

EM-AT&T-057-158-161-020531

**CUDDY & FEDER & WORBY LLP**

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DANIEL F. LEARY (also CT)  
BARRY E. LONG

May 30, 2002

VIA FEDERAL EXPRESS

Hon. Mortimer Gelston, Chairman and Members  
of the Siting Council  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051

Re: AT&T Wireless Notice of Exempt Modification  
880 Post Road West, Westport, Connecticut  
46 Fenwood Lane, Wilton, Connecticut  
Butternut Hollow Road, Greenwich, Connecticut

**RECEIVED**

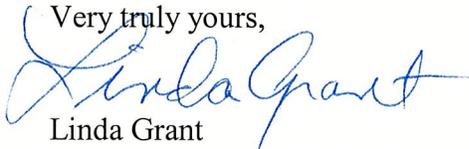
MAY 31 2002

**CONNECTICUT  
SITING COUNCIL**

Hon. Mortimer Gelston, Chairman and Members of the Siting Council:

On behalf of AT&T Wireless, we respectfully enclose an original and twenty-five copies of its notice of exempt modification with respect to the above mentioned facilities together with a check in the amount of \$500.00. We would appreciate it if these matters were placed on the next available agenda for acknowledgment by the Council. Should the Council or staff have any questions regarding this matter, please do not hesitate to contact us.

Very truly yours,

  
Linda Grant

cc: Christopher B. Fisher, Esq.

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DANIEL F. LEARY (also CT)  
BARRY E. LONG

May 30, 2002

VIA FEDERAL EXPRESS

Hon. Mortimer Gelston, Chairman and Members  
of the Siting Council  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051

Re: AT&T Wireless - EM-AT&T -057-991101  
Butternut Hollow Road, Greenwich, Connecticut  
Notice of Further Exempt Modification

**RECEIVED**

MAY 31 2002

**CONNECTICUT  
SITING COUNCIL**

Hon. Mortimer Gelston, Chairman and Members of the Siting Council:

The State of Connecticut, Department of Public Safety, Division of State Police (the "State Police") holds the Siting Council certificate for the existing communications tower and related facility located at Butternut Hollow Road, Greenwich, Connecticut (Docket No. 150). On November 9, 1999 AT&T Wireless ("AT&T") received the Council's acknowledgement of a notice to modify the existing facility pursuant to Section 16-50j-72 of the Regulations of Connecticut State Agencies (EM-AT&T-057-991101) permitting AT&T to install up to twelve (12) panel antennas at approximately the 144 level of the tower, with associated equipment on a platform located within the fenced compound.

This notice of further exempt modification is also being provided pursuant to Section 16-50j-72 of the Council's regulations. AT&T will be installing an additional equipment cabinet (approximately 76"H x 76"W x 30"D) on the existing platform at the facility. There will be no other material infrastructure changes to AT&T's facility.

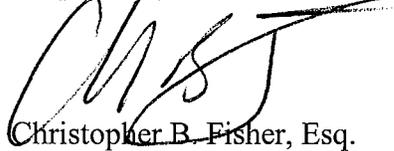
May 30, 2002

Page 2

The proposed addition of equipment to AT&T Wireless' facility does not constitute a "modification" of an existing facility as defined in Connecticut General Statutes Section 16-50i(d). The proposed addition to AT&T Wireless' facility will not result in an increase in the Tower's height or extend the boundaries of the existing fenced area surrounding the Tower. Further, there will be no increase in noise levels by six (6) decibels or more at the Tower site's boundary. AT&T has made measurements of the existing facility to confirm compliance with MPE limits and as set forth in a report prepared by Wireless Facilities, Inc., annexed hereto, the total radio frequency electromagnetic radiation power density at the Tower site's boundary will not be increased to or above the standard adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes. For all the foregoing reasons, addition of AT&T Wireless' equipment to its existing facility constitutes an exempt modification which will not have a substantially adverse environmental effect.

AT&T Wireless respectfully submits that the proposed addition of equipment to the Butternut Hollow Road Facility meets the Council's exemption criteria and requests an acknowledgment of same.

Respectfully Submitted,



Christopher B. Fisher, Esq.  
On behalf of AT&T Wireless

cc: First Selectman, Town of Greenwich  
Brian Benito, Connecticut State Police  
Darryl Hendrickson, Bechtel Telecommunications



**Wireless Facilities, Inc.**  
**1840 Michael Faraday Drive**  
**Suite 200**  
**Reston, VA 20190**

May 15, 2002

Mr. Mortimer A. Gelston, Chairman  
 Connecticut Siting Council  
 10 Franklin Square  
 New Britain, CT 06051

**RE: FCC Compliance Statement for AT&T Site CT-032 (Greenwich-Butternut)**

Dear Mr. Gelston:

On behalf of AT&T Wireless, Wireless Facilities Inc. has performed office analyses for the above referenced site to determine compliance with FCC mandated Maximum Permissible Exposure (MPE) limits as defined in 47 CFR § 1.1310.

The table below gives a brief summary of the site location, its configuration and associated technical parameters.

<u><i>Summary of Site Parameters</i></u>	
Site ID	CT-032
Site Name	Greenwich-Butternut
Latitude	41.09694
Longitude	-73.64
Address of Structure	1 Butternut Hollow Road Greenwich, CT 06830
Type of Structure	Lattice Tower
FCC Class and Type of Service	PCS TDMA (IS-136) PCS GSM
Operating Frequency	PCS Band
Azimuths (deg.)	15, 135, 255
Antenna Radiation Center, AGL	142 ft.
Antenna Configuration	2 Antennas per Sector
Antenna Type	Panel

The mathematical equations used in evaluating power density values are exactly as outlined in the Office of Engineering & Technology (OET) Bulletin Number 65, which contains the FCC guidelines for evaluating human exposure to radio-frequency electromagnetic fields.

In the case of a single radiating antenna, a prediction for power density in the far field of the antenna can be written as:

$$S = \frac{EIRP}{4\pi D^2} = \frac{1.64 * ERP}{4\pi D^2}$$

Where: S = Power density in W/m<sup>2</sup>  
EIRP = Effective isotropic radiated power (W)  
ERP = Effective radiated power (W)  
D = Distance in meters

Using the EPA's recommended factor of 1.6 for 100 % reflection, the worst-case power density can be obtained by incorporating this factor into the above equation. If the distance, D, is in centimeters, the ERP is in Watts, then the worst case power density in mW/cm<sup>2</sup> is given by:

$$S = \frac{(1.64)(.64)(ERP)(1000 \text{ mW / W})}{\pi D^2}$$

Where: S = Power density in mW/cm<sup>2</sup>  
ERP = Effective radiated power in Watts (# of channels x ERP/channel)  
D = Distance in centimeters

The results presented in this analysis are based on the following:

- WFI's analysis considered the transmit parameters for AT&T's existing TDMA system, for the future GSM deployment they are proposing, and for all other existing carriers.
- The formula utilized for the calculations is taken directly from the FCC OET Bulletin 65 as shown above.
- A 100% duty cycle with maximum power and maximum number of channels for each system was assumed.
- With exception of the microwave antennas at 18.7 GHz and 6.7 GHz, a worst-case scenario was assumed with all antennas for the existing and future installations pointing directly at the base of the tower. No antenna discrimination was considered.
- For the microwave antennas at 18.7 GHz and 6.7 GHz, antenna discrimination was considered. However, a conservative estimate for antenna gain of just 20 dB below main beam gain was used. This equates to an antenna gain toward the base of the tower of 17.46 dBd for the 6.7 GHz system and 26.36 dBd for the 18.7 GHz system. Because of the highly directional nature of these parabolic antennas, power directed toward the base of the tower will in actuality be much less.

The following transmission parameters were used throughout this analysis.

Carrier / Agency	Operating Frequency (MHz)	Maximum ERP/Ch (Watts)	Maximum No. of Xmtrs per Sector	Maximum ERP per Sector/Antenna (Watts)	Antenna Centerline (ft.)
AT&T, Current	1900	136.9	8	1095.2	142
AT&T, Future	1900	275	4	1100	142
SCLP	825	100	19	1900	150
Bell Atlantic	825	100	19	1900	125
Sprint	1900	122	11	1342	115
Nextel	851	100	8	800	105
CSP	866.7125	1000	1	1000	180
CSP	866.0125	1000	1	1000	180
Greenwich	866.7875	1000	1	1000	180
Omnipoint	1900	893.3	3	2679.9	135
Greenwich	18700	431.67	1	431.67	177
DOT	42.8	100	1	100	180
NU	928	50	1	50	150
NU	150	316	1	316	150
NU	37.8	100	1	100	80
NU	944	555	1	555	165
NU	450	316	1	316	150
NU	47.86	100	1	100	130
CSP	6700	55.61	1	55.61	176

The maximum worst-case values of the power density for this analysis are outlined below:

Carrier / Agency	Point of Worst Case Predicted Level	Predicted Value ( $\mu\text{W}/\text{cm}^2$ )	MPE Limit for Uncontrolled Environment Set by FCC ( $\mu\text{W}/\text{cm}^2$ )	% of the Standard
<b>AT&amp;T, Current PCS TDMA</b>	Base of the tower	19.517	1000.00	1.952
<b>AT&amp;T, Future PCS GSM</b>	Base of the tower	19.602	1000.00	1.960
<b>SCLP, Cellular</b>	Base of the tower	30.343	550.00	5.517
<b>Bell Atlantic, Cellular</b>	Base of the tower	43.695	550.00	7.944
<b>Sprint, PCS</b>	Base of the tower	36.463	1000.00	3.646
<b>Nextel, ESMR</b>	Base of the tower	26.074	567.33	4.596
<b>Omnipoint, PCS</b>	Base of the tower	11.090	577.81	1.919
<b>CSP, UHF</b>	Base of the tower	11.090	577.34	1.921
<b>CSP, UHF</b>	Base of the tower	11.090	577.86	1.919
<b>Greenwich, UHF</b>	Base of the tower	52.838	1000.00	5.284

Carrier / Agency	Point of Worst Case Predicted Level	Predicted Value ( $\mu\text{W}/\text{cm}^2$ )	MPE Limit for Uncontrolled Environment Set by FCC ( $\mu\text{W}/\text{cm}^2$ )	% of the Standard
Greenwich, 18.7 GHz	Base of the tower	5.305	1000.00	0.530
DOT, VHF	Base of the tower	1.109	200.00	0.555
NU, UHF	Base of the tower	0.799	618.67	0.129
NU, VHF	Base of the tower	5.047	200.00	2.523
NU, VHF	Base of the tower	5.615	200.00	2.807
NU, UHF	Base of the tower	7.325	629.33	1.164
NU, UHF	Base of the tower	5.047	300.00	1.682
NU, VHF	Base of the tower	2.126	200.00	1.063
CSP, 6.7 GHz	Base of the tower	0.691	1000.00	0.069
<b>Total % of Standard</b>				<b>51.795</b>

The results of these analyses indicate that output power levels for the AT&T owned equipment deployed at the above referenced facility meet FCC approved exposure limits for all uncontrolled areas where general population exposure may exist. Thus, the maximum level of RF radiation contributed by AT&T in all uncontrolled areas, assuming a worst case scenario and a 100% duty cycle for all transmitters, is equal to or less than 3.912% (1.952 + 1.960) of the maximum permissible exposure limit mandated by the FCC and endorsed by the NCRP and ANSI/IEEE.

Based on the transmit parameters indicated on the table above, the worst-case composite level of RF radiation in all uncontrolled areas for all identified systems operating at this facility is equal to or less than 51.795% of the FCC maximum permissible exposure limit.

To the best of my knowledge, the statements made and information disclosed in this study are complete and accurate.

Sincerely,  
Wireless Facilities, Inc.



Dan Hardiman  
Senior Engineer II  
Fixed Network Engineering

**CUDDY & FEDER & WORBY LLP**

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MAY 31 2002

May 30, 2002 **CONNECTICUT  
SITING COUNCIL**

VIA FEDERAL EXPRESS

Hon. Mortimer Gelston, Chairman and Members  
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Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051

Re: AT&T Wireless - EM-AT&T -  
880 Post Road West, Westport, Connecticut  
Notice of Further Exempt Modification

Hon. Mortimer Gelston, Chairman and Members of the Siting Council:

The State of Connecticut, Department of Public Safety, Division of State Police (the "State Police") holds the Siting Council certificate for the existing communications tower and related facility located at 880 Post Road West, Westport, Connecticut (Docket No. 123). On November 9, 1999 AT&T Wireless ("AT&T") received the Council's acknowledgement of a notice to modify the existing facility pursuant to Section 16-50j-72 of the Regulations of Connecticut State Agencies (EM-AT&T-) permitting AT&T to install up to twelve (12) panel antennas at approximately the 155 level of the tower, with associated equipment on a platform located within the fenced compound.

This notice of further exempt modification is also being provided pursuant to Section 16-50j-72 of the Council's regulations. AT&T will be installing an additional equipment cabinet (approximately 76"H x 76"W x 30"D) on the existing platform at the facility. There will be no other material infrastructure changes to AT&T's facility.

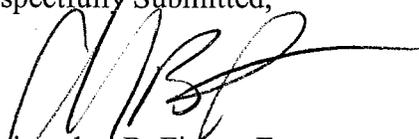
May 30, 2002

Page 2

The proposed addition of equipment to AT&T Wireless' facility does not constitute a "modification" of an existing facility as defined in Connecticut General Statutes Section 16-50i(d). The proposed addition to AT&T Wireless' facility will not result in an increase in the Tower's height or extend the boundaries of the existing fenced area surrounding the Tower. Further, there will be no increase in noise levels by six (6) decibels or more at the Tower site's boundary. AT&T has made measurements of the existing facility to confirm compliance with MPE limits and as set forth in a report prepared by Wireless Facilities, Inc., annexed hereto, the total radio frequency electromagnetic radiation power density at the Tower site's boundary will not be increased to or above the standard adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes. For all the foregoing reasons, addition of AT&T Wireless' equipment to its existing facility constitutes an exempt modification which will not have a substantially adverse environmental effect.

AT&T Wireless respectfully submits that the proposed addition of equipment to the Post Road West Facility meets the Council's exemption criteria and requests an acknowledgment of same.

Respectfully Submitted,



Christopher B. Fisher, Esq.  
On behalf of AT&T Wireless

cc: First Selectman, Town of Westport  
Brian Benito, Connecticut State Police  
Darryl Hendrickson, Bechtel Telecommunications



**Wireless Facilities, Inc.**  
**1840 Michael Faraday Drive**  
**Suite 200**  
**Reston, VA 20190**

May 9, 2002

Mr. Mortimer A. Gelston, Chairman  
 Connecticut Siting Council  
 10 Franklin Square  
 New Britain, CT 06051

**RE: FCC Compliance Statement for AT&T Site CT-019 (Westport State Police Tower)**

Dear Mr. Gelston:

On behalf of AT&T Wireless, Wireless Facilities Inc. has performed office analyses for the above referenced site to determine compliance with FCC mandated Maximum Permissible Exposure (MPE) limits as defined in 47 CFR § 1.1310.

The table below gives a brief summary of the site location, its configuration and associated technical parameters.

<u><i>Summary of Site Parameters</i></u>	
Site ID	CT-019
Site Name	Westport State Police Tower
Latitude	41.13805
Longitude	-73.33583
Address of Structure	880 Post Road East, Westport, CT
Type of Structure	Lattice Tower
FCC Class and Type of Service	PCS TDMA (IS-136) PCS GSM
Operating Frequency	PCS Band
Azimuths (deg.)	15, 135, 255
Antenna Radiation Center, AGL	145 ft.
Antenna Configuration	2 Antennas per Sector
Antenna Type	Panel

The mathematical equations used in evaluating the power density values are exactly as outlined in the Office of Engineering & Technology (OET) Bulletin Number 65, which contains the FCC guidelines for evaluating human exposure to radio-frequency electromagnetic fields.

In the case of a single radiating antenna, a prediction for power density in the far field of the antenna can be written as:

$$S = \frac{EIRP}{4\pi D^2} = \frac{1.64 * ERP}{4\pi D^2}$$

Where: S = Power density in W/m<sup>2</sup>  
EIRP = Effective isotropic radiated power (W)  
ERP = Effective radiated power (W)  
D = Distance in meters

Using the EPA's recommended factor of 1.6 for 100 % reflection, the worst-case power density can be obtained by incorporating this factor into the above equation. If the distance, D, is in centimeters, the ERP is in Watts, then the worst case power density in mW/cm<sup>2</sup> is given by:

$$S = \frac{(1.64)(.64)(ERP)(1000 \text{ mW} / \text{W})}{\pi D^2}$$

Where: S = Power density in mW/cm<sup>2</sup>  
ERP = Effective radiated power in Watts (# of channels x ERP/channel)  
D = Distance in centimeters

The results presented in this analysis are based on the following:

- WFI's analysis considered the transmit parameters for AT&T's existing TDMA system, for the future GSM deployment they are proposing, and for all other existing carriers.
- The formula utilized for the calculations is taken directly from the FCC OET Bulletin 65 as shown above.
- The worst-case scenario was assumed with all of the antennas for both the current and the future installation pointing to the base of the tower.
- A 100% duty cycle with maximum power and the maximum number of channels for each system was assumed.

The following transmission parameters were used throughout this analysis.

Carrier / Agency	Operating Frequency (MHz)	Maximum ERP/Ch (Watts)	Maximum No. of Xmtrs per Sector	Maximum ERP per Sector (Watts)	Antenna Centerline (ft.)
AT&T, Current	1900	150.1	8	1200.8	145
AT&T, Future	1900	275	4	1100	145
SNET	825	100	19	1900	150
Verizon Wireless	825	100	19	1900	160
Verizon Wireless	1900	1004.76	6	6028.56	160
Verizon Wireless	10555	13879.3	1	13879.3	170
CSP	42.04	330	1	330	180
CSP	954.4	50.7	1	50.7	169

The maximum worst-case values for power density calculated in this analysis are outlined below:

Carrier / Agency	Point of Worst Case Predicted Level	Predicted Value ( $\mu\text{W}/\text{cm}^2$ )	Maximum Limit for Uncontrolled Environment Set by FCC ( $\mu\text{W}/\text{cm}^2$ )	% of the Standard
AT&T, Current PCS TDMA	Base of the tower	22.332	1000	2.233
AT&T, Future PCS GSM	Base of the tower	20.458	1000	2.046
SNET, Cellular	Base of the tower	32.925	550	5.986
Verizon Wireless, Cellular	Base of the tower	28.788	550	5.234
Verizon Wireless, PCS	Base of the tower	91.341	1000	9.134
Verizon Wireless, 11GHz	Base of the tower	185.427	1000	18.543
CSP, VHF	Base of the tower	3.917	200	1.958
CSP, UHF	Base of the tower	0.686	636.27	0.108
<b>Total % of Standard</b>				<b>45.242</b>

The results of these analyses indicate that output power levels for the AT&T owned equipment deployed at the above referenced facility meets FCC approved exposure limits for all uncontrolled areas where general population exposure may exist. Thus, the maximum level of RF radiation contributed by AT&T in all uncontrolled areas, assuming a worst case scenario and a 100% duty cycle for all transmitters, is equal to or less than 4.279% (2.233 + 2.046) of the maximum permissible exposure limit mandated by the FCC and endorsed by the NCRP and ANSI/IEEE.

Based on the transmit parameters indicated on the table above, the worst-case composite level of RF radiation in all uncontrolled areas for all identified systems operating at this facility is equal to or less than 45.242% of the FCC maximum permissible exposure limit.

To the best of my knowledge, the statements made and information disclosed in this study are complete and accurate.

Sincerely,  
Wireless Facilities, Inc.

A handwritten signature in black ink, appearing to read "Dan Hardiman". The signature is written in a cursive style with a large initial "D".

Dan Hardiman  
Senior Engineer II  
Fixed Network Engineering

**CUDDY & FEDER & WORBY LLP**

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KENNETH F. JURIST  
MICHAEL L. KATZ (also NJ)  
JOSHUA E. KIMERLING (also CT)  
DANIEL F. LEARY (also CT)  
BARRY E. LONG

May 30, 2002

VIA FEDERAL EXPRESS

Hon. Mortimer Gelston, Chairman and Members  
of the Siting Council  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051

Re: AT&T Wireless - EM-AT&T-161-991101  
46 Fenwood Lane, Wilton, Connecticut  
Notice of Further Exempt Modification

**RECEIVED**  
MAY 31 2002  
CONNECTICUT  
SITING COUNCIL

Hon. Mortimer Gelston, Chairman and Members of the Siting Council:

The State of Connecticut, Department of Public Safety, Division of State Police (the "State Police") holds the Siting Council certificate for the existing communications tower and related facility located at 46 Fenwood Lane, Wilton, Connecticut (Docket No. 128). On November 9, 1999 AT&T Wireless ("AT&T") received the Council's acknowledgement of a notice to modify the existing facility pursuant to Section 16-50j-72 of the Regulations of Connecticut State Agencies (EM-AT&T-161-991101) permitting AT&T to install up to twelve (12) panel antennas at approximately the 165 level of the tower, with associated equipment on a platform located within the fenced compound.

This notice of further exempt modification is also being provided pursuant to Section 16-50j-72 of the Council's regulations. In order for AT&T to install an additional equipment cabinet (approximately 76"H x 76"W x 30"D) at the facility, the existing concrete pad and steel platform must be extended. AT&T proposes to add an 8'-6" x 1' poured concrete pad and steel platform to the existing pad within the existing fenced compound. See plans prepared by URS

CUDDY & FEDER & WORBY LLP

May 30, 2002

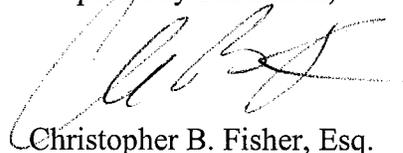
Page 2

Corporation annexed hereto as Exhibit 1. There will be no other material infrastructure changes to AT&T's facility.

The proposed addition of equipment to AT&T Wireless' facility does not constitute a "modification" of an existing facility as defined in Connecticut General Statutes Section 16-50i(d). The proposed addition to AT&T Wireless' facility will not result in an increase in the Tower's height or extend the boundaries of the existing fenced area surrounding the Tower. Further, there will be no increase in noise levels by six (6) decibels or more at the Tower site's boundary. AT&T has made measurements of the existing facility to confirm compliance with MPE limits and as set forth in a report prepared by Wireless Facilities, Inc., annexed hereto, the total radio frequency electromagnetic radiation power density at the Tower site's boundary will not be increased to or above the standard adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes. For all the foregoing reasons, addition of AT&T Wireless' equipment to its existing facility constitutes an exempt modification which will not have a substantially adverse environmental effect.

AT&T Wireless respectfully submits that the proposed addition of equipment to the Fenwood Lane Facility meets the Council's exemption criteria and requests an acknowledgment of same.

Respectfully Submitted,



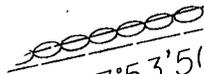
Christopher B. Fisher, Esq.  
On behalf of AT&T Wireless

cc: First Selectman, Town of Wilton  
Brian Benito, Connecticut State Police  
Darryl Hendrickson, Bechtel Telecommunications

TN



(MP)



S17°53'50"

24F



**Wireless Facilities, Inc.**  
**1840 Michael Faraday Drive**  
**Suite 200**  
**Reston, VA 20190**

May 9, 2002

Mr. Mortimer A. Gelston, Chairman  
 Connecticut Siting Council  
 10 Franklin Square  
 New Britain, CT 06051

**RE: FCC Compliance Statement for AT&T Site CT-056 (State Police-Wilton)**

Dear Mr. Gelston:

On behalf of AT&T Wireless, Wireless Facilities Inc. has performed office analyses for the above referenced site to determine compliance with FCC mandated Maximum Permissible Exposure (MPE) limits as defined in 47 CFR § 1.1310.

The table below gives a brief summary of the site location, its configuration and associated technical parameters.

<u><i>Summary of Site Parameters</i></u>	
Site ID	CT-056
Site Name	State Police-Wilton
Latitude	41.17277
Longitude	-73.43416
Address of Structure	46 Fenwood Lane, Wilton, CT
Type of Structure	Lattice Tower
FCC Class and Type of Service	PCS TDMA (IS-136) PCS GSM
Operating Frequency	PCS Band
Azimuths (deg.)	0, 120, 240
Antenna Radiation Center, AGL	165 ft.
Antenna Configuration	2 Antennas per Sector
Antenna Type	Panel

The mathematical equations used in evaluating the power density values are exactly as outlined in the Office of Engineering & Technology (OET) Bulletin Number 65, which contains the FCC guidelines for evaluating human exposure to radio-frequency electromagnetic fields.

In the case of a single radiating antenna, a prediction for power density in the far field of the antenna can be written as:

$$S = \frac{EIRP}{4\pi D^2} = \frac{1.64 * ERP}{4\pi D^2}$$

Where: S = Power density in W/m<sup>2</sup>  
EIRP = Effective isotropic radiated power (W)  
ERP = Effective radiated power (W)  
D = Distance in meters

Using the EPA's recommended factor of 1.6 for 100 % reflection, the worst-case power density can be obtained by incorporating this factor into the above equation. If the distance, D, is in centimeters, the ERP is in Watts, then the worst case power density in mW/cm<sup>2</sup> is given by:

$$S = \frac{(1.64)(.64)(ERP)(1000 \text{ mW} / \text{W})}{\pi D^2}$$

Where: S = Power density in mW/cm<sup>2</sup>  
ERP = Effective radiated power in Watts (# of channels x ERP/channel)  
D = Distance in centimeters

The results presented in this analysis are based on the following:

- WFI's analysis considered the transmit parameters for AT&T's existing TDMA system, for the future GSM deployment they are proposing, and for all other existing carriers.
- The formula utilized for the calculations is taken directly from the FCC OET Bulletin 65 as shown above.
- The worst-case scenario was assumed with all of the antennas for both the current and the future installation pointing to the base of the tower.
- A 100% duty cycle with maximum power and the maximum number of channels for each system was assumed.

The following transmission parameters were used throughout this analysis.

Carrier / Agency	Operating Frequency (MHz)	Maximum ERP/Ch (Watts)	Maximum No. of Xmtrs per Sector	Maximum ERP per Sector (Watts)	Antenna Centerline (ft.)
AT&T, Current	1900	100.5	16	1608	165
AT&T, Future	1900	275	4	1100	165
Omnipoint	1900	893.33	3	2679.99	122
Sprint	1900	74	33	2442	105
SNET	825	100	19	1900	140
CSP	6700	5591	1	5591	176
CSP	6700	5591	1	5591	130
NEU	48	100	1	100	80
WPD	45	100	1	100	95
DEA	406	631	1	631	100
NEU	37.44	100	1	100	120
NEU	925	50	1	50	120
WTR	170	100	1	100	135
USS	165	398	1	398	85
CSP	954.4	227	1	227	169
FCP	154.1	199.5	2	399	170
CSP	154.665	330	1	330	170
DHS	153.815	200	1	200	112
CSP	42.04	300	1	300	120
CSP	42.04	300	1	300	180
CSP	822.5	199	1	199	175
CSP	6700	5591	1	5591	176
DOE	2668	76	1	76	180

The maximum worst-case values for power density calculated in this analysis are outlined below.

Carrier / Agency	Point of Worst Case Predicted Level	Predicted Value ( $\mu\text{W}/\text{cm}^2$ )	Maximum Limit for Uncontrolled Environment Set by FCC ( $\mu\text{W}/\text{cm}^2$ )	% of the Standard
AT&T, Current PCS TDMA	Base of the tower	22.855	1000.00	2.286
AT&T, Future PCS GSM	Base of the tower	15.635	1000.00	1.563
Omnipoint, PCS	Base of the tower	71.567	1000.00	7.157
Sprint, PCS	Base of the tower	89.530	1000.00	8.953
SNET, Cellular	Base of the tower	38.022	550.00	6.913
CSP, 6.7 GHz	Base of the tower	69.516	1000.00	6.952
CSP, 6.7 GHz	Base of the tower	130.659	1000.00	13.066
NEU, VHF	Base of the tower	6.562	200.00	3.281

Carrier / Agency	Point of Worst Case Predicted Level	Predicted Value ( $\mu\text{W}/\text{cm}^2$ )	Maximum Limit for Uncontrolled Environment Set by FCC ( $\mu\text{W}/\text{cm}^2$ )	% of the Standard
WPD, VHF	Base of the tower	4.536	200.00	2.268
DEA, UHF	Base of the tower	25.661	270.67	9.481
NEU, VHF	Base of the tower	2.765	200.00	1.382
NEU,UHF	Base of the tower	1.382	616.67	0.224
WTR, VHF	Base of the tower	2.159	200.00	1.080
USS, VHF	Base of the tower	22.915	200.00	11.458
CSP, UHF	Base of the tower	3.070	636.27	0.483
FCP, VHF	Base of the tower	5.331	200.00	2.665
CSP, VHF	Base of the tower	4.409	200.00	2.204
DHS, VHF	Base of the tower	6.396	200.00	3.198
CSP, VHF	Base of the tower	8.295	200.00	4.147
CSP, VHF	Base of the tower	3.561	200.00	1.780
CSP, UHF	Base of the tower	2.504	548.33	0.457
CSP, 6.7 GHz	Base of the tower	69.516	1000.00	6.952
DOE, 2.7 GHz	Base of the tower	0.902	1000.00	0.090
			<b>Total % of Standard</b>	<b>98.039</b>

The results of these analyses indicate that output power levels for the AT&T owned equipment deployed at the above referenced facility meets FCC approved exposure limits for all uncontrolled areas where general population exposure may exist. Thus, the maximum level of RF radiation contributed by AT&T in all uncontrolled areas, assuming a worst case scenario and a 100% duty cycle for all transmitters, is equal to or less than 3.849% (2.286 + 1.563) of the maximum permissible exposure limit mandated by the FCC and endorsed by the NCRP and ANSI/IEEE.

Based on the transmit parameters indicated on the table above, the worst-case composite level of RF radiation in all uncontrolled areas for all identified systems operating at this facility is equal to or less than 98.039% of the FCC maximum permissible exposure limit.

To the best of my knowledge, the statements made and information disclosed in this study are complete and accurate.

Sincerely,  
Wireless Facilities, Inc.



Dan Hardiman  
Senior Engineer II  
Fixed Network Engineering