

**One Size fits all has never
been better -**

**Motorola Wireless Modules
ein Formfaktor für alle
Technologien, wie GSM,
CDMA, HSPA, WiFi oder
WiMax**

Agenda



- 1. G24 Standard Module**
- 2. Low Cost Module G24-L**
- 3. WiFi Modul W24**
- 4. HSPA-Modul H24**
- 5. Weiter Module im G24 Formfaktor**
- 6. Neues LGA-Modul G30**
- 7. Roadmap**

G24 – The Most Reliable Module in the Market

- Quad Band GSM/GPRS/EDGE (850/900/1800/1900 MHz)
- Exceptional RF performance: 4dB better than GSM spec
- Optional JAVA controllable CPU



Size:

- 24.4 x 45.2 x 6.0 mm

Extended temp range:

- -30°C : +85 °C

Data Features:

- EDGE/GPRS Class 10
- Internal TCP/IP stack
- Internal FTP
- E-mail
- SSL
- HTTP

- SAT

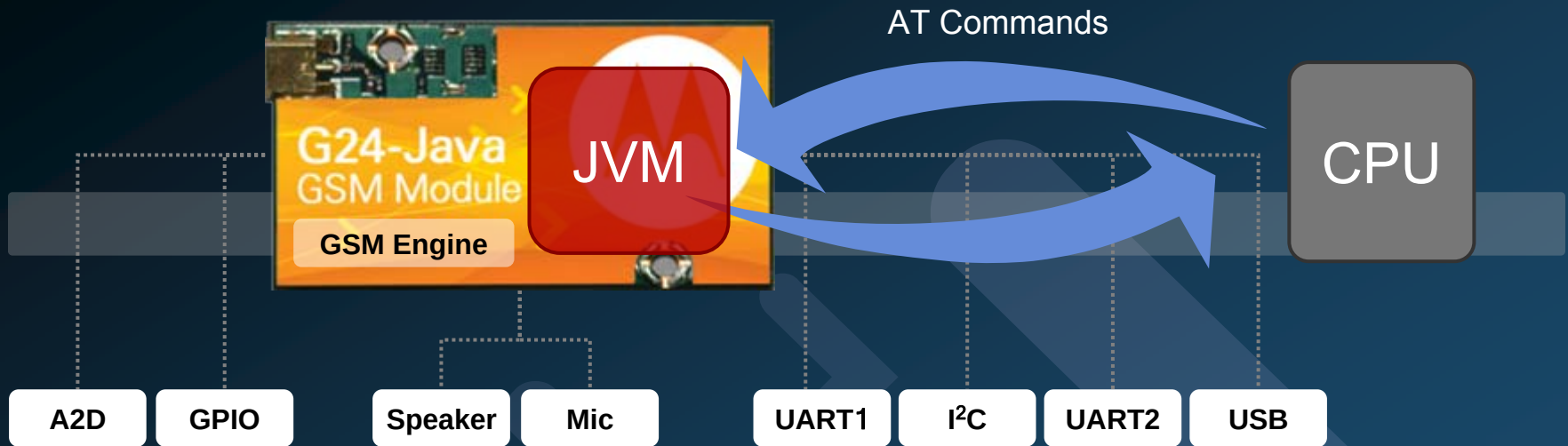
- RoHS

- FOTA

Launched Jan 2006 - Actual MTBF - 7 Million hours!

Java Approach

GSM/GPRS/EDGE Network

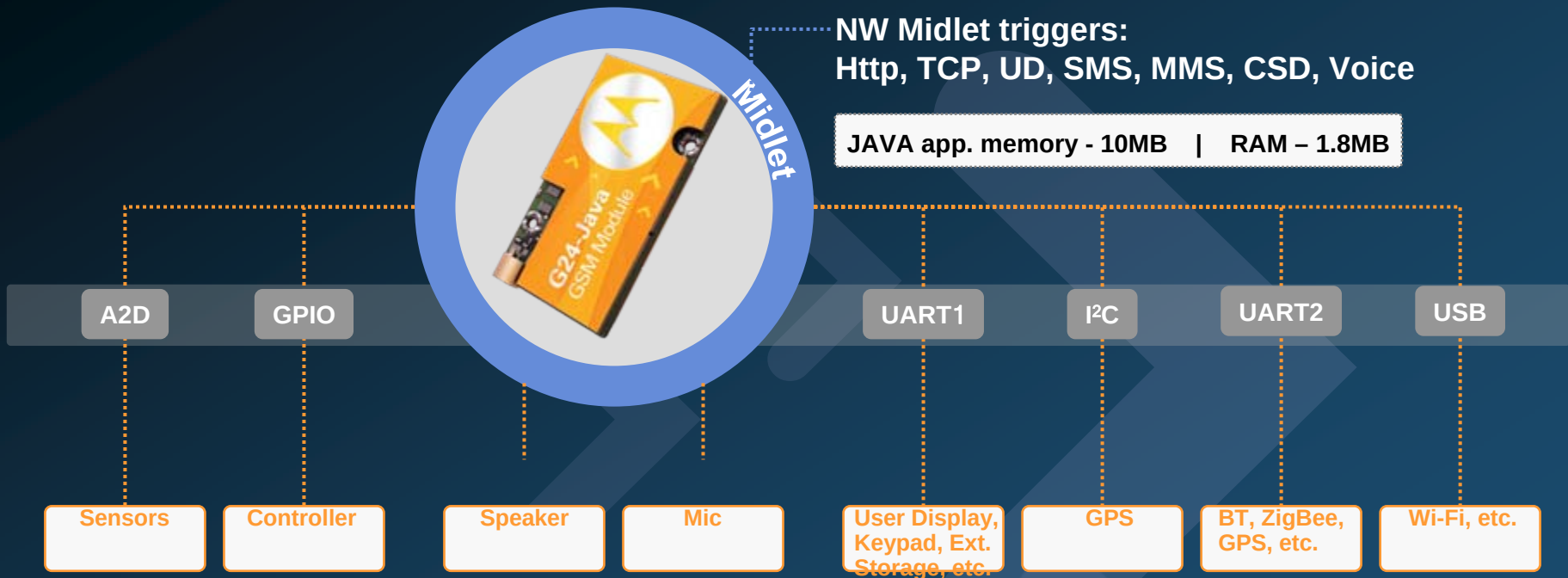


There is no need for an external system. G24 can host the functionality

- Software programmed in Java
- All functionality of the GSM engine is available to the Java program

G24 Java

A stand alone wireless controller managed by a downloadable MIDlet



Jamming Detection



➤ When jamming is detected:
Module initiates sequence of commands (activates alarms, calls police via wireline phone if available, sends SMS, etc.)

➤ Additional Capabilities:
Jamming detection can be enabled during power up, active in idle & dedicated mode, detection preferences stored in flex



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4.HSPA-Modul H24

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G24-Lite - Hello Scalability



- Offering the right set of features at the right price
- Backwards compatible with the G24
- Quad-band GPRS class 10
- RoHS
- Exceptional RF performance
- Charger option
- STK, TCP/IP stack



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Stand-alone WiFi **OR** Become a gateway



W24 Module - Wi-Fi/Cellular Solution



Dual Usage:

- Stand Alone Wi-Fi Station (Ad-Hoc network)
- Wi-Fi/Cellular Gateway (Receive data and transfer to back-office and vice versa)

Benefits:

Wi-Fi Devices

- High Data transfer
- Easy deployment



Target Segments:

Automatic Vehicle Location (AVL)

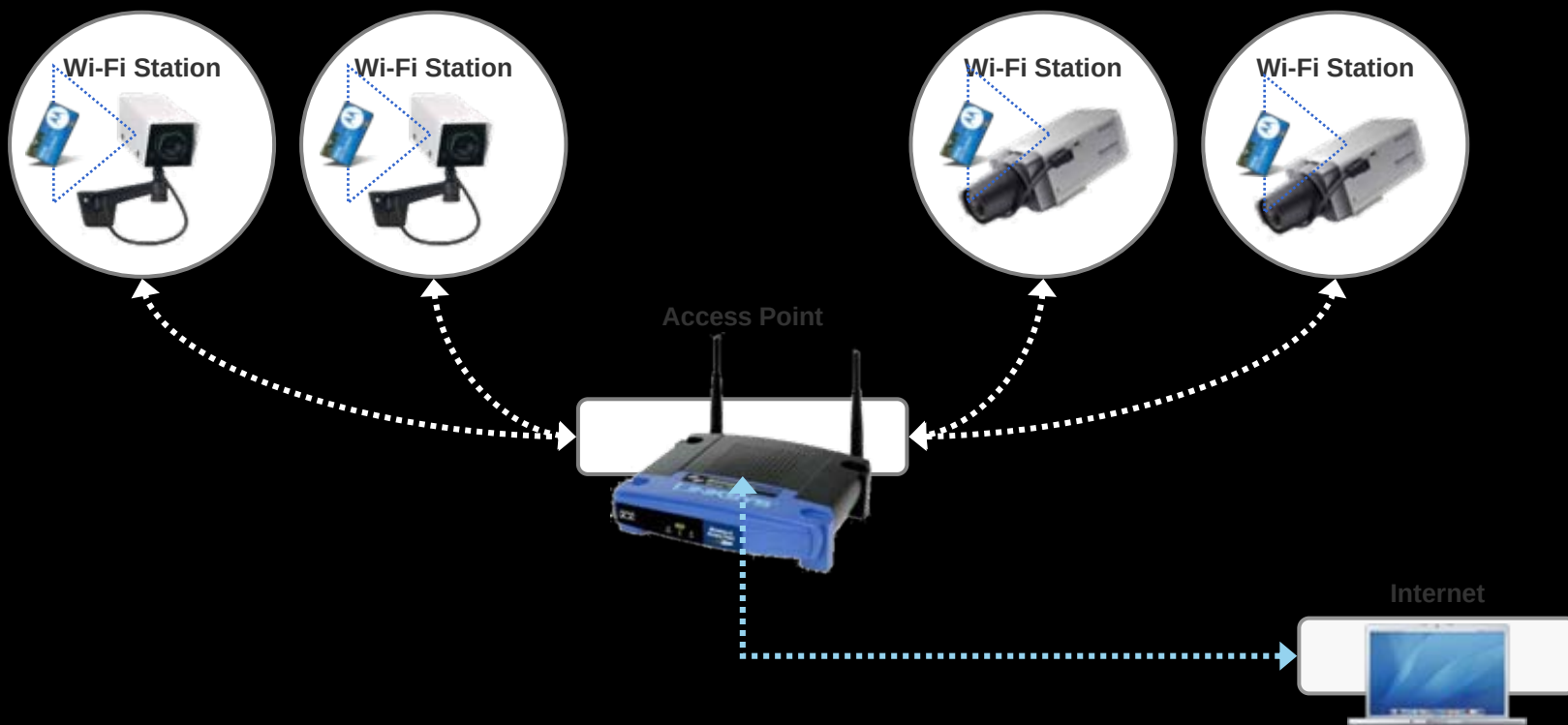
Automated Meter Reading (AMR)

Industrial Automation

Security

Electronic Point-of-Sale (ePOS)

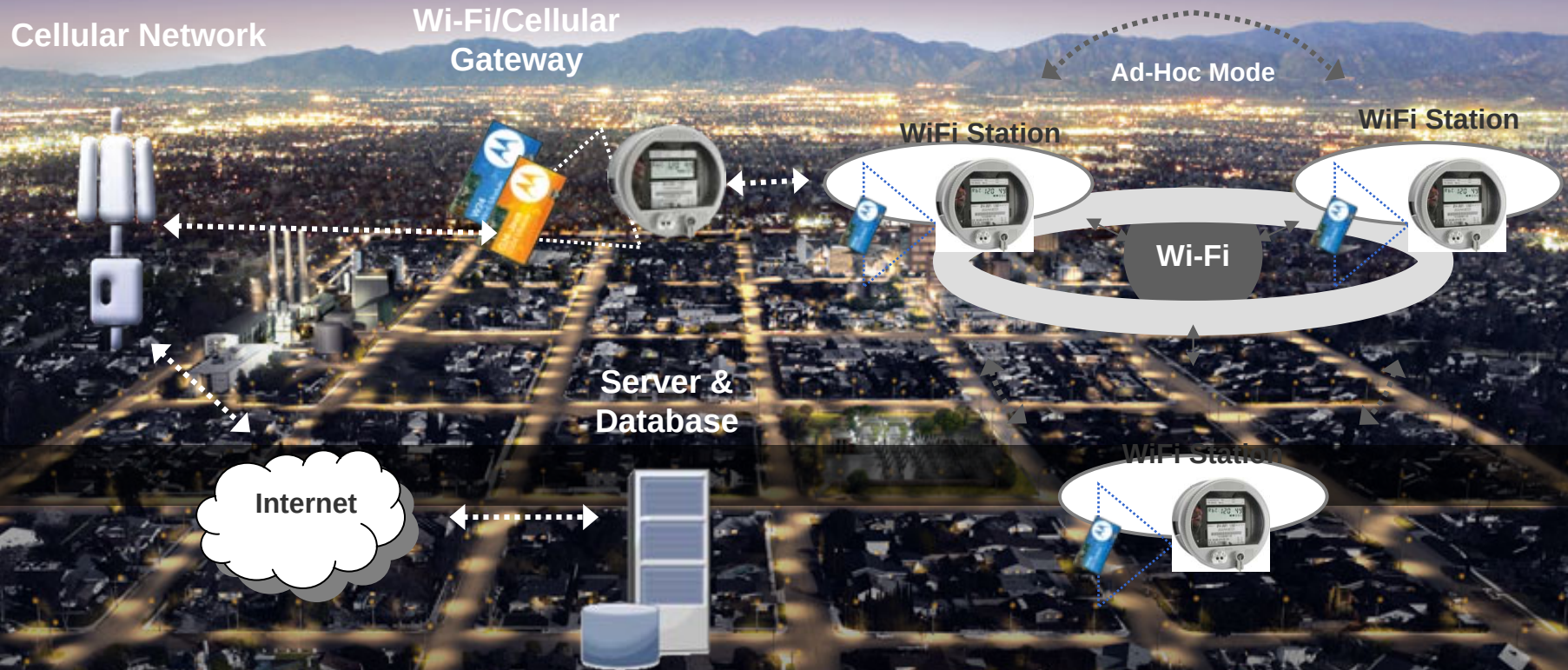
W24 – Client Mode



➤ Surveillance camera as any other device equipped with W24 are able to communicate with an Access Point for data transceiving.

W24 – Ad-Hoc and Gateway Modes

Communication over Cellular Gateway



- AMI which incorporates W24 for two purposes:
 - Wi-Fi Station (Meter Reading)
 - Wi-Fi/Cellular Gateway (Receive data and transfer to back-office and vice versa)

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H24 Roadmap

	Supported Bands						Diversity	GPS	Embedded SIM	Software Enhancements*
	800 MHz	850 MHz	900 MHz	1700 MHz	1900 MHz	2100 MHz				
Aug - 2009	H24 Global	●			●	●	(●)			
	H24 EU					●	(●)			
	H24 NA	●			●		(●)			
Q4 - 2009	H24 Global	●			●	●	(●)	(●)	(●)	●
	H24 EU					●	(●)	(●)	(●)	●
	H24 NA	●			●		(●)	(●)	(●)	●
	H24 EU/ANZ		●			●	(●)	(●)	(●)	●
	H24 NA+	●		●	●	●	(●)	(●)	(●)	●

* Software Enhancements include: MUX over UART, Fax, FTP, Second UART and I2C

(●) signifies optional feature

H24 General Specifications



Supported Bands:

- Tri-Band UMTS/HSPA 850/1900/2100 MHz
- Quad-Band GSM 850/900/1800/1900 MHz
- EDGE multi-slot class 12
- GPRS multi-slot class 12

Data:

- HSUPA 2.0Mbps / HSDPA 7.2Mbps
- EDGE (E-GPRS) multi-slot class 12
- GPRS multi-slot class 12

Physical:

- Size: 24.4 x 45.2 x 5.3 mm
- Mounting: two 2.4 mm holes



HW Specifications



Receiver diversity and equalizer provide best RF sensitivity



Operating Temperature:

- -30C to +85C

Storage Temperature:

- -40C to +85C

Connectors:

- Single 70pin board to board
- RF MMCX – Main Antenna
- RF U.FL – GPS & Diversity antennas

SIM:

- USIM / SIM Card 1.8V, 3.0V

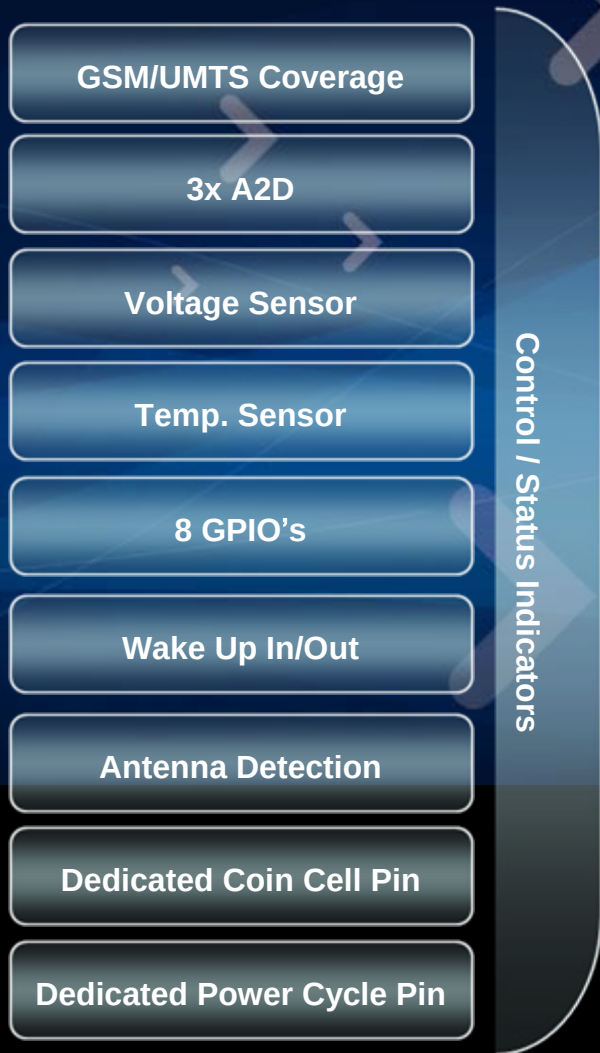


Main Features

- Internal TCP/IP & UDP/IP protocol stack
- SSL - Secure Connection
- SMS
- CSD (UMTS and GSM)
- FAX (Group 3, Class1)
- Embedded GPS receiver
- Connectivity
 - USB 2.0 high speed
 - UART
- Enhanced audio
 - 2 differential microphones
 - 2 speakers + alert speaker
 - Broad gain control



Control / Status Indicators





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C24 – Go To Market



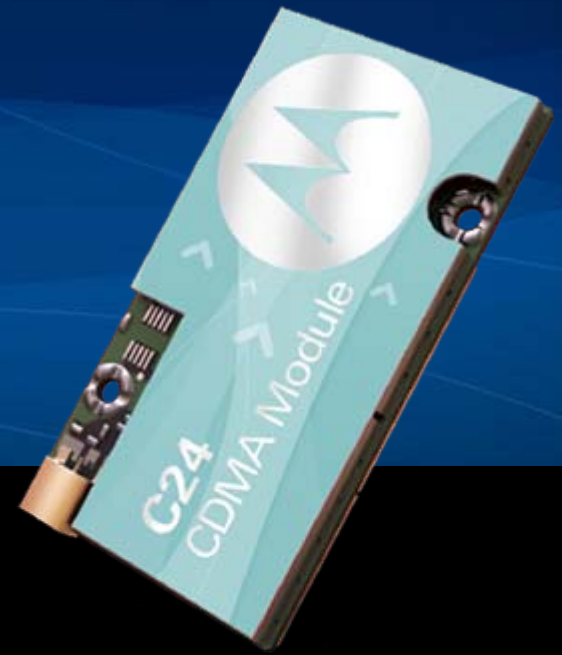
Module launched December 2008

Certified on Sprint CDMA network

Second Major Release with Verizon approval targeted for mid 2009

Relevant for all M2M Applications:

- WLL
- Telemetry
- Telematics



X24 General Specifications



- Designed for Mobile WiMAX 802.16e
- Leverages “24” family form factor design
- Dual band WiMAX - 2.5 GHz and 3.5 GHz
 - Contains internal antennae (2.5 GHz) & external antennae connectors (dual band)
- MIMO (2Rx + 1Tx) 512 and 1024 FFT
- Multiple BW support (3.5, 4.375, 5, 7, 8.75 and 10 MHz)
- Downlink modulation: QPSK/16QAM/64QAM
- Uplink modulation: QPSK/16QAM
- Low Current Consumption



Cross Platform Technology Solution



Motorola's "24" family form factor – One Size, Multiple Technologies
A Single Design Solution for Cross Platform Technology





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G30 Specifications



GPRS Features:

- Multislot Class 10
- DL up to 85.6 kbit/s, UL up to 42.8 kbit/s
- Mobile station class B
- CS1 to CS 4 supported



Speech Support:

- HR/FR/EFR/AMR
- Echo canceller
- Noise reduction

GPRS:

- Fax Group 3, Class 2.0
- SIM application toolkit (SAT Release 99)

AT Commands:

- Subset of GSM 07.05, - GSM 07.07
- Mux 07.10
- Custom AT commands

SMS:

- PDU / Text mode
- SMS cell broadcast

CSD:

- Max 9.6kb/s user data (Non-transparent / Transparent)
- Modem type V.32, V.110

G30 Software



- Subset of GSM 07.05, GSM 07.07, GSM 07.10/MUX and proprietary AT commands
- TCP/IP stack
- FOTA
- On Board Application Processing
 - Ansi C programming language
 - Strictly pre-emptive multi-tasking real-time Operating System
 - Pre compiled and linked to the firmware
- Jamming Detection



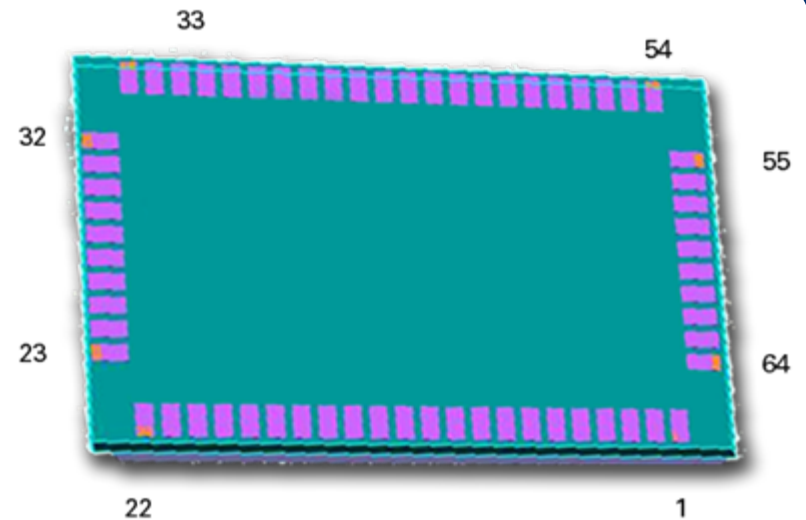
G30 Layout



Top Side



Bottom Side



G30 Timeline



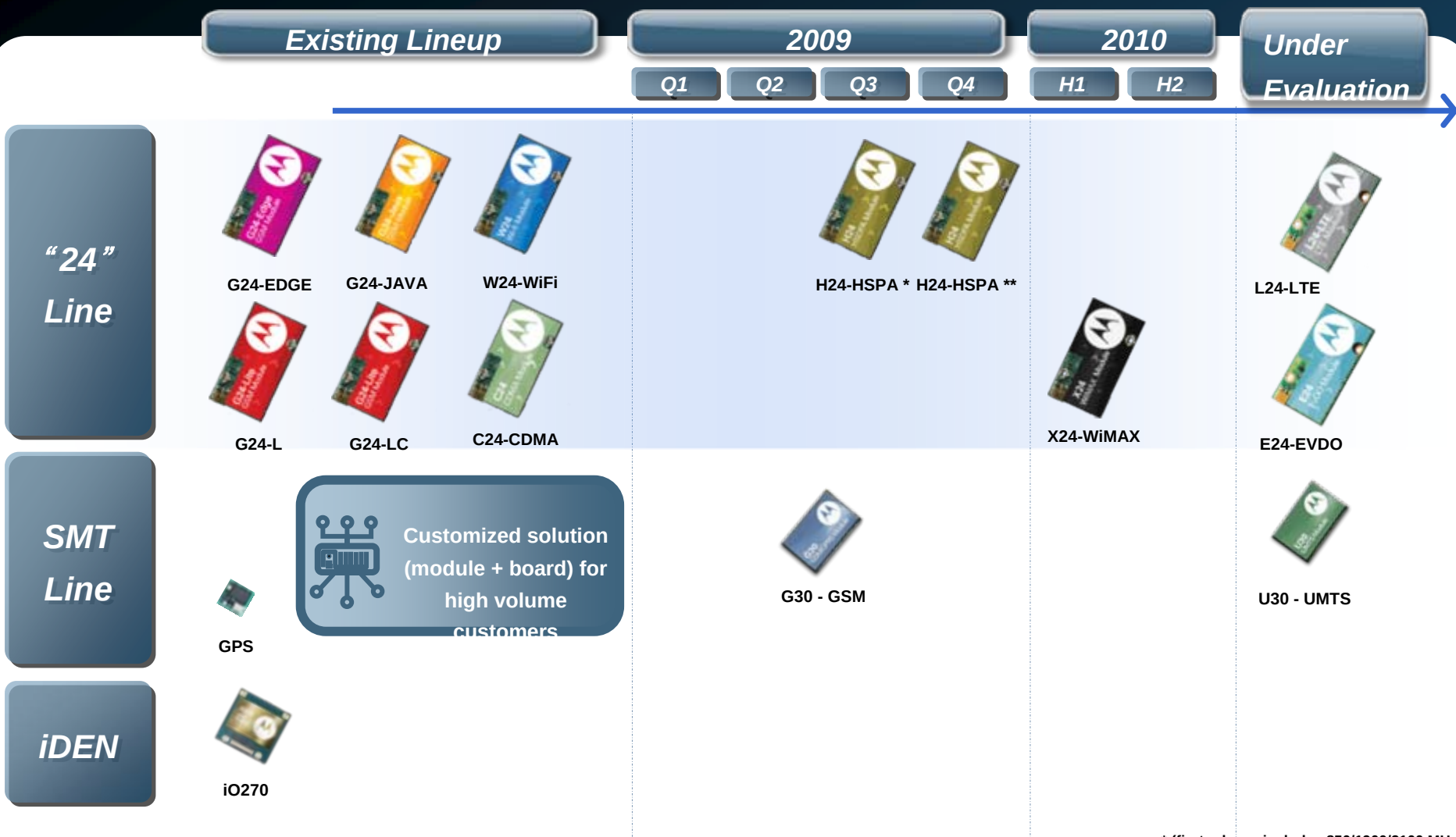
Pin out and electrical diagram: **January 2009**

P1 Samples: **February 2009**

P2 Samples: **April 2009**

Ship Acceptance: **July-Aug 2009**

Roadmap



* (first release includes 850/1900/2100 MHz)

** (second release includes 800/850/900/1700/1900/2100 + GPS, Embedded SIM, Added SW)

Ihr Partner für M2M, Navigation und Telematik



MOTOROLA

- GSM/GPRS-Module mit TCP/IP-Stack, für Sprach-, Fax-, SMS- u. Datenübermittlung
- Dualband- und Quadband-Versionen
- Edge- und Java-Funktionalität
- Module für CDMA-Anwendungen
- Alle Module fully Type Approved



- Funkmodule und Lösungen im ISM-Band, auch inklusive Controller und Standardsoftware
- kundenspezifische Softwareanpassungen
- sowohl getrennte Sender und Empfänger als auch Transceiver für kleine und höhere Leistung



CEL California Eastern Laboratories

- ZigBee Module nach IEEE 802.15.4 im 2.45 GHz Band auf verschiedenen Plattformen:
- Ember 250 und Ember 260
- Freescale MC13192
- Texas Instruments CC2430
- Leistungsklassen von 1 mW bis 100 mW für Reichweiten > 1000m



- Socketmodems für GSM/GPRS, analog, ISDN und LAN
- Connexant- oder DIL 40- Style; Standard Pin-Out
- Standard AT-Commands über serielles Interface
- Box-Modems für GSM/GPRS, Analog, ISDN und LAN
- CE-Approval



- GPS-Receiver-Module auf der Basis des Sirf III-Chipsatzes für fast alle Anwendungen, auch mit erhöhter Sensitivität
- Komplette GPS-Receiver mit integrierter Antenne und RS232 oder USB-Interface
- GPS-Receiver mit integrierter Bluetooth-Technologie



- breitbandige Antennen für GSM/GPRS/UMTS
- aktive und passive Antennen für GPS
- Kombiantennen für Mobilfunk und GPS
- Kabellängen und Stecker frei wählbar
- Adapterkabel in verschiedenen Ausführungen



- Modems, Melder und Module zur drahtlosen Fernüberwachung, Telemetrie und Ortung
- verschieden Bauformen inkl. Hutschienenmontage
- einsetzbar in allen Mobilfunknetzen



THANK YOU



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