Welcome – APT

GSMA Lunchtime Session

AI 1.13





Welcome – APT

Joe Guan
Head of Policy, Greater China
GSMA

Impact of mmWave Spectrum in Asia-Pacific

Cristian Gomez

Director, Spectrum & Policy Regulatory Affairs, APAC

GSMA

5G needs spectrum across three ranges



Sub-1 GHz

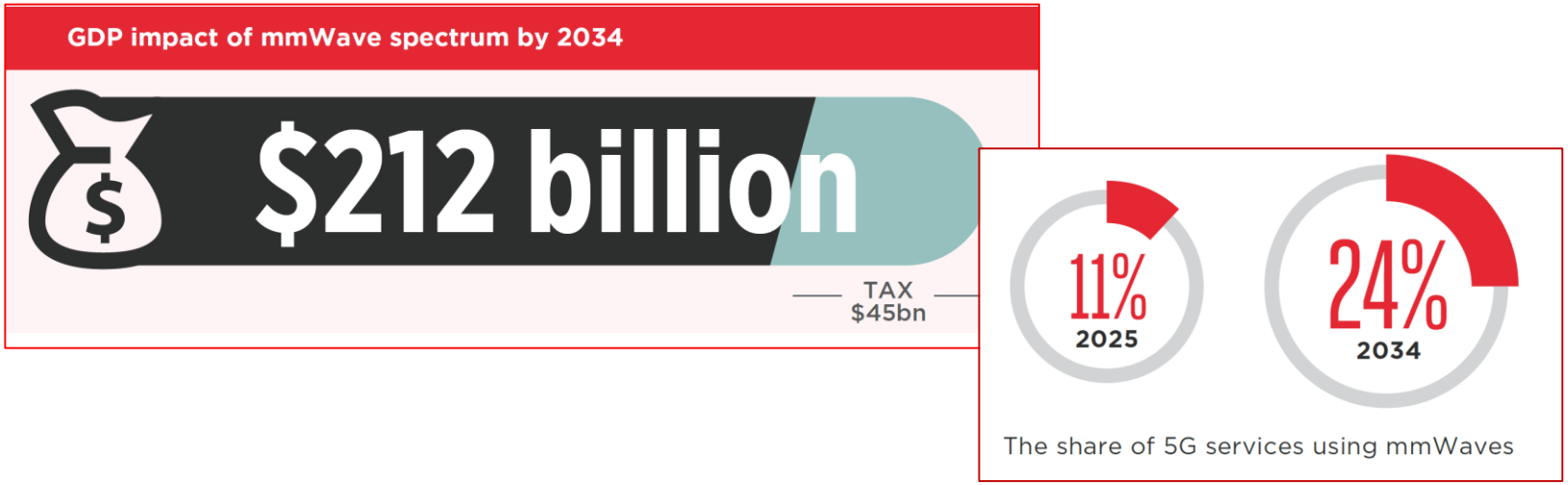
1 – 6 GHz

AND ABOVE

6 GHz

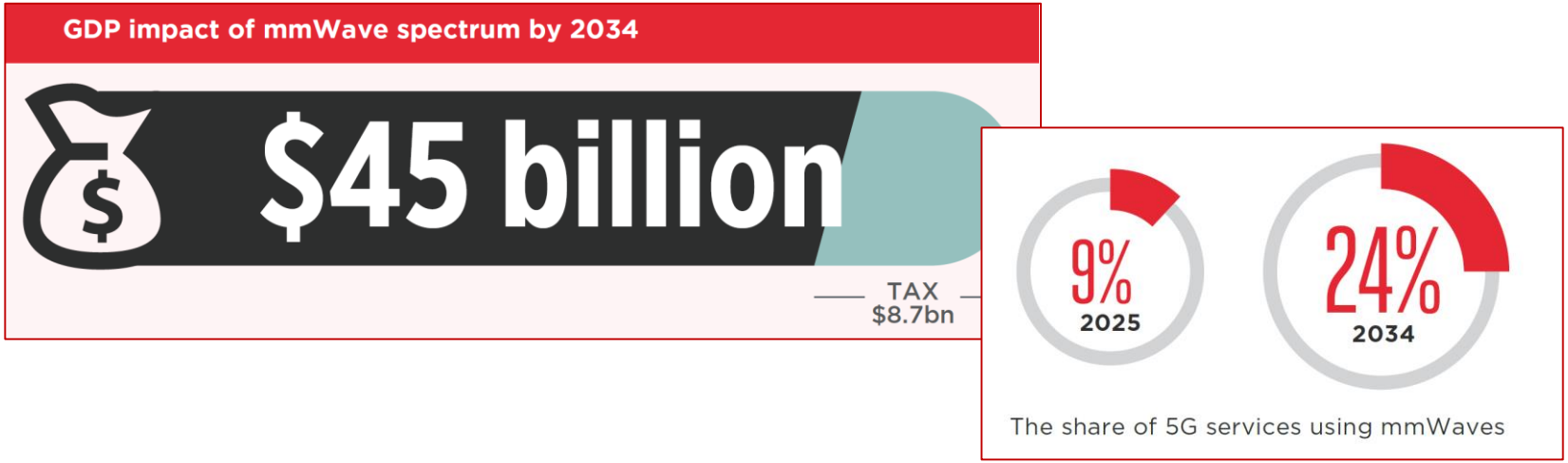
The socio-economic benefits of mmWave 5G (2020-2034)

Asia-Pacific Edition



The socio-economic benefits of mmWave 5G (2020-2034)

South and South East Asia and the Pacific Islands



Use cases for mmWave spectrum

5G: reaching it's full potential



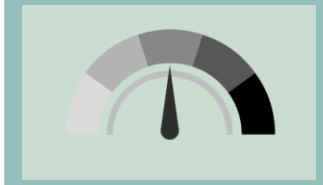
Remote manipulation



Industrial automation



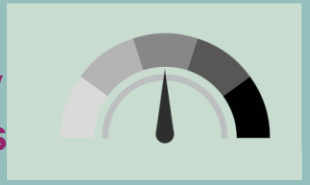
Quick/temp. deployment



High-speed broadband



Virtual reality and meetings



Next-gen transport connectivity

A lot at stake – WRC-19

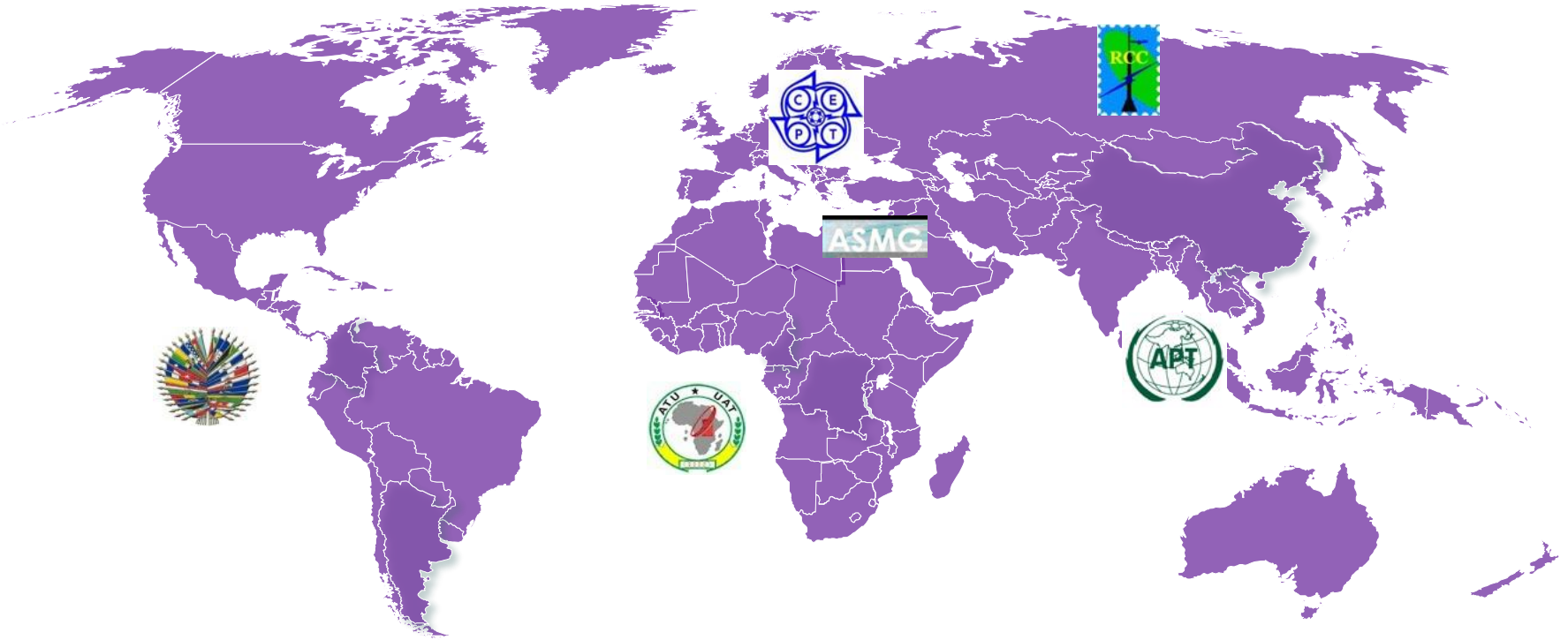
A successful identification of spectrum for IMT under Agenda Item 1.13 is vital to realise the full potential of 5G networks

The GSMA supports the **26 GHz and 40 GHz** bands	The GSMA also supports **66-71 GHz**	Due to the large amount of spectrum needed for 5G services, the range **45.5-52.6 GHz** also needs to be considered

Technical studies show coexistence between IMT and other services is possible

The result will have a major impact on the future of 5G

Target bands around the world





Wang Hu
Head of Radio Spectrum Policy
Huawei Technologies

GLOBAL HARMONISATION OF MILLIMETER WAVE SPECTRUM FOR IMT-2020

February 2019

Global mobile Suppliers Association

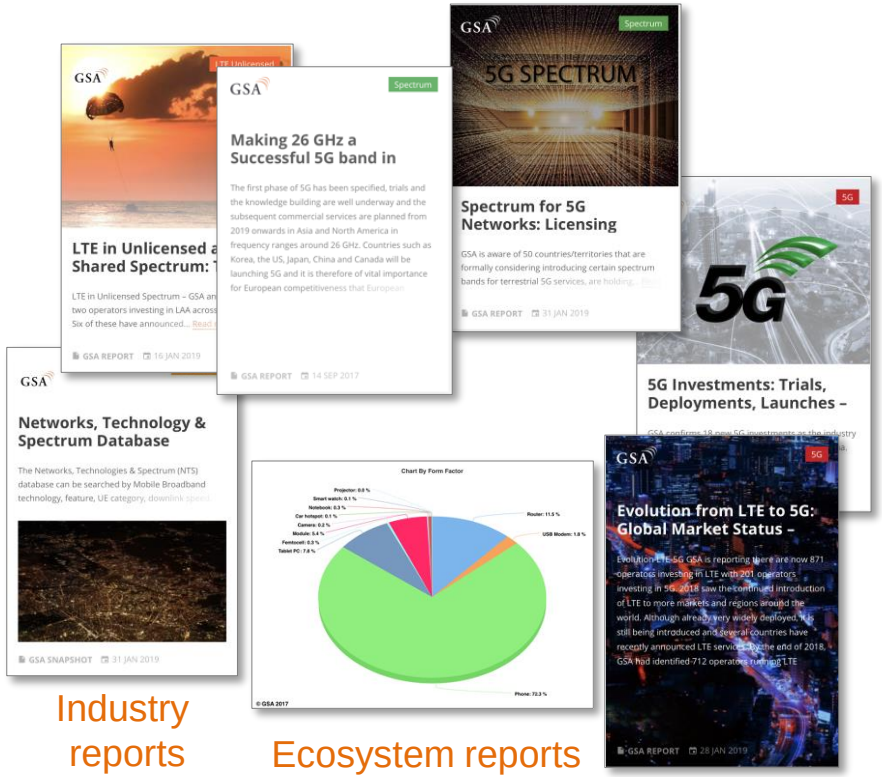
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ABOUT GSA

See https://gsacom.com/

- GSA (the Global mobile Suppliers Association) is the *Voice of the Global Mobile Ecosystem* and has been supporting the industry since 1998
- GSA actively promotes the 3GPP technology and spectrum road-map – 3G; 4G; 5G – and is a single source of information resource for industry reports and market intelligence
- GSA reports are free to download and are based on our leading industry database – GAMBoD
- Regulators can access specific reports and consultation responses at https://gsacom.com/regulators/
- Regulator members have access to GAMBoD

Spectrum reports



Industry reports

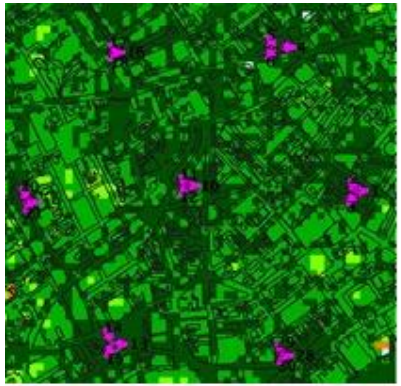
Ecosystem reports

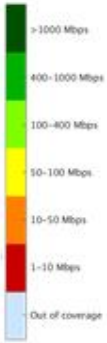
5G Reports

https://gsacom.com/gambod/

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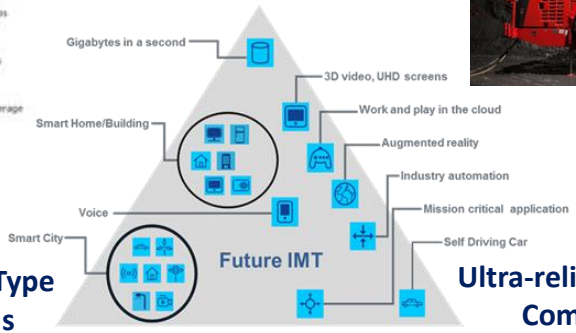
ENABLE A VARIETY OF USE CASES







Enhanced Mobile Broadband



Massive Machine Type Communications

Ultra-reliable, Low-latency Communications

ITU-R M.2083



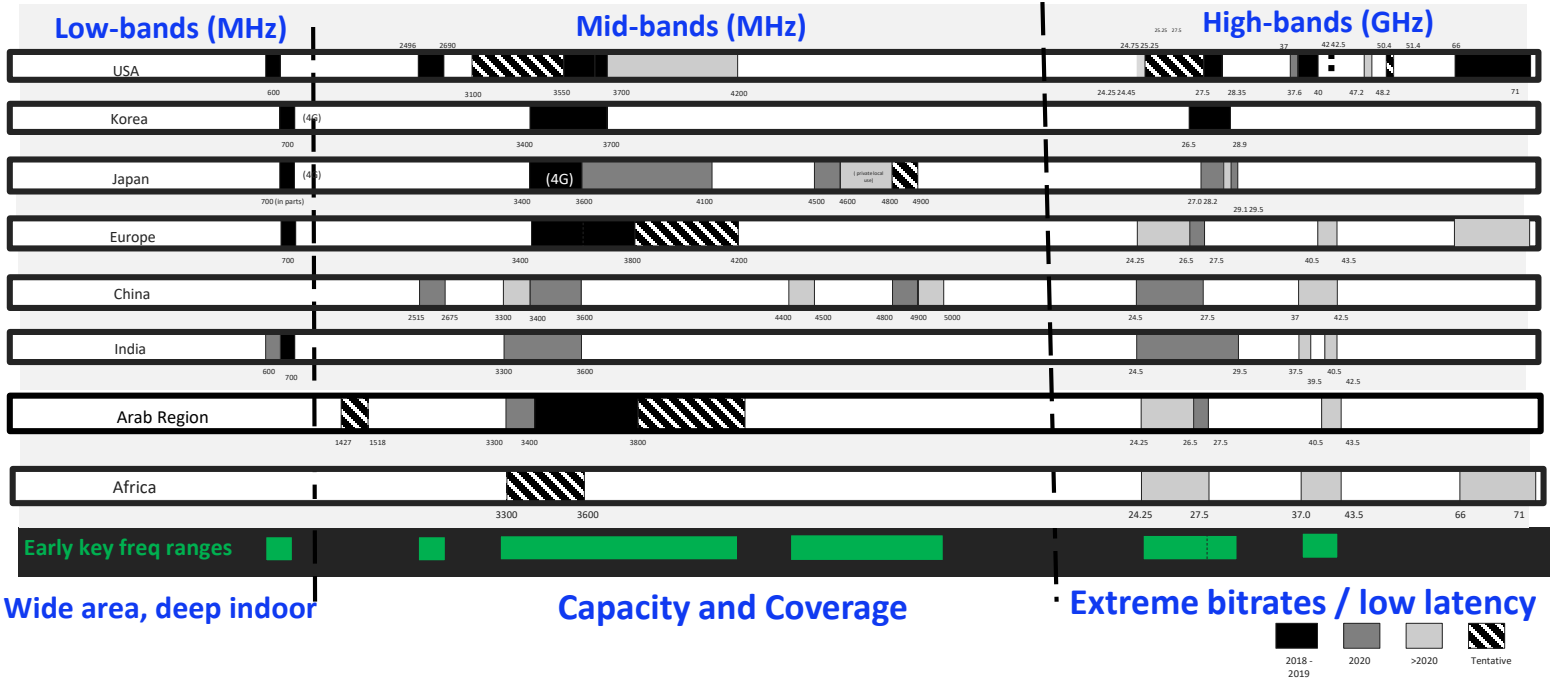




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Source: Recommendation ITU-R M.2083 “IMT Vision - Framework and overall objectives of the future development of IMT for 2020 and beyond”

ENABLE A VARIETY OF FREQUENCY BANDS - EXAMPLES

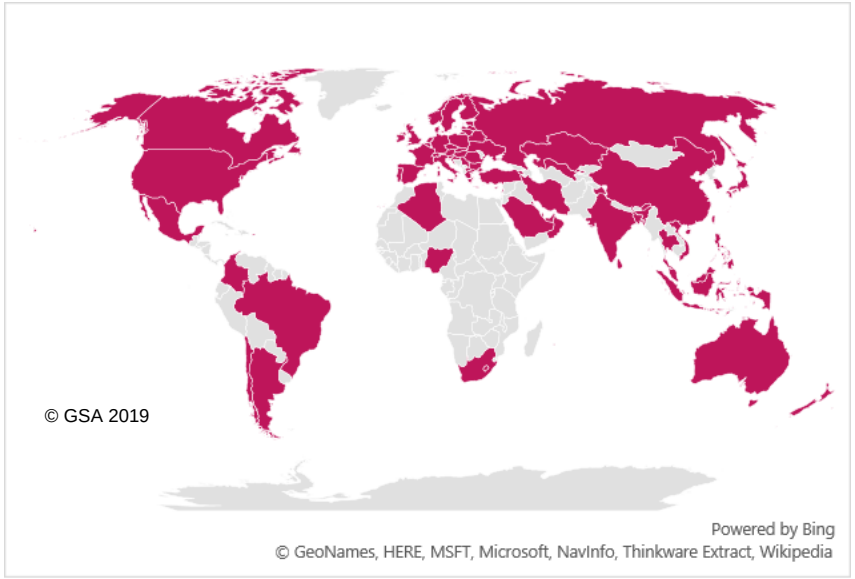


Key frequency ranges for early 5G NR deployments globally: 600/700 MHz, 2.6 GHz, 3.3-5 GHz, 26/28 GHz and 37-43.5 GHz

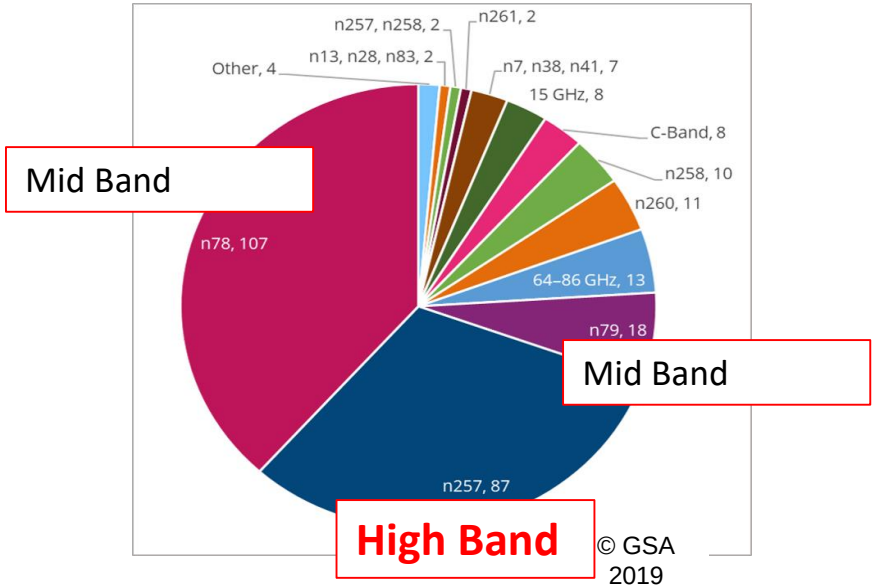
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TRIALS

Tests/trials/launches:
201 operators, 83 countries



Spectrum bands used in IMT-2020 / 5G trials, mapped to 3GPP 5G spectrum band allocations (November 2018)



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COMMERCIAL

3GPP

- Initial 3GPP standard (Rel 15) completed
- Work started on release 16
- mmWave frequency bands specified, in addition to mid and low bands

NR – mmWave			
Band	Frequencies GHz	BW MHz	Duplex mode
n257	26.5 – 29.5	50 – 400	TDD
n258	24.25 – 27.5	50 – 400	TDD
n259	[40.5] – 43.5	50 - 400	TDD
n260	37.0 – 40.0	50 - 400	TDD
n261	27.5 – 28.35	50 – 400	TDD

Commercial equipment

- 5G Infrastructure base stations, chipsets, 5G/Wi-Fi routers and phones available 2018 – 2020 to support frequency bands available
- 5G Operator commercial deployments commenced



Key frequency ranges for early 5G NR deployments globally: 600/700 MHz, 2.6 GHz, 3.3-5 GHz, 26/28 GHz and 37-43.5 GHz

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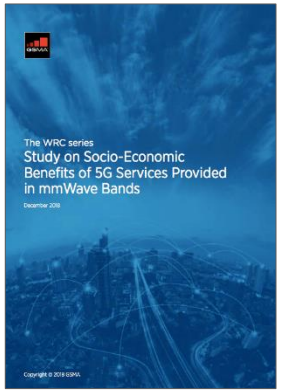
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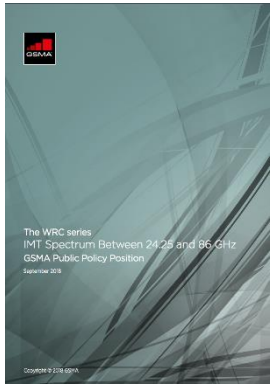
Closing remarks

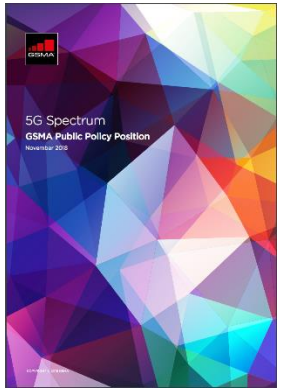
Peng Zhao
Senior Director, Spectrum
GSMA

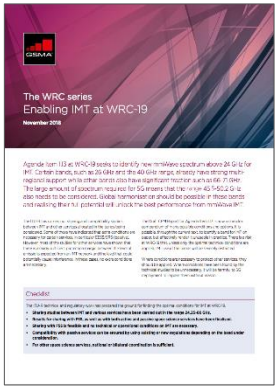
How will the industry prepare for 5G?

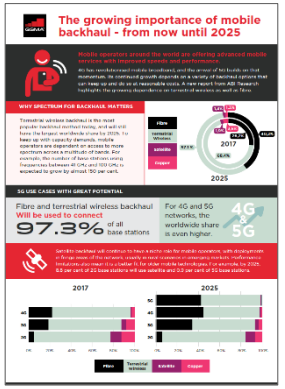
26 GHz	40 GHz	66 GHz
24.25-27.5 GHz	37-43.5 GHz	66-71 GHz
EESS (passive) -32 to -35 dB(W/200MHz) FSS / ISS sharing studies show significant protection margin	EESS (passive) Res 752 applies Active band FSS sharing is a national issue	Flexible use by 5G systems Enabling both IMT and non-IMT technologies











https://www.gsma.com/spectrum/wrc-series

https://www.gsma.com/spectrum/5g-spectrum-guide/

MOBILE CHANGES EVERYTHING

mmWaves: unlock the full potential of 5G