



Region 3 Rapporteur

UPDATE ON ACTIVITIES IN REGION 3

1 Introduction

This Report introduces recent activities in Region 3 mainly related to IMT.

2 APT activities

2.1 APT Conference Preparatory Group (APG) for WRC-23

The 4th meeting of APG23 (APG23-4) is scheduled as a physical meeting in Thailand with remote participation in 15-20 August 2022. General information of APG activities is available in <http://www.aptsec.org/APTAPG> (meeting documents are only for APT members).

The APT preliminary views developed in APG23-3 in November 2021 are also available in <https://www.itu.int/en/ITU-R/conferences/wrc/2023/Pages/reg-prep.aspx>.

2.2 APT Wireless Group (AWG)

The 29th Meeting of the APT Wireless Group (AWG-29) was held as a e-meeting in 21-29 March 2022. General information of AWG activities is available in <http://www.aptsec.org/APTAWG> (meeting documents are only for APT members).

2.2.1 New organizational structure

The new organizational structure with new chairpersons has implemented to cover expanding study areas and improve work efficiency. WG IMT has newly established to accommodate increasing number of work items related to IMT. On the other hand, WG Harmonization also treats IMT spectrum matters which require harmonization efforts to other services.

The new structure and chairpersonship are shown on the table below.

Working Group on Harmonization (WG Harmonization) Mr. John Lewis, Added Value Applications, New Zealand	Working Group on IMT (WG IMT) Mr. Wang Hu, Huawei Technologies Co. Ltd., China	Working Group on Terrestrial (WG Terrestrial) Mr. Takahiko Yamazaki, Mitsubishi Electric Corporation, Japan	Working Group on Space, Aeronautical and Maritime (WG SAM) Mr. Bui Ha Long, Authority of Radio Frequency Management, Viet Nam
Sub Working Group on Spectrum Arrangement and Harmonization (Sub-WG SA&H) Ms. Lyu Boya, Huawei Technologies Co. Ltd., China	Sub Working Group on IMT Spectrum (Sub-WG IMT Spectrum) Dr. Michael Seongill Park, Qualcomm, Korea	Task Group on Fixed Wireless and Ground-Based Radar Systems (TG FWS/GBRS) Dr. Tetsuya Kawanishi, National Institute of Information and Communications Technology, Japan	Task Group on Satellite Systems (TG Satellite) Ms. Masmurni Binti Abdul Rahman, Measat Satellite Systems Sdn Bhd, Malaysia
Sub Working Group on Sharing Studies (Sub-WG SS) Mr. Alex Orange, Omnispace, Australia Mr. Yiran Jin, Samsung Electronics, Korea	Sub Working Group on IMT Technologies (Sub-WG IMT Tech) Mr. Yasuhiro Kato, ARIB, Japan	Task Group on Intelligent Transportation Systems (TG ITS) Mr. Satoshi Oyama, ARIB, Japan	Task Group on Aeronautical and Maritime (TG A&M) Dr. Xu Ying, State Radio Monitoring Center, China
Sub Working Group on Spectrum Monitoring (Sub-WG SM) Mr. Zheng Gaozhe, State Radio Monitoring Center, China	Task Group on Public Protection and Disaster Relief (TG PPDR) Mr. Bharat Bhatia, ITU-APT Foundation, India	Task Group on Wireless Power Transmission (TG WPT) Dr. Chan Hyung Chung, Radio Promotion Association, Korea	
	Task Group on High Altitude Platform Station (TG HAPS) Dr. Lang Baozhen, China Academy of Information and Communications Technology, China	Task Group on Railway Radiocommunications (TG RR) Mr. Liu Bin, State Radio Monitoring Center, China	AFIS (APT Frequency Information System) adhoc Dr. Jaewoo Lim, National Radio Research Agency, Korea

2.2.2 Spectrum aspects

470-698 MHz (SWG-SA&H)

The meeting has worked to revise APT/AWG/Rep-79” Frequency Arrangements for IMT in the Band 470-698 MHz” for expanding its frequency arrangement defined as 3GPP band n71, also called the APT 600MHz. The meeting agreed to prioritize a new expanded arrangement, which is based on an extension to band n71, and sent a liaison statement to 3GPP RAN4 for asking to develop technical specification.

1 427-1 518 MHz (SWG-SA&H)

It was agreed to finalize this APT report with the title "Relevant information for considerations on the possible implementation of IMT in the frequency band 1 427-1 518 MHz", which was published as APT/AWG/Rep-113. The meeting aimed first developing APT Recommendation for its frequency arrangement, but the target and contents were modified mainly to capture relevant information, considering ITU-R has been conducting the sharing study between IMT and MSS.

1 980-2 010 MHz/ 2 170-2 200 MHz (SWG-SA&H)

The on-going study on coexistence study between terrestrial and satellite IMT system was progressed toward a new APT report. The draft report was carried forward to the next meeting for final review. This report contains survey summary about current status and future plan in APT members and related ITU-R studies on some technical and operational measures.

3 300-3 400 MHz and 4 800-4 900 MHz (SWG-IMT spectrum)

The meeting discussed how to develop frequency arrangement for APT member on both bands and decided to develop it as APT Report. All contributions were carried forward to the next meeting for further discussion.

2.2.3 Technology and general aspects

5G implementation in frequency bands above 24.25 GHz (SWG-IMT technologies)

This study is aiming to collect global trends of 5G implementation, on-going standardization activities and case studies above 24.25 GHz on each country. With many contributions so far, draft materials for this report are almost ready and reviewing process finally started. Some progresses were made but there are still many controversial parts remained for further review.

Development approaches and solutions for IMT-2020/5G use case (SWG-IMT technologies)

There were contributions for new study related to 5G use cases and deployment scenario. After cooperative discussion, proposed scopes were refined to focus deployment solutions for each use cases. The meeting agreed to start this new study and plans to complete it by AWG-32.

Public warning service status over IMT and other networks (TG-PPDR)

It was agreed to finalize this APT report, which was published as APT/AWG/Rep-115. This report captures survey results of alerting means over IMT network in APT members and summarizes 3GPP standardization progress on public warning services.

Emerging critical applications of IMT for industrial, societal and enterprise users (TG-PPDR)

The working document was updated and became stable while further work is still needed for some portions. It was agreed to extend the finalization of study to AWG-30. A reply liaison statement was sent to WP 5D to inform the progress of this work.

3 Activities in Region 3 countries

3.1 China

The 5G base stations construction has progressed steadily, and 5G subscribers have developed rapidly. By the end of March, the total number of base stations in China had reached 10.04 million. Among them, the total number of 5G base stations reached 1.559 million, accounting for 15.5% of the total base stations. By the end of March, the total number of mobile phone subscribers reached 1.66 billion, a net increase of 18.2 million over the end of the previous year. Among them, there were

403 million 5G subscribers, a net increase of 48.11 million over the end of the previous year, accounting for 24.3% of the total subscribers.

3.2 India

India held its first 5G spectrum auctions which was conducted over seven days and went through 40 rounds of bidding¹. It concluded on 1st August 2022. Key spectrum bands under auction for 5G were::

- (a) 663-703/612-652 MHz (APT600 MHz band – 3GPP Band #n105)
- (b) 703-748/758-803 MHz (APT 700 MHz Band – 3GPP Band #28)
- (b) 3300-3670 MHz
- (c) 24.25-27.5 GHz

Spectrum in other bands was also auctioned which included 850 MHz, 900 MHz, 1 800 MHz, 2 100 MHz, 2 300 MHz and 2 500 MHz .

A total of 71% spectrum got sold for US\$ 19 Billion for a license period of 20 years as follows –

Sno	LSA	Bija												Bharti												VI												Adani											
		600	700	800	900	1800	2100	2300	2500	3600	26000	600	700	800	900	1800	2100	2300	2500	3600	26000	600	700	800	900	1800	2100	2300	2500	3600	26000	600	700	800	900	1800	2100	2300	2500	3600	26000								
1	AP	10							100	1000									100	800																													
2	AS	10	5						100	1000					3.8				100	800				3.4																50									
3	BH	10							100	1000						5			100	800																			50										
4	DL	10							100	1000						5			100	800																				50									
5	GU	10				10			100	1000						5			100	800																				100									
6	HA	10							100	1000						5			100	800																			50										
7	HP	10							130	1000						5			100	800																			50										
8	JK	10	5						130	1000						5			100	800																													
9	KA	10							130	1000									100	800						5													50										
10	KE	10							130	1000						5			100	800																			50										
11	KO	10							100	1000						5			100	800																													
12	MP	10				10			130	1000									100	800																													
13	MA	10				10			100	1000									100	800																													
14	MU	10							100	1000							4			100	800																		100										
15	NE	10	5						130	1000						4			100	800																													
16	OR	10				10			100	1000						5.2			100	800																													
17	PU	10							100	1000									100	800						10													50										
18	RA	10				10			130	1000									100	800																			50										
19	TH	10							100	1000									100	800																			50										
20	UPE	10				10			100	1000									100	800																		50											
21	UPW	10	5						130	1000						0.8			100	800																		50											
22	WB	10							100	1000									100	800																			50										

Values in MHz

Government also decided to reserve the following bands for Government owned mobile operator BSNL for rolling out 5G services:

- (a) 663-673/612-622 MHz (10 MHz paired) (APT600 MHz band – n105)
- (b) 3630-3670 MHz (40 MHz)
- (c) 24.25-24.65 MHz (400 MHz)

Following these auctions the total spectrum holding of various Indian mobile operators is as below:

¹ <https://dot.gov.in/spectrum-management/2886>

Site	Bjoo						Bharti						VI						Adani						Bcom						Aircel													
	600	700	800	900	1800	2100	600	700	800	900	1800	2100	600	700	800	900	1800	2100	600	700	800	900	1800	2100	600	700	800	900	1800	2100	600	700	800	900	1800	2100								
1	AP	10	10	10	40	100	5	21.4	5	30	100	5	10	5	20	50								50																		4.4	5	
2	AS	10	10	10	40	100	11.8	15.6	10	40	100	25	5	20																						5						4.4	1.8	
3	BH	10	10	10	40	100	11.2	18	15	40	100	17.8	5	10	50																											8	5	
4	DL	10	10	10	40	100	6	7	15	30	100	10	10.6	5	20	50																										6.2		
5	GU	10	10	10	40	100	4.2	10	15	40	100	11	20.8	10	30	50								100												6.25								
6	HAI	10	10	10	40	100	5	10	15	40	100	12.2	15.8	15	20	50																				1.25		0.6						
7	HSP	10	10	10.4	40	130	10	20	5	40	100	11.2	5	10																						2.5		5	5					
8	JK	10	10	10	40	130	11.2	15	10	40	100	17	5	10																						5		5	5			4.4	3.6	
9	KA	10	10	10	40	130	8.8	20	10	30	100	5	15	10										50												3.75		0.6				4.4	5	
10	KE	10	10	10	40	130	4.6	10	15	30	100	12.4	20	10	5	20																				3.75						4.4	5	
11	MD	10	10	10	40	100	7	15	10	30	100	7	15	10	20	50																				5		5				6.2	5	
12	MP	10	10	10	40	130	5	15	10	30	100	7.4	18.6	5	5	20																												
13	MA	10	10	10	40	100	5	20	10	30	100	14	12.4	15	5	30																				14		5	30	50	400			
14	MU	10	15	10	40	100	5	14.8	5	30	100	11	14.6	10	20	50								100														0.6	5			6.2		
15	NE	10	10	10	40	130	14	10	10	40	100	25.8	5	20																						5		5	5			4.4	3.6	
16	OR	10	10	10	40	100	11.2	15.6	5	40	100	5	17	5	20																					1.25		5	5			10.6	5	
17	PU	10	10	10	40	100	10	15	5	40	100	5.6	15	10	20	50																				2.5		0.6	5			4.4	5	
18	RA	10	10	10	40	130	6	10	15	40	100	6.4	10	15	20	50								50														5				7.8		
19	TH	10	10	10	40	100	5	20	10	30	100	5	11.4	15										50												3.75						10	5	
20	UP	10	10	10	40	100	11.2	16.8	5	40	100	5.6	10	20	20	50																				5.6						8	5	
21	UPW	10	10	10	40	130	5	15	10	40	100	11.2	15	10	20	50																				5								
22	WB	10	10	10.6	40	100	9.4	10	15	40	100	6.6	13.4	5	20	50																				5		5				7.4	5	
Total		220	225	281	880	2440	20	156	328	215	790	2200	140	351	200	15	850								400												58.8	10	17.4	65			13.2	97

3.3 Japan

Beyond 5G whitepaper of Beyond 5G promotion consortium

The Beyond 5G promotion consortium has published [the Beyond 5G whitepaper](#) in March. This whitepaper contains valuable information which would promote studies on new future business and solutions for social issues over all industries not limited to communication industry. Those studies continue and the whitepaper will be also updated accordingly. Japan continues contributing to WP 5D based on this activity.

Draft report on principles of ICT strategy toward Beyond 5G

On May 6, the Information and Communications Council has published [the draft report](#) on principles of ICT strategy toward Beyond 5G (Japanese only). The draft report summarized potential directions on R&D, IPR and standardization activities with various trends and forecasts toward Beyond 5G. Continuously a public hearing has been conducted and a report would be finalized accordingly.

Field trials on Local 5G

In fiscal year 2021, the Ministry of Internal Affairs and Communications (MIC) conducted 26 field trials in various environments to promote use of local 5G and [the summary of the results](#) (Japanese only) was published in May 2022.

MIC plans to continue field trials in this fiscal year, with more focusing some technical areas such as radio propagation characteristics of local 5G, study on linear area coverage and test production of user system for various use cases.

2.3 GHz dynamic spectrum sharing

Dynamic Spectrum Sharing (DSS) with other services had been studied in Japan and the technical and deployment requirements of DSS in 2 330-2 370 MHz have been set for frequency assignment. Primary systems in this band include a programme making & special events (PMSE) service. The DSS system enables a mobile operator to operate dynamically based on the instruction judging from registered operation plans (location, time and frequency) of the primary systems.

After application and evaluation process conducted in this year, MIC decided to assign the whole band 2 330-2 370 MHz solely to KDDI corporation group, one of four major mobile operators in Japan. KDDI plans to launch its commercial service on this band in the latter half of fiscal year 2023.

4 Activities in SDO and others

4.1 CJK cooperation activities

The China, Japan and Korea Meeting on Information and Telecommunication Standards (CJK IT Standards Meeting) is the cooperation framework among four SDOs (ARIB, CCSA, TTA and TTC). Under the framework of the CJK IT Standards Meeting, the Working Group on IMT Standards (CJK IMT WG) undertakes collaborative activities related to IMT among ARIB, CCSA and TTA.

The 64th of CJK IMT WG was held from 12 to 13 May 2022 as a e-meeting. At the meeting, the following multi-country contributions were developed for the 41st meeting of WP 5D through the collaborative works based on each country's proposal.

- Proposal for the works in preparation for RA-23(JK)
- Proposed Revision of RESOLUTION ITU-R 56-2(CJK)
- Proposal to adopt option B as the overview timeline for IMT towards 2030 and beyond (CJK)
- Considerations on RESOLUTION ITU-R 65(CJK)

4.2 TSDSI

TSDSI has undertaken a normative work towards Broadcast Offload/Broadcast Broadband Convergence to support offload of traffic from the cellular network to the broadcast network. The overall scope of the Work Item is to identify techniques and changes needed in support of the same, which include incorporation of minimum technical changes needed to existing non-3GPP broadcast, optimum broadcast physical layer, UE for supporting converged middleware and 5GC for broadcast offload.

TSDSI has also started standardization of a new generic and flexible Relay/IAB Architecture along with the associated protocols based on the identification of limitations of existing relay architectures in LTE/5G."
