Engineering Advisory 48152

Power Consumption on Polycom® Phones

This engineering advisory shows detailed information about the power consumption of the Polycom® SoundPoint® IP desktop phones, Polycom® SoundStation® IP and Polycom® SoundStation Duo™ conference phones, Polycom® VVX® business media phones, and Polycom® CX series phones.

This engineering advisory applies to the following Polycom phones:

- SoundPoint IP phones running UC software 3.3.0 or later
- SoundStation IP phones running UC software 3.3.0 or later
- SoundStation Duo phones running UC software 4.0.0 or later
- VVX 300/310 and VVX 400/410 phones running UC software 4.1.4 or later
- VVX 500 phones running UC software 4.0.1B or later
- VVX 600 phones running UC software 4.1.2 or later
- VVX 1500 phones running UC software 3.3.0 or later
- CX500, CX600, CX700, CX3000 phones running software 4.0.7577.4372 or later

The topics in this advisory include:

- Power Dissipation Power consumption data for Polycom phones.
- PD and PSE Power Classification Classification of available maximum and minimum power levels.
- Test Condition Terminology Description of conditions used when testing the power consumption of the phones.

Power Dissipation

Testing of the Polycom phones reveals the power consumption data shown in Table 1: Power Dissipation and Advertisement for Polycom Phones.

Note: When the CDP Advertisement is Displayed

Only Polycom phones running UC software 3.3.0 or later will display the CDP advertisement shown in Table 1.

Table 1: Power Dissipation and Advertisement for Polycom Phones

Phone Model	*Idle State (minimum power)*	*Call State (nominal hands-free volume)*	*Maximum Power*	*Class Advertisement[1] (IEEE 802.3af)*	*CDP Advertisement[4]*
SoundPoint IP					
IP 321	2.1W	2.5W	3.4W	1	3.5
IP 331	2.3W	3.0W	3.7W	1	3.7
IP 335	2.4W	3.3W	4.3W	2	3.9
IP 450	2.2W	3.8W	5.3W	2	5.4
IP 550	2.3W	3.9W	5.6W	0	5.9
IP 560	4.1W	7.3W	8.0W	0	8.3
IP 650	3.5W	4.6W	6.5W	0	6.5, 12.0[4]
IP 650 Expansion Module (Backlit)	1.4W	n/a	2.0W	0[3]	[3]
IP 670	4.2W	7.4W	8.4W	0	8.4,14.0[4]
IP 670 Expansion Module (Color Backlit)[5]	1.5W	n/a	2.0W	0[3]	3
SoundStation IP					
IP 5000	3.7W	4.3W	6.0W	2	5.8
IP 6000	4.1W	5.0W	7.0W	0	9.8

Phone Model	*Idle State (minimum power)*	*Call State (nominal hands-free volume)*	*Maximum Power*	*Class Advertisement[1] (IEEE 802.3af)*	*CDP Advertisement[4]*
IP 7000	4.6W	6.1W	9.9W	0	9.8
Duo	3.0W	4.5W	7.0W	0	7.0
VVX					
VVX 300	1.8W	3.0W	3.5W	2	5.0
VVX 310	1.9W	3.1W	3.5W	2	5.0
VVX 400	2.4W	4.1W	4.5W	2	5.0
VVX 410	2.4W	4.3W	4.5W	2	5.0
VVX 500	3.4W	4.2W	5.0W	4[2]	8.0
VVX 600	4.3W	5.0W	5.4W	4[2]	8.0
VVX 1500	6.5W	9.4W	10.5W	0	11.8
CX					
CX500	2.0W	3.3W	4.3W	2	
CX600	2.4W	4.5W	4.9W	2	
CX700	3.1W	4.7W	5.2W		
CX3000	2.3W	3.3W	5.5W	3	

[1] See Table 2: PD Power Classification (IEEE 802.3af).

[2] VVX 500 and VVX 600 advertise as Class 4, in conformance with IEEE802.3at specification (backwards compatible with IEEE802.3af).

[3] Class/CDP advertised through Host Phone (no native PoE on-board).

[4] CDP values are reflected for SoundPoint IP phones running SIP 3.1.0. 'EM Power' can be disabled through the phone's menu; this would lower the advertised power in CDP. The higher values reflect 'EM-enabled' CDP advertisement (default).

[5] It is recommended that users use a power supply adapter with the SoundPoint IP 670 when more than one color Expansion Module is attached to the phone.

PD and PSE Power Classification

Powered Device (PD) power classification is shown in Table 2: PD Power Classification (IEEE 802.3af). This defines the maximum power levels available at the PD (phone).

Table 2: PD Power Classification (IEEE 802.3af)

Class	*Usage*	*Maximum Power Range Used by the PD (phone)*
0	Default	0.44 to 12.95W
1	Optional	0.44 to 3.84W
2	Optional	3.84 to 6.49W
3	Optional	6.49 to 12.95W
4	Optional	Reserved for future use (for example: IEEE802.3at)

Power Sourcing Equipment (PSE) power classification is shown in Table 3: PSE Power Classification (IEEE 802.3af). This defines the minimum power levels available at the PSE (PoE switch).

Table 3: PSE Power Classification (IEEE 802.3af)

Class	*Usage*	*Minimum Power Levels at Output of PSE (PoE switch)*
0	Default	15.4 Watts
1	Optional	4.0 Watts
2	Optional	7.0 Watts
3	Optional	15.4 Watts
4	Reserved	Reserved for future use (for example: IEEE802.3at)

The deltas in power level between Tables 2 and 3 provision voltage and current losses in cabling lengths of up to 100m (330ft) that may be encountered in enterprise installations.

Test Condition Terminology

The following test condition terminology was used in Table 1.

- Idle State
  - The phone has completed the boot-up process.
  - Ethernet speed at 10/100 Mbps on LAN port; PC port not connected
  - The idle screen is shown on the LCD.
  - Where applicable, the LCD backlight was set to default minimum (sleep mode) brightness.
  - There was no call state established.
- Call State
  - Both LAN and PC ports running at maximum capable data rates
  - The handsfree transducer was activated for each UUT and was set to default nominal volume.
  - Normal call established in handsfree mode.
  - The LCD backlight set to default maximum brightness.
- Maximum Power
  - All ports and peripherals running at maximum data rates
  - Maximum volume on handsfree transducer; running codec stress tests with select wav files
  - LCD backlight and line LEDs set at maximum brightness.
- Class Advertisement
  - The Power over Ethernet (PoE) class advertisement circuitry on-board SoundPoint IP, SoundStation IP, and VVX phones
- CDP Advertisement
  - The power requirements for CDP reported by SoundPoint IP, SoundStation IP, and VVX phones running minimum release of SIP 3.1.0 and BootROM 4.1.2.
- Power consumption measured using PoE IEEE802.3af standard powering
  - The measurements were taken as average from six IEEE802.3af compliant PoE switches.
  - The power consumption using AC/DC adapters is similar to above, but must account for approximately 72% efficiency rating from AC source.
  - Power consumption does not include power sourcing to external USB devices (SoundPoint IP 670, VVX 500, VVX 600, and VVX 1500 models).

- Power consumption measured at the SoundPoint IP and SoundStation IP phone end
  - 7ft maximum length LAN cord to PoE switch during measurement
  - 2.45W maximum power loss allowable over 100m (330ft) cable lengths

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