



Product Brief

MCCI[®] Drivers for MCPC-Compatible WCDMA Handsets

An Integrated Solution for Wireless Communication

The MCCI MCPC GL-004/005 drivers profit from MCCI's many years of experience developing USB technology for PCs, and they provide compatibility and flexibility to the designer of USB-based WCDMA terminal equipment, whether in a PC, a car navi, or some other system. The solution is compatible with LTE, as well as with MCCI's PPP LAN Technology.

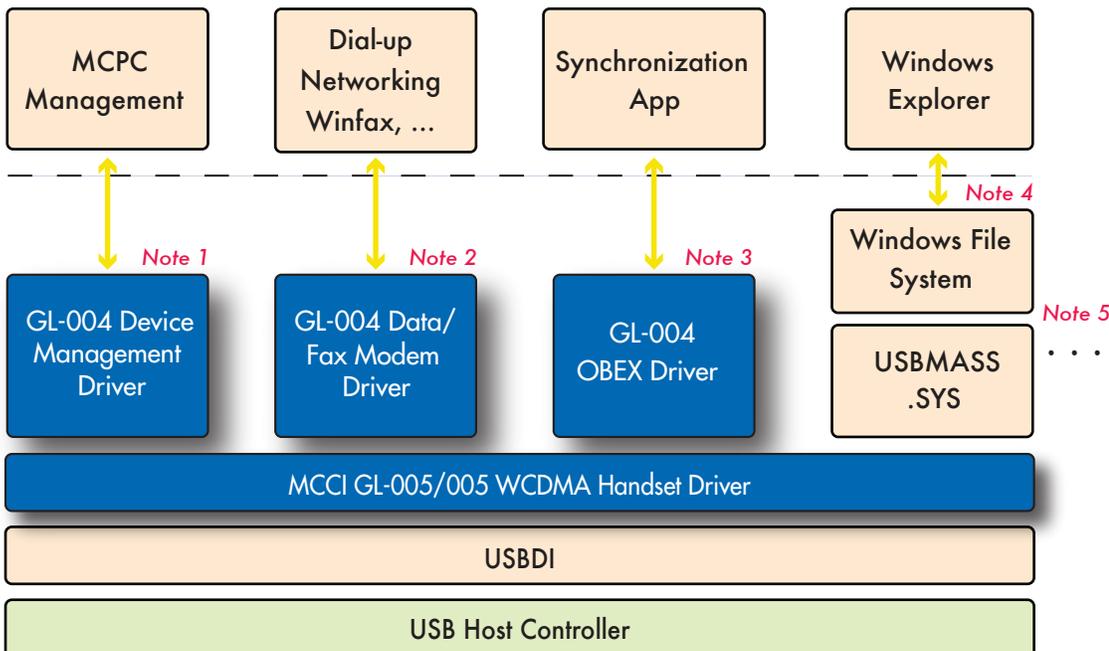
As shown in the block diagram below, the MCCI driver set's key element is the central driver, which provides device-level management services for the handset. In addition, the handset driver identifies the Terminal Adapters (TAs) and other functions present in the phone. The handset driver identifies the appropriate link and mode to be used based on the phone's USB descriptors. It also identifies non-MCPC functions, such as Mass Storage class, and arranges for the appropriate function drivers to be loaded by Windows. In the example below, the handset provides four functions, three of which are supported by MCCI drivers, and one by Microsoft-supplied drivers.

The Handset Driver is an advanced WDM bus driver, which performs two functions:

- It identifies the individual functions available on the phone, and provides enumeration and multiplexing services for the individual function drivers.
- It simplifies installation on multiple Windows systems, by generating operating-system-specific device IDs.

MCCI further provides function drivers that support AT-command-based device management, data/fax modem emulation, OBEX synchronization, and special purpose diagnostic management.

MCCI MCPC Solution Block Diagram



Notes to Block Diagram on p.4.

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GL-004/005 WCDMA Handset Drivers

<i>Operating Systems</i>	XP, Vista, Win7, all in 32-bit and 64-bit editions
<i>Installation</i>	Plug and Play (INF based)
<i>Device Classes Supported for Enumeration</i>	CDC, MCPC GL-004/005, Audio, plus all single-interface classes
<i>API</i>	No specific API. Functionality can be tailored at runtime using SetupDI and the registry
<i>Number of simultaneous cell phones supported</i>	Limited only by system resources
<i>Device requirements</i>	MCPC GL-004/005; Audio class; CDC 1.1; any Audio Class interfaces must be compatible with the limitations of the underlying operating system. Other single interface functions will also be enumerated correctly
<i>Number of Data Class Interfaces Supported</i>	Up to 14 (due to limited number of endpoints in real USB silicon)
<i>Language support and localization</i>	Provided by customer
<i>Technical Documentation</i>	<ul style="list-style-type: none"> • Functional Specification, including descriptor requirements and INF-based options • SetupDI interfacing document, for writing programs to manage the handset driver directly

MCCI Enhanced GL-004/005 WCDMA Device Management and OBEX Port Drivers

<i>Operating Systems</i>	XP, Vista, Win7, all in 32-bit and 64-bit editions
<i>Installation</i>	Plug and Play (INF based) or optional installer
<i>Number of Ports Supported</i>	Up to 128 (limited by Windows)
<i>API</i>	Standard COMM port, including support for most 16-bit Windows apps and real-mode DOS apps via a port-mapping VxD. (Timing differences may uncover bugs in the applications.)
<i>Device Requirements</i>	Mobile Abstract Control Model. AT Command Device and OBEX devices must match MCPC recommendations
<i>Language Support and Localization</i>	Provided by customer
<i>Documentation</i>	Functional specifications, including descriptor requirements and INF-based options
<i>INF File Customization</i>	Normally not required

MCCI Enhanced GL-004/005 WCDMA Data/Fax Port Drivers

<i>Operating Systems</i>	XP, Vista, Win7, all in 32-bit and 64-bit editions
<i>Installation</i>	Plug and Play (INF based) or optional installer
<i>Number of Ports Supported</i>	Up to 128 (limited by Windows)
<i>API</i>	<ul style="list-style-type: none"> • Standard UNIMODEM COM-port based interface • SET_LINK and ACTIVATE_MODE are handled automatically at OPEN/CLOSE time, in accordance with MCPC recommendations • Standard NDIS Network-based interface via embedded PPP stack (MCCI PPP LAN)
<i>Device Requirements</i>	Mobile Abstract Control Model. Device must support AT commands over data class pipe, as well as supporting encapsulated commands. COMM class notifications must correctly indicate the associated DATA class interface
<i>Language Support and Localization</i>	Provided by customer
<i>Technical Documentation</i>	Functional specifications, including descriptor requirements and INF-based options
<i>INF File Customization for AT Command Set</i>	Provided by customer. MCCI provides an INF file based on a standard modem model

MCCI InstallRight Pro Support

Mobile handset customers don't want a complex and difficult software installation process for their handsets. The more customer interaction needed during an install, the higher the probability of install error.

Because MCCI offers installation from a single directory, there is no need for separate Windows XP, Vista, and Win7 directories. However, MCCI can also deliver in multiple directory format, which is useful for customers who wish to use their own installer.

MCCI also offers automated pre-install/uninstall tools designed for minimal customer interaction. MCCI software improves upon installs managed by Windows Device Manager. In WDM "remove device" doesn't actually remove any files from the system. It only edits the registry. On the next handset plug-in, old drivers that were presumed removed are loaded again without notification to the user.

MCCI InstallRight Pro completely removes old drivers and INF files, which is extremely useful for technical support.

<i>Operating Systems</i>	XP, Vista, Win7, all in 32-bit and 64-bit editions
<i>Installation</i>	Three modes: install before plug; plug before install; install while plug
<i>Uninstallation</i>	Via Add/Remove Programs, or an icon
<i>Integration with Larger Installs</i>	Can be launched as a captive .exe by a larger install/uninstall application
<i>Language Support and Localization</i>	Provided by customer

Delivery Information

<i>Basic Delivery Format</i>	Binary plus INF files, as drivers in checked and free format; via download from MCCI's secure web site
<i>Branding</i>	Drivers will bear MCCI's copyright, but will be rebranded using MCCI's standard rebranding technology for customer, for one device. Additional rebranding available at extra fee
<i>End-User Documentation</i>	Customer's responsibility
<i>Support</i>	MCCI supports its direct customers via telephone and email. Resellers or manufacturers of products incorporating MCCI technology are responsible for supporting their own customers

Notes to the Block Diagram (p.1)

1. The Device Management driver provides a separate API to the handset via a simulated serial port.
2. One copy of the data/fax driver is loaded for each Mobile Abstract Control logical terminal adapter that is to be used for data services. In addition to supporting high-speed data transfer via dial-up networking, MCCI drivers support legacy switched-circuit data communication applications such as WinFax and Procomm Plus.
3. The OBEX driver provides a separate API to the synchronization interface of the handset. At the OEM's option, this interface may be accessed either as a simulated serial port or as a special OBEX device class.
4. In this example, the handset exports a USB Mass-Storage Class interface, for access to MP-3 files stored on the handset. The MCCI Handset Driver automatically arranges to load the Microsoft Mass Storage class driver on Windows XP, Vista, and Windows 7.
5. Additional standard USB class drivers (for example, HID, audio class, vendor-specific functions) will be handled automatically, by parsing the descriptors. Mobile Direct Line control devices will be correctly enumerated but must be handled via a separate driver (not included in the base kit).