

From: Cunliffe, Fred
Sent: Thursday, July 12, 2018 10:51 AM
To: Barton, Jenna <Jenna.Barton@ct.gov>
Cc: Nwankwo, Ifeanyi <Ifeanyi.Nwankwo@ct.gov>
Subject: FW: Council Third Incomplete Letter for EM-SPRINT-003-180504-SelesRd-Ashford

This now makes the filing complete.
Acknowledgement letter will be needed. Thanks.

Fred Cunliffe
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From: Paul Sagristano [<mailto:psagristano@lrivassoc.com>]
Sent: Thursday, July 12, 2018 10:46 AM
To: Barton, Jenna
Cc: CSC-DL Siting Council
Subject: RE: Council Third Incomplete Letter for EM-SPRINT-003-180504-SelesRd-Ashford

Please find revised MPE attached. Our RF reporters found no discernable difference between the incorrect 180' and the correct 170'. I apologize for not providing this with the S&S Structural Analysis. Please let me know if this is now sufficient for the council to make the EM determination. Thank you!

Best,
Paul F. Sagristano
917-841-0247

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From: Barton, Jenna [<mailto:Jenna.Barton@ct.gov>]
Sent: Thursday, July 12, 2018 10:36 AM
To: Paul Sagristano
Cc: CSC-DL Siting Council
Subject: Council Third Incomplete Letter for EM-SPRINT-003-180504-SelesRd-Ashford

Please see the attached correspondence.

Jenna Barton
Connecticut Siting Council
Ten Franklin Square
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Jenna.Barton@ct.gov



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RADIO FREQUENCY EMISSIONS ANALYSIS REPORT EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

SPRINT Existing Facility

Site ID: CT33XC015

Ashford
22 Seles Road
Ashford, CT 06278

July 12, 2018

EBI Project Number: 6218000955

| Site Compliance Summary | |
|---|------------------|
| Compliance Status: | COMPLIANT |
| Site total MPE% of FCC general population allowable limit: | 6.33 % |



February 12, 2018

SPRINT

Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, NJ 07495

Emissions Analysis for Site: **CT33XC015 – Ashford**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **22 Seles Road, Ashford, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 850 MHz Band is approximately $567 \mu\text{W}/\text{cm}^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **22 Seles Road, Ashford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.
- 4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.



- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antennas used in this modeling are the **RFS APXV9ERR18-C-A20** and the **Commscope DT465B-2XR** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antenna mounting height centerlines of the proposed antennas are **170 feet** above ground level (AGL) for **Sector A**, **170 feet** above ground level (AGL) for **Sector B** and **170 feet** above ground level (AGL) for Sector C.
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general population threshold limits.



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SPRINT Site Inventory and Power Data by Antenna

| Sector: | A | | |
|------------|--------------------------|--|--------------------------|
| Antenna #: | 1 | | |
| | RFS | | RFS |
| | APXV9ERR18-C-A20 | | APXV9ERR18-C-A20 |
| | 11.9 / 14.9 dBd | | 11.9 / 14.9 dBd |
| | 170 feet | | 170 feet |
| | 850 MHz / 1900 MHz (PCS) | | 850 MHz / 1900 MHz (PCS) |
| | 10 | | 10 |
| | 220 Watts | | 220 Watts |
| | 5,873.76 | | 5,873.76 |
| | 0.78 % | | 0.78 % |
| Antenna #: | 2 | | |
| | Commscope | | Commscope |
| | DT465B-2XR | | DT465B-2XR |
| | 15.05 dBd | | 15.05 dBd |
| | 170 feet | | 170 feet |
| | 2500 MHz (BRS) | | 2500 MHz (BRS) |
| | 8 | | 8 |
| | 160 Watts | | 160 Watts |
| | 5,118.23 | | 5,118.23 |
| | 0.61 % | | 0.61 % |

| Site Composite MPE % | |
|-------------------------|--------|
| Carrier | MPE% |
| SPRINT – Max per sector | 1.39 % |
| Nextel | 0.18 % |
| Verizon Wireless | 2.72 % |
| AT&T | 2.04 % |
| Site Total MPE %: | 6.33 % |

| | |
|------------------------|--------|
| SPRINT Sector A Total: | 1.39 % |
| SPRINT Sector B Total: | 1.39 % |
| SPRINT Sector C Total: | 1.39 % |
| Site Total: | 6.33 % |

| SPRINT Frequency Band / Technology (All Sectors) | # Channels | Watts ERP (Per Channel) | Height (feet) | Total Power Density ($\mu\text{W}/\text{cm}^2$) | Frequency (MHz) | Allowable MPE ($\mu\text{W}/\text{cm}^2$) | Calculated % MPE |
|--|------------|-------------------------|---------------|---|-----------------|---|------------------|
| Sprint 850 MHz CDMA | 1 | 309.76 | 170 | 0.37 | 850 MHz | 567 | 0.07% |
| Sprint 850 MHz LTE | 2 | 309.76 | 170 | 0.74 | 850 MHz | 567 | 0.13% |
| Sprint 1900 MHz (PCS) CDMA | 5 | 494.45 | 170 | 2.94 | 1900 MHz (PCS) | 1000 | 0.29% |
| Sprint 1900 MHz (PCS) LTE | 2 | 1,236.12 | 170 | 2.94 | 1900 MHz (PCS) | 1000 | 0.29% |
| Sprint 2500 MHz (BRS) LTE | 8 | 639.78 | 170 | 6.08 | 2500 MHz (BRS) | 1000 | 0.61% |
| | | | | | | Total: | 1.39% |



Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the SPRINT facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

| | |
|---|------------------|
| Sector A: | 1.39 % |
| Sector B: | 1.39 % |
| Sector C: | 1.39 % |
| SPRINT Maximum Total (per sector): | 1.39 % |
| Site Total: | 6.33 % |
| Site Compliance Status: | COMPLIANT |

The anticipated composite MPE value for this site assuming all carriers present is **6.33 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.