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# Comb Generator

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# RADIATING COMB GENERATOR

## 1 Introduction

The TBCG1 is a radiating comb generator with an internal antenna and a base frequency of 100 MHz. It radiates a comb spectrum characterized up to 6 GHz. The comb generator is built and characterized to serve as a rough reference for testing radiated noise measurement set ups in anechoic chambers, TEM/GTEM cells, shielded chambers, etc. It is a portable device, powered by a 9 V alkaline cell.



## 2 Specification

Base frequency: 100 MHz  
Characterized comb spectrum: 100 MHz - 6 GHz  
Tolerance: +/- 2.5 dB  
Power supply: 9V PP3 (E-block) alkaline battery  
Current consumption: 175 mA  
Dimensions: 80 mm x 61 mm x 27 mm  
Weight including battery: 76 g

**Warning: the TBCG1 radiates across a wide spectrum, significantly exceeding radiating noise limits specified in any CISPR standard. Use it only in a shielded environment to avoid interference with other electronic products**

Turn off the device after its use, to prevent battery drainage ( $I_{ON} = 175 \text{ mA}$ )

# RADIATING COMB GENERATOR

## 3 Spectrum Plots

### 3.1 Orientation 1



# RADIATING COMB GENERATOR

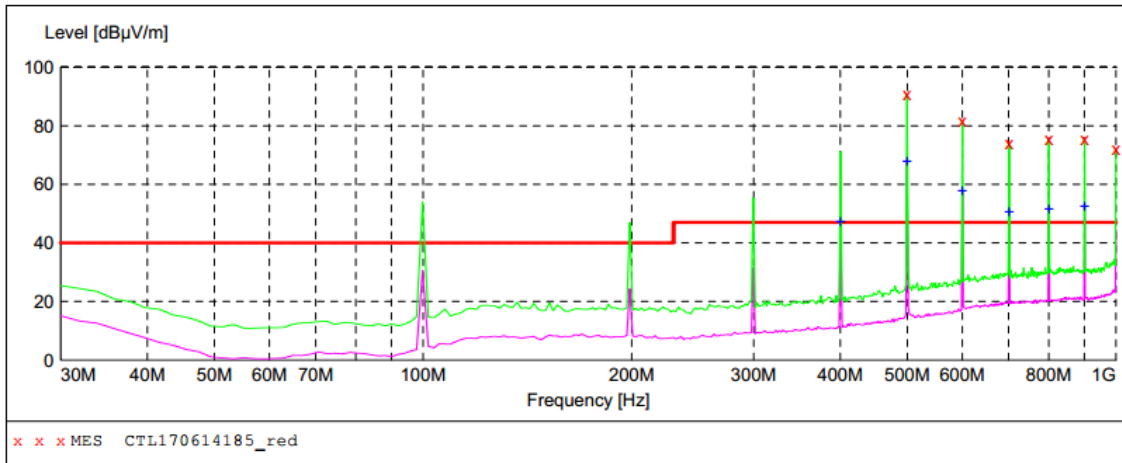
## 3.1.1 Radiated Emission from 30 MHz to 1 GHz, vertical Polarisation (Orientation 1)

### Radiation Emission Test EN 55032

EUT: TBCG1  
 Manufacturer: CTL  
 Operating Condition: ON  
 Test Site: 3m Chamber  
 Operator: XIANG  
 Test Specification: DC 9V  
 Comment: 1  
 Start of Test: 6/15/2017 / 12:17:23AM

### SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1
		Average			



### MEASUREMENT RESULT: "CTL170614185\_red"

Detector: Max. Peak

6/15/2017 12:17AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
499.480000	90.70	20.5	47.0	-43.7	---	0.0	0.00	VERTICAL
600.360000	81.70	23.0	47.0	-34.7	---	0.0	0.00	VERTICAL
701.240000	73.90	24.3	47.0	-26.9	---	0.0	0.00	VERTICAL
800.180000	75.40	25.6	47.0	-28.4	---	0.0	0.00	VERTICAL
901.060000	75.50	26.3	47.0	-28.5	---	0.0	0.00	VERTICAL
1000.000000	72.10	28.2	47.0	-25.1	---	0.0	0.00	VERTICAL

### MEASUREMENT RESULT: "CTL170614185\_red2"

Detector: Average

6/15/2017 12:17AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
400.540000	47.30	18.2	1000.0	952.7	---	0.0	0.00	VERTICAL
499.480000	67.80	20.5	1000.0	932.2	---	0.0	0.00	VERTICAL
600.360000	57.90	23.0	1000.0	942.1	---	0.0	0.00	VERTICAL
701.240000	50.40	24.3	1000.0	949.6	---	0.0	0.00	VERTICAL
800.180000	51.70	25.6	1000.0	948.3	---	0.0	0.00	VERTICAL
901.060000	52.50	26.3	1000.0	947.5	---	0.0	0.00	VERTICAL

# RADIATING COMB GENERATOR

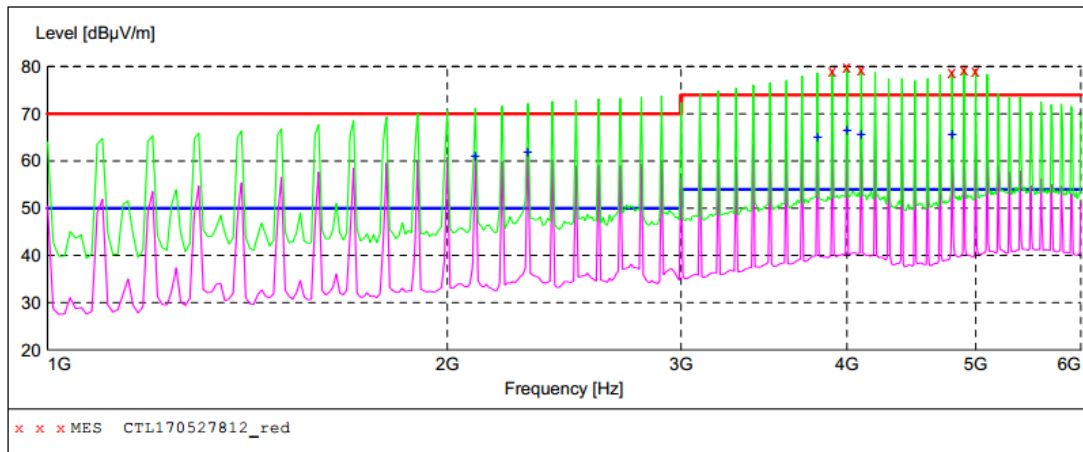
## 3.1.2 Radiated Emission from 1 GHz to 6 GHz, vertical Polarisation (Orientation 1)

### Radiation Emission Test EN 55022 B

EUT: TBCG1  
 Manufacturer: /  
 Operating Condition: ON  
 Test Site: 3m Chamber  
 Operator: WZ  
 Test Specification: DC 9V  
 Comment: 1  
 Start of Test: 6/15/2017 / 12:33:01AM

### SWEEP TABLE: "test (1G-18G) P"

Short Description: EN 55022 Field Strength  
 Start Stop Detector Meas. IF Transducer  
 Frequency Frequency Time Bandw.  
 1.0 GHz 6.0 GHz MaxPeak 5.0 s 1 MHz DRH-118 Horizontal  
 Average



### MEASUREMENT RESULT: "CTL170527812\_red" Detector: Max. Peak

6/15/2017 12:39AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
3900.000000	79.10	6.3	74.0	-5.1	---	0.0	0.00	VERTICAL
4000.000000	79.90	7.0	74.0	-5.9	---	0.0	0.00	VERTICAL
4100.000000	79.30	6.4	74.0	-5.3	---	0.0	0.00	VERTICAL
4800.000000	78.90	5.9	74.0	-4.9	---	0.0	0.00	VERTICAL
4900.000000	79.40	6.5	74.0	-5.4	---	0.0	0.00	VERTICAL
5000.000000	79.20	7.1	74.0	-5.2	---	0.0	0.00	VERTICAL

### MEASUREMENT RESULT: "CTL170527812\_red2" Detector: Average

6/15/2017 12:39AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
2100.000000	61.10	-1.9	50.0	-11.1	---	0.0	0.00	VERTICAL
2300.000000	61.90	-0.9	50.0	-11.9	---	0.0	0.00	VERTICAL
3800.000000	65.10	5.7	54.0	-11.1	---	0.0	0.00	VERTICAL
4000.000000	66.40	7.0	54.0	-12.4	---	0.0	0.00	VERTICAL
4100.000000	65.50	6.4	54.0	-11.5	---	0.0	0.00	VERTICAL
4800.000000	65.70	5.9	54.0	-11.7	---	0.0	0.00	VERTICAL

# RADIATING COMB GENERATOR

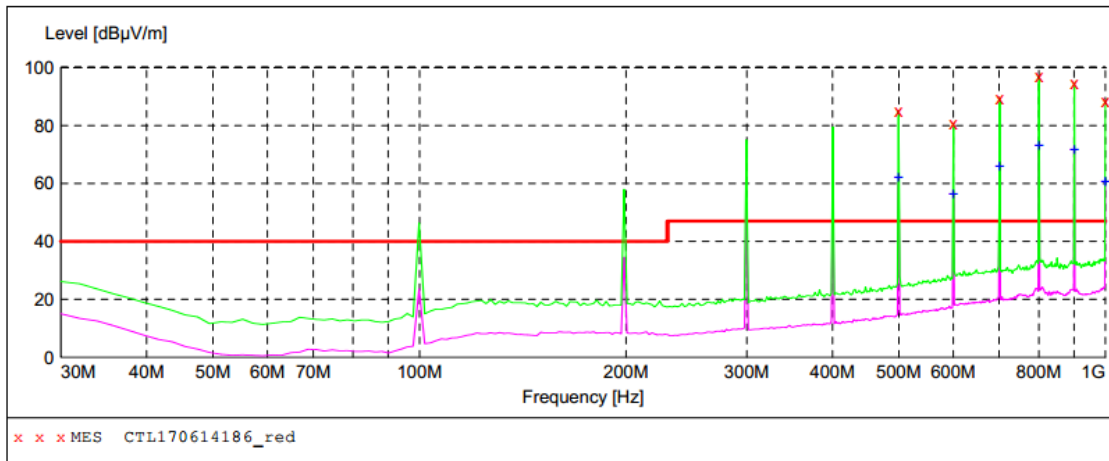
## 3.1.3 Radiated Emission from 30 MHz to 1 GHz, horizontal Polarisation (Orientation 1)

### Radiation Emission Test EN 55032

EUT: TBCG1  
 Manufacturer: CTL  
 Operating Condition: ON  
 Test Site: 3m Chamber  
 Operator: XIANG  
 Test Specification: DC 9V  
 Comment: 1  
 Start of Test: 6/15/2017 / 12:18:20AM

### SWEEP TABLE: "test (30M-1G)"

Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1
Average					



### MEASUREMENT RESULT: "CTL170614186\_red" Detector: Max. Peak

6/15/2017 12:19AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
499.480000	84.90	20.5	47.0	-37.9	---	0.0	0.00	HORIZONTAL
600.360000	80.60	23.0	47.0	-33.6	---	0.0	0.00	HORIZONTAL
701.240000	89.40	24.3	47.0	-42.4	---	0.0	0.00	HORIZONTAL
800.180000	97.00	25.6	47.0	-50.0	---	0.0	0.00	HORIZONTAL
901.060000	94.80	26.3	47.0	-47.8	---	0.0	0.00	HORIZONTAL
1000.000000	88.60	28.2	47.0	-41.6	---	0.0	0.00	HORIZONTAL

### MEASUREMENT RESULT: "CTL170614186\_red2" Detector: Average

6/15/2017 12:19AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
499.480000	62.00	20.5	1000.0	938.0	---	0.0	0.00	HORIZONTAL
600.360000	56.50	23.0	1000.0	943.5	---	0.0	0.00	HORIZONTAL
701.240000	65.70	24.3	1000.0	934.3	---	0.0	0.00	HORIZONTAL
800.180000	73.20	25.6	1000.0	926.8	---	0.0	0.00	HORIZONTAL
901.060000	71.60	26.3	1000.0	928.4	---	0.0	0.00	HORIZONTAL
1000.000000	60.70	28.2	1000.0	939.3	---	0.0	0.00	HORIZONTAL

# RADIATING COMB GENERATOR

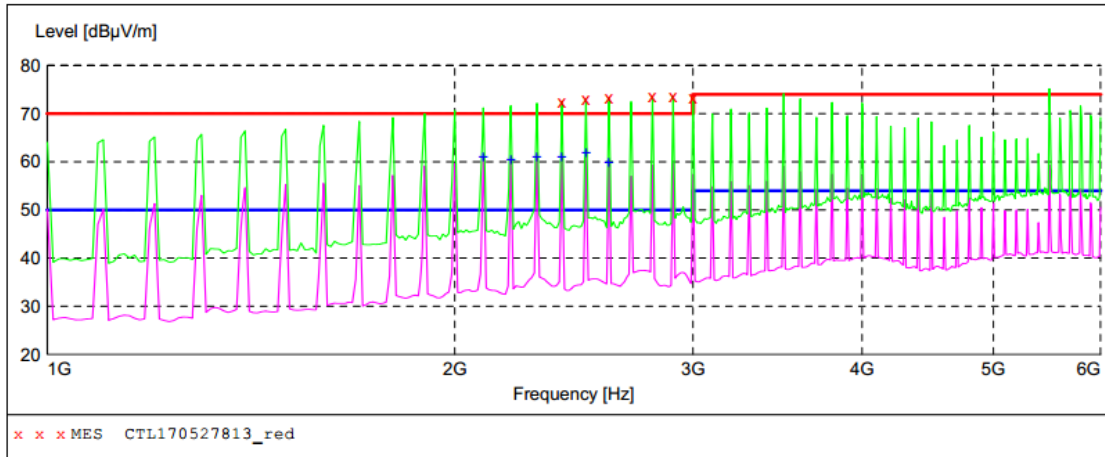
## 3.1.4 Radiated Emission from 1 GHz to 6 GHz, horizontal Polarisation (Orientation 1)

### Radiation Emission Test EN 55022 B

EUT: TBCG1  
 Manufacturer: /  
 Operating Condition: ON  
 Test Site: 3m Chamber  
 Operator: WZ  
 Test Specification: DC 9V  
 Comment: 1  
 Start of Test: 6/15/2017 / 12:40:03AM

### SWEEP TABLE: "test (1G-18G) P"

Short Description: EN 55022 Field Strength  
 Start Stop Detector Meas. IF Transducer  
 Frequency Frequency Time Bandw.  
 1.0 GHz 6.0 GHz MaxPeak 5.0 s 1 MHz DRH-118 Horizontal  
 Average



### MEASUREMENT RESULT: "CTL170527813\_red" Detector: Max. Peak

6/15/2017 12:41AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
2400.000000	72.60	-0.5	70.0	-2.6	---	0.0	0.00	HORIZONTAL
2500.000000	73.00	0.0	70.0	-3.0	---	0.0	0.00	HORIZONTAL
2600.000000	73.20	0.2	70.0	-3.2	---	0.0	0.00	HORIZONTAL
2800.000000	73.50	0.6	70.0	-3.5	---	0.0	0.00	HORIZONTAL
2900.000000	73.70	0.8	70.0	-3.7	---	0.0	0.00	HORIZONTAL
3000.000000	73.40	1.0	70.0	-3.4	---	0.0	0.00	HORIZONTAL

### MEASUREMENT RESULT: "CTL170527813\_red2" Detector: Average

6/15/2017 12:41AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
2100.000000	61.00	-1.9	50.0	-11.0	---	0.0	0.00	HORIZONTAL
2200.000000	60.30	-1.4	50.0	-10.3	---	0.0	0.00	HORIZONTAL
2300.000000	61.10	-0.9	50.0	-11.1	---	0.0	0.00	HORIZONTAL
2400.000000	61.00	-0.5	50.0	-11.0	---	0.0	0.00	HORIZONTAL
2500.000000	61.80	0.0	50.0	-11.8	---	0.0	0.00	HORIZONTAL
2600.000000	59.90	0.2	50.0	-9.9	---	0.0	0.00	HORIZONTAL



# RADIATING COMB GENERATOR

## 3.2 Orientation 2





# RADIATING COMB GENERATOR

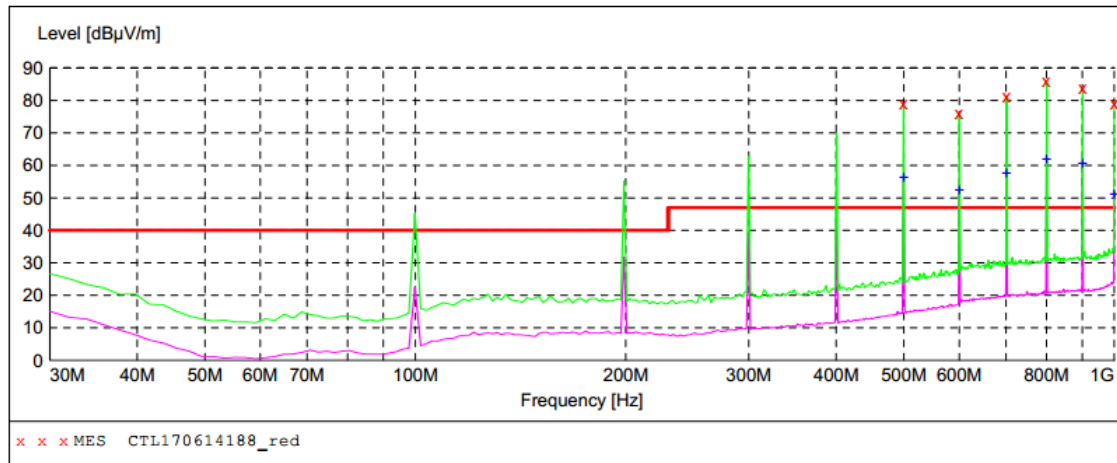
## 3.2.1 Radiated Emission from 30 MHz to 1 GHz, vertical Polarisation (Orientation 2)

### Radiation Emission Test EN 55032

EUT: TBCG1  
 Manufacturer: CTL  
 Operating Condition: ON  
 Test Site: 3m Chamber  
 Operator: XIANG  
 Test Specification: DC 9V  
 Comment: 2  
 Start of Test: 6/15/2017 / 12:23:36AM

### SWEEP TABLE: "test (30M-1G)"

Start	Stop	Detector	Meas. Time	IF Bandw.	Field Strength Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1
Average					



### MEASUREMENT RESULT: "CTL170614188\_red" Detector: Max. Peak

6/15/2017 12:25AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
499.480000	79.10	20.5	47.0	-32.1	---	0.0	0.00	VERTICAL
600.360000	76.30	23.0	47.0	-29.3	---	0.0	0.00	VERTICAL
701.240000	81.40	24.3	47.0	-34.4	---	0.0	0.00	VERTICAL
800.180000	85.90	25.6	47.0	-38.9	---	0.0	0.00	VERTICAL
901.060000	83.80	26.3	47.0	-36.8	---	0.0	0.00	VERTICAL
1000.000000	79.20	28.2	47.0	-32.2	---	0.0	0.00	VERTICAL

### MEASUREMENT RESULT: "CTL170614188\_red2" Detector: Average

6/15/2017 12:25AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
499.480000	56.20	20.5	1000.0	943.8	---	0.0	0.00	VERTICAL
600.360000	52.40	23.0	1000.0	947.6	---	0.0	0.00	VERTICAL
701.240000	57.80	24.3	1000.0	942.2	---	0.0	0.00	VERTICAL
800.180000	62.00	25.6	1000.0	938.0	---	0.0	0.00	VERTICAL
901.060000	60.60	26.3	1000.0	939.4	---	0.0	0.00	VERTICAL
1000.000000	51.10	28.2	1000.0	948.9	---	0.0	0.00	VERTICAL

# RADIATING COMB GENERATOR

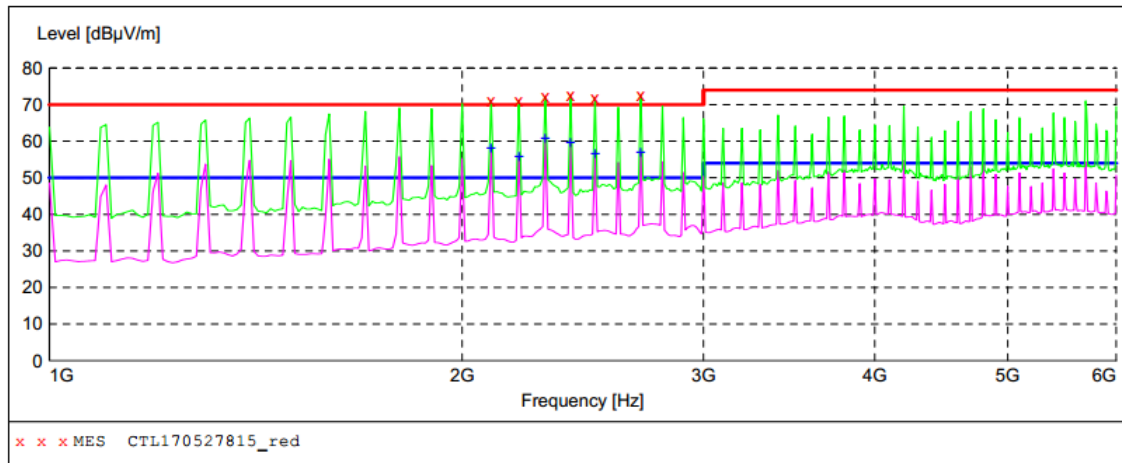
## 3.2.2 Radiated Emission from 1 GHz to 6 GHz, vertical Polarisation (Orientation 2)

### Radiation Emission Test EN 55022 B

EUT: TBCG1  
 Manufacturer: /  
 Operating Condition: ON  
 Test Site: 3m Chamber  
 Operator: WZ  
 Test Specification: DC 9V  
 Comment: 2  
 Start of Test: 6/15/2017 / 12:45:12AM

### SWEEP TABLE: "test (1G-18G) P"

Short Description: EN 55022 Field Strength  
 Start Stop Detector Meas. IF Transducer  
 Frequency Frequency Time Bandw.  
 1.0 GHz 6.0 GHz MaxPeak 5.0 s 1 MHz DRH-118 Horizontal  
 Average



### MEASUREMENT RESULT: "CTL170527815\_red" Detector: Max. Peak

6/15/2017 12:46AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
2100.000000	71.10	-1.9	70.0	-1.1	---	0.0	0.00	VERTICAL
2200.000000	71.00	-1.4	70.0	-1.0	---	0.0	0.00	VERTICAL
2300.000000	72.10	-0.9	70.0	-2.1	---	0.0	0.00	VERTICAL
2400.000000	72.60	-0.5	70.0	-2.6	---	0.0	0.00	VERTICAL
2500.000000	71.90	0.0	70.0	-1.9	---	0.0	0.00	VERTICAL
2700.000000	72.60	0.4	70.0	-2.6	---	0.0	0.00	VERTICAL

### MEASUREMENT RESULT: "CTL170527815\_red2" Detector: Average

6/15/2017 12:46AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
2100.000000	58.00	-1.9	50.0	-8.0	---	0.0	0.00	VERTICAL
2200.000000	55.80	-1.4	50.0	-5.8	---	0.0	0.00	VERTICAL
2300.000000	60.70	-0.9	50.0	-10.7	---	0.0	0.00	VERTICAL
2400.000000	59.50	-0.5	50.0	-9.5	---	0.0	0.00	VERTICAL
2500.000000	56.40	0.0	50.0	-6.4	---	0.0	0.00	VERTICAL
2700.000000	57.10	0.4	50.0	-7.1	---	0.0	0.00	VERTICAL

# RADIATING COMB GENERATOR

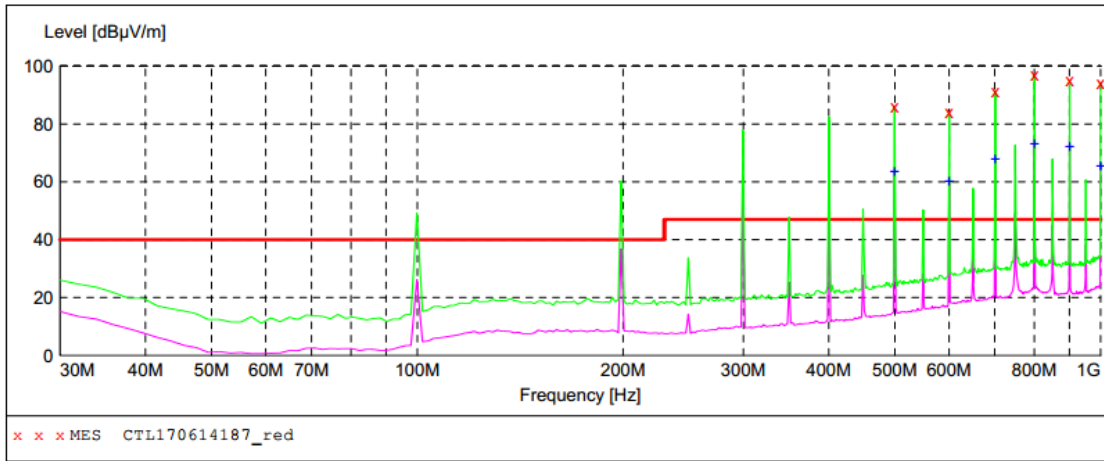
## 3.2.3 Radiated Emission from 30 MHz to 1 GHz, horizontal Polarisation (Orientation 2)

### Radiation Emission Test EN 55032

EUT: TBCG1  
 Manufacturer: CTL  
 Operating Condition: ON  
 Test Site: 3m Chamber  
 Operator: XIANG  
 Test Specification: DC 9V  
 Comment: 2  
 Start of Test: 6/15/2017 / 12:20:14AM

### SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	MaxPeak	300.0 ms	120 kHz	JB1
30.0 MHz	1.0 GHz	Average			



### MEASUREMENT RESULT: "CTL170614187\_red" Detector: Max. Peak

6/15/2017 12:23AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
499.480000	86.20	20.5	47.0	-39.2	---	0.0	0.00	HORIZONTAL
600.360000	83.90	23.0	47.0	-36.9	---	0.0	0.00	HORIZONTAL
701.240000	91.40	24.3	47.0	-44.4	---	0.0	0.00	HORIZONTAL
800.180000	96.90	25.6	47.0	-49.9	---	0.0	0.00	HORIZONTAL
901.060000	95.20	26.3	47.0	-48.2	---	0.0	0.00	HORIZONTAL
1000.000000	94.00	28.2	47.0	-47.0	---	0.0	0.00	HORIZONTAL

### MEASUREMENT RESULT: "CTL170614187\_red2" Detector: Average

6/15/2017 12:23AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
499.480000	63.30	20.5	1000.0	936.7	---	0.0	0.00	HORIZONTAL
600.360000	60.00	23.0	1000.0	940.0	---	0.0	0.00	HORIZONTAL
701.240000	67.70	24.3	1000.0	932.3	---	0.0	0.00	HORIZONTAL
800.180000	73.00	25.6	1000.0	927.0	---	0.0	0.00	HORIZONTAL
901.060000	72.00	26.3	1000.0	928.0	---	0.0	0.00	HORIZONTAL
1000.000000	65.60	28.2	1000.0	934.4	---	0.0	0.00	HORIZONTAL

# RADIATING COMB GENERATOR

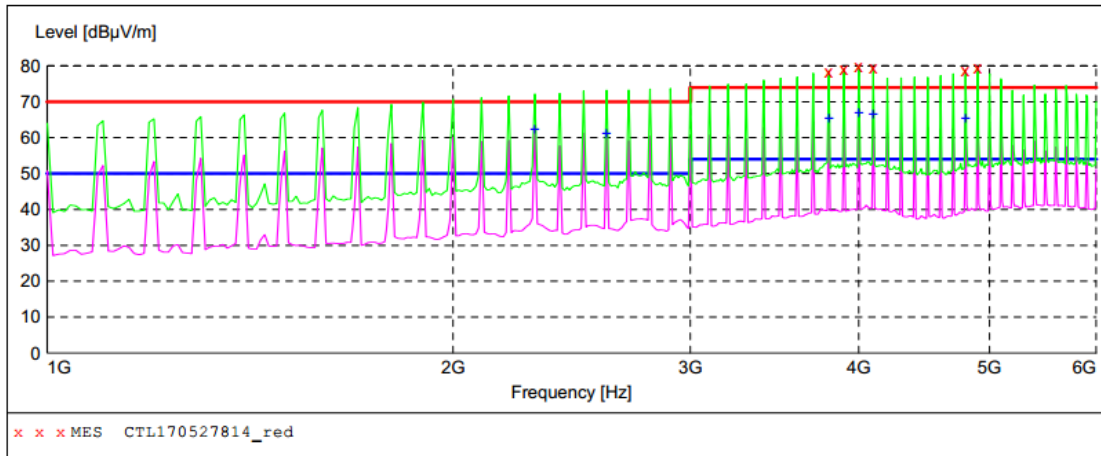
## 3.2.4 Radiated Emission from 1 GHz to 6 GHz, horizontal Polarisation (Orientation 2)

### Radiation Emission Test EN 55022 B

EUT: TBCG1  
 Manufacturer: /  
 Operating Condition: ON  
 Test Site: 3m Chamber  
 Operator: WZ  
 Test Specification: DC 9V  
 Comment: 2  
 Start of Test: 6/15/2017 / 12:42:05AM

### SWEEP TABLE: "test (1G-18G) P"

Short Description: EN 55022 Field Strength  
 Start Stop Detector Meas. IF Transducer  
 Frequency Frequency Time Bandw.  
 1.0 GHz 6.0 GHz MaxPeak 5.0 s 1 MHz DRH-118 Horizontal  
 Average



### MEASUREMENT RESULT: "CTL170527814\_red" Detector: Max. Peak

6/15/2017 12:44AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
3800.000000	78.60	5.7	74.0	-4.6	---	0.0	0.00	HORIZONTAL
3900.000000	79.10	6.3	74.0	-5.1	---	0.0	0.00	HORIZONTAL
4000.000000	80.00	7.0	74.0	-6.0	---	0.0	0.00	HORIZONTAL
4100.000000	79.40	6.4	74.0	-5.4	---	0.0	0.00	HORIZONTAL
4800.000000	78.90	5.9	74.0	-4.9	---	0.0	0.00	HORIZONTAL
4900.000000	79.50	6.5	74.0	-5.5	---	0.0	0.00	HORIZONTAL

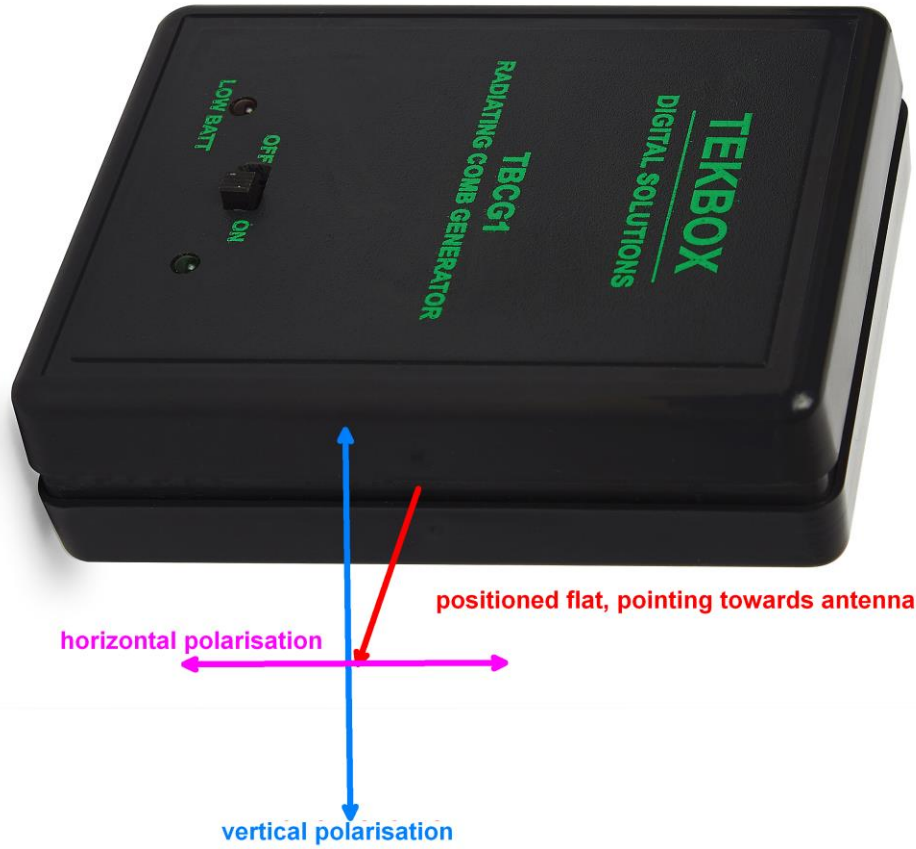
### MEASUREMENT RESULT: "CTL170527814\_red2" Detector: Average

6/15/2017 12:44AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
2300.000000	62.20	-0.9	50.0	-12.2	---	0.0	0.00	HORIZONTAL
2600.000000	61.30	0.2	50.0	-11.3	---	0.0	0.00	HORIZONTAL
3800.000000	65.30	5.7	54.0	-11.3	---	0.0	0.00	HORIZONTAL
4000.000000	66.90	7.0	54.0	-12.9	---	0.0	0.00	HORIZONTAL
4100.000000	66.40	6.4	54.0	-12.4	---	0.0	0.00	HORIZONTAL
4800.000000	65.40	5.9	54.0	-11.4	---	0.0	0.00	HORIZONTAL

# RADIATING COMB GENERATOR

## 3.3 Orientation 3



# RADIATING COMB GENERATOR

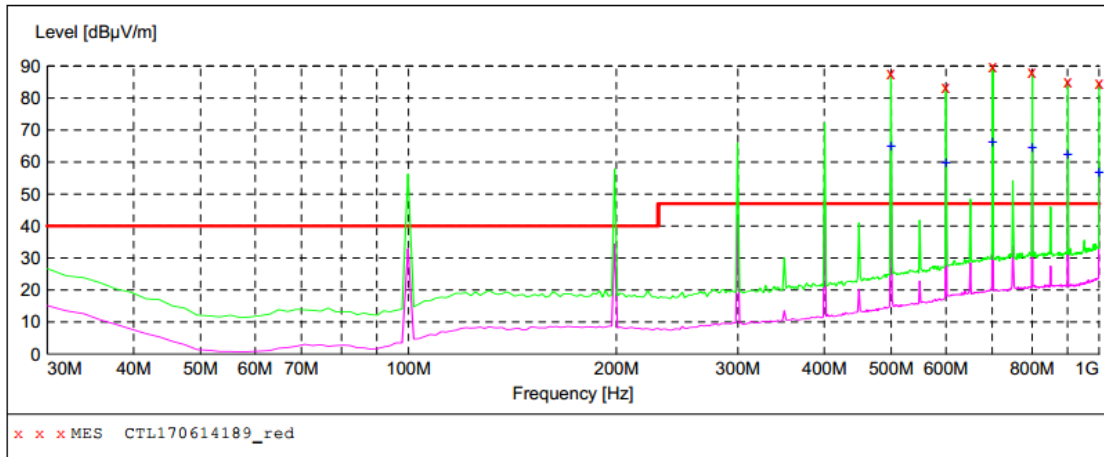
## 3.3.1 Radiated Emission from 30 MHz to 1 GHz, vertical Polarisation (Orientation 3)

### Radiation Emission Test EN 55032

EUT: TBCG1  
 Manufacturer: CTL  
 Operating Condition: ON  
 Test Site: 3m Chamber  
 Operator: XIANG  
 Test Specification: DC 9V  
 Comment: 3  
 Start of Test: 6/15/2017 / 12:25:43AM

### SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	MaxPeak	300.0 ms	120 kHz	JB1
30.0 MHz	1.0 GHz	Average			



### MEASUREMENT RESULT: "CTL170614189\_red" Detector: Max. Peak

6/15/2017 12:29AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
499.480000	87.90	20.5	47.0	-40.9	---	0.0	0.00	VERTICAL
600.360000	83.60	23.0	47.0	-36.6	---	0.0	0.00	VERTICAL
701.240000	89.80	24.3	47.0	-42.8	---	0.0	0.00	VERTICAL
800.180000	88.30	25.6	47.0	-41.3	---	0.0	0.00	VERTICAL
901.060000	85.40	26.3	47.0	-38.4	---	0.0	0.00	VERTICAL
1000.000000	84.90	28.2	47.0	-37.9	---	0.0	0.00	VERTICAL

### MEASUREMENT RESULT: "CTL170614189\_red2" Detector: Average

6/15/2017 12:29AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
499.480000	65.00	20.5	1000.0	935.0	---	0.0	0.00	VERTICAL
600.360000	59.70	23.0	1000.0	940.3	---	0.0	0.00	VERTICAL
701.240000	66.20	24.3	1000.0	933.8	---	0.0	0.00	VERTICAL
800.180000	64.40	25.6	1000.0	935.6	---	0.0	0.00	VERTICAL
901.060000	62.30	26.3	1000.0	937.7	---	0.0	0.00	VERTICAL
1000.000000	56.80	28.2	1000.0	943.2	---	0.0	0.00	VERTICAL



# RADIATING COMB GENERATOR

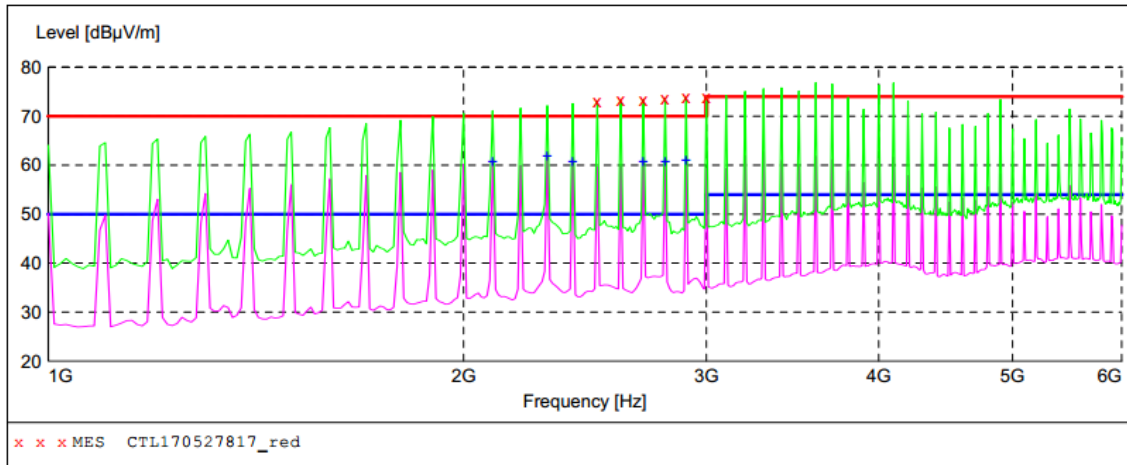
## 3.3.2 Radiated Emission from 1 GHz to 6 GHz, vertical Polarisation (Orientation 3)

### Radiation Emission Test EN 55022 B

EUT: TBCG1  
 Manufacturer: /  
 Operating Condition: ON  
 Test Site: 3m Chamber  
 Operator: WZ  
 Test Specification: DC 9V  
 Comment: 3  
 Start of Test: 6/15/2017 / 6:40:02PM

### SWEEP TABLE: "test (1G-18G) P"

Start	Stop	Detector	Meas. Time	IF Bandw.	Field Strength Transducer
1.0 GHz	6.0 GHz	MaxPeak Average	5.0 s	1 MHz	EN 55022 DRH-118 Horizontal



### MEASUREMENT RESULT: "CTL170527817\_red" Detector: Max. Peak

6/15/2017 6:46PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
2500.000000	73.00	0.0	70.0	-3.0	---	0.0	0.00	VERTICAL
2600.000000	73.20	0.2	70.0	-3.2	---	0.0	0.00	VERTICAL
2700.000000	73.40	0.4	70.0	-3.4	---	0.0	0.00	VERTICAL
2700.000000	73.40	0.4	70.0	-3.4	---	0.0	0.00	VERTICAL
2800.000000	73.60	0.6	70.0	-3.6	---	0.0	0.00	VERTICAL
2900.000000	73.80	0.8	70.0	-3.8	---	0.0	0.00	VERTICAL
3000.000000	73.90	1.0	70.0	-3.9	---	0.0	0.00	VERTICAL

### MEASUREMENT RESULT: "CTL170527817\_red2" Detector: Average

6/15/2017 6:46PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
2100.000000	60.80	-1.9	50.0	-10.8	---	0.0	0.00	VERTICAL
2300.000000	61.80	-0.9	50.0	-11.8	---	0.0	0.00	VERTICAL
2400.000000	60.80	-0.5	50.0	-10.8	---	0.0	0.00	VERTICAL
2700.000000	60.70	0.4	50.0	-10.7	---	0.0	0.00	VERTICAL



# RADIATING COMB GENERATOR

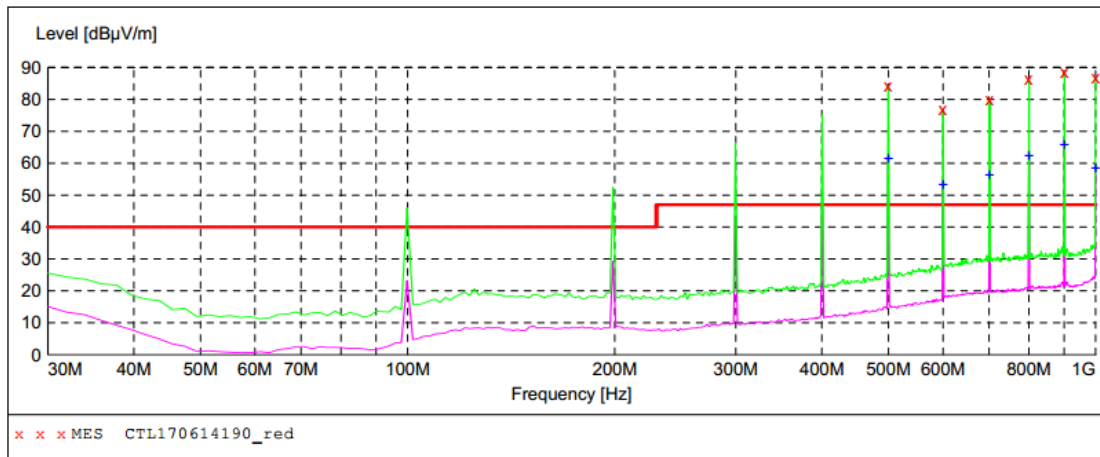
## 3.3.3 Radiated Emission from 30 MHz to 1 GHz, horizontal Polarisation (Orientation 3)

### Radiation Emission Test EN 55032

EUT: TBCG1  
 Manufacturer: CTL  
 Operating Condition: ON  
 Test Site: 3m Chamber  
 Operator: XIANG  
 Test Specification: DC 9V  
 Comment: 3  
 Start of Test: 6/15/2017 / 12:30:03AM

### SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1
Average					



### MEASUREMENT RESULT: "CTL170614190\_red" Detector: Max. Peak

6/15/2017 12:31AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
499.480000	84.50	20.5	47.0	-37.5	---	0.0	0.00	HORIZONTAL
600.360000	77.10	23.0	47.0	-30.1	---	0.0	0.00	HORIZONTAL
701.240000	80.00	24.3	47.0	-33.0	---	0.0	0.00	HORIZONTAL
800.180000	86.30	25.6	47.0	-39.3	---	0.0	0.00	HORIZONTAL
901.060000	88.80	26.3	47.0	-41.8	---	0.0	0.00	HORIZONTAL
1000.000000	86.80	28.2	47.0	-39.8	---	0.0	0.00	HORIZONTAL

### MEASUREMENT RESULT: "CTL170614190\_red2" Detector: Average

6/15/2017 12:31AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
499.480000	61.60	20.5	1000.0	938.4	---	0.0	0.00	HORIZONTAL
600.360000	53.20	23.0	1000.0	946.8	---	0.0	0.00	HORIZONTAL
701.240000	56.40	24.3	1000.0	943.6	---	0.0	0.00	HORIZONTAL
800.180000	62.40	25.6	1000.0	937.6	---	0.0	0.00	HORIZONTAL
901.060000	65.60	26.3	1000.0	934.4	---	0.0	0.00	HORIZONTAL
1000.000000	58.60	28.2	1000.0	941.4	---	0.0	0.00	HORIZONTAL

# RADIATING COMB GENERATOR

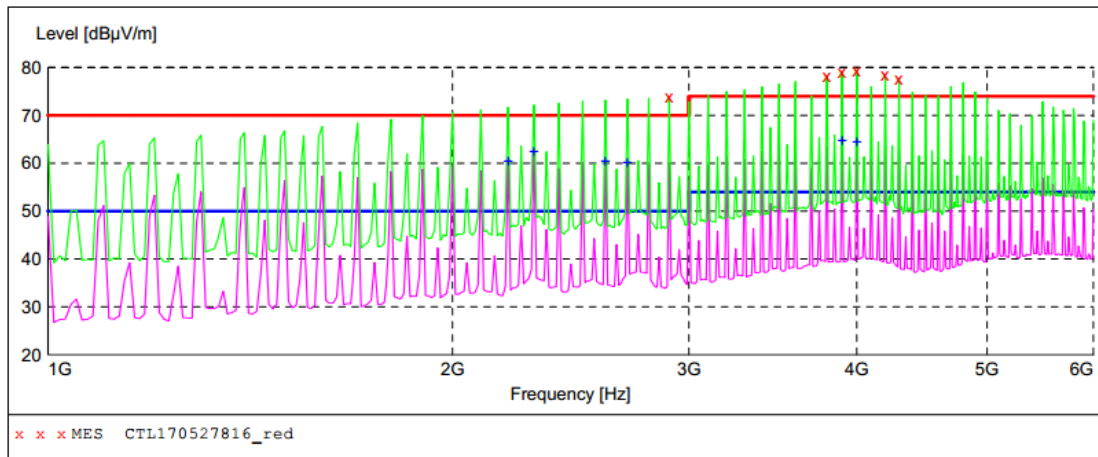
## 3.3.4 Radiated Emission from 1 GHz to 6 GHz, horizontal Polarisation (Orientation 3)

### Radiation Emission Test EN 55022 B

EUT: TBCG1  
 Manufacturer: /  
 Operating Condition: ON  
 Test Site: 3m Chamber  
 Operator: WZ  
 Test Specification: DC 9V  
 Comment: 3  
 Start of Test: 6/15/2017 / 6:13:20PM

### SWEEP TABLE: "test (1G-18G) P"

Short Description: EN 55022 Field Strength  
 Start Stop Detector Meas. IF Transducer  
 Frequency Frequency Time Bandw.  
 1.0 GHz 6.0 GHz MaxPeak 5.0 s 1 MHz DRH-118 Horizontal  
 Average



### MEASUREMENT RESULT: "CTL170527816\_red" Detector: Max. Peak

6/15/2017 6:44PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
2900.000000	73.80	0.8	70.0	-3.8	---	0.0	0.00	HORIZONTAL
3800.000000	78.30	5.7	74.0	-4.3	---	0.0	0.00	HORIZONTAL
3900.000000	79.20	6.3	74.0	-5.2	---	0.0	0.00	HORIZONTAL
4000.000000	79.50	7.0	74.0	-5.5	---	0.0	0.00	HORIZONTAL
4200.000000	78.40	5.7	74.0	-4.4	---	0.0	0.00	HORIZONTAL
4300.000000	77.70	5.1	74.0	-3.7	---	0.0	0.00	HORIZONTAL

### MEASUREMENT RESULT: "CTL170527816\_red2" Detector: Average

6/15/2017 6:45PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
2200.000000	60.50	-1.4	50.0	-10.5	---	0.0	0.00	HORIZONTAL
2300.000000	62.50	-0.9	50.0	-12.5	---	0.0	0.00	HORIZONTAL
2600.000000	60.40	0.2	50.0	-10.4	---	0.0	0.00	HORIZONTAL
2700.000000	60.20	0.4	50.0	-10.2	---	0.0	0.00	HORIZONTAL
3900.000000	64.60	6.3	54.0	-10.6	---	0.0	0.00	HORIZONTAL
4000.000000	64.30	7.0	54.0	-10.3	---	0.0	0.00	HORIZONTAL

## RADIATING COMB GENERATOR

### 4 Ordering Information

Part Number	Description
TBCG1	Radiating comb generator, 9 V battery not included

### 5 History

Version	Date	Author	Changes
V 1.0	22.06.2017	Mayerhofer	Creation of the document
V 1.01	11.12.2017	JR	Modified structure of the document