HYPER CORP

"Wireless that Works"SM

1279 Quarry Lane • Suite B, Pleasanton, CA 94566-8499 USA
Phone: +1.925.462.9105 Fax: +1.925.280.7751

MPE Safe Distance Calculation

Report No.: 703-0207005-BTMOD

Product Name: Polycom Bluetooth Radio Module

Issued Date: November 17, 2002

Applicant:

Polycom®, Inc.
78A Monnow Street
Monmouth
NP25 3EQ
United Kingdom
Phone: +44 (0) 1600-716950
Fax: +44 (0) 1600-715799

Bluetooth is a Trademark owned by Bluetooth SIG, Inc. and licensed to Hyper Corp.

Hyper Corp is a BLUETOOTH Qualification Test Facility (BQTF) for RF Conformance Testing and an Associate Member of the SIG

ACCREDITED

Certificate Number 1708-1

Hyper Corp is an Accredited Laboratory by The American Association For Laboratory Accreditation (A2LA) to ISO/IEC 17025-for the scope of BLUETOOTH Testing.

Signature Page

The below listed Hyper Corporation Personnel takes responsibility for the contents of this Test Report.

Signatures

Test Engineer(s):

	Original signed	**11.17.02**
	William Elliott	**Date**

Reviewed by Technical Manager:

	Original signed	**11.17.02**
	Kevin Marquess	**Date**

Bluetooth is a Trademark owned by Bluetooth SIG, Inc. and licensed to Hyper Corp.

Certificate Number 1708-1

Hyper Corp is a BLUETOOTH Qualification Test Facility (BQTF) for RF Conformance Testing and an Associate Member of the SIG

Hyper Corp is an Accredited Laboratory by The American Association For Laboratory Accreditation (A2LA) to ISO/IEC 17025-for the scope of BLUETOOTH Testing.

1. List of Revisions

Version	Date	Author(s)	Description
001	November 17, 2002	William Elliott	Initial Version

TABLE OF CONTENTS

2. Disclaimer Notice

This test report applies only to the EUT (Equipment Under Test) and the results of the specifications called out in this report.

The test results contained herein relate only to the model(s) identified. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics.

This Report must not be used to claim product endorsement by A2LA or any agency of the U.S. Government.

3. Reproduction Clause

This document may not be reproduced without written consent from Hyper Corporation. Extracts are never permitted. After written consent from Hyper Corporation, the document must be reproduced in its entirety.

4. General Information

4.1 Identification of the EUT

Manufacturer: Polycom® Inc.

Model No.: Polycom Bluetooth Radio Module

Hardware Version: Rev 1.0

Software Version: Rev 1.0

FCC ID: M72BTMOD01

Frequency Range: 2402 MHz ~ 2480 MHz

Channel Number: 79

Frequency of Each Channel: 2402 + k (MHz), k=0~78

Type of Modulation: GFSK

Manufacturer Specified Max. Power Output: +4.16 dBm

Sample Received Date: September 20, 2002

Test Dates: November 14, 2002 – November 17, 2002

Test Facility: Hyper Corporation
1279 Quarry Lane, Suite B
Pleasanton, CA 94566, USA

4.2 Antenna Description

Antenna Gain: Peak Gain: 0 dBi
Rangestar Wireless Bluetooth Antenna p/n 100902

4.3 Maximum Permissible Exposure

4.3.1 Calculations

E = SQR ROOT (30*P*G) / d

And

S=E^2 / 3770

Where

E = Field Strength in Volts/meter
P= Power In Watts
G = Numeric Antenna Gain
d = Distance in Meters
S = Power Density in mW / square cm

Combining equations and rearranging the terms to express d as a function of the other variables yields:

d = SQR ROOT (30*P*G) / (3770 * S)

Changing to units of mW and cm::

P(mW) = P(W) / 1000

And

d(cm)= 100 *d(m)

Yields

d = 100 * SQR ROOT ((30*P*G) / (3770*S))

Therefore

d = 0.282* SQR ROOT (P*G/S)

Where

d = Distance in Meters
P= Power In mW
G = Numeric Antenna Gain
S= Power Density in mW / cm^2

Substituting the log form of gain and power:

P (mW) = 10^ (P(dBm)/10)

And

G (numeric) = 10 ^ (G(dBi) / 10)

Yields

d = .282 * 10 ^ ((P+G) / 20) / (SQR ROOT (S))

Where

d = MPE Safe Distance in cm
P= Power In dBm
G = Antenna Gain in dBi
S= Power Density Limit in mW / cm^2

4.3.2 Results

2.4 GHz Bluetooth Transceiver

EUT Output Power = + 4.16 (Section 4.1)
Antenna Gain = 0 dBi (Section 4.2)
S = 1.0 mW / cm^2 (CFR 47 Part 1.1310)

Minimum MPE safe distance (using equation above) = **0.46 cm**

Safe distance compliant with 20 cm separation distance mandatory for mobile transmitters.

Unit is compliant