



STATE OF CONNECTICUT  
*CONNECTICUT SITING COUNCIL*

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: [siting.council@ct.gov](mailto:siting.council@ct.gov)

Web Site: [portal.ct.gov/csc](http://portal.ct.gov/csc)

**VIA ELECTRONIC MAIL**

March 16, 2022

G. Scott Shepherd  
Property Development Specialist II  
SBA Communications  
134 Flanders Road, Suite 125  
Westborough, MA 01581  
[gshepherd@sbsite.com](mailto:gshepherd@sbsite.com)

**RE: EM-T-MOBILE-044-220127** – T-Mobile notice of intent to modify an existing telecommunications facility located at 60 Commerce Street, East Haven, Connecticut.

Dear Mr. Shepherd:

The Connecticut Siting Council (Council) is in receipt of your correspondence of February 22, 2022 and March 11, 2022 both submitted in response to the Council's February 16, 2022 notification of an incomplete request and March 3, 2022 follow-up correspondence for exempt modification with regard to the above-referenced matter.

The submissions renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

A handwritten signature in dark ink, appearing to read "Melanie A. Bachman".

Melanie A. Bachman  
Executive Director

MAB/FOC/emr

**From:** Glenn Shepherd <GShepherd@sbsite.com>  
**Sent:** Friday, March 11, 2022 11:40 AM  
**To:** Robidoux, Evan <Evan.Robidoux@ct.gov>  
**Cc:** CSC-DL Siting Council <Siting.Council@ct.gov>; Kri Pelletier <KPelletier@sbsite.com>; Mark Appleby <mappleby@clinellc.com>  
**Subject:** RE: [External] FW: Council Incomplete Letter for EM-T-MOBILE-044-220127 (Commerce Street, East Haven)

EXTERNAL EMAIL: This email originated from outside of the organization. Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Evan, Et al,

Please see the attached letter from Centerline in response to Council's Incomplete Letter EM-T-MOBILE-044-220127 also attached for your reference.

Please let me know if you any further questions in this regard.

Thank you,

**G. Scott Shepherd**

*Site Development Specialist II*

508.251.0720 Ext.3807 + **T**

508.366.2610 + F + **F**

508.868.6000 + C + **C**



March 10, 2022

Attn: G. Scott Shepherd  
Property Development Specialist II  
SBA Communications  
134 Flanders Rd., Suite 125  
Westborough, MA 01581

Re: Response to CSC Incomplete Letter for Proposed T-Mobile Modifications  
T-Mobile Site Name: CTNH723A  
Site Address: 60 Commerce Street, East Haven, CT 06512

To whom it may concern:

This correspondence addresses the Connecticut Siting Council (CSC) letter from Melanie Bachman (dated 3/3/2022) regarding the site compliance report prepared by Centerline Communications (dated 1/25/2022) for the proposed T-Mobile modifications at above referenced site. Centerline Communications is a leader in the evaluation of such deployments for compliance with the Federal Communications Commission (FCC) rules and regulations regarding Radio Frequency Electromagnetic Fields (RF-EME).

Centerline Communications performed a predictive theoretical exposure analysis to determine the upper-limit RF exposure levels from the existing/proposed T-Mobile facility. The results of the analysis were compiled in the site compliance report dated 1/25/2022. Based on the evaluation, it was determined that the ground level exposure would be in compliance with the FCC General Public maximum permissible exposure (MPE) limit by a substantial margin.

The letter from the CSC dated 3/3/2022 stated the following:

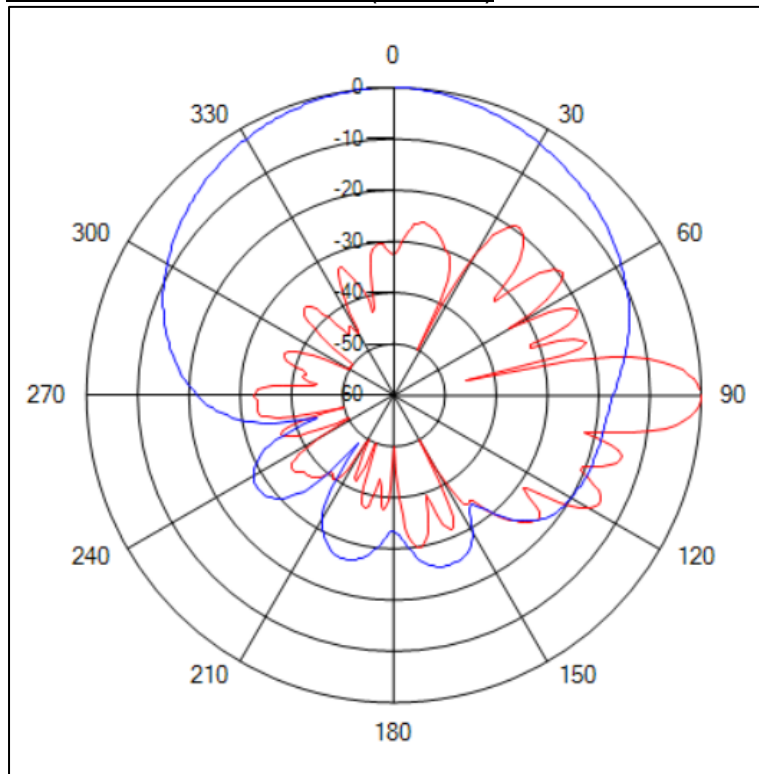
*Please see the attached power density database table for the above referenced facility for T-Mobile. The power density calculation accounts for -20dB in the denominator and the result for MPE is 68%; much higher than 14% which Mr. Fischer claims. The Report does not include this type of table. Please provide such table as well as clarification of the vertical plane antenna gain values within the attached power density calculation consistent with a FCC OET Bulletin 65 formula.*

Centerline Communications uses a predictive software modeling tool—Roofmaster®—to perform exposure calculations in accordance with methodologies prescribed in OET Bulletin 65. The prediction software is an industry accepted modeling tool which is used to generate reports for wireless licensees nationwide, including T-Mobile. CSC's calculations utilize the same methodologies but in a more conservative manner. There are differences in the results for a few reasons. The CSC calculations are not using specific antenna pattern data but rather a 10 dB offset reduction from the main beam calculation. The CSC calculations also combine the exposure from all antennas on a single sector into a single point in space 6' above ground level unlike Roofmaster® which is calculating exposure at all points in space and spatially averaging the results within a 6' span from 0-6' above ground level to find the maximum value at any given location.

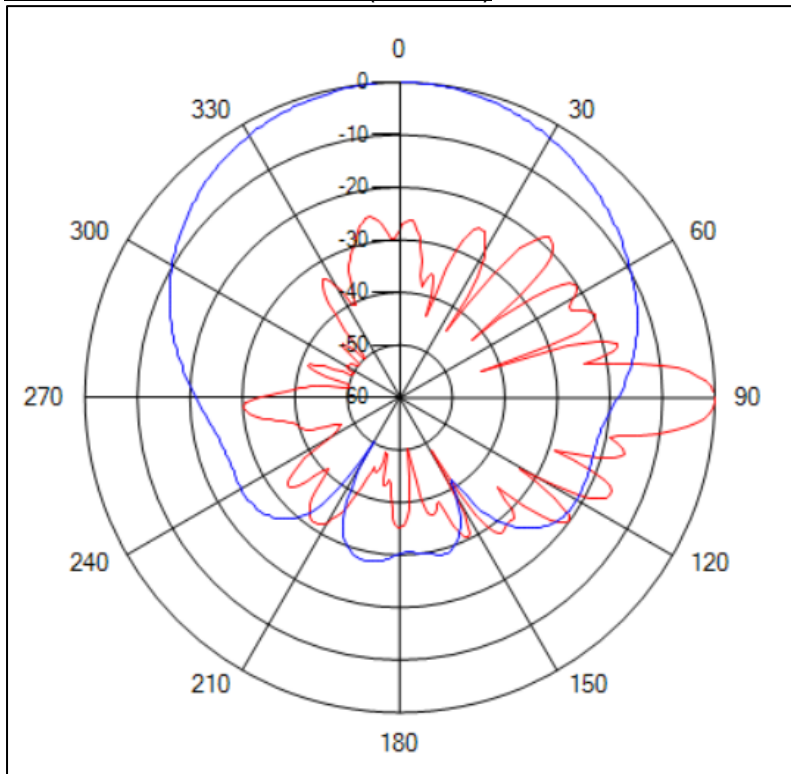
Typical panel antennas in use by T-Mobile employ an off-beam reduction much greater than 10 dB (in many cases 30+ dB) directly below the antennas in the vertical plane. This is the point at which the CSC performs the calculations as it is the closest point to the antennas. The CSC standards state: "...it is permissible to use a relative field factor if information about an antenna's radiation pattern is known...such a factor may result in a more realistic prediction." As mentioned previously, the software tool is using antenna pattern data provided directly from the antenna manufacturers. The patterns are uploaded into the tool and actual horizontal and vertical antenna pattern data is used in performing the predictive calculations.

The proposed T-Mobile antenna configuration at this site includes two different antenna models and various frequency bands. I have inserted images below of the horizontal (blue) and vertical (red) antenna patterns for the proposed 600/700/1900/2100 MHz RFS multi-band antenna. This antenna is proposed on each T-Mobile sector at this site.

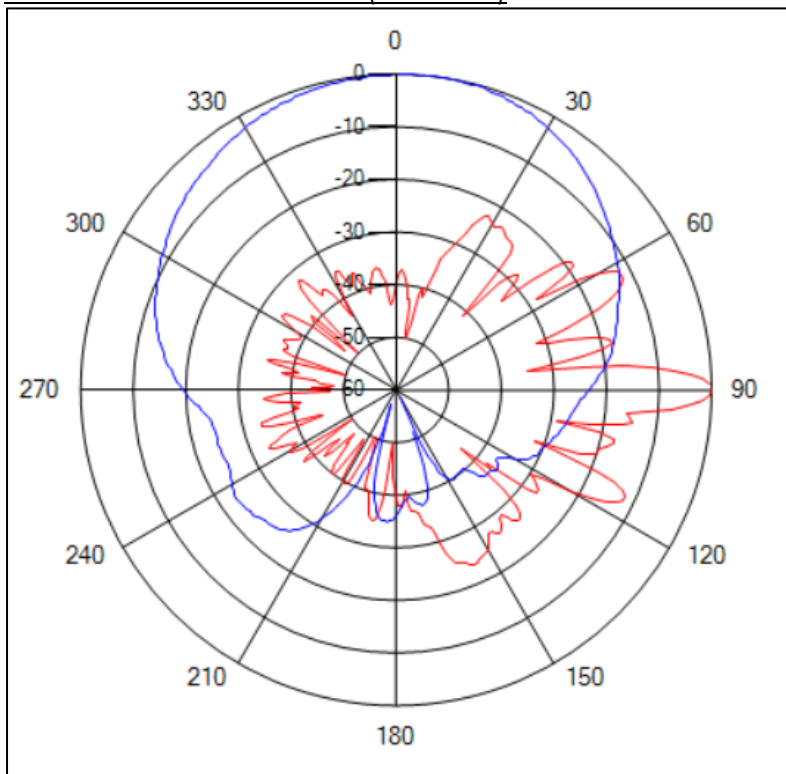
RFS APXVAALL24 43-U-NA20 (600 MHz)



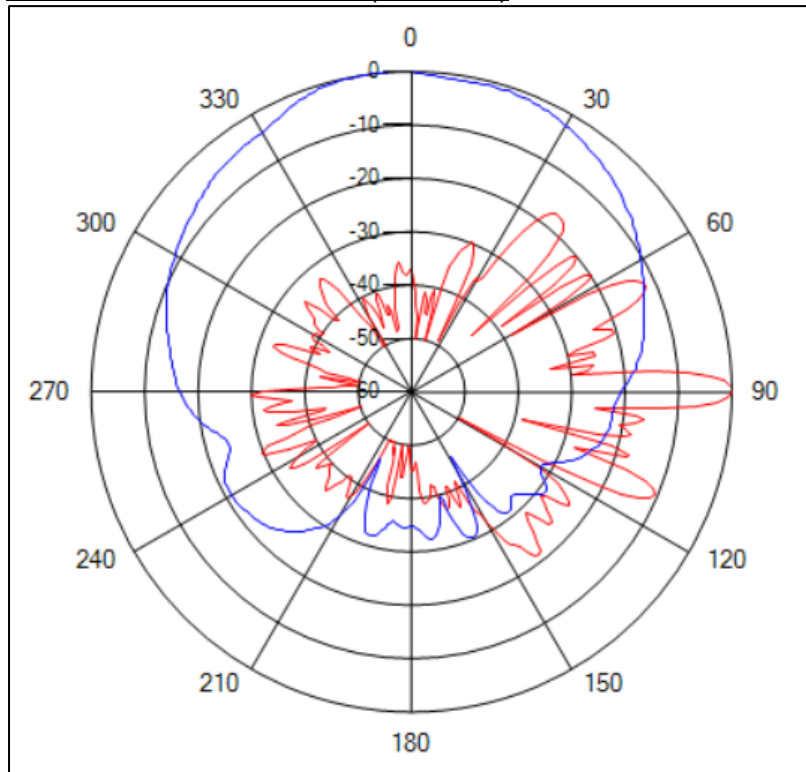
RFS APXVAALL24 43-U-NA20 (700 MHz)



RFS APXVAALL24 43-U-NA20 (1900 MHz)



RFS APXVAALL24 43-U-NA20 (2100 MHz)



As shown on the antenna pattern plots above, moving inward from the outermost concentric circle represents a reduction of 10 dB. Directly below the antennas, which would be the closest point to the antennas when standing at ground level, there is at least 30 dB reduction when compared to the main beam. This would equate to a reduction of 1000 times below the calculated main beam exposure. There are other lobes below the main beam for these antennas which may have less reduction relative to the reduction directly below the antennas; however, in the direction of these lobes, the distance used in the OET 65 far-field calculations would be greater, which would then offset the lower reduction factor.

The antenna data for the Ericsson AIR 6449 antenna, which is the other antenna being proposed by T-Mobile at this site, cannot be provided due to a non-disclosure agreement in place with the manufacturer. However, I will attest as a professional engineer the antenna data was provided directly by the manufacturer and uploaded into the tool and that this antenna was modeled in Roofmaster® in the same manner as the RFS antenna, with our predictive results being well below the allowable limit.

Compared to the CSC calculations which used a 10 dB reduction (which is only a numerical factor of 10), utilizing the actual antenna pattern data significantly reduces the predictive exposure calculations. Per correspondence from CSC, the CSC calculated ground level exposure for T-Mobile was 136.67% General Public MPE and the cumulative exposure with Verizon included was 143.88% General Public MPE (after the 10 dB reduction was applied). Applying a conservative 20 dB reduction to the same calculation would give a result of 13.667% General Public MPE and 14.388% General Public MPE, respectively. Keep in mind that the CSC calculation was done in a very conservative manner, but regardless, the result is still substantially below the FCC allowable limit when using a more realistic reduction factor. Thus, when



incorporating the actual antenna pattern data into the calculations, at any location at ground level, the predictive exposure results would be compliant with the FCC General Public MPE limit.

For a comparison with the more conservative CSC calculation method, I have included the table below and show hand-calculated results including a 10 dB reduction as well as a 20 dB reduction. With the 20 dB reduction, the calculated exposure is well below the allowable limit.

Carrier	Band	ERP	ACL (ft)	Eval Ht (ft)	Eval Ht (m)	Power Density (mW/cm2)	MPE Limit (mW/cm2)	% MPE	% MPE (-10 dB)	% MPE (-20 dB)
TMO	L700	1853.92	67	61	18.59	0.179	0.467	38.40	3.84	0.38
TMO	L600	4733.81	67	61	18.59	0.458	0.400	114.39	11.44	1.14
TMO	L600	1577.94	67	61	18.59	0.153	0.400	38.13	3.81	0.38
TMO	L2100	12363.97	67	61	18.59	1.195	1.000	119.50	11.95	1.20
TMO	L1900	9821.05	67	61	18.59	0.949	1.000	94.93	9.49	0.95
TMO	G1900	526.13	67	61	18.59	0.051	1.000	5.09	0.51	0.05
TMO	L2500	959.67	67	61	18.59	0.093	1.000	9.28	0.93	0.09
TMO	N2500	937.82	67	61	18.59	0.091	1.000	9.06	0.91	0.09
TMO	L2500	15461.18	67	61	18.59	1.494	1.000	149.44	14.94	1.49
TMO	N2500	15461.18	67	61	18.59	1.494	1.000	149.44	14.94	1.49
VZ	850	4509.41	55	49	14.93	0.675	0.567	119.20	11.92	1.19
VZ	2100	5958.27	55	49	14.93	0.893	1.000	89.25	8.93	0.89
VZ	2100	5958.27	55	49	14.93	0.893	1.000	89.25	8.93	0.89
VZ	3700	43154.89	55	49	14.93	6.464	1.000	646.43	64.64	6.46
<b>Composite % MPE</b>								<b>1671.79</b>	<b>167.18</b>	<b>16.72</b>

Lastly, I have personally performed ground level RF exposure measurements at many sites over the past 19 years. Using calibrated instruments accepted throughout the industry, I have never seen any measurements come close to approaching the General Public MPE limit with antennas mounted in an elevated manner similar to the T-Mobile antennas at this site. I would expect similar results if ground level measurements were to be performed at this site.

If you have any questions, please contact me at [mfischer@clinellc.com](mailto:mfischer@clinellc.com).

Sincerely,

Michael Fischer, P.E.  
 Director of Engineering  
 Centerline Communications, LLC

**From:** Glenn Shepherd <GShepherd@sbsite.com>

**Sent:** Tuesday, February 22, 2022 5:22 PM

**To:** Robidoux, Evan <Evan.Robidoux@ct.gov>

**Cc:** CSC-DL Siting Council <Siting.Council@ct.gov>

**Subject:** RE: EM-T-MOBILE-044-220127 [External] FW: Council Incomplete Letter for EM-T-MOBILE-044-220127 (Commerce Street, East Haven)

EXTERNAL EMAIL: This email originated from outside of the organization. Do not click any links or open any attachments unless you trust the sender and know the content is safe.

**Re: EM-T-MOBILE-044-220127**

Evan et al,

Please see the attached email with regard to the MPE% and associated PD Report conducted by Centerline in response to Council's letter of incomplete referenced above and attached for your reference.

Please let me know if you have any questions in this regard.

Thank You,

**G. Scott Shepherd**

*Site Development Specialist II*

508.251.0720 Ext.3807 + **T**

508.366.2610 + F + **F**

508.868.6000 + C + **C**



This what I received from the Engineer performing the EME – I had to admit, its not clear to me. Is it to you?

Thanks

**From:** Michael Fischer <[mfischer@clinellc.com](mailto:mfischer@clinellc.com)>

**Sent:** Friday, February 18, 2022 9:49 AM

**To:** Lakpa Sherpa <[lsherpa@clinellc.com](mailto:lsherpa@clinellc.com)>; Michael Austin <[maustin@clinellc.com](mailto:maustin@clinellc.com)>

**Cc:** Jessica Meyer <[jmeyer@clinellc.com](mailto:jmeyer@clinellc.com)>

**Subject:** RE: CSC returned EME report - can you please review? CTNH723A\_Sprint Keep

The report provided by Centerline utilizes a predictive modeling software, Roofmaster®, to perform RF exposure calculations in accordance with methodologies prescribed in OET Bulletin 65. Roofmaster® is the industry standard tool accepted by the major carriers to evaluate wireless telecommunications facilities. The analysis uses upper-limit operating parameters with radios operating at maximum power and 100% duty cycle for a worst-case look at potential exposure. The analysis incorporates the spatial separation of the antennas, antenna sector azimuths, and the horizontal and vertical antenna patterns of each antenna model in performing the calculations to provide cumulative exposure predictions at all evaluated levels. For the ground level prediction in the provided site compliance report, the worst-case composite predictive exposure was 9.21% General Population MPE, which takes into account contributions from both T-Mobile and Verizon. This is a spatially averaged value calculated 0-6' above ground level. Having personally measured many tower-mounted facilities with calibrated instruments over the past 20 years, actual exposure levels at the ground rarely exceed 1% of the allowable general public standard during normal operating conditions.

The CSC calculations referenced in the February 16, 2022 letter are conservative by nature in using a -10 dB reduction, whereas the Roofmaster® calculations incorporate more of a reduction in the vertical plane with the actual vertical antenna patterns taken into account. Though still conservative, using a -12 dB offset in the CSC calculations would result in a predictive level below 100% GP MPE. Using a more realistic offset of -20 dB for calculated ground level areas close to the tower based on vertical antenna patterns for the antennas in use would bring that calculated figure down to 14% which is closer to our predictive value of ~9%.

Hope this helps. Happy to discuss with the CSC folks if needed.



**Michael Fischer, P.E.** | Director of Engineering

750 W Center St, Suite 301 | West Bridgewater, MA 02379

Mobile: 215-205-2130

[mfischer@clinellc.com](mailto:mfischer@clinellc.com) | [www.centerlinecommunications.com](http://www.centerlinecommunications.com)

**From:** Lakpa Sherpa <[lsherpa@clinellc.com](mailto:lsherpa@clinellc.com)>

**Sent:** Thursday, February 17, 2022 7:08 PM

**To:** Michael Austin <[maustin@clinellc.com](mailto:maustin@clinellc.com)>; Michael Fischer <[mfischer@clinellc.com](mailto:mfischer@clinellc.com)>

**Cc:** Jessica Meyer <[jmeyer@clinellc.com](mailto:jmeyer@clinellc.com)>

**Subject:** RE: CSC returned EME report - can you please review? CTNH723A\_Sprint Keep

**Michael** – I am forwarding this to our PE – Michael Fischer (cc on mail) for review.

**Mike** – Please see e-mail below and advise.

Thank you,



**Lakpa Sherpa** | RF Project Manager  
750 W Center St, Suite 301 | West Bridgewater, MA 02379  
Mobile: 703-935-9076  
[lsherpa@clinellc.com](mailto:lsherpa@clinellc.com) | [www.centerlinecommunications.com](http://www.centerlinecommunications.com)

**From:** Michael Austin <[maustin@clinellc.com](mailto:maustin@clinellc.com)>  
**Sent:** Thursday, February 17, 2022 2:00 PM  
**To:** Amberly Krahwinkel <[akrahwinkel@clinellc.com](mailto:akrahwinkel@clinellc.com)>  
**Cc:** Lakpa Sherpa <[lsherpa@clinellc.com](mailto:lsherpa@clinellc.com)>; Jessica Meyer <[jmeyer@clinellc.com](mailto:jmeyer@clinellc.com)>  
**Subject:** CSC returned EME report - can you please review? CTNH723A\_Sprint Keep

Hello,

Please see following email in regard to the eme report completed for CTNH723 and advise. Letter is attached.

Thank you  
Michael

**From:** Glenn Shepherd <[GShepherd@sbsite.com](mailto:GShepherd@sbsite.com)>  
**Sent:** Thursday, February 17, 2022 1:57 PM  
**To:** Michael Austin <[maustin@clinellc.com](mailto:maustin@clinellc.com)>  
**Cc:** Jeff Steinberg <[JSteinberg@sbsite.com](mailto:JSteinberg@sbsite.com)>; Kri Pelletier <[KPelletier@sbsite.com](mailto:KPelletier@sbsite.com)>; Rick Woods <[RWoods@sbsite.com](mailto:RWoods@sbsite.com)>; John Morrison <[JoMorrison@sbsite.com](mailto:JoMorrison@sbsite.com)>; Elizabeth Jamieson <[EJamieson@sbsite.com](mailto:EJamieson@sbsite.com)>  
**Subject:** CTNH723A\_Sprint Keep

Michael,

Please see the attached Letter of Incomplete from the CSC.

- In short, according to the CSC it appears the MPE% is a lot higher than what the PD Report provided by Centerline stated it was.

Excerpt from attached letter:

**Council staff calculated the power density for the proposed T-Mobile modification using the data provided in Site Antenna Data Table on Page 6 of the report. Using the Federal Communications Commission (FCC) OET Bulletin 65 predictive methods accounting for the -10 dB off beam pattern**

**adjustment and a 6-foot tall person at ground level at the base of the tower and results indicate that the requested modification, as proposed, would produce radio frequency emissions with a %MPE of 136.67% for each sector of T-Mobile's antennas and a cumulative %MPE of 143.88% with Verizon's antennas. This exceeds the FCC's allowable General Public/Uncontrolled cumulative MPE limit of 100%.**

**G. Scott Shepherd**

*Site Development Specialist II*



**SBA Communications Corporation**

134 Flanders Road  
Suite 125  
Westborough, MA 01581

508.251.0720 Ext.3807 + **T**

508.366.2610 + **F** + **F**

508.868.6000 + **C** + **C**

[GShepherd@sbsite.com](mailto:GShepherd@sbsite.com)

***Your Signal Starts Here.***

This email (collectively with its attachments, the "Electronic Communication") is intended solely for the use of the individual(s) to whom it is addressed. The Electronic Communication may contain information that is confidential, privileged or otherwise protected from disclosure, or is intellectual property. No confidentiality, privilege or other protections, and no intellectual property rights, are waived or lost by any mis-transmission. If you are not the intended recipient of this Electronic Communication and/or believe you received this Electronic Communication in error, accessing, reading, acting upon, printing, disclosing, duplicating, retaining, or redistributing the Electronic Communication by any means is prohibited and you must notify the sender immediately, delete the Electronic Communication from your computer, servers and electronic media, and not access, read, act upon, print, disclose, duplicate, retain, or redistribute the Electronic Communication by any means. No employee or agent is authorized to conclude any binding agreement on behalf of the company with another party by Electronic Communication without the express consent of the company's General Counsel. Any tax statements contained in the Electronic Communication were not intended or written to be used, and cannot be used, for the purpose of avoiding U.S., federal, state or local tax penalties.