



Ball Aerospace Technologies Corp.  
1600 Commerce Street  
Reply to: P.O. Box 1069, Boulder, Colorado 80306-1062



## CERTIFICATE OF COMPLIANCE

**Prepared for: Perales Consulting**

**Your Purchase Order Number: Credit Card**

**BATC Work Order Number: 33662.09.214**

We hereby certify that the following line items

<b>Line item</b>	<b>Quantity</b>
<b>Mouth Guards</b>	<b>3</b>
<b>Whitening Strips</b>	<b>2</b>

Per Customer Assigned on the above-mentioned purchase order, covered by this document has been produced in accordance with the specifications as required by your purchase order.

Description: Testing performed was Radiated Emissions from 10 kHz to 1 GHz and an ESD sweep for relevant test levels.

**Ball Aerospace Technologies Corporation.**

*Rick Hansen*

**Date: 8/24/09**



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**Scope:**

The testing was performed to baseline possible radiated emissions from an electrically charged mouth guard and whitening strip. The articles were placed on above a ground plane test bench for standard testing and were measured for radiated emissions emanating from them. The items were also tested using an Electrostatic Discharge field sweep meter to measure verified quantity of charged energy emanating from them.

**Results:**

The results show very little electric field emanations and a low charge of ESD energy. The test data is as follows in the figures below for the Radiated Emissions and in the Table for the ESD measurements.

Test Article	ESD Level measured
Mouth Guard 1	1.342 kV
Mouth Guard 2	1.002 kV
Mouth Guard 3	0.52 kV
Whitening Strip 4	0.56 kV
Whitening Strip 8	0.08 kV

The equipment used is listed below.

**EMI TEST EQUIPMENT LIST**

NOMENCLATURE	MODEL No.	MFG.	MET No.	DUE DATE
ESD Field Static Sensor	718	3M	N/A	N/A
Antenna Power BiConical	3108	EMCO	P111637	11/17/09
Antenna Monopole	3301B	EMCO	M24785	6/24/09
Antenna Horn	3106	EMCO	P116928	11/17/09
Receiver	ESIB40	Rohde & Schwarz	P135409	12/02/09



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Radiated Emissions test setup



ESD Test setup



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## Common Information

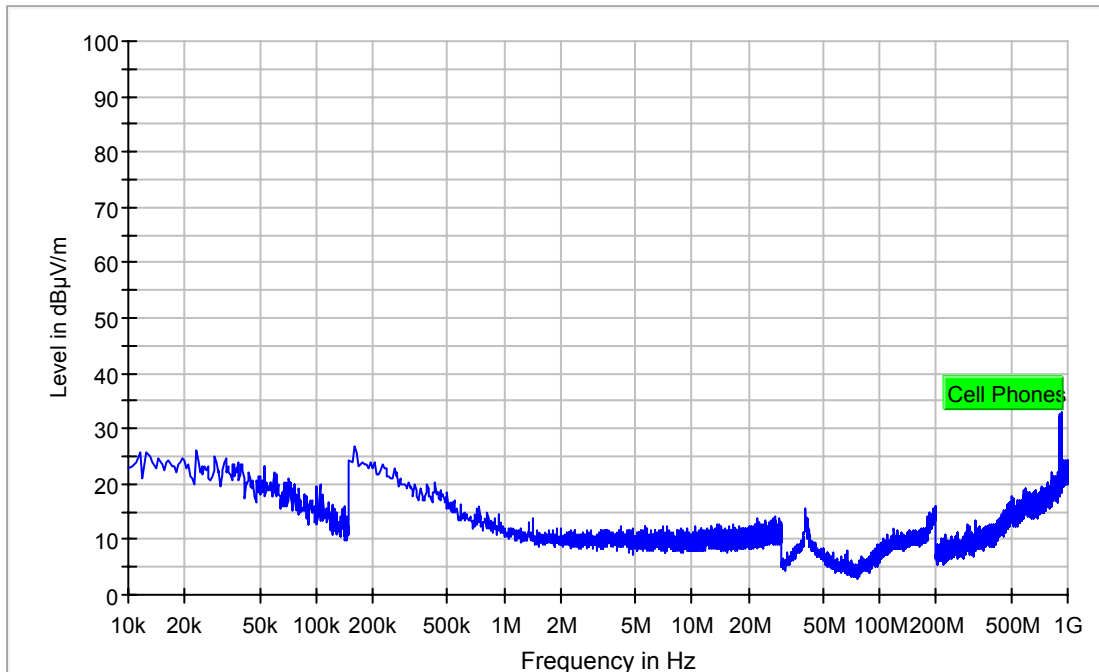
EUT Name:	Mouth Guard
Serial Number:	1
Test Description:	Radiated Emissions
Operating Conditions:	Charged
Operator Name:	P. Yuritich
Comment:	Vertical Polarization

## Scan Setup: RE102E

Hardware Setup:	RE102E With 1-18 GHz Preamps
Level Unit:	dB $\mu$ V/m

Sub range	Detectors	IF Bandwidth	Meas. Time	Receiver
10 kHz - 150 kHz	Max Peak	1 kHz	0.02 s	Receiver
150 kHz - 30 MHz	Max Peak	10 kHz	0.02 s	Receiver
30 MHz - 200 MHz	Max Peak	100 kHz	0.02 s	Receiver
200 MHz - 1 GHz	Max Peak	100 kHz	0.02 s	Receiver

RE102E With Preamps





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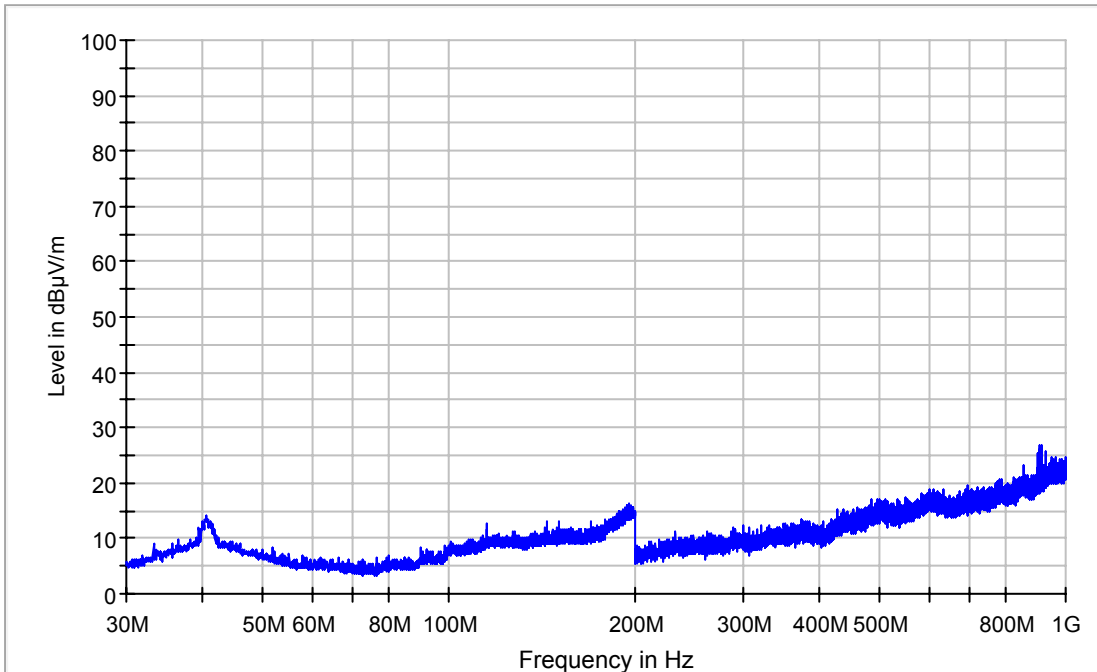
EUT Name: Mouth Guard  
 Serial Number: 1  
 Test Description: Radiated Emissions  
 Operating Conditions:  
 Operator Name: R. Hansen  
 Comment: Horizontal Polarization

## Scan Setup: RE102E

Hardware Setup: RE102E With 1-18 GHz Preamps  
 Level Unit: dB $\mu$ V/m

Sub range	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 200 MHz	Max Peak	100 kHz	0.02 s	Receiver
200 MHz - 1 GHz	Max Peak	100 kHz	0.02 s	Receiver

RE102E With Preamps





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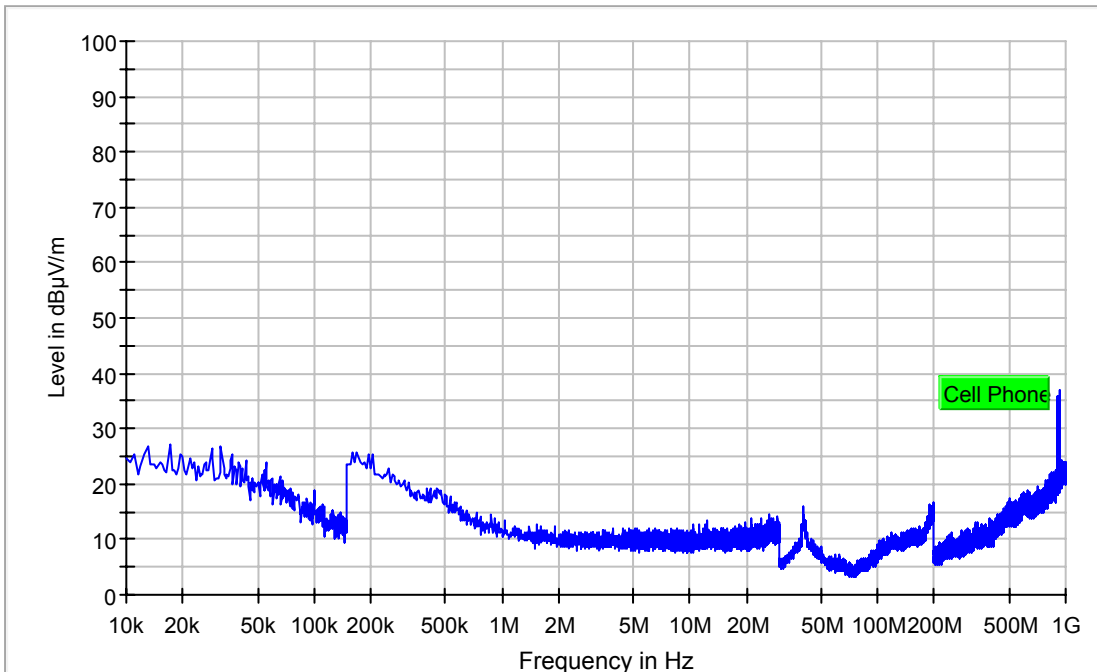
EUT Name: Mouth Guard  
 Serial Number: 2  
 Part Number  
 Operating Conditions: Charged and boiled  
 Operator Name: P. Yuritich  
 Comment: Vertical Polarization

## Scan Setup: RE102E

Hardware Setup: RE102E With 1-18 GHz Preamps  
 Level Unit: dB $\mu$ V/m

Sub range	Detectors	IF Bandwidth	Meas. Time	Receiver
10 kHz - 150 kHz	Max Peak	1 kHz	0.02 s	Receiver
150 kHz - 30 MHz	Max Peak	10 kHz	0.02 s	Receiver
30 MHz - 200 MHz	Max Peak	100 kHz	0.02 s	Receiver
200 MHz - 1 GHz	Max Peak	100 kHz	0.02 s	Receiver

RE102E With Preamps





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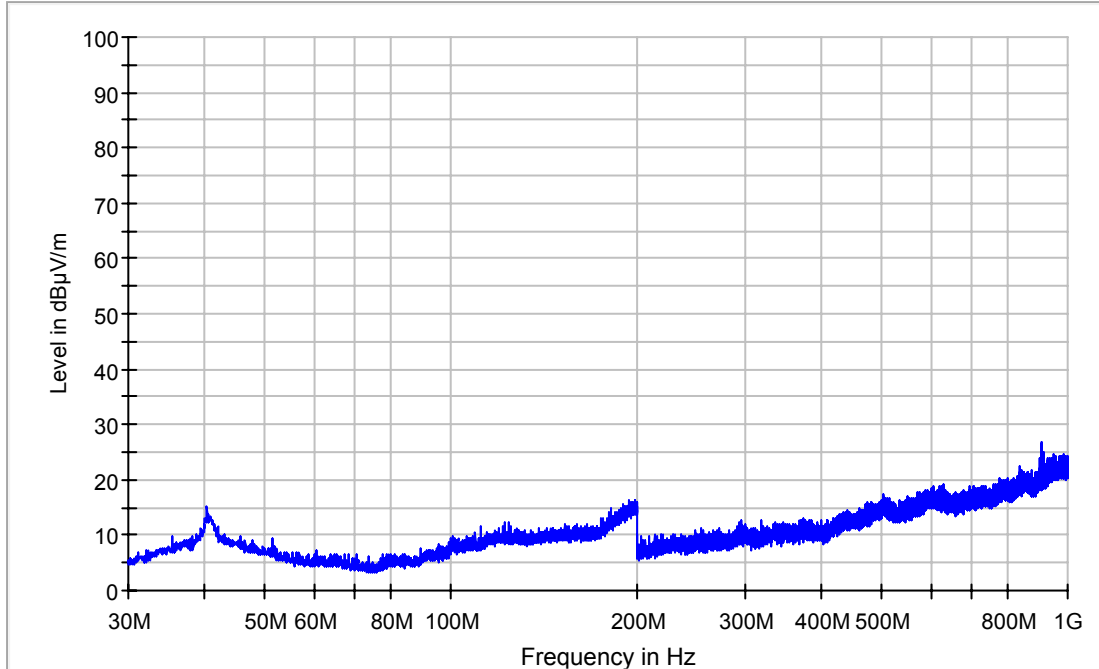
EUT Name: Mouth Guard  
 Serial Number: 2  
 Test Description: Radiated Emissions  
 Operator Name: R. Hansen  
 Comment: Horizontal Polarization

## Scan Setup: RE102E With Preamps [EMI radiated]

Hardware Setup: RE102E With 1-18 GHz Preamps  
 Level Unit: dB $\mu$ V/m

Sub range	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 200 MHz	Max Peak	100 kHz	0.02 s	Receiver
200 MHz - 1 GHz	Max Peak	100 kHz	0.02 s	Receiver

RE102E With Preamps





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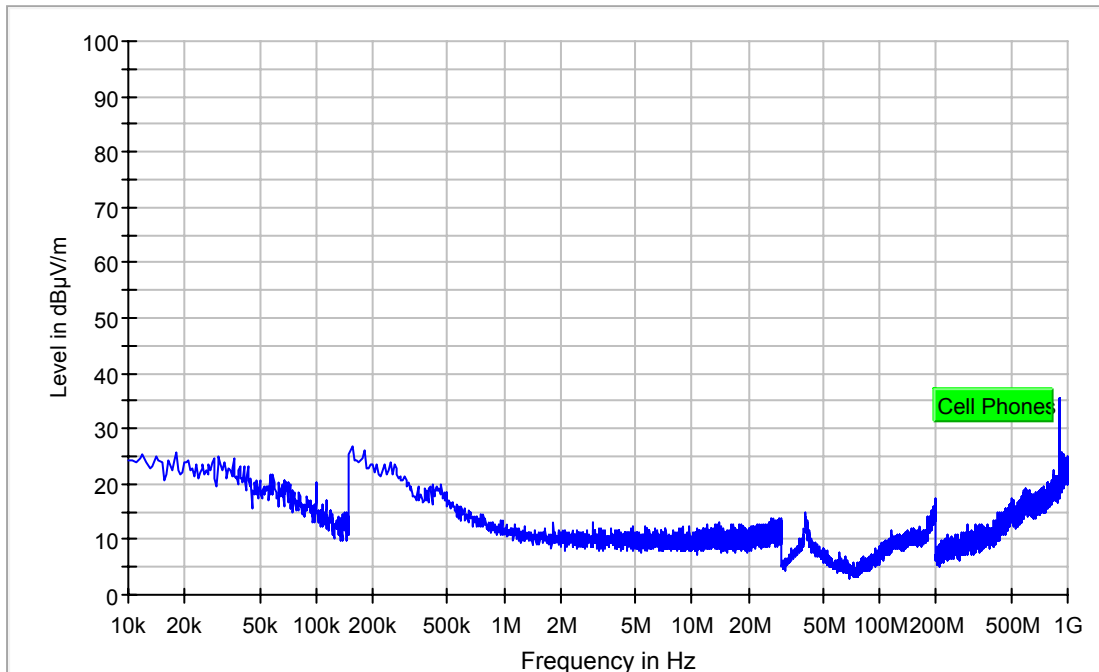
EUT Name: Mouth Guard  
 Serial Number: 3  
 Test Description: Radiated Emissions  
 Operating Conditions: Not Charged  
 Operator Name: P. Yuritich  
 Comment: Vertical Polarization

## Scan Setup: RE102E With Preamps [EMI radiated]

Hardware Setup: RE102E With 1-18 GHz Preamps  
 Level Unit: dB $\mu$ V/m

Sub range	Detectors	IF Bandwidth	Meas. Time	Receiver
10 kHz - 150 kHz	Max Peak	1 kHz	0.02 s	Receiver
150 kHz - 30 MHz	Max Peak	10 kHz	0.02 s	Receiver
30 MHz - 200 MHz	Max Peak	100 kHz	0.02 s	Receiver
200 MHz - 1 GHz	Max Peak	100 kHz	0.02 s	Receiver

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## Common Information

EUT Name: Mouth Guard  
 Serial Number: 3  
 Test Description: Radiated Emissions  
 Operator Name: R. Hansen  
 Comment: Horizontal Polarization

## Scan Setup: RE102E

Hardware Setup: RE102E With 1-18 GHz Preamps  
 Level Unit: dB $\mu$ V/m

Sub range	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 200 MHz	Max Peak	100 kHz	0.02 s	Receiver
200 MHz - 1 GHz	Max Peak	100 kHz	0.02 s	Receiver

RE102E With Preamps

