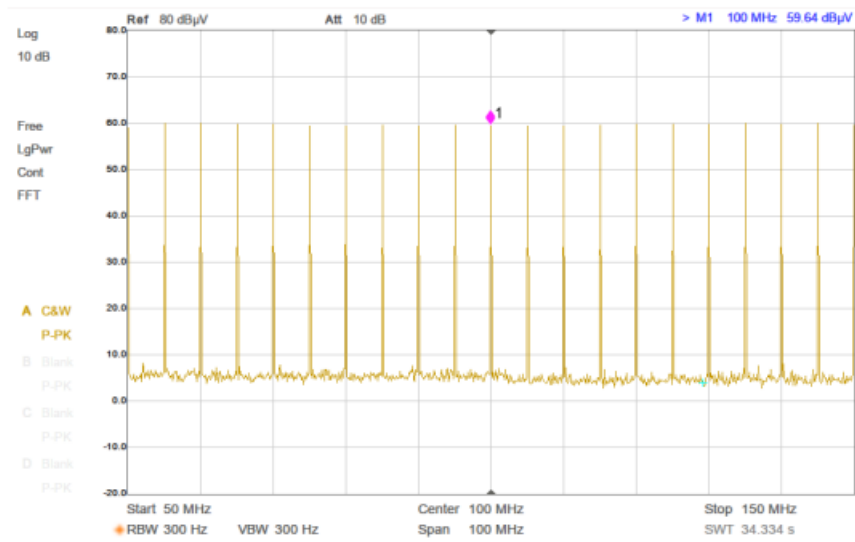


Figure 4 – zoomed; f_{comb} : 5 MHz; span: 50 MHz – 150 MHz

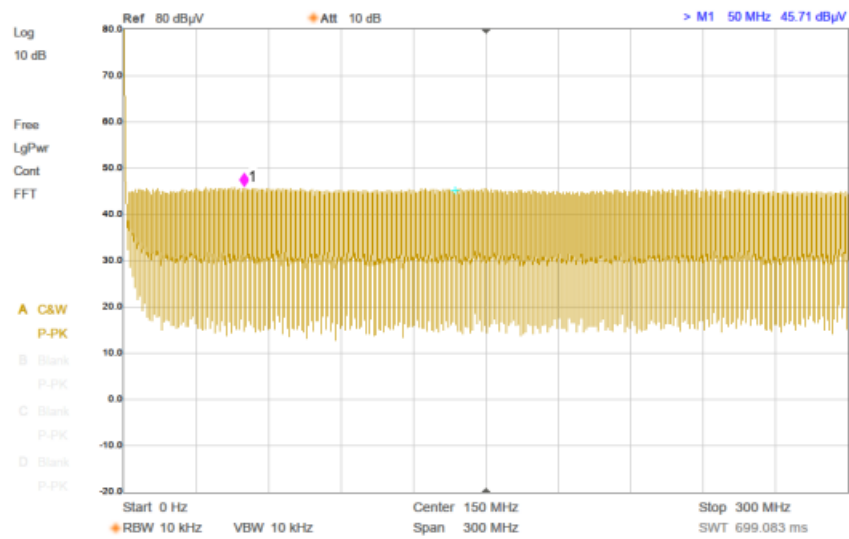


Figure 5 – zoomed; f_{comb} : 1 MHz; 45 dB μ V @ 50 MHz;
span: 0 MHz – 300 MHz; spectrum flatness up to 1.5 GHz: -8dB

TBCG3-CN Comb Generator

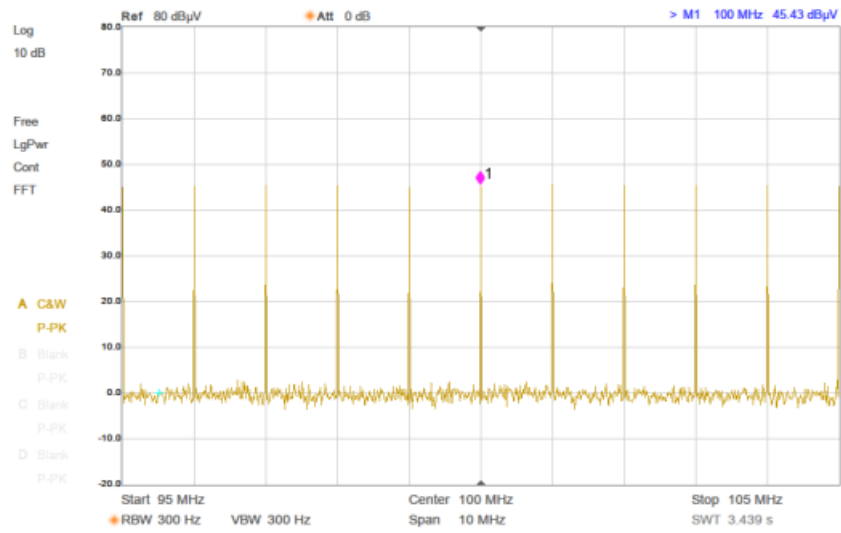


Figure 6 – zoomed; f_{comb} : 1 MHz; span: 95 MHz – 105 MHz

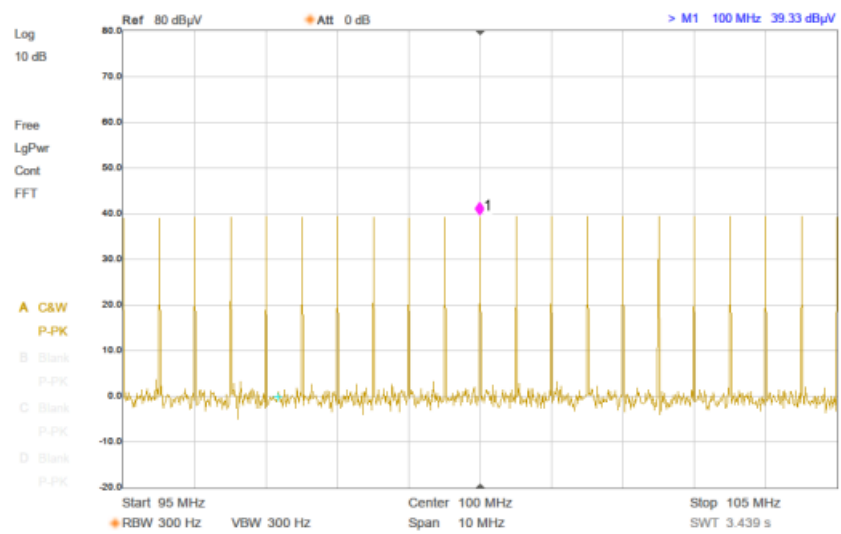


Figure 7 – zoomed; f_{comb} : 500 kHz; 39 dBμV @ 100 MHz; span: 95 MHz – 105 MHz; spectrum flatness up to 1.5 GHz: -8dB

TBCG3-CN Comb Generator

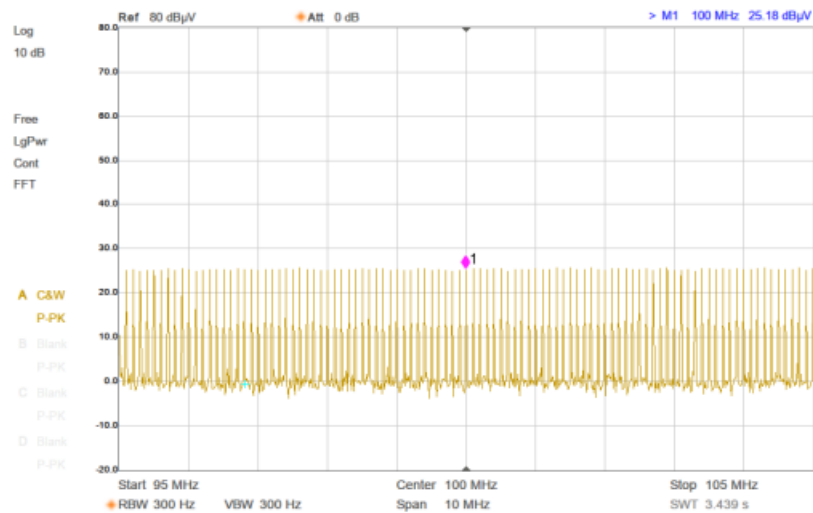


Figure 8 – zoomed; f_{comb} : 100 kHz; 25 dBμV @ 100 MHz; span: 95 MHz – 105 MHz; spectrum flatness up to 1.5 GHz: -17dB

Spectrum plots, external frequency input

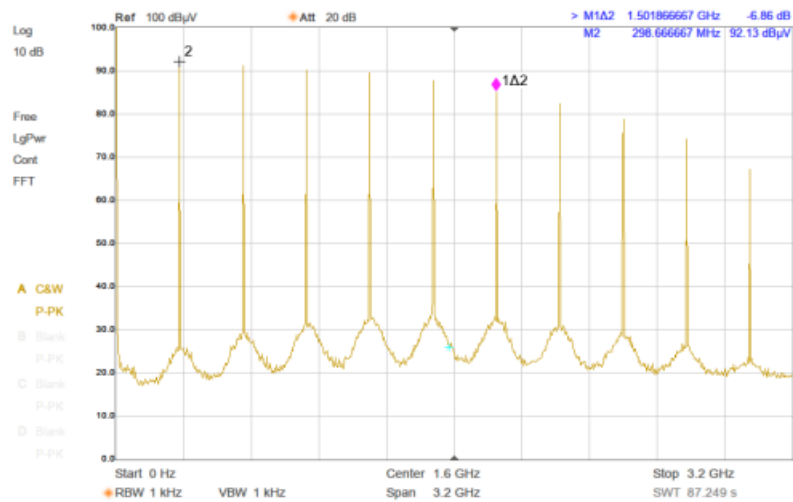


Figure 9 - f_{comb} : 300 MHz; 92 dBμV @ 300 MHz; spectrum flatness up to 1.5 GHz: -7dB
Signal amplitude at external input: +6 dBm

TBCG3-CN Comb Generator

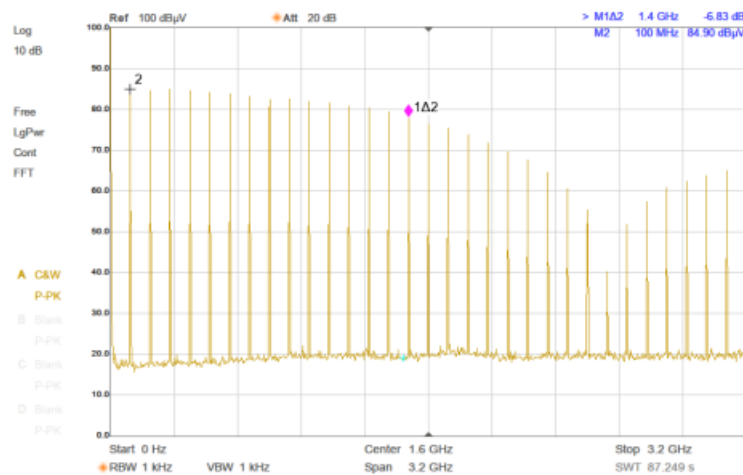


Figure 10 - f_{comb} : 100 MHz; 85 dBμV @ 100 MHz; spectrum flatness up to 1.5 GHz: -7dB
Signal amplitude at external input: +6 dBm

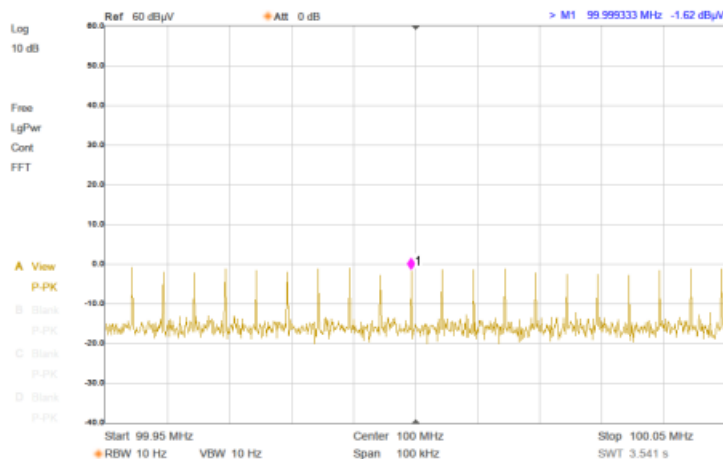


Figure 10 – zoomed; f_{comb} : 5 kHz; -1 dBμV @ 100 MHz;
span: 99.95 MHz – 100.05 MHz
Signal amplitude at external input: square, 3.3 Vpp

Application

Checking the sanity of a LISN or conducted emission measurement setup.

There is no need to swap the N-connectors of the LISN adapter cable to switch between LISN channels, when utilizing a TBRFPS1 power splitter:



Picture 1: TBCG3-CN connected to a LISN utilizing a RF power splitter

Warning:

Never connect the comb generator or the comb generator adapter cable to a powered LISN to avoid potentially lethal electric shock. Before connecting the comb generator adapter cable into the DUT / EUT socket, always unhook the mains connector on the back of the LISN.

Never plug the comb generator adapter cord into a power outlet to avoid potentially lethal electric shock.

Inserting/replacing batteries

Loosen the SMA-connector nut a few turns. Remove the six screws at the bottom of the comb generator housing, lift it, and insert four AA rechargeable 1.2V NiMH batteries. Both the battery compartment and the PCB indicate the polarity.

Reattach the bottom cover, then tighten the screws and the SMA-connector nut.

Ordering Information

Part Number	Description
TBCG3-CN-EU	Comb generator, Ansmann ACS110 charger, LISN adapter cable with Schuko connector
TBCG3-CN-UK	Comb generator, Ansmann ACS110 charger, LISN adapter cable with UK connector
TBCG3-CN-US	Comb generator, Ansmann ACS110 charger, LISN adapter cable with US connector
TBCG3-CN-AU	Comb generator, Ansmann ACS110 charger, LISN adapter cable with Australian connector
TBLA-3P-16A	BNC adapter for 3 Phase LISN TBL5032-16A EUT socket
TBLA-3P-32A	BNC adapter for 3 Phase LISN TBL5032-32A EUT socket
TBLA-PH1	BNC adapter for TBL5016-1 or TBL0550 EUT/SOURCE socket
TBLA-PH2	BNC adapter for TBL50100 or TBL05100 EUT/SOURCE socket
TBRFPS1	Power splitter

History


Version	Date	Author	Changes
V 1.0	4.2.2023	Mayerhofer	Creation



TekBox Digital Solutions Vietnam Pte. Ltd.

Factory 4, F4, Lot I-3B-1, Saigon Hi-Tech Park, Tan Phu Ward, District 9, Ho Chi Minh City, Vietnam

Documents / Resources

	<p>TEKBOX TBCG3-CN Comb Generator [pdf] User Manual TBCG3-CN Comb Generator, TBCG3-CN, Comb Generator, Generator</p>
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References

- [Tekbox Digital Solutions](#) |

