

# Antimicrobial Lab Test Report

The Socket SoMo® 650Rx handheld computer incorporates antimicrobial materials that provide an extra layer of protection to the device against the spread and multiplication of potentially harmful bacteria and microbes.

To be considered antimicrobial, products treated with antimicrobial materials must be tested and verified by an approved test lab. Testing on the SoMo 650Rx was performed in accordance with JIS Z2801:2000.

Per the JIS Z2801:2000 test standard, products are considered “antimicrobial” when achieving an antimicrobial rating (log reduction value) > 2.0. Testing performed on the SoMo 650Rx achieved an antimicrobial rating of 2.49 on Methicillin-resistant Staphylococcus aureus (MRSA). In addition, when cleaned with [Sani-Cloth® Plus](#) brand disposable cloth wipes the antimicrobial rating increases to 6.07. The standard version of the SoMo 650 handheld computer was also tested for antimicrobial effectiveness using Sani-Cloth Plus wipes, and achieved an antimicrobial rating of 4.11.

Socket recommends using Sani-Cloth Plus as the standard disinfectant wipe for both the SoMo 650Rx and SoMo 650 handheld computers.

The following lab test results demonstrate that the antimicrobial casing shows greater than a 99 percent reduction in Staph. bacteria on the surface of the device over a 24 hour period. Additionally, when devices are cleaned with a Sani-Cloth, the antimicrobial properties are enhanced more than two-fold. Accelerated aging tests performed on the device confirm antimicrobial efficacy for a minimum of 36 months.

**WARNING:** Antimicrobial protection does not guarantee protection against the spread and multiplication of potentially harmful bacteria and microbes. Thus, proper care and precautions must be employed. Socket DOES NOT recommend the use of bleach-based or Dispatch® brand cloth wipes, as they negate all antimicrobial properties that have been added to the device.

This study report is published with the express written consent of [Antimicrobial Test Laboratories](#).



## SECTION 1

Microbiology Study Report - Socket Mobile - #NG1280 - JIS Z 2801:2000  
Completed December 18, 2008

The following section of this report contains information related to the antimicrobial rating and test results of the Socket SoMo 650Rx handheld computer.

# Antimicrobial Test Laboratories

Fast, Reliable Antimicrobial Efficacy Testing

## Microbiology Study Report - Socket Mobile - #NG1280 - JIS Z 2801:2000

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### Client Information

Company Name:	<u>Socket Mobile</u>	Sponsor(s):	<u>Mike Tolaio</u>
Sponsor's Phone:	<u>(800) 552-3300</u>	E-mail(s):	<u>miket@socketmobile.com</u>

### Test Information

Test(s) Performed:	<u>JIS Z 2801:2000</u>		
SOP Followed:	<u>ATL SOP 039</u>	Performed by:	<u>B. Tanner</u>

### Sample Information

Test Substance ID(s):	<u>See Table, Page 2</u>	Batch/Lot #:	<u>See Table, Page 2</u>
Sample (s) Received:	<u>12/16/2008</u>		

### Parameters

Microorganism(s):	<u><i>S. aureus</i> ATCC 6538</u>	Exposure Temp.	<u>35.0 (+/- 1) C</u>
Subculture Number:	<u>3</u>	Type of Carrier:	<u>Plastic Cell Phone Battery Cover</u>
Growth Medium:	<u>TSB</u>	# of Test Carriers:	<u>12 Total: 6 Treated, 6 Control</u>
Culture Age:	<u>18 Hours</u>	Target Inoculum:	<u>1.5 x 10<sup>5</sup> cfu/coupon</u>
Diluent for Plating:	<u>D/E Broth (0.9 mL Blanks)</u>	Plating medium:	<u>Trypticase Soy Agar (Difco)</u>
Plate Incubation Time:	<u>24 Hours</u>	Plate Inc. Temp.:	<u>35.0 (+/- 1) C</u>

### Controls

Neutralized:	<u>Passed, Agar Plates Positive (T=0)</u>	Growth Control:	<u>Passed, <i>S. aureus</i> +</u>
Media Sterility:	<u>Passed, Control Plates Neg</u>		

### Test Results

Test(s) Valid?:	<u>Yes, See Table, Page 2</u>	"Passed?"	<u>Yes</u>
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**Notes:** The study was conducted in accordance with JIS Z 2801:2000. The control coupons appeared visually to be of the same composition of the test coupons, except for color. The reproducibility between replicates was very good for this study.

**Tests Completed:** 12/18/2008

**Report Sent:** 12/19/2008

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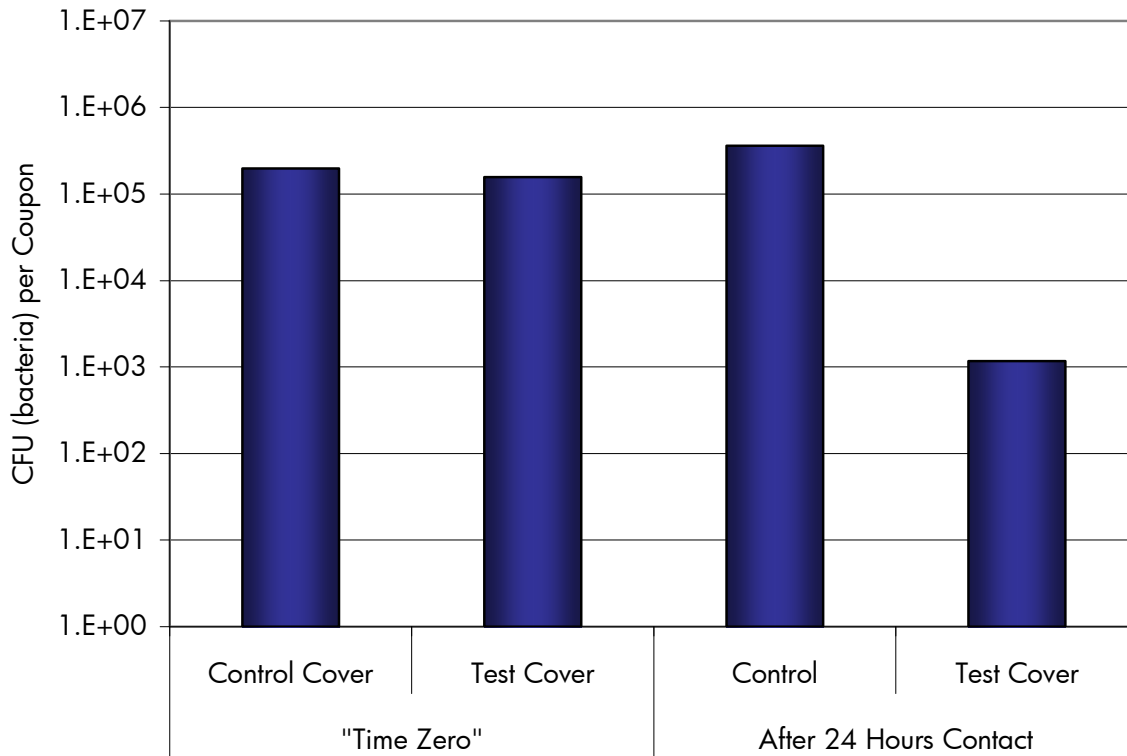
**Socket Mobile Study #NG1276**

**Raw Data Table:**

	Sample	CFU <i>S. aureus</i> /Coupon			
		Replicate #1	Replicate #2	Replicate #3	Average
"Time Zero"	Control Cover	1.65E+05	2.10E+05	2.15E+05	1.97E+05
	Test Cover	1.40E+05	1.15E+05	2.15E+05	1.57E+05
After 24 Hours Contact	Control	6.50E+03	8.60E+05	2.15E+05	3.61E+05
	Test Cover	3.30E+02	2.50E+03	6.80E+02	1.17E+03

**Chart:**

**JIS Z 2801:2000 Test Results 12/18/08  
Average Concentrations - *S. aureus***



## **Socket Mobile Study #NG1276**

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### **Method of Calculation of Antimicrobial Activity:**

R (Average Log Reduction) =  $\text{Log}(B/C)$ , where:

B = Average number of viable cells on the control pieces after 24 hr.

C = Average number of viable cells on the test pieces after 24 hr.

### **R-Values (Values of Antimicrobial Activity):**

**Test Cover = 2.49**

Note: A value of 2.0 or above is considered "antimicrobial" by JIS.

## **Socket Mobile Study #NG1276**

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Photo of Test Setup: Samples were inoculated, and then covered with sterile film and incubated.  
(only the incubated coupons are shown in the photo below)



After the incubation period, samples were eluted D/E broth and enumerated.  
The "time zero" samples were enumerated immediately after being inoculated.  
The 24 hour samples were enumerated after 24 hours of incubation at 35C.

## SECTION 2

Microbiology Study Report - Socket Mobile - #NG1310 - JIS Z 2801:2000  
Completed February 13, 2009

The following section of this report contains information related to the cleaning / disinfecting methods and materials of the Socket SoMo 650Rx handheld computer.

# Antimicrobial Test Laboratories

## Fast, Reliable Antimicrobial Efficacy Testing

### Microbiology Study Report

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#### Client Information

Company Name:	<u>Socket Mobile</u>	Sponsor(s):	<u>Mike Tolaio</u>
Sponsor's Phone:	<u>(800) 552-3300</u>	E-mail(s):	<u>miket@socketmobile.com</u>

#### Test Information

Test(s) Performed:	<u>JIS Z 2801:2000 (Study ID NG1310)</u>		
SOP Followed:	<u>ATL SOP 039</u>	Performed by:	<u>B. Tanner</u>

#### Sample Information

Test Substance ID(s):	<u>Cell Phone Casings</u>	Batch/Lot #:	<u>Control, White Casing</u>
Sample(s) Received:	<u>1/22/2009</u>		<u>Test, Black Casing</u>

#### Parameters

Microorganism(s):	<u><i>S. aureus</i> ATCC 6538</u>	Exposure Temp.	<u>35.0 (+/- 1) C</u>
Subculture Number:	<u>3</u>	Type of Carrier:	<u>Plastic Cell Phone Battery Cover</u>
Growth Medium:	<u>TSB</u>	# of Test Carriers:	<u>18 Total: 12 Test, 6 Control</u>
Culture Age:	<u>18 Hours</u>	Target Inoculum:	<u>1.0 x 10<sup>5</sup> cfu/coupon</u>
Diluent for Plating:	<u>D/E Broth (0.9 mL Blanks)</u>	Plating medium:	<u>Trypticase Soy Agar (Difco)</u>
Plate Incubation Time:	<u>24 Hours</u>	Plate Inc. Temp.:	<u>35.0 (+/- 1) C</u>

#### Controls

Neutralized:	<u>Passed, Agar Plates Positive (T=0)</u>	Growth Control:	<u>Passed, <i>S. aureus</i> +</u>
Media Sterility:	<u>Passed, Control Plates Negative</u>		

#### Test Results

Test(s) Valid?:	<u>Yes, See Table, Page 2</u>	"Passed?"	<u>Yes</u>
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**Notes:** The study was conducted in accordance with JIS Z 2801:2000. The control coupons appeared visually to be of the same composition of the test coupons, except for color. The reproducibility between replicates was very good for this study. The purpose of the study was to evaluate the impact of multiple cleanings on the efficacy of the antimicrobial treatment, so certain samples were cleaned 10X with SaniCloth Plus or Dispatch wipes prior to initiation of the regular JIS Z 2801 assay. The study shows that cleaning with the Dispatch wipe has a negative impact to efficacy.

Tests Completed:	<u>2/13/2009</u>	Report Sent:	<u>2/13/2009</u>
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# Antimicrobial Test Laboratories

## Fast, Reliable Antimicrobial Efficacy Testing

### Microbiology Study Report

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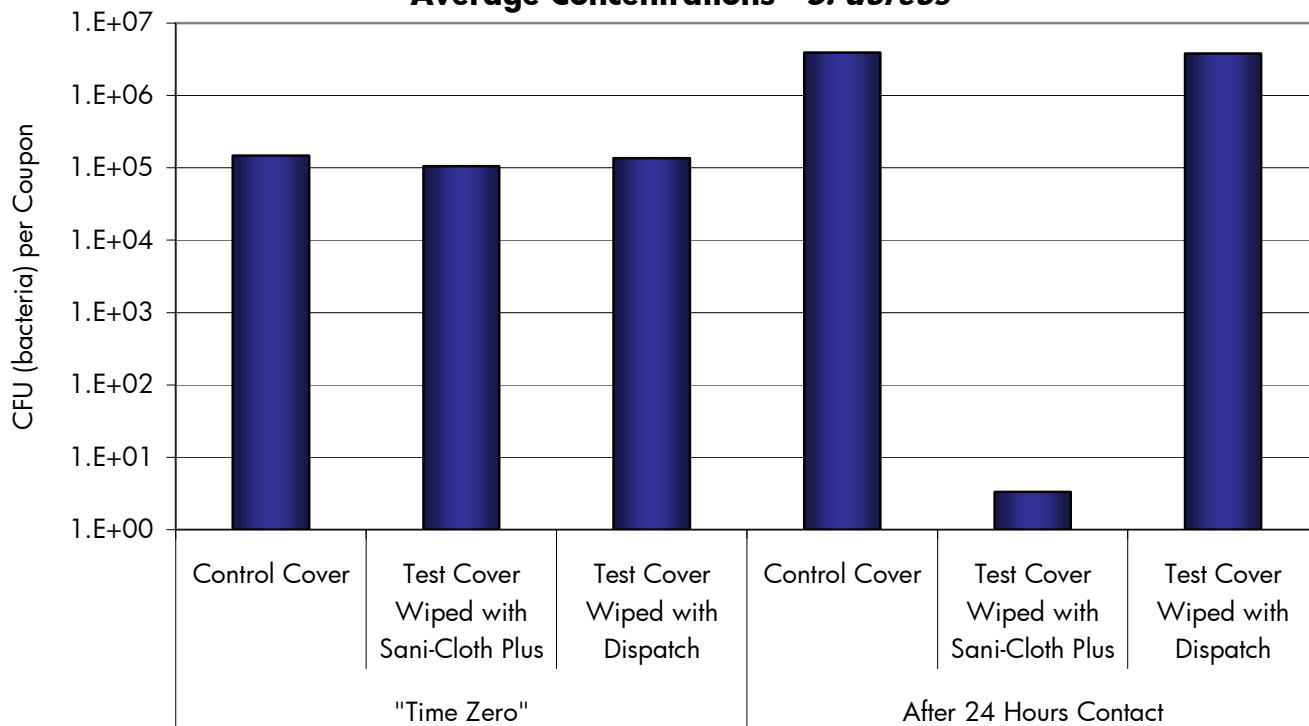
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#### Additional Test Information

		CFU <i>S. aureus</i> per Coupon				
	Sample	Replicate #1	Replicate #2	Replicate #3	Average	R-Value(s)
"Time Zero"	Control Cover	1.39E+05	1.66E+05	1.34E+05	1.46E+05	N/A
	Test Cover Wiped with Sani-Cloth Plus	8.40E+04	1.26E+05	1.05E+05	1.05E+05	N/A
	Test Cover Wiped with Dispatch	1.35E+05	1.33E+05	1.38E+05	1.35E+05	N/A
After 24 Hours Contact	Control	4.19E+06	3.08E+06	4.45E+06	3.91E+06	N/A
	Test Cover Wiped with Sani-Cloth Plus	1.00E+01	< 10	< 10	3.33E+00	6.07
	Test Cover Wiped with Dispatch	3.76E+06	3.90E+06	3.76E+06	3.81E+06	0.01

#### JIS Z 2801:2000 Test Results 2/13/09

##### Average Concentrations - *S. aureus*



# Antimicrobial Test Laboratories

## Fast, Reliable Antimicrobial Efficacy Testing

### Microbiology Study Report

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### **Additional Test Information**

#### **Method of Calculation of Antimicrobial Activity:**

R (Average Log Reduction) =  $\text{Log}(B/C)$ , where:

B = Average number of viable cells on the control pieces after 24 hr.

C = Average number of viable cells on the test pieces after 24 hr.

#### **R-Values (Values of Antimicrobial Activity):**

**Sani-Cloth Plus 10X Cleaned** =  
**Dispatch 10X Cleaned** =

<b>6.07</b>
<b>0.01</b>

Note: A value of 2.0 or above is considered "antimicrobial" by JIS.

# Antimicrobial Test Laboratories

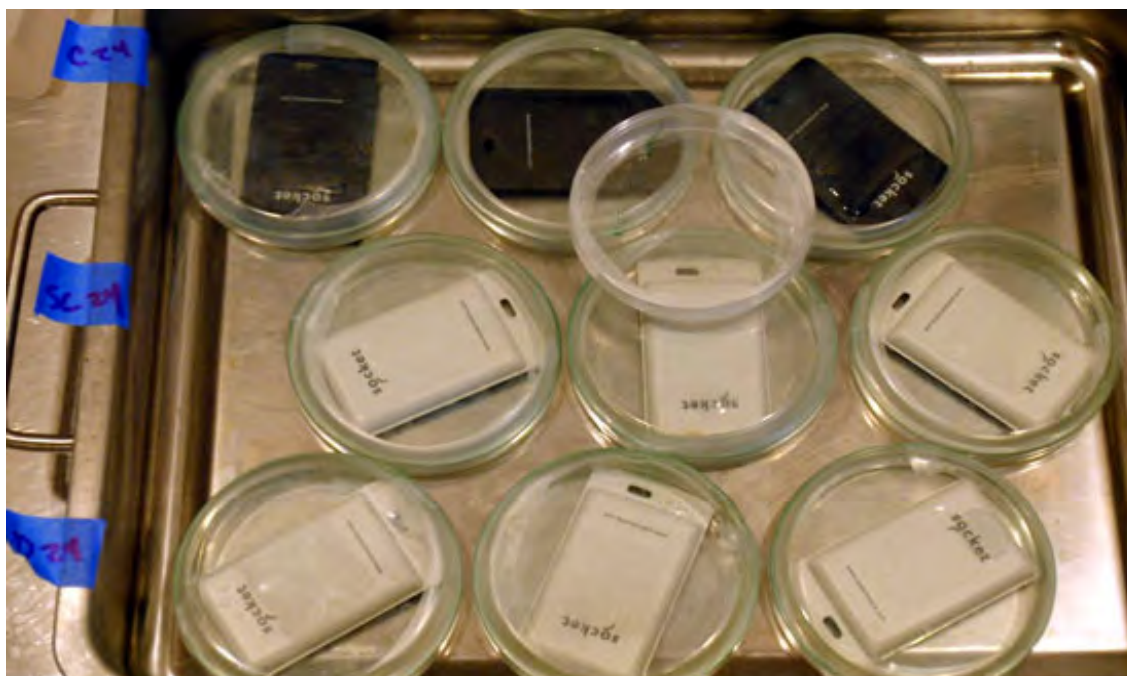
## Fast, Reliable Antimicrobial Efficacy Testing

### Microbiology Study Report

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### **Additional Test Information**



Samples were inoculated, and then covered with sterile film and incubated. After the incubation period, samples were eluted with D/E broth and enumerated. The "time zero" samples were enumerated immediately after being inoculated. The 24 hour samples were enumerated after 24 hours of incubation at 35C.

## SECTION 3

Microbiology Study Report - Socket Mobile - #NG1369 - JIS Z 2801:2000  
Completed March 5, 2009

The following section of this report contains information related to the cleaning / disinfecting methods and materials of the standard version (not Rx) of the Socket SoMo 650 handheld computer.

# Antimicrobial Test Laboratories

## Fast, Reliable Antimicrobial Efficacy Testing

### Microbiology Study Report

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#### Client Information

Company Name:	<u>Socket Mobile</u>	Sponsor(s):	<u>Mike Gifford</u>
Sponsor's Phone:	<u>(800) 552-3300</u>	E-mail(s):	<u>mike@socketmobile.com</u>

#### Test Information

Test(s) Performed:	<u>JIS Z 2801:2000 (Study ID NG1369)</u>		
SOP Followed:	<u>ATL SOP 039</u>	Performed by:	<u>J. Williams</u>

#### Sample Information

Test Substance ID(s):	<u>Cell Phone Casings</u>	Batch/Lot #:	<u>Control, White Casing</u>
Sample(s) Received:	<u>1/22/2009</u>		

#### Parameters

Microorganism(s):	<u>S. aureus ATCC 6538</u>	Exposure Temp.	<u>35.0 (+/- 1) C</u>
Subculture Number:	<u>3</u>	Type of Carrier:	<u>Plastic Cell Phone Battery Cover</u>
Growth Medium:	<u>TSB</u>	# of Test Carriers:	<u>12 Total: 6 Test, 6 Control</u>
Culture Age:	<u>18 Hours</u>	Target Inoculum:	<u>1.0 x 10<sup>5</sup> cfu/coupon</u>
Diluent for Plating:	<u>D/E Broth (0.9 mL Blanks)</u>	Plating medium:	<u>Trypticase Soy Agar (Difco)</u>
Plate Incubation Time:	<u>24 Hours</u>	Plate Inc. Temp.:	<u>35.0 (+/- 1) C</u>

#### Controls

Neutralized:	<u>Passed, Agar Plates Positive (T=0)</u>	Growth Control:	<u>Passed, S. aureus +</u>
Media Sterility:	<u>Passed, Control Plates Negative</u>		

#### Test Results

Test(s) Valid?:	<u>Yes, See Table, Page 2</u>	"Passed?"	<u>n/a</u>
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**Notes:** The study was conducted in accordance with JIS Z 2801:2000. Control coupons were used for both the control and "test" samples. The purpose of the study was to evaluate the impact of Sani-Cloth Plus on the control samples. The "test" samples were cleaned 10X with SaniCloth Plus wipes and then rinsed with sterile DI water prior to initiation of the regular JIS Z 2801 assay.

**Tests Completed:** 3/5/2009

**Report Sent:** 3/10/2009

# Antimicrobial Test Laboratories

## Fast, Reliable Antimicrobial Efficacy Testing

### Microbiology Study Report

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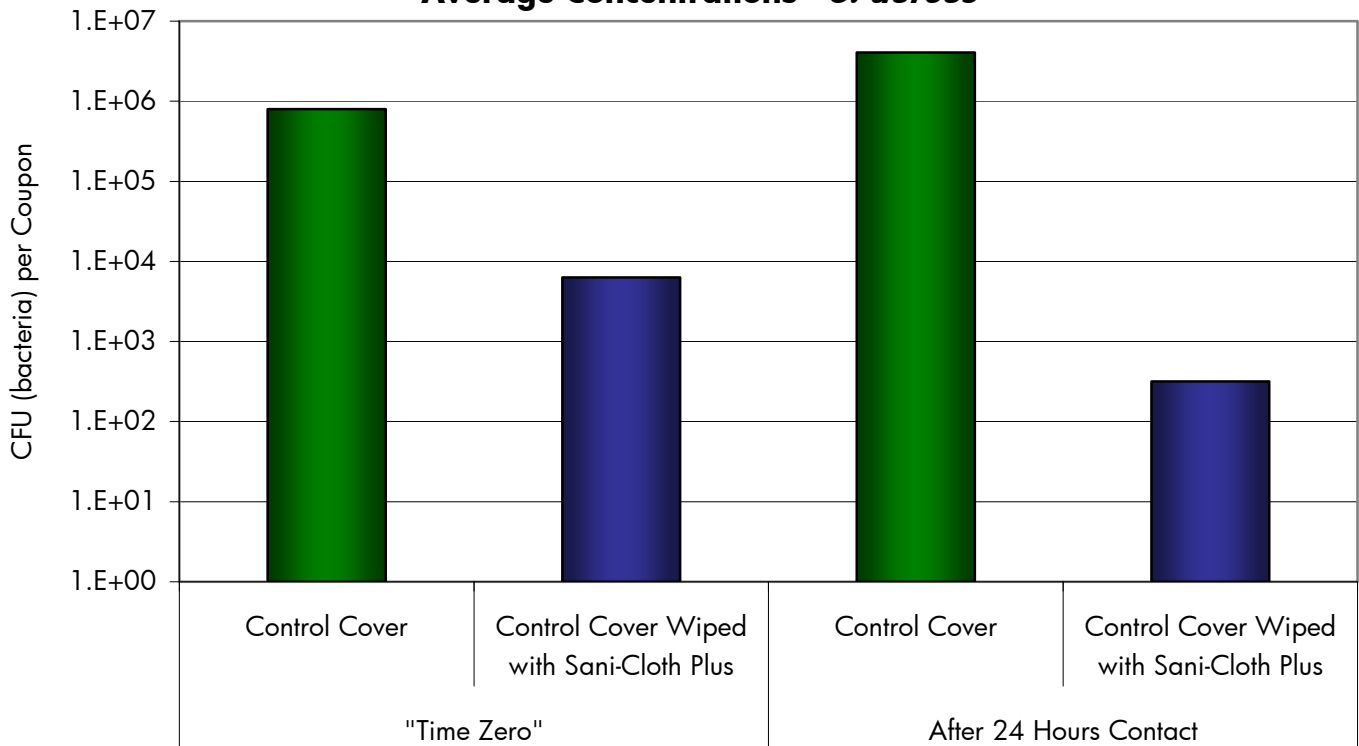
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### Additional Test Information

		CFU <i>S. aureus</i> per Coupon				
	Sample	Replicate #1	Replicate #2	Replicate #3	Average	R-Value(s)
"Time Zero"	Control Cover	1.25E+06	3.15E+05	8.40E+05	8.00E+05	N/A
	Control Cover Wiped with Sani-Cloth Plus	1.90E+04	< 1000	< 1000	6.33E+03	N/A
After 24 Hours Contact	Control Cover	5.42E+06	4.27E+06	2.53E+06	4.07E+06	N/A
	Control Cover Wiped with Sani-Cloth Plus	< 10	9.30E+02	2.00E+01	3.17E+02	4.11

### JIS Z 2801:2000 Test Results 3/5/09

#### Average Concentrations - *S. aureus*



# Antimicrobial Test Laboratories

## Fast, Reliable Antimicrobial Efficacy Testing

### Microbiology Study Report

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### **Additional Test Information**

#### **Method of Calculation of Antimicrobial Activity:**

R (Average Log Reduction) =  $\text{Log}(B/C)$ , where:

B = Average number of viable cells on the control pieces after 24 hr.

C = Average number of viable cells on the test pieces after 24 hr.

#### **R-Values (Values of Antimicrobial Activity):**

**Sani-Cloth Plus 10X Cleaned =**

**4.11**

Note: A value of 2.0 or above is considered "antimicrobial" by JIS.

## SECTION 4

Microbiology Study Report - Socket Mobile - #NG1355 - JIS Z 2801:2000  
Completed May 20, 2009

The following section of this report contains information related to the accelerated age testing conducted to determine antimicrobial activity with respect to product age.

# Antimicrobial Test Laboratories

## Fast, Reliable Antimicrobial Efficacy Testing

### Microbiology Study Report

Page 1 of 4

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#### Client Information

Company Name:	<u>Socket Mobile</u>	Sponsor(s):	<u>Mike Gifford</u>
Sponsor's Phone:	<u>(800) 552-3300</u>	E-mail(s):	<u>mike@socketmobile.com</u>

#### Test Information

Test(s) Performed:	<u>JIS Z 2801:2000 (Study ID NG1355)</u>		
SOP Followed:	<u>ATL SOP 039</u>	Performed by:	<u>J. Williams</u>

#### Sample Information

Test Substance ID(s):	<u>Cell Phone Casings</u>	Batch/Lot #:	<u>Control, Black Casing (halved casings)</u>
Sample(s) Received:	<u>1/22/2009 and 2/10/2009</u>		<u>Test, White Casing</u>

#### Parameters

Microorganism(s):	<u><i>S. aureus</i> ATCC 6538</u>	Exposure Temp.	<u>35.0 (+/- 1) C</u>
Subculture Number:	<u>N/A</u>	Type of Carrier:	<u>Plastic Cell Phone Battery Cover</u>
Growth Medium:	<u>TSB</u>	# of Test Carriers:	<u>8 Total: 4 Test, 2 Control (halved)</u>
Culture Age:	<u>18-24 Hours</u>	Target Inoculum:	<u><math>1.0 \times 10^5</math> cfu/coupon</u>
Diluent for Plating:	<u>D/E Broth (0.9 mL Blanks)</u>	Plating medium:	<u>Trypticase Soy Agar (Difco)</u>
Plate Incubation Time:	<u>24 Hours</u>	Plate Inc. Temp.:	<u>35.0 (+/- 1) C</u>

#### Controls

Neutralized:	<u>Passed, Agar Plates Positive (T=0)</u>	Growth Control:	<u>Passed, <i>S. aureus</i> +</u>
Media Sterility:	<u>Passed, Control Plates Negative</u>		

#### Test Results

Test(s) Valid?:	<u>Yes, See Table, Page 2</u>	"Passed?"	<u>Yes</u>
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**Notes:** The study was conducted in accordance with JIS Z 2801:2000. The control coupons appeared visually to be of the same composition of the test coupons, except for color. The purpose of this study was to determine antimicrobial activity, with respect to product age, under accelerated conditions via product incubation at 70 °C. Based on the data collected, antimicrobial activity remains at some level throughout the aging period, generally trending down over time. The increased reduction at 36 months may be due, in part, to partial evaporation of the culture media on the test surface over the 24 hour contact time.

Tests Completed:	<u>5/20/2009</u>	Report Sent:	<u>5/20/2009</u>
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# Antimicrobial Test Laboratories

## Fast, Reliable Antimicrobial Efficacy Testing

### Microbiology Study Report

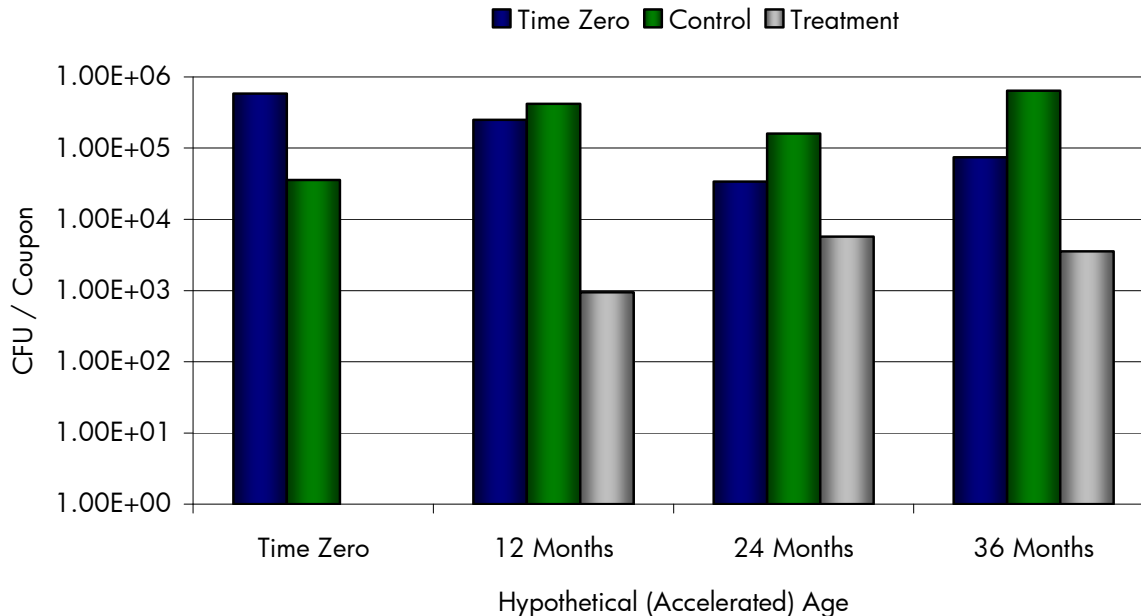
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#### Additional Test Information

Sample Age	Hypothetical "Accelerated" Age	Sample Type	CFU / Coupon	% Reduction vs Control	R-Value
0 Days	Time Zero	Time Zero	5.85E+05	99.999%	>3.5
		Control	3.55E+04		
		Treatment	<10		
11 Days	12 Months	Time Zero	2.50E+05	99.77%	2.65
		Control	4.20E+05		
		Treatment	9.50E+02		
23 Days	24 Months	Time Zero	3.40E+04	96.44%	1.45
		Control	1.60E+05		
		Treatment	5.70E+03		
35 Days	36 Months	Time Zero	7.50E+04	99.45%	2.26
		Control	6.40E+05		
		Treatment	3.55E+03		

#### Socket Mobile® JIS Z 2801 "Accelerated Aging Study" NG1355



Note: Non-detects (<100 cfu/ml) are presented as zero on this chart.

# Antimicrobial Test Laboratories

## Fast, Reliable Antimicrobial Efficacy Testing

### Microbiology Study Report

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### **Additional Test Information**

#### **Method of Calculation of Antimicrobial Activity:**

R (Average Log Reduction) =  $\text{Log}(B/C)$ , where:

B = Average number of viable cells on the control pieces after 24 hr.

C = Average number of viable cells on the test pieces after 24 hr.

#### **R-Values (Values of Antimicrobial Activity):**

<b>Time Zero</b>	<b>&gt; 3.5</b>
<b>12 Months</b>	<b>2.65</b>
<b>24 Months</b>	<b>1.45</b>
<b>36 Months</b>	<b>2.26</b>

Note: A value of 2.0 or above is considered "antimicrobial" by JIS.

# Antimicrobial Test Laboratories

## Fast, Reliable Antimicrobial Efficacy Testing

### Microbiology Study Report

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### **Additional Test Information**



Samples were incubated at 70°C to mimic an accelerated aging process, and tested for antimicrobial activity at 0, 11, 23 and 35 days representing a "hypothetical" accelerated age of 0, 12, 24 and 36 months, respectively.

## Microbiology Study Report - Accelerated Age Testing

"Hypothetical" based on elevated temperature at 70 degrees celsius

Test conducted in accordance with JIS Z 2801:2000. Completed 5/20/2009

Sample Age (Days)	Hypothetical Age (Months)	% Reduction versus Control	R-Value
0	0	99.999	3.5
11	12	99.77	2.65
23	24	96.44	1.45
35	36	99.45	2.26

