
	<h1>C&amp;E Mobility Policy (Standard)</h1>		
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<b>Raycap Equipment Placement Guidelines</b>	5/16/2014	5/16/2015	

**Subject: Guidelines for installation location of ground based Raycap devices (non RRH/RRU)**

**Date: 5/16/14**

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**Overview:**

The objective of this Policy Letter is to provide guidance on the proper location of ground based Raycap surge protection devices located in shelters (rack mount units) or outdoors (NEMA enclosure units). The policy includes devices used on rooftops to protect the DC plant. It does not cover Raycap devices used to protect RRH/RRUs as those devices are only available in outdoor rated enclosures.

Exceptions to the location standards are also covered in the policy.

The intent with exceptions is to avoid the following:

- Delays in launching sites (i.e., missing scheduled commercial launch dates)
- Additional costs associated with moving and/or replacing equipment
- Sites being flagged with discrepancies during audits (Ops site acceptance, third party audits, etc.)

**Audience:**

- AT&T Equipment Engineers and Implementation Project Managers
- Turf vendors and contractors performing installation work
- AT&T Field Operations personnel performing Site Acceptance audits
- Third Party Auditors

**Guidelines and exceptions are explained in the following sections:**

- **Section 1:** location of Raycap units indoors
- **Section 2:** exceptions for indoor sites
- **Section 3:** location of Raycap at outdoor sites
- **Section 4:** exceptions for outdoor sites

Raycap data guides and installation manuals may be found on the CEMPO SharePoint at the link below. Documents are also posted on VMT

[CEMPO SharePoint-Raycap Information](#)

**NOTE: if at any time a site incurs damage due to incorrectly installed Raycaps and/or grounding practices the installation must be corrected as soon as possible**

## **Section 1: Location of Raycap units in shelters or tenant improvement indoor rooms**

- Indoor sites (those utilizing indoor equipment) located in shelters or TI rooms must use a rack mount Raycap. Current and previous models are shown below
  - DC6-48-60-RM (CEQ 32405)
  - DC12-48-60-RM (CEQ 32407)

### **Current Rack Mount Raycap**



### **Previous Rack Mount Raycap (no longer orderable)**



- The rack mount units are to be installed in a FIF rack
  - Locate near the top of the rack to provide maximum protection of other equipment and provide the shortest grounding path
  - Rack may be a DC equipment only (Raycap, stand-alone converter shelves, etc.) or a hybrid style rack containing both DC and communications equipment
  - Grounding must be in accordance with Policy Letter ATT-CEM-13002, *FIF Installation & Grounding of 3G/4G RF and DC Equipment*
- Rack mount units shall not be installed in DC plant or battery racks
  - Exposes the DC plant to surge damage
  - Limits growth of the DC plant and batteries
  - Increases amount of wiring in the DC plant area
- In the event there is not adequate rack space for mounting a Raycap, it is acceptable to wall mount a NEMA style outdoor Raycap device under the following conditions:
  - Preferred location is near the Cell Reference Ground Bar (CRGB) to provide maximum surge protection
  - Utilize a Raycap that will accommodate necessary growth until rack space is available
  - Provide a proper wire routing path between the Raycap and DC plant. It may be necessary to install vertical cable ladder on the wall to transition from the Raycap to the overhead cable ladder
  - When used indoors, NEMA style Raycap devices are not required to be sealed using conventional conduit, glands or Roxtec entry ports provided the cables and alarm wire are properly secured prior to entering the Raycap
- It is strongly recommended that Hybrid style racks (Item Master # NEQ 16971) be utilized for indoor Raycap installations. The Hybrid rack will accommodate up to 3 rack mount Raycaps along with various communication equipment devices. Grounding methods, per ATT-TP-76416 and Policy Letter ATT-CEM-13002, are fully compliant using the Hybrid rack

## **Section 2: Exceptions for indoor sites**

Indoor Raycap devices not installed per Section 1 are grandfathered under the following conditions:

- Units already installed may remain in their present location until existing DC trunk cables are exhausted
  - Example, if two DC trunk cables are currently installed, the Raycap may remain in its present location until more than 6 RRH/RRUs are installed. When the 7<sup>th</sup> (and beyond) RRH/RRU is installed, along with new DC trunk cables, a new rack mount unit must be installed per Section 1 or the existing unit must be moved and comply with Section 1
- Units already installed are not required to be relocated if any of the following conditions exist:
  - Additional costs will be incurred to move units
  - Commercial launch dates will be delayed
  - DC trunk cables would require splicing to reach the new location. DC trunk cables are not to be spliced under any conditions
- If Raycap units are not installed but are on order and the appropriate FIF racks are not on order, every effort must be made to order & install the FIF rack without jeopardizing commercial launch dates
- If FIF racks cannot be ordered & installed in time to meet launch dates the Raycap may be installed in the DC plant frame (below the DC plant) provided the following provisions are made:
  - Terminate the minimum number of DC drops in the plant and at the Raycap to meet the immediate requirements, such as 3 RRH/RRUs for 1<sup>st</sup> carrier
  - Leave adequate DC trunk cable slack to allow moving the trunk cables to a FIF rack when the next expansion project (2C, 3C, etc.) is installed
    - Trunk cable slack may be coiled and temporarily secured to the DC plant frame rail or to the stringer (side) of the overhead cable rack provided it does not interfere with other wiring or equipment
    - Slack shall be secured with lacing cord
  - DC drops between the plant and Raycap shall be the proper length and must be replaced if they are not long enough to properly reach the new FIF location
  - Approved TelcoFlex wire must be used between the DC plant and Raycap per AT-002-290-701
  - Ground wire shall be the proper length and must be replaced if it is not long enough to properly reach the new FIF location

### Section 3: Location of Raycap units at outdoor sites

- Outdoor sites (those utilizing outdoor equipment) must use an outdoor rated Raycap device which is housed a NEMA enclosure. Examples of approved models are shown below
  - DC12-48-60-0-25E (CEQ 12659); equipped with both 2" conduit & gland fittings
  - DC6-48-60-0-1B-01 (CEQ 10279); equipped with Roxtec entry port
  - DC6-48-60-0-1B-1E (CEQ 10506); equipped with 2" conduit entry ports
  - FC12PC6-10E (ANT 13887); 18 pair fiber & DC distribution only, no DC surge protection



- Raycap devices are to be installed on a H-frame, wall, pipe, unistrut or other acceptable mounting surface that is compatible with the device
- Rack mount units are not to be used at outdoor sites regardless of mounting location unless they are in a dedicated cabinet, such as a Purcell FLX12, that contains no other equipment
- Do not install Raycap devices in cabinets containing communications equipment such as BBUs, SIADs, etc.
  - May expose communications equipment to noise and possible surge damage
  - Does not meet the grounding isolation requirements of ATT-TP-76416

#### Section 4: Exceptions for outdoor sites

Raycap devices at outdoor sites not installed per Section 3 are grandfathered under the following conditions:

- Units already installed may remain in their present location until existing DC trunk cables are exhausted
  - Example, if a rack mount Raycap has been installed in a cabinet, such as the DC plant or battery cabinet, and is equipped with two DC trunk cables that are currently terminated, the Raycap may remain in its present location until more than 6 RRH/RRUs are installed. When the 7<sup>th</sup> (and beyond) RRH/RRU is installed, along with new DC trunk cables, a new outdoor rated unit must be installed per Section 3
- Units already installed are not required to be relocated if any of the following conditions exist:
  - Additional costs will be incurred to move units
  - Commercial launch dates will be delayed
  - DC trunk cables would require splicing to reach the new location. DC trunk cables are not to be spliced under any conditions
- If rack mount Raycap units are not installed but are on order for outdoor sites, every effort must be made to order the correct, outdoor rated units without jeopardizing commercial launch dates. Rack mount (indoor) units can then be re-assigned to indoor sites
- If outdoor rated Raycap devices (NEMA enclosure style) cannot be ordered & installed in time to meet launch dates the Raycap may be installed in the DC plant cabinet (below the DC plant) or an unused space in the battery cabinet provided the following provisions are made:
  - Terminate the minimum number of DC drops in the plant and at the Raycap to meet the immediate requirements, such as 3 RRH/RRUs for 1<sup>st</sup> carrier
  - Leave adequate DC trunk slack to allow moving the trunk cables to an outdoor Raycap device when the next expansion project (2C, 3C, etc.) is installed
    - Trunk cable slack may be coiled and temporarily secured inside the DC plant or battery cabinet provided it does not interfere with other wiring or equipment
    - Slack shall be secured with lacing cord
  - DC drops between the plant and Raycap shall be the proper length and must be replaced if they are not long enough to properly reach the new outdoor Raycap device
  - Approved TelcoFlex wire must be used between the DC plant and Raycap per AT-002-290-701
  - Ground wire shall be the proper length and must be replaced if it is not long enough to properly reach the new FIF location
- Rack mount Raycap units may be installed in a Purcell FLX12 cabinet provided no other equipment is installed in the cabinet. Attention should be made to the additional space required for the Purcell cabinet when considering the overall lease footprint needs, including future growth