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| **Radiocommunication Study Groups** |  |
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| Source: Document 5D/TEMP/125(Rev.1) | **Document IMT-2020/40-E** |
| **27 February 2020** |
| **English only** |
| Working Party 5D | |
| Summary results of Evaluation by 5G Infrastructure Association of IMT-2020 candidate technology submission in Documents IMT-2020/13, IMT-2020/14, IMT-2020/15, IMT-2020/16, IMT-2020/17 (3GPP), IMT‑2020/17(Rev.1) (DECT), IMT-2020/18(Rev.1)  and IMT-2020/19(Rev.1) | |
|  | |

This document summarizes the evaluation results and activities identified for the IMT-2020 candidate technology submission(s) in Documents [IMT-2020/13](https://www.itu.int/md/R15-IMT.2020-C-0013/en), [IMT-2020/14](https://www.itu.int/md/R15-IMT.2020-C-0014/en), [IMT-2020/15](https://www.itu.int/md/R15-IMT.2020-C-0015/en), [IMT-2020/16](https://www.itu.int/md/R15-IMT.2020-C-0016/en), [IMT-2020/17 (3GPP)](https://www.itu.int/md/R15-IMT.2020-C-0017/en), [IMT-2020/17(Rev.1) (DECT)](https://www.itu.int/md/R15-IMT.2020-C-0017/en), [IMT-2020/18(Rev.1)](https://www.itu.int/md/R15-IMT.2020-C-0018/en) and [IMT-2020/19(Rev.1)](https://www.itu.int/md/R15-IMT.2020-C-0019/en) from *5G Infrastructure Association.*

# 1 Background

The period from October 2018 (the 31st meeting of Working Party 5D) to February 2020 (the 34th meeting of Working Party 5D) has been designated for evaluation of the IMT-2020 candidate technology submissions by Independent Evaluation Groups.

The 5G Infrastructure Associationis a registered Independent Evaluation Group. At the 34th meeting of Working Party 5D, a final Evaluation Report on IMT-2020 candidate technology submissions in Documents IMT-2020/13, IMT-2020/14, IMT-2020/15, IMT-2020/16, IMT‑2020/17 (3GPP), IMT-2020/17(Rev.1) (DECT), IMT-2020/18(Rev.1) and IMT‑2020/19(Rev.1) was submitted by 5G Infrastructure Association (Documents [5D/50](https://www.itu.int/md/R19-WP5D-C-0050/en), [5D/51](https://www.itu.int/md/R19-WP5D-C-0051/en), [5D/52](https://www.itu.int/md/R19-WP5D-C-0052/en) and [5D/53](https://www.itu.int/md/R19-WP5D-C-0053/en)). Working Party 5D has reviewed the evaluation report, and will consider it further in the IMT-2020 development process.

# 2 Evaluation summary for an SRIT for IMT-2020 candidate technology in Document IMT-2020/13

## 2.1 Use of information in Report ITU-R M.2412

Does Independent Evaluation Group confirm use of Report ITU-R M.2412 in their work?

☑Yes 🞎 No

## 2.2 Provision of compliance templates

Provision of compliance template for services (section 5.2.4.1 of Report ITU-R M.2411)

🞎 Yes 🞎 No (only partial evaluation of LTE)

Provision of compliance template for spectrum (section 5.2.4.2 of Report ITU-R M.2411)

☑ Yes 🞎 No

Provision of compliance template for technical performance (section 5.2.4.3 of Report ITU-R M.2411)

🞎 Yes 🞎 No (only partial evaluation of LTE)

## 2.3 Summary of conclusions of the evaluation report

Does the Evaluation Report indicate that the candidate technology meet minimum service and spectrum requirements?

Service requirements: 🞎 Yes 🞎 No

Spectrum requirements: ☑ Yes 🞎 No

Which test environments have been considered in the evaluation report? What is outcome of the evaluation?

|  |  |
| --- | --- |
| Test environment | Does the evaluation report indicate that the minimum technical performance requirements are met in the test environment?  Yes: all technical performance requirements are met.  No: at least one technical performance requirement is not met. |
| ☑ Indoor Hotspot – eMBB | 🞎 Yes 🞎 No |
| ☑ Dense Urban – eMBB | 🞎 Yes 🞎 No |
| ☑ Rural – eMBB | 🞎 Yes 🞎 No |
| ☑ Urban Macro – mMTC | 🞎 Yes 🞎 No |
| ☑ Urban Macro – URLLC | 🞎 Yes 🞎 No |

## 2.4 Additional evaluation methodologies and assumptions

Have any additional evaluation methodologies or assumptions that had not been included in the Report ITU-R M.2412 been used in evaluation?

🞎 Yes ☑ No

# 3 Evaluation summary for a RIT for IMT-2020 candidate technology in Document IMT-2020/14

## 3.1 Use of information in Report ITU-R M.2412

Does Independent Evaluation Group confirm use of Report ITU-R M.2412 in their work?

☑Yes 🞎 No

## 3.2 Provision of compliance templates

Provision of compliance template for services (section 5.2.4.1 of Report ITU-R M.2411)

☑Yes 🞎 No

Provision of compliance template for spectrum (section 5.2.4.2 of Report ITU-R M.2411)

☑ Yes 🞎 No

Provision of compliance template for technical performance (section 5.2.4.3 of Report ITU-R M.2411)

☑ Yes 🞎 No

## 3.3 Summary of conclusions of the evaluation report

Does the Evaluation Report indicate that the candidate technology meet minimum service and spectrum requirements?

Service requirements: ☑ Yes 🞎 No

Spectrum requirements: ☑ Yes 🞎 No

Which test environments have been considered in the evaluation report? What is outcome of the evaluation?

|  |  |
| --- | --- |
| Test environment | Does the evaluation report indicate that the minimum technical performance requirements are met in the test environment?  Yes: all technical performance requirements are met.  No: at least one technical performance requirement is not met. |
| ☑ Indoor Hotspot – eMBB | ☑ Yes 🞎 No |
| ☑ Dense Urban – eMBB | ☑ Yes 🞎 No |
| ☑ Rural – eMBB | ☑ Yes 🞎 No |
| ☑ Urban Macro – mMTC | ☑ Yes 🞎 No |
| ☑ Urban Macro – URLLC | ☑ Yes 🞎 No |

## 3.4 Additional evaluation methodologies and assumptions

Have any additional evaluation methodologies or assumptions that had not been included in the Report ITU-R M.2412 been used in evaluation?

🞎 Yes ☑ No

# 4 Evaluation summary for a RIT for IMT-2020 candidate technology in Document IMT-2020/15

## 4.1 Use of information in Report ITU-R M.2412

Does Independent Evaluation Group confirm use of Report ITU-R M.2412 in their work?

☑Yes 🞎 No

## 4.2 Provision of compliance templates

Provision of compliance template for services (section 5.2.4.1 of Report ITU-R M.2411)

☑Yes 🞎 No

Provision of compliance template for spectrum (section 5.2.4.2 of Report ITU-R M.2411)

☑ Yes 🞎 No

Provision of compliance template for technical performance (section 5.2.4.3 of Report ITU-R M.2411)

☑ Yes 🞎 No

## 4.3 Summary of conclusions of the evaluation report

Does the Evaluation Report indicate that the candidate technology meet minimum service and spectrum requirements?

Service requirements: ☑ Yes 🞎 No

Spectrum requirements: ☑ Yes 🞎 No

Which test environments have been considered in the evaluation report? What is outcome of the evaluation?

|  |  |
| --- | --- |
| Test environment | Does the evaluation report indicate that the minimum technical performance requirements are met in the test environment?  Yes: all technical performance requirements are met.  No: at least one technical performance requirement is not met. |
| ☑ Indoor Hotspot – eMBB | ☑ Yes 🞎 No |
| ☑ Dense Urban – eMBB | ☑ Yes 🞎 No |
| ☑ Rural – eMBB | ☑ Yes 🞎 No |
| ☑ Urban Macro – mMTC | ☑ Yes 🞎 No |
| ☑ Urban Macro – URLLC | ☑ Yes 🞎 No |

## 4.4 Additional evaluation methodologies and assumptions

Have any additional evaluation methodologies or assumptions that had not been included in the Report ITU-R M.2412 been used in evaluation?

🞎 Yes ☑ No

# 5 Evaluation summary for a RIT for IMT-2020 candidate technology in Document IMT-2020/16

## 5.1 Use of information in Report ITU-R M.2412

Does Independent Evaluation Group confirm use of Report ITU-R M.2412 in their work?

☑Yes 🞎 No

## 5.2 Provision of compliance templates

Provision of compliance template for services (section 5.2.4.1 of Report ITU-R M.2411)

☑Yes 🞎 No

Provision of compliance template for spectrum (section 5.2.4.2 of Report ITU-R M.2411)

☑ Yes 🞎 No

Provision of compliance template for technical performance (section 5.2.4.3 of Report ITU-R M.2411)

☑ Yes 🞎 No

## 5.3 Summary of conclusions of the evaluation report

Does the Evaluation Report indicate that the candidate technology meet minimum service and spectrum requirements?

Service requirements: ☑ Yes 🞎 No

Spectrum requirements: ☑ Yes 🞎 No

Which test environments have been considered in the evaluation report? What is outcome of the evaluation?

|  |  |
| --- | --- |
| Test environment | Does the evaluation report indicate that the minimum technical performance requirements are met in the test environment?  Yes: all technical performance requirements are met.  No: at least one technical performance requirement is not met. |
| ☑ Indoor Hotspot – eMBB | ☑ Yes 🞎 No |
| ☑ Dense Urban – eMBB | ☑ Yes 🞎 No |
| ☑ Rural – eMBB | ☑ Yes 🞎 No |
| ☑ Urban Macro – mMTC | ☑ Yes 🞎 No |
| ☑ Urban Macro – URLLC | ☑ Yes 🞎 No |

## 5.4 Additional evaluation methodologies and assumptions

Have any additional evaluation methodologies or assumptions that had not been included in the Report ITU-R M.2412 been used in evaluation?

🞎 Yes ☑ No

# 6 Evaluation summary for a component RIT for IMT-2020 candidate technology in Document IMT-2020/17 (3GPP NR)

## 6.1 Use of information in Report ITU-R M.2412

Does Independent Evaluation Group confirm use of Report ITU-R M.2412 in their work?

☑Yes 🞎 No

## 6.2 Provision of compliance templates

Provision of compliance template for services (section 5.2.4.1 of Report ITU-R M.2411)

☑Yes 🞎 No

Provision of compliance template for spectrum (section 5.2.4.2 of Report ITU-R M.2411)

☑ Yes 🞎 No

Provision of compliance template for technical performance (section 5.2.4.3 of Report ITU-R M.2411)

☑ Yes 🞎 No

## 6.3 Summary of conclusions of the evaluation report

Does the Evaluation Report indicate that the candidate technology meet minimum service and spectrum requirements?

Service requirements: ☑ Yes 🞎 No

Spectrum requirements: ☑ Yes 🞎 No

Which test environments have been considered in the evaluation report? What is outcome of the evaluation?

|  |  |
| --- | --- |
| Test environment | Does the evaluation report indicate that the minimum technical performance requirements are met in the test environment?  Yes: all technical performance requirements are met.  No: at least one technical performance requirement is not met. |
| ☑ Indoor Hotspot – eMBB | ☑ Yes 🞎 No |
| ☑ Dense Urban – eMBB | ☑ Yes 🞎 No |
| ☑ Rural – eMBB | ☑ Yes 🞎 No |
| ☑ Urban Macro – mMTC | ☑ Yes 🞎 No |
| ☑ Urban Macro – URLLC | ☑ Yes 🞎 No |

## 6.4 Additional evaluation methodologies and assumptions

Have any additional evaluation methodologies or assumptions that had not been included in the Report ITU-R M.2412 been used in evaluation?

🞎 Yes ☑ No

# 7 Evaluation summary for a component RIT for IMT-2020 candidate technology in Document IMT-2020/17(Rev.1) (DECT-2020 NR)

## 7.1 Use of information in Report ITU-R M.2412

Does Independent Evaluation Group confirm use of Report ITU-R M.2412 in their work?

☑ Yes 🞎 No

## 7.2 Provision of compliance templates

Provision of compliance template for services (section 5.2.4.1 of Report ITU-R M.2411)

☑ Yes 🞎 No

Provision of compliance template for spectrum (section 5.2.4.2 of Report ITU-R M.2411)

🞎 Yes ☑ No

Provision of compliance template for technical performance (section 5.2.4.3 of Report ITU-R M.2411)

☑ Yes 🞎 No (only partly evaluated)

## 7.3 Summary of conclusions of the evaluation report

Does the Evaluation Report indicate that the candidate technology meet minimum service and spectrum requirements?

Service requirements: 🞎 Yes ☑ No

Spectrum requirements: 🞎 Yes 🞎 No

Which test environments have been considered in the evaluation report? What is outcome of the evaluation?

|  |  |
| --- | --- |
| Test environment | Does the evaluation report indicate that the minimum technical performance requirements are met in the test environment?  Yes: all technical performance requirements are met.  No: at least one technical performance requirement is not met. |
| 🞎 Indoor Hotspot – eMBB | 🞎 Yes 🞎 No |
| 🞎 Dense Urban – eMBB | 🞎 Yes 🞎 No |
| 🞎 Rural – eMBB | 🞎 Yes 🞎 No |
| 🞎 Urban Macro – mMTC | 🞎 Yes 🞎 No |
| ☑ Urban Macro – URLLC | 🞎 Yes ☑No |

## 7.4 Additional evaluation methodologies and assumptions

Have any additional evaluation methodologies or assumptions that had not been included in the Report ITU-R M.2412 been used in evaluation?

🞎 Yes ☑ No

# 8 Evaluation summary for a RIT for IMT-2020 candidate technology in Document IMT-2020/18(Rev.1)

## 8.1 Use of information in Report ITU-R M.2412

Does Independent Evaluation Group confirm use of Report ITU-R M.2412 in their work?

☑ Yes 🞎 No

## 8.2 Provision of compliance templates

Provision of compliance template for services (section 5.2.4.1 of Report ITU-R M.2411)

☑ Yes 🞎 No

Provision of compliance template for spectrum (section 5.2.4.2 of Report ITU-R M.2411)

🞎 Yes ☑ No

Provision of compliance template for technical performance (section 5.2.4.3 of Report ITU-R M.2411)

☑ Yes 🞎 No

## 8.3 Summary of conclusions of the evaluation report

Does the Evaluation Report indicate that the candidate technology meet minimum service and spectrum requirements?

Service requirements: 🞎 Yes ☑ No

Spectrum requirements: 🞎 Yes 🞎 No

Which test environments have been considered in the evaluation report? What is outcome of the evaluation?

|  |  |
| --- | --- |
| Test environment | Does the evaluation report indicate that the minimum technical performance requirements are met in the test environment?  Yes: all technical performance requirements are met.  No: at least one technical performance requirement is not met. |
| ☑ Indoor Hotspot – eMBB | 🞎 Yes ☑ No |
| ☑ Dense Urban – eMBB | 🞎 Yes ☑ No |
| ☑ Rural – eMBB | 🞎 Yes ☑ No |
| 🞎 Urban Macro – mMTC | 🞎 Yes 🞎 No |
| ☑ Urban Macro – URLLC | 🞎 Yes ☑ No |

## 8.4 Additional evaluation methodologies and assumptions

Have any additional evaluation methodologies or assumptions that had not been included in the Report ITU-R M.2412 been used in evaluation?

🞎 Yes ☑ No

# 9 Evaluation summary for a RIT for IMT-2020 candidate technology in Document IMT-2020/19(Rev.1)

## 9.1 Use of information in Report ITU-R M.2412

Does Independent Evaluation Group confirm use of Report ITU-R M.2412 in their work?

☑ Yes 🞎 No

## 9.2 Provision of compliance templates

Provision of compliance template for services (section 5.2.4.1 of Report ITU-R M.2411)

🞎 Yes ☑ No

Provision of compliance template for spectrum (section 5.2.4.2 of Report ITU-R M.2411)

🞎 Yes ☑ No

Provision of compliance template for technical performance (section 5.2.4.3 of Report ITU-R M.2411)

☑ Yes 🞎 No

## 9.3 Summary of conclusions of the evaluation report

Does the Evaluation Report indicate that the candidate technology meet minimum service and spectrum requirements?

Service requirements: 🞎 Yes 🞎 No

Spectrum requirements: 🞎 Yes 🞎 No

Which test environments have been considered in the evaluation report? What is outcome of the evaluation?

|  |  |
| --- | --- |
| Test environment | Does the evaluation report indicate that the minimum technical performance requirements are met in the test environment?  Yes: all technical performance requirements are met.  No: at least one technical performance requirement is not met. |
| 🞎 Indoor Hotspot – eMBB | 🞎 Yes 🞎 No |
| ☑ Dense Urban – eMBB | 🞎 Yes 🞎 No |
| ☑ Rural – eMBB | 🞎 Yes 🞎 No |
| 🞎 Urban Macro – mMTC | 🞎 Yes 🞎 No |
| 🞎 Urban Macro – URLLC | 🞎 Yes 🞎 No |

## 9.4 Additional evaluation methodologies and assumptions

Have any additional evaluation methodologies or assumptions that had not been included in the Report ITU-R M.2412 been used in evaluation?

🞎 Yes ☑ No

# 10 Evaluation Report

| The number of the final evaluation report | The name of the final evaluation report | The files of the final evaluation report |
| --- | --- | --- |
| 5D/50 | Final evaluation report from the 5G Infrastructure Association on IMT‑2020 proposals IMT-2020/13, 14, 15, 16, parts of 17 |  |
| 5D/51 | Final evaluation report from the 5G Infrastructure Association on IMT‑2020 proposal IMT-2020/17 |  |
| 5D/52 | Final evaluation report from the 5G Infrastructure Association on IMT‑2020 proposal IMT-2020/18 |  |
| 5D/53 | Final evaluation report from the 5G Infrastructure Association on IMT‑2020 proposal IMT-2020/19 |  |

# 11 Consideration of TSDSI Supplementary Material Assessment by this IEG in Sections II-D, II-E.2.1, II-E.2.2, II-E.2.3, III-1 and III-2.2.3 of Document 5D/53

Working Party 5D notes that this Evaluation Report includes material related to the “Supplementary Material” in the submission in Documents 5D/[1231](https://www.itu.int/md/R15-WP5D-C-1231/en) and 5D/[1301](https://www.itu.int/md/R15-WP5D-C-1301/en) from TSDSI.

WP 5D provided guidance on this material in Meeting in #33 documented in Document [IMT/2020/28(Rev.1)](https://www.itu.int/md/R15-IMT.2020-C-0028/en) as noted below.

• *Furthermore, as noted in Doc.* [*IMT-2020/28(Rev.1)*](https://www.itu.int/md/R15-IMT.2020-C-0028/en) *in Part I Attachment 2:*

*• “In conjunction with the supplementary material noted above, and pertaining to Step 3 (for self-evaluation aspects) and/or Step 4 for this submission, it is noted that:*

*▪ WP 5D has not considered the indicated supplementary materials in the IMT-2020 evaluation as it is not directly relevant to the formal IMT-2020 evaluation.*

*▪ WP 5D therefore offers no endorsement of this supplementary information in the context of IMT-2020 suitability.”*

*• As such, WP 5D has not evaluated, nor endorses, any supplementary material provided.*

**Consequently, the same statement above from Doc. IMT/2020/28(Rev.1) directly applies to**

*– Document 5D/53 from the Independent Evaluation Group 5G Infrastructure Association,*

*– FINAL Evaluation report from the 5G Infrastructure Association on IMT-2020 proposal IMT*-2020/19, specifically:

***• Sections II-D, II-E.2.1, II-E.2.2, II-E.2.3, III-1, III-2.2.3 (Comments in the table)***

**and the provision and use of the specific evaluation materials in the Sections of the IEG Report identified above are out of scope in the IMT-2020 evaluation process in Document IMT‑2020/2(Rev.2).**

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