

LTE como una NGN



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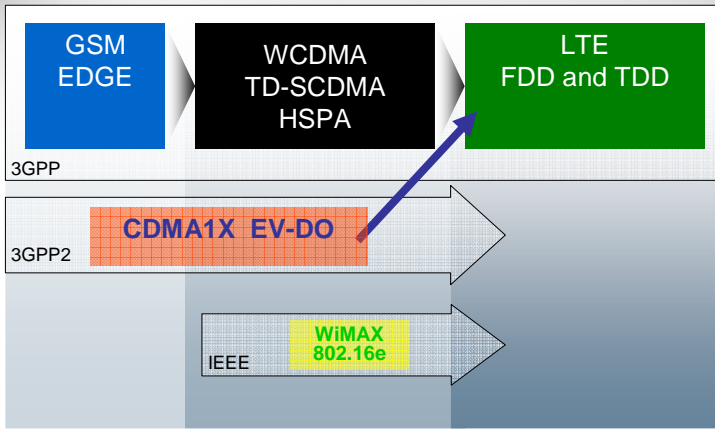
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Radio Evolution – Data rates

LTE – Mainstream global choice for next generation




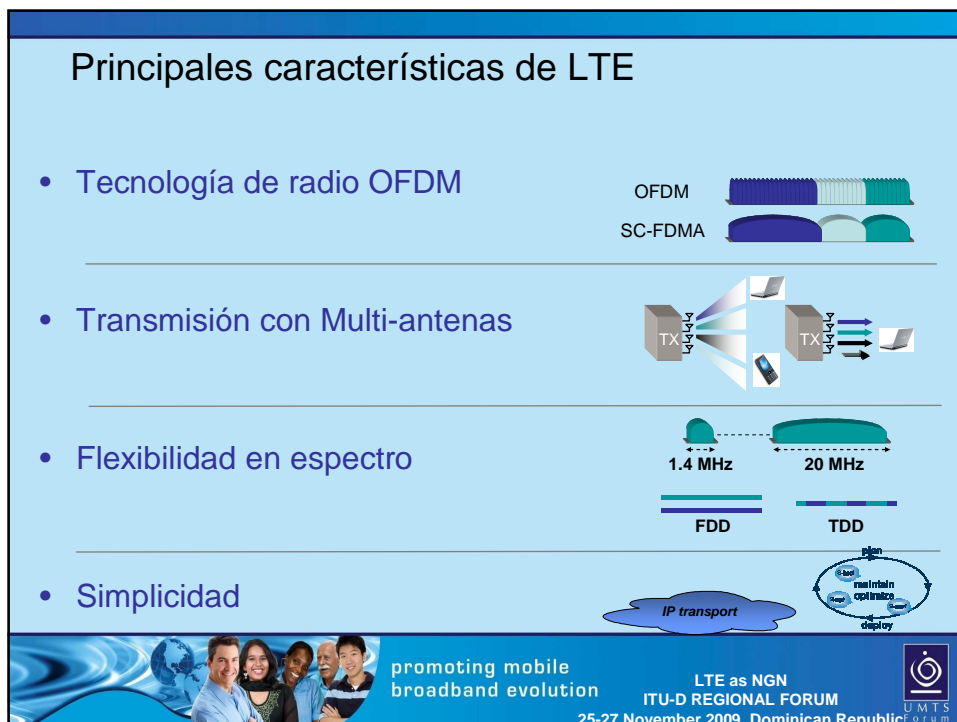
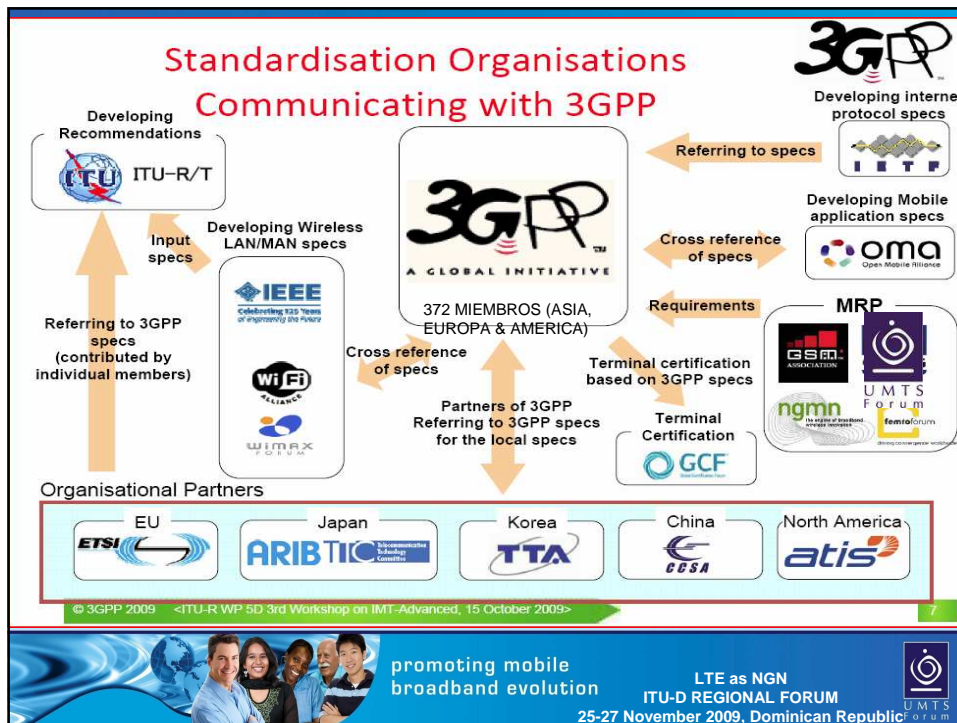
Technology	Standard	Organization	Data Rate
GSM EDGE		3GPP	1 Mbps
WCDMA TD-SCDMA HSPA		3GPP	1 – 40 Mbps
LTE FDD and TDD		3GPP	40 – 300 Mbps
CDMA1X EV-DO		3GPP2	1 – 40 Mbps
WiMAX 802.16e		IEEE	1 – 40 Mbps

Source: Ericsson

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Transmisión Multi-antena 4x4 MIMO

Canal de Radio

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Flexibilidad para espectro

- Bandas nuevas y existentes
- FDD y TDD
- Ancho de banda por canal flexible

		FDD					
Band		Frequencies (MHz)					
1		1920-1980/2110-2170					
2		1850-1910/1930-1990					
4		1710-1755/2110-2155					
5		824-849/869-894					
7		2500-2570/2620-2690					
10		1710-1770/2110-2170					
12, 13, 14, 17		698-716/728-746 777-787/746-756 788-798/758-768 704-716/734-746					

		TDD					
Band		Frequencies (MHz)					
38		2570-2620					
40		2300-2400					

Channel bandwidth [MHz]	1.4	3	5	10	15	20
Number of Resource Blocks	6	15	25	50	75	100

6 RB (≈ 1.1 MHz)
 100 RB (≈ 20 MHz)

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Simplicidad

Self-Organizing Network - SON

Auto-Configuración

Auto-Optimización

Auto reparación

Plan

Mantenerse Optimizado

Despliegue

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Simplicidad

All-IP RAN

RBS Site

Mobile Backhaul

All-IP

Microwave

Copper

Fibre

IP/MPLS (metro Ethernet)

Switch Site

Access, LRAN

Metro, HRAN

RAN evoluciona hacia IP, Transporte basado en internet

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Introducción de dispositivos LTE

Plataformas de dispositivos multi-modo TDD/FDD planeadas por los principales fabricantes de terminales

2008 2009 2010 2011

Prototype Feb 2008 Interoperability Testing Started Dec 2008 At Ericsson First Chipset Samples Pre Commercial Trial Devices First Voice Terminal First Data Only Device

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Compromisos con LTE

Mas de 30 Operadores en mas de 16 países

... y mas por venir

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Telefonía sobre LTE

Telefonía IMS/MM



- **Suporta**
 - Voz
 - Video
 - Comunicación por Texto
 - Transferencia de archivos
 -
- **Servicios complementario**
 - Similar a GSM





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Evolución de capacidad y desempeño en LTE


LTE Advanced Release 10 and beyond

Terminal capabilities	150 Mbps 50 Mbps	300 Mbps 75 Mbps	600 Mbps 150 Mbps	1000 Mbps 500 Mbps
	OFDM	OFDM	OFDM	OFDM
	64/16 QAM DL/UL	64/16 QAM DL/UL	64/16 QAM DL/UL	64/16 QAM DL/UL
	2x MIMO	2x MIMO	2x MIMO	2x MIMO
		4x MIMO	4x MIMO	4x MIMO
		MU-MIMO (UL)	MU-MIMO (UL)	MU-MIMO (UL)
			MU-MIMO (DL)	MU-MIMO (DL)
			64 QAM UL	64 QAM UL
			20+20 MHz BW	100 MHz BW
				8x MIMO



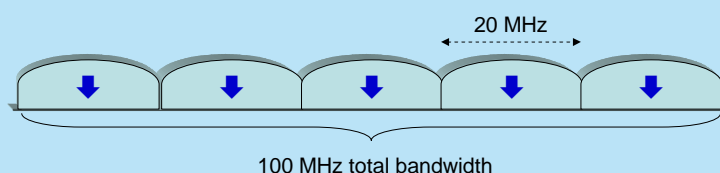
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Evolución de LTE (4G LTE Avanzado) Adición de portadoras

- Grupo de componentes de portadoras
- Cada componente compatible con Release 8
- LTE-Avanzado con adición de portadoras

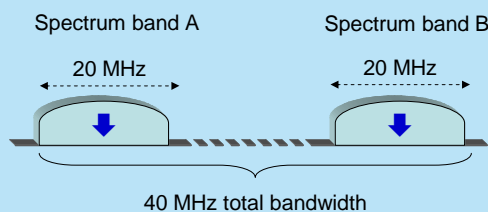


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LTE Evolution (4G LTE Avanzado) Spectrum Aggregation

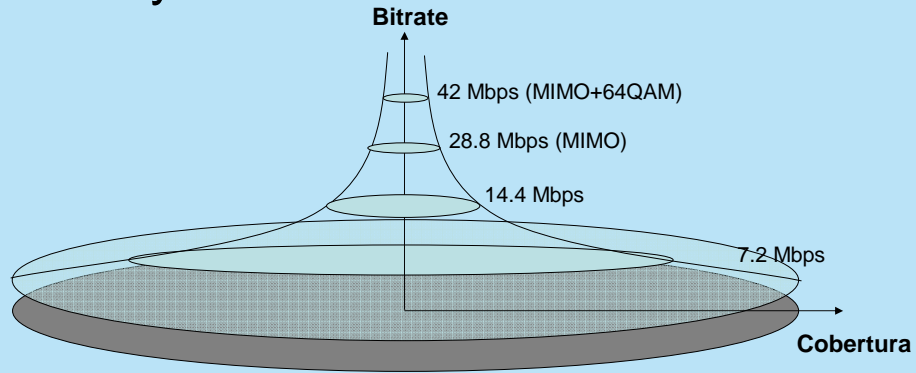
- Portadoras no contiguas
- Portadoras en espectro separado
- LTE-Avanzado con adición de portadoras



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Retos: Relación entre tasa de datos y Cobertura



Capacidad no crece con la tasa de datos

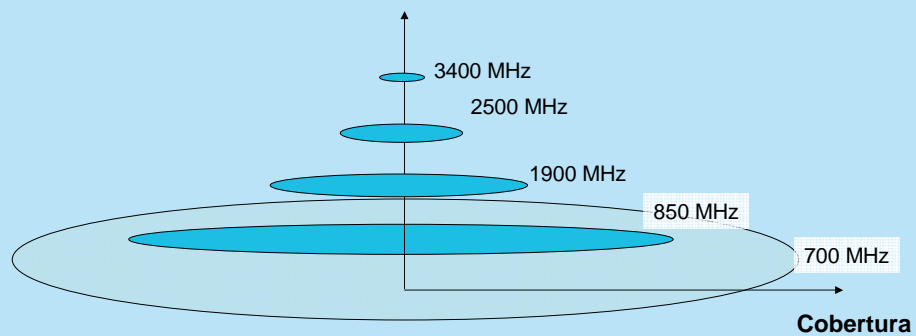


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Retos: Relación cobertura y frecuencia



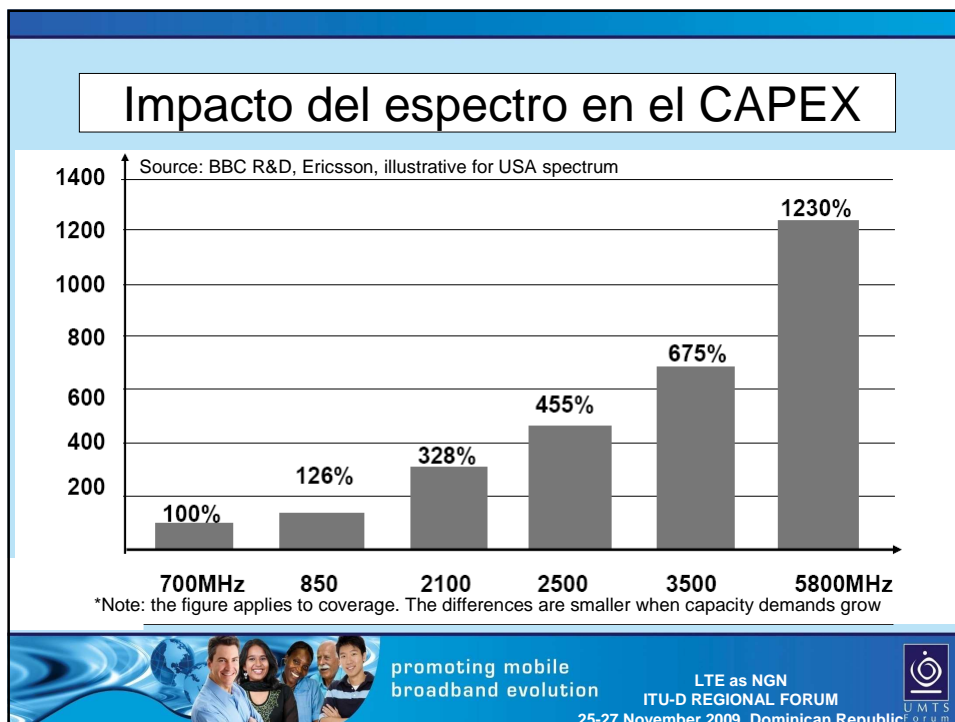
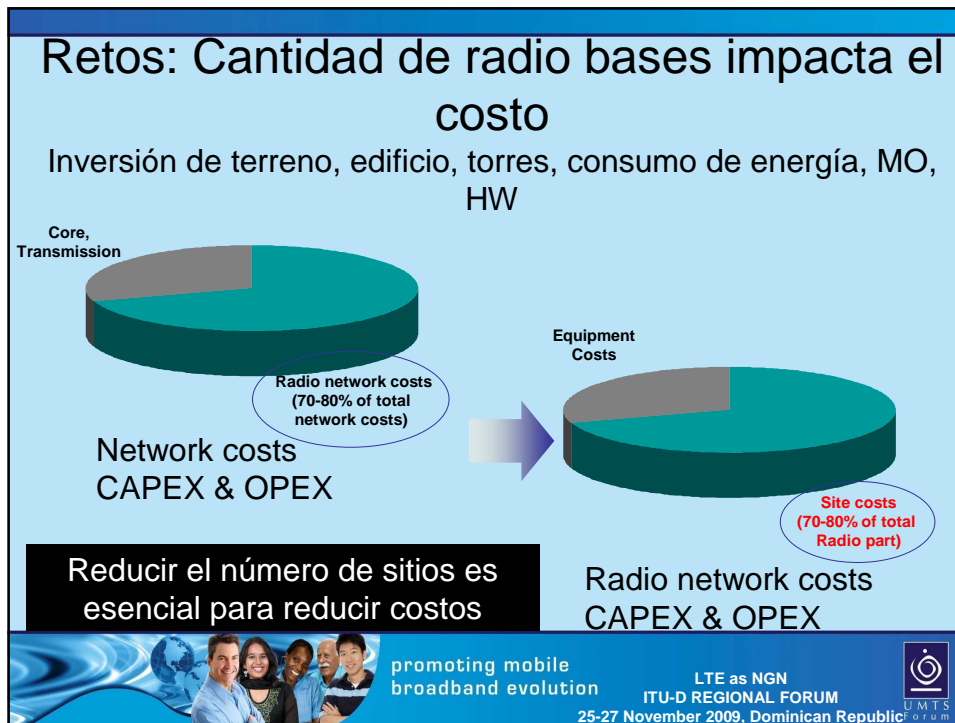
Frecuencias bajas para cobertura y las altas para capacidad



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50 billion connections year 2020



- consumers will increasingly expect all their services to be accessible anywhere and from any device
- constantly connected with friends, family and co-workers
- need to be connected to their enterprise network environment, to access email, files and media
- be able connect to residential networks to access their personal media collections and other content

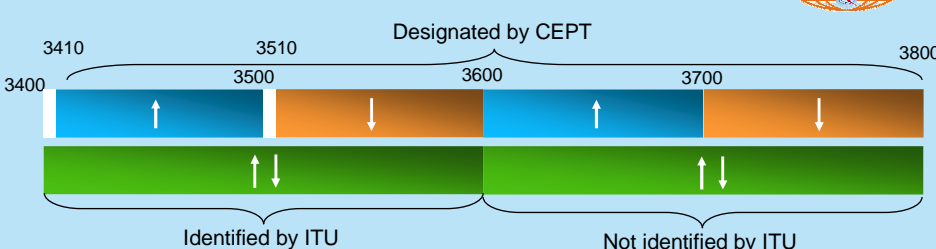


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The range 3400 – 3800 MHz



Designated by CEPT


Identified by ITU Not identified by ITU

Facts for the "IMT C-bands"

- the band 3400-3600 MHz is allocated to mobile and identified to IMT in Regions 1 and 3
 - already designated for mobile broadband usage in EU/CEPT
- the band 3600-3800 MHz is allocated to mobile in Regions 2 and 3
 - decided for mobile broadband in EU/CEPT by year 2012
- both for paired and unpaired arrangements, but discussions are still ongoing in 3GPP


Considerations

- for very high data rate multimedia mobile broadband services
- for FDD, 100 MHz duplex spacing for both bands, but other arrangements may be considered
- using channel bandwidths > 20 MHz per operator




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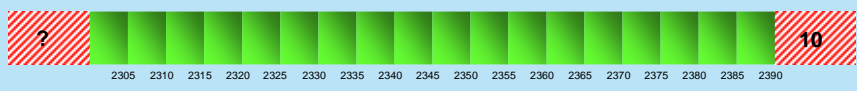


The band 2300 – 2400 MHz



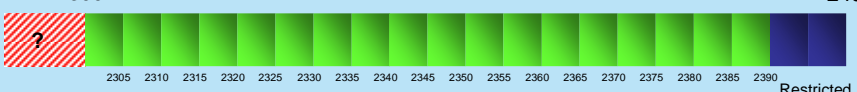
The allocation of the band 2300 – 2400 MHz, in countries where Administrations wish to implement IMT applications

2300 2400




The need for guard band to be studied Within the range 2300 – 2390 MHz other unpaired arrangement can be used, subject to national situation Guard band to protect RLAN and Bluetooth

2300 2400



- TDD usage only is consistent with general technology trends
- TD-LTE utilizes 5 MHz, 10 MHz and 20 MHz bandwidths in this band


Restricted channels in systems where devices does not use RLAN and Bluetooth



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Overall spectrum objectives

Thriving for global, or regional, harmonization of frequency bands for mobile and fixed broadband radiocommunication services;

- The **right spectrum** (propagation and coverage)
- The **right combination** of spectrum bands
- **Contiguous** spectrum (**20 MHz** channels for high data rates)
- **Aligned and common** duplex arrangements (**separate** FDD and TDD)
- **Aligned channel raster**, and/or block arrangements (**5 MHz** channel raster)
- Minimizing **interference** between different operations; minimizing the need for **guard bands** / restricted channels (supported by technology developments)
- Under **licensed** schemes (**QoS**)


Harmonized spectrum has enabled global mobile penetration of 60%



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Neutrality and flexibility


- In cases of **different standards**
 - Harmonized spectrum certainly provide the means for **ensuring co-existence** between different operations
- All future mobile standards are likely to have **both FDD and TDD access modes**
 - Harmonized spectrum arrangements, in terms of transmission direction and channeling, **will allow for any standard** (= neutral)

IMT technologies being the natural choice



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El éxito de la familia 3GPP aporta economías de escala

Year	CDMA	Other	Mobile WiMAX	TDSCDMA	GSM/GPRS/EDGE	WCDMA/HSPA	LTE	Total
2007	500	100	0	0	2000	1000	0	3500
2008	500	100	0	0	2500	1500	0	4500
2009	500	100	0	0	3000	2000	0	5500
2010	500	100	0	0	3500	2500	0	6500
2011	500	100	0	0	4000	3000	0	7500
2012	500	100	50	0	4500	3500	0	8500
2013	500	100	100	0	4000	3000	0	8100
2014	500	100	100	0	3500	2500	1000	8100


This slide contains forward looking statements Source: Internal Ericsson

El espectro armonizado es un elemento clave para mercados masivos



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**Beneficios: Una sola tecnología para acceder internet
Pirámide Económica**

Notebook/laptop
 Teléfono móvil
 Acceso compartido
 Servicio Fijo

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LTE es una NGN – Resumen

Características

- Innovación tecnológica en movilidad de banda ancha
- LTE ofrece la oportunidad de ofrecer el Cuádruple play
- Es una red con interfase de aire IP que es la principal característica de las NGN

Requisitos

- Disponibilidad de suficiente espectro
- Seguir las recomendaciones de la UIT-R en cuanto a la asignación de las frecuencias

Aplicaciones de la banda ancha fija y móvil

- Asegurar servicios premium en fijo (IP-TV, etc.)
- No se estanque en banda ancha móvil – el usuario escogerá al que mas opciones le ofrezca al mejor precio
- Crear buenos paquetes accesibles a todos los bolsillos

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Oportunidades de Banda ancha móvil – Resumen

Evolucione a sus usuarios para evitar la erosión del precio

- Mejore continuamente el valor del dinero del usuario
- Introduzca paquetes que diferencien prioridad y velocidad
- Saque provecho del “uplink” úselo como ventaja competitiva

Invierta en las correctas funcionalidades en su red

- Cobertura y capacidad en su red de acceso (RAN)
- Construya su propia red de apoyo basada en microondas para mejorar la capacidad y el desempeño de su red
- Administre el tráfico y el abuso de los usuarios por medio del manejo de sus enlaces E2E
- Introduzca la diferenciación del perfil de usuario



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Thank you !

For more information
www.umts-forum.org



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