

# **Public Hearing Presentation**

**City Hall, Berkeley, CA  
September 16, 2003**

**Appeal of Use Permit #02-10000053 (1600 Shattuck Avenue)**

**Appellants: Shahram Shahruz, Frances Strassman,  
Kaoru Reynolds, Simone Gaddini,  
Patricia Cloud, Daniel Wolfe**

## **2. Proposed Antennas and the Law**

**The proposed antennas do not comply with:**

- The City of Berkeley Telecommunications Ordinance, and Title 32, Zoning,**
- The Federal Communications Commission (FCC) requirements.**

- According to **Section 23C.17.040.F**, applications for wireless telecommunication facilities shall include "**Engineering calculations demonstrating that the proposed facility will comply with all applicable FCC requirements and standards.**"
- When Sprint submitted application on July 22, 2002, **NO ENGINEERING CALCULATIONS** were provided.

On December 19, 2002, **A WEEK AFTER** the Public Hearing, a five page report arrived at the Planning Department. This report has some engineering calculations and provides a value for the **power density (PD)** of the proposed antennas at 1600 Shattuck.

RECEIVED

DEC 19 2002

Sprint PCS • Proposed Base Station (Site No. SF33xc704F)  
1600 Shattuck Avenue • Berkeley, California

**Statement of Hammett & Edison, Inc., Consulting Engineers**

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Sprint PCS, a wireless telecommunications carrier, to evaluate the proposed PCS base station (Site No. SF33xc704F) to be located at 1600 Shattuck Avenue in Berkeley, for compliance with appropriate

**A WEEK AFTER !**

**A WEEK AFTER?!**

**You gotta be kidding!**



**The Planning Department in the Action Calendar of April 1, 2003, responded:**

**“... the Engineer, Mr. Hammett presented information from the report verbally, to the ZAB at the December 12, 2002 meeting, but neglected to leave a copy with the ZAB secretary. A copy was faxed to the office the following week.”**

**THIS IS CERTAINLY UNTRUE.**

- Engineering calculations were **NOT** presented in the ZAB Public Hearing on December 12, 2002;

**NEITHER** was the value of the power density of the antennas at 1600 Shattuck.

(Audio tape of the ZAB Public Hearing on December 12<sup>th</sup>.)

- Mr. Hammett said:

“... it is similar to having 6 light bulbs up on the top of the building ...“

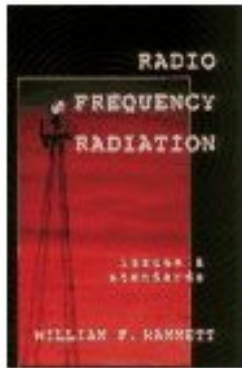
**This is unprofessional presentation of engineering results.**

- **Also, Mr. Hammett said that he had written a book entitled:  
"Radio Frequency Radiation: Issues & Standards"**
  
- **Searched for the book in:**
  - **UC Berkeley libraries**
  
  - **All UC libraries**
  
  - **World Catalog (WCAT): Books in libraries around the world**

www.AMAZON.com

## Radio Frequency Radiation: Issues & Standards

by [William F. Hammett](#)



**Availability:** Out of Print--Limited Availability

**Edition:** Hardcover

▶ [See more product details](#)

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### Product Details

- **Hardcover:** 194 pages ; Dimensions (in inches): 0.75 x 9.50 x 6.50
- **Publisher:** McGraw Hill Text; (March 1997)
- **ASIN:** 0070259291

[www.AMAZON.com](http://www.AMAZON.com)

## Customer Reviews

☆☆☆☆☆ **An "Insider" Guide to Radio Frequency Radiation**, May 11, 2001

Reviewer: **A reader** from Los Angeles, CA United States

This book is out of print for good reason. It is very out-dated. It is hardly the "definitive guide" it was advertised to be, even at the time it was written. By 1997, much of the "information" Mr. Hammett tries to disseminate was already pretty widely known. He criticizes researchers for not using a type of control protocol in early research, that he says is necessary to validate the results, and then calls the use of these protocols in later studies a "sham".

He tries to downplay the term "radiation" as it is found in "radio frequency radiation" to state that it simply means to emanate outward from - not that it is akin to radioactivity. Mr. Hammett supports the theories supplied by the NCRP and ANSI that non-ionizing radiation is not harmful.

In short, the book is outdated, misleading, and not applicable to today's concerns regarding radio frequency radiation. If you are involved in the industry, this book will give you all the pat answers and propaganda espoused by the rest of the industry (if you haven't gleaned it already) which are old and weak, but popular nonetheless.



**William F. Hammett, P.E.**  
President

### **Education**

- Dartmouth College, AB Degree magna cum laude in Engineering Sciences, 1977
- University of Illinois, MS Degree in Mechanical Engineering, 1978

### **Professional Licenses and Affiliations**

- Registered Professional Engineer (Mechanical), State of California, M-20676

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**Radio Frequency (RF) engineering is **NOT** part of mechanical engineering.**

# Human Exposure to Radio Base-Station Antennas in Urban Environment

Paolo Bernardi, *Fellow, IEEE*, Marta Cavagnaro, Stefano Pisa, *Member, IEEE*, and Emanuele Piuzzi

**IEEE: Institute of Electrical and Electronics Engineers**

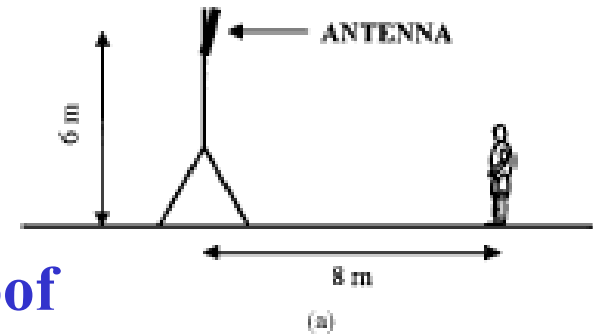
**The paper studies:**

	<b># of Antennas</b>	<b>Power</b>	<b>Frequency</b>
<b>Paper:</b>	<b>1</b>	<b>30 W</b>	<b>900 MHz</b>
<b>Sprint:</b>	<b>3</b>	<b>640 W (252 W)</b>	<b>1900 MHz</b>

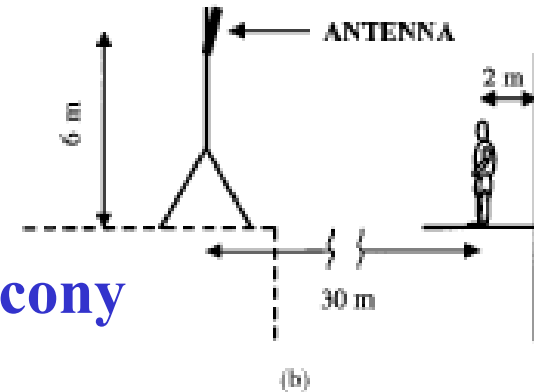
# Balcony Effect:

If the building on which antennas are installed is short, such as that at 1600 Shattuck, those in the vicinity experience **Balcony Effect**. This effect increases the exposure by a factor of **46**.

Roof



Balcony



Street

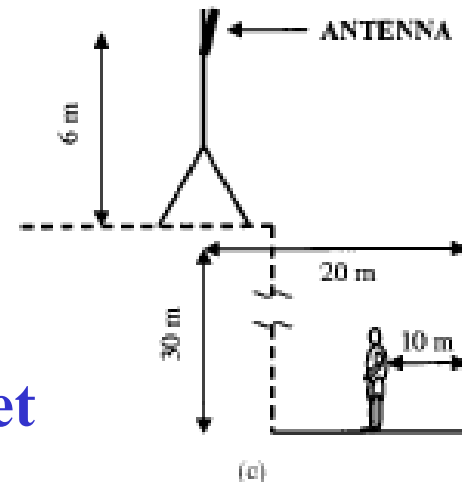


Fig. 3. Environment geometry for the three cases studied. Dashed lines represent planes not considered in the simulations. (a) Case I: subject on the building roof. (b) Case II: subject on the balcony. (c) Case III: subject on the street.

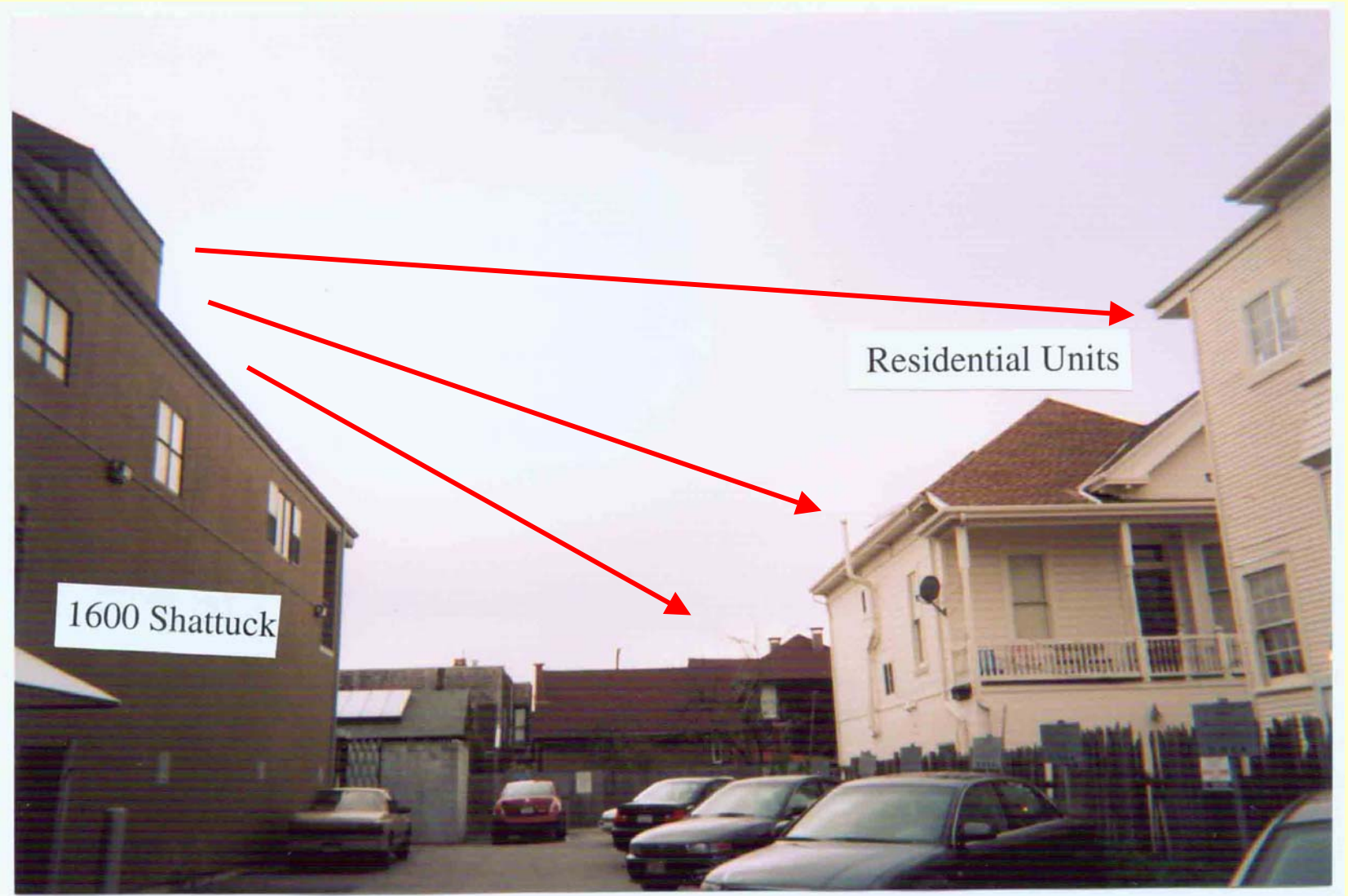
TABLE I

SPATIAL MAXIMUM ( $E_{I\text{MAX}}$ ), AND SPATIAL AVERAGE ( $E_{I\text{AVE}}$ ), OF THE INCIDENT FIELD rms VALUE; MAXIMUM SAR VALUES AVERAGED OVER 1 g ( $\text{SAR}_{1\text{g}}$ ), OVER 10 g ( $\text{SAR}_{10\text{g}}$ ), AND SAR VALUE AVERAGED OVER THE WHOLE BODY ( $\text{SAR}_{\text{WB}}$ ) FOR THE THREE EXPOSURE CONDITIONS CONSIDERED

	$E_{I\text{MAX}}$ (V/m)	$E_{I\text{AVE}}$ (V/m)	$\text{SAR}_{1\text{g}}$ (mW/kg)	$\text{SAR}_{10\text{g}}$ (mW/kg)	$\text{SAR}_{\text{WB}}$ (mW/kg)
Case I	4.2	2.8	5.3	3.0	0.12
Case II	8.1	5.5	13.2	8.5	0.46
Case III	1.3	1.1	0.26	0.17	0.01



Since the building at 1600 Shattuck is short, an antenna on it causes **Balcony Effect** on adjacent buildings. This implies **46** times more exposure.



**Balcony Effect on the west of 1600 Shattuck**



**Balcony Effect on the south of 1600 Shattuck**

# Bouncing Effect:

BERNARDI *et al.*: HUMAN EXPOSURE TO RADIO BASE-STATION ANTENNAS IN

and  $SAR_{WFB} = 0.41$  mW/kg. These results, compared with those obtained in case II, show that both the average field level and SAR values remain almost unchanged. It must be noted, however, that this result is dependent upon the dielectric characteristics of the building walls that give rise to rather low reflections (reflection coefficients not higher than 0.4). In fact, considering a reflection coefficient of 0.7, the presence of the reflecting walls results in a 40% increase in the average field levels with a corresponding doubling in the  $SAR_{WFB}$  value with respect to the free-space condition [9].

**Bouncing Effect** increases the exposure by a factor of **2**.  
Sprint uses a factor of 1.6. Thus, correction factor is  $2/1.6 = 1.25$ .

# All Things Considered: A Realistic Value of the Power Density (PD) around 1600 Shattuck

<b>Sprint (ground level)</b>	<b>0.0021 m W/cm<sup>2</sup></b>
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<b>Balcony Effect</b>	<b>3 X 46</b>
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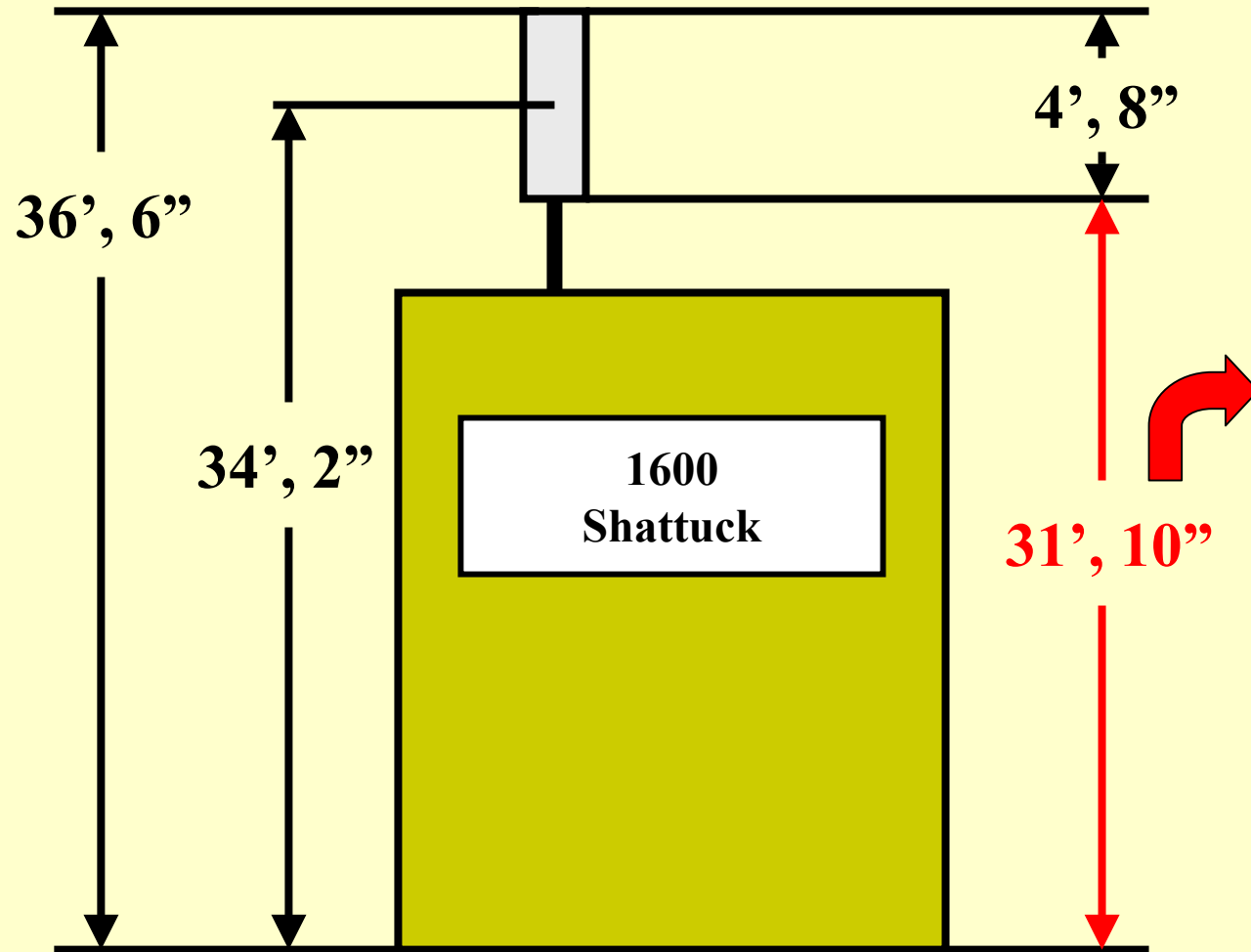
<b>Bouncing Effect</b>	<b>3 X 1.25</b>
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<b>FCC Limit</b>	<b>1 m W/cm<sup>2</sup></b>
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<b>PD around 1600 Shattuck</b>	<b>1.09 m W/cm<sup>2</sup></b>
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**ABOVE FCC LIMIT !**

# FCC and Height:



Should have  
been at least  
33'.

- **If the lowest point of an antenna is less than 33 feet above the ground, then the antenna is not categorically excluded; evaluation is required [FCC/LSGAC].**

**[FCC/LSGAC] “A Local Government Official’s Guide to Transmitting Antenna RF Emission Safety: Rules, Procedures, and Practical Guidance,” W. E. Kennard and K. S. Fellman, FCC, June 2000.**

- **Report by Mr. Hammett (stamped December 19, 2002):**  
**“... effective height of about 34 feet above ground ...”**

**Letter by Mr. Jerrold T. Bushberg of Health and Medical Physics Consulting to Mr. Martin of Sprint (March 5, 2003):**  
**“... radiation center at least 34 feet above ground ...”**

- **Sprint concealed the fact that the lowest point of the antenna is less than 33 feet above the ground. By doing this, Sprint evaded the required evaluation.**

# Laws Breached

- **Section 23C.17.040.F** is violated (Engineering calculations were not provided till a week after the Public Hearing.)
- Sprint evaded material provision of the permit by **not** providing engineering calculations when applying for a permit.
- The **Planning Department** committed material misrepresentation of fact by falsely writing in the Action Calendar of April 1, 2003 that Sprint presented engineering calculations verbally.

- **Section 23B.32.040.B** is violated (The Board did not make findings required by either general or District regulations applicable to the Use Permit of antennas.)
- **Section 23C.17.090.A** is violated (The power density the proposed antennas exceeds the FCC's limit. The height of the lowest point of the antennas does not comply with the FCC's limit.)
- **Section 23C.17.100.A** and **Section 23C.17.100.B.1** are violated (Negligence of the ZAB or the Zoning Officer.)

**ANTENNAS SHOULD NOT BE  
INSTALLED AT 1600 SHATTUCK.**

**Permit should be denied.**

# **Acknowledgements**

**Many thanks to those who have been supporting the neighbors of 1600 Shattuck and to those who helped us prepare this presentation.**

**Also, thanks to the City Council for giving us a chance to present our case.**