

**Sustainable Connectivity TOR**  
**UNICEF State of Palestine**  
**TERMS OF REFERENCE**  
**INSTITUTIONAL CONTRACT**

<b>Title</b>	Technical support to provide sustainable and affordable connectivity in marginalized schools
<b>Location</b>	State of Palestine
<b>Reporting to</b>	Chief of Education and Adolescents
<b>Duration</b>	One Year with possible extension for additional 1-2 years
<b>Start and end Date</b>	1 <sup>st</sup> of January 2022– December 30 <sup>th</sup> 2023

## **I. PART ONE – External**

### **1. BACKGROUND**

There are 2,284 schools in the State of Palestine (1,863 in West Bank and 421 in Gaza); 96% of schools are connected with more than 5 Mbps per school, **89 marginalized schools** remain unconnected (3%). The majority (96%) of the unconnected schools are in Area C. There have been past connectivity efforts to provide internet to schools in Area C, for example, 45 schools were connected using microwave links and achieved download speeds of up to 30 Mbps per school. However, the **main issue is sustainability** as these schools need to be able to pay for their internet services after a connectivity pilot ends.

Giga aims to expand connectivity through its focus on four main pillars of work: 1) **Map**: identifying the locations and connectivity status of every school and determining connectivity gaps; 2) **Connect**: supporting the expansion of safe, secure, reliable, fit-for-purpose infrastructure to support future digital development needs; 3) **Finance**: building affordable and sustainable country-specific models for finance; and 4) **Empower**: deploying open-source digital solutions and ensuring young people and communities leverage connectivity to reach their full potential. The Giga approach to expanding school connectivity includes consideration of the role that laws, policies and regulation have on the commercial feasibility of various connectivity approaches and options. Giga also considers how innovative uses of technology and business models can help close connectivity gaps.

Giga Accelerate is an initiative, part of the Giga partnership, that explores the provision of broadband connectivity solutions to schools in order to fast-track governments' universal connectivity programmes by testing 1) use of high frequency data to monitor quality of connectivity service, 2) specific procurement models, 3) demand aggregation, 4) new and diverse technologies, 5) sustainable business models, and other approaches that will help leapfrog national connectivity programmes.

### **2. SCOPE**

This TOR has been developed to provide innovative, reliable, and affordable solutions for internet connectivity in marginalized schools in the State of Palestine, through disruptive technologies and sustainable business models, as part of the Giga Accelerate initiative.

### 3. DESCRIPTION OF THE ASSIGNMENT:

- Provide unlimited data through continuous internet connectivity services, including backhauling and internal provisioning through access point(s) and servicing with a dedicated internet link to all schools (could be shared bandwidth for smaller schools) that the solution provider will include in the proposal from the time the school has been connected.
- Provide the connectivity services to schools at the required download and upload speeds specified in mandatory point “1. Connectivity Speed and Coverage” of section “6. Methodology and Major Tasks to be Accomplished” section.
- Recommend business models or commercial solutions that can help schools to pay for their own connectivity services over time (e.g. community collaboration, electricity and connectivity bundle, coverage as a service, among others). This point should be considered as optional, and applicants will not be penalized if they do not submit a proposal for business models.
- Provide central control of the installed network, including filtering of content, with provisions for child online protection (as a reference providers can access the [ITU Guidelines on Child Online Protection](#)).
- Conduct remote administration of and provide real-time data for all the access points and networks, including public provision of connectivity data points (connectivity status, upload and download speeds, packet loss, up and down time, latency, etc.) through linkage with offeror’s operation management centers, network management systems (NMSs) or other network monitoring systems via an application programming interface (API) or other means to be connected to Giga’s [Project Connect](#) and monitored by MoE, MTIT and Giga. The provider should demonstrate MoE, MTIT and Giga focal points how to access this data.
- Provide required connectivity equipment and maintenance of the installed equipment for a minimum duration of 12 months after service has commenced.
- Provide, as a reference, a financial offer for schools to keep the same levels of connectivity after the initial 12 months of service provision. This quote should be valid for the following 3 years of service.
- Provide a basic training on the installed connectivity solution to at least two teachers, including the head teacher and the ICT focal point teacher in each of the project schools. The objective of this training is for end users to be familiar with the connectivity solutions and capable of providing basic support to the school community, as well as to troubleshoot potential technical issues and/or contact the service provider to solve these issues.
- Provide support to all connected schools through a central point of contact to address technical issues within agreed SLAs. A dedicated account manager (business and technical) and escalation matrix is **required**.

Any interested contractor is required to include information on their capability of providing connectivity services as per the specifications laid out above to each of the identified schools. **They must propose a technology solution, dedicated or shared internet bandwidth, and speeds (download and upload) for each one of the schools listed in Annex A. The final number of schools to connect will be decided based on the pricing specified in the financial proposal submitted by suppliers.**

### 4. PURPOSE OF THE ASSIGNMENT

The overall **objective** of this specific service provision is to support, through Giga Accelerate, the design, planning and establishment of innovative, reliable, and affordable solutions to provide



continuous Internet connectivity to the selected schools in the State of Palestine, with related maintenance services, through a sustainable commercial solution.

The school locations, including latitude and longitude, are listed in **Annex A**. Depending on the technical viability and cost, Giga Accelerate will choose certain amount of schools for this prototype project and may later choose to expand the contract to include more schools.

To achieve this objective, UNICEF State of Palestine is interested in receiving proposals for solutions to deploy broadband connectivity in these pre-identified schools. **We are soliciting and testing innovative applications of new or disruptive technologies that may be more sustainable than current models and approaches.** Ultimately the insights gained from this procurement will be used to inform efforts aimed at connecting more schools in the State of Palestine.

Thus, the **aim** is to provide these schools with **meaningful and sustainable connectivity** using innovative commercial solutions and uses of technology:

- a. **Meaningful connectivity:** Giga has set a **minimum target of 20 Mbps per school** for connectivity to be considered as “meaningful” for learners; so they can open documents, take online assessments, watch online videos, provide feedback & questions, use several sessions of video-streaming per school, and use cloud-based apps. For larger schools, **Giga recommends adapting the minimum target of meaningful connectivity to 1 Mbps per 20 students.** This means, for example, that an average sized school of ~300 students would require ~15 Mbps as a target.
- b. **Sustainable connectivity:** Giga defines business model as the interlinkage of technology, operating model, funding structure, and cost structure that define the overall approach to the infrastructure deployment to connect schools. For this prototype, Giga aims to explore and test sustainable business models (those that can maintain themselves indefinitely and are not dependent upon external grants and donations) to connect marginalized schools in Palestine.

The **expected results** of this activity shall be that innovative and affordable internet connectivity solutions, with potential to become self-sustainable, are implemented to connect schools in Palestine with reliable broadband internet services for 12 months. After installation of the connectivity solutions, Giga will extract insights from the newly installed connectivity services, procurement process and deployed business models that will inform further collaboration with the State of Palestine.

## **5. INDENTED USE AND AUDIENCE OF ASSIGNMENT:**

Under Giga, a global initiative to connect every school to the internet, connect young people to information, opportunities and choice, this service will provide technical support to provide a comprehensive connectivity package to selected schools in State of Palestine.

## **6. METHODOLOGY AND MAJOR TASKS TO BE ACCOMPLISHED:**

The proposal is required to address only the first point: “Provide Connectivity for Schools at the Required Speeds and Report Status on Real-Time” as the **mandatory service**; while the second point “Recommend and Propose an Implementation Plan for Sustainable Business Models” should be



considered only as an **optional service** requirement (there will not be points deduction in the technical evaluation for providers who decide not to submit a proposal for the optional service).

### **1) Provide Connectivity for Schools at the Required Speeds and Report Status on Real-Time (mandatory service)**

Applicants are invited to propose a speed/price combination for unlimited data that will offer users the best quality and affordable broadband access possible.

At a minimum, a dedicated downlink channel capacity of at least 20 Mbps per school must be provided and 5 Mbps of upload speed.

- For larger schools, the minimum target should be adapted to comply 1 Mbps per 20 students.
- For smaller schools (less than 100 students), the provider is encouraged to offer solutions to reduce the price of connectivity while achieving the minimum target of 20 Mbps. For example, by pooling shared bandwidth across small schools whenever this is possible.

The above are minimum targets. Giga is, however, interested in receiving viable offers that far exceed the minimum, as it is anticipated that schools and communities will use media-rich technology for digital learning and other services.

**Annex A** includes a list of the schools to connect through this prototype. Applicants should complement this list by providing:

- 1) Technology to use to connect each school
- 2) Description of the bandwidth solution for each school: dedicated (average and large schools) or shared (for small schools)
- 3) Proposed speed target for each school (download / upload), which will be reported in real-time and monitored through Giga's Project Connect platform (<https://projectconnect.unicef.org/map/country/ps>), which will be connected to the provider's Network Management System through an API.

Applicants are strongly encouraged to visit a few sites to understand the needs and context of these schools and propose the most appropriate technologies and business models. Proposals should consider the context of the selected schools, along with the approach to share real-time data on the internet speeds delivered to each school, as well as quality of service data (e.g., data reports on quality of service with very high frequency updates) to be uploaded directly to Giga's Project Connect through an API and to be reported to the Ministry of Telecommunications and Information Technology (MTIT) from the State of Palestine.

### **2) Recommend and Propose an Implementation Plan for Sustainable Business Models (optional)**

These Terms of Reference leave the specific business model and implementation approach of the proposed solution up to the applicants. Giga has been exploring the implementation of different business models to provide sustainable connectivity to schools worldwide. Based on the following list (which should be considered only as examples by applicants) the applicants are expected to recommend a particular business model that is technically and legally feasible to implement in Palestine:

- Coverage as a Service (revenue sharing): A small ISP player adds to an existing network of a large ISP player. The small player connects local communities to a large players network and revenue gets shared.
- Selling Internet/Wi-Fi to the Community: The provider or their partner uses the school's equipment as a node to offer Wi-Fi or a hotspot to the community. Generating revenue from subscribers or "pay-as-you-go" users to offset and reduce the cost of the school's internet.



- **Selling Energy to the Community:** The provider or their partner uses the school's roof or facilities to install solar panels to power both the internet equipment and sell excess power to the community. Generating revenue from subscribers or "pay-as-you-go" users to offset and reduce the cost of the school's internet power usage (charging a slightly higher price for solar power over cost, but still lower than grid prices).
- **Community Collaboration or Ownership:** An ISP player rolls out their network and trains local community members to do maintenance, thus reducing the ISP player's costs and making the internet cost more affordable. Another alternative, the community contributes to paying the schools connectivity costs and supports with maintenance, as they also benefit from broadband services for the community members (who pay according to usage).
- Among other business models that could be considered by the applicant...

The applicant should describe in their proposal the business model and a recommended implementation plan, which should specify the roles and responsibilities from the provider and other key actors (e.g. schools, government, partners, etc.), and how would the model work to achieve sustainability. For example, if the applicant proposes to use the school as a hub to sell Wi-Fi to the community through a hotspot, the proposal must include the description of the technology to be used, the business solutions needed to make the school a hotspot (e.g. client management systems for ticketing, billing & accounting, etc.), and the mechanisms that the provider will implement to offset the schools' connectivity costs in retribution.

## 7. SUSTAINABILITY

**Service providers should ensure 12 months internet connection at the speed they proposed for schools listed in Annex A.** This period will help Giga and partners to assess the feasibility and scalability of the technological and business model solutions to connect schools sustainably in Palestine. Further, UNICEF Palestine recognizes the extent and character of internet use in education evolves over time. Accordingly, applicants should include a description of how their proposed technical and business model solution could be scaled to meet increasing demand over time.

**Applicants are also required to provide in their submission a future quote, with the prices that schools would need to pay to maintain the same level of connectivity after the 12 months provision.**

## 8. DELIVERABLES AND DEADLINE(S) FOR SUBMISSION:

Applicants should provide an executive summary of their proposed implementation plan with a detailed timeline for rolling out their proposed connectivity solution (procurement of equipment, delivery, set-up, training, etc.) in each one of the schools identified in **Annex A**, while keeping in mind that the service provision should be for a year once the solution is installed and operational. Applicants should also state if they are able to provide the required services to all schools in Annex A or identify only those where they will be able to provide such services. **Broadband connectivity services to most of the schools should be provided in a timeframe that does not exceed four months or 120 days; providers should specify if certain schools would require a solution that would exceed the expected timeframe.** UNICEF Palestine will evaluate the feasibility and efficiency of proposed timelines as a part of its proposal review.

## 9. BUDGET



**The applicant is required to submit the technical and financial proposal in separate documents.** In the financial proposal, the applicant must identify how the objectives shall be met by specifying the approach and technology to be used for undertaking this assignment, as well as provide a detailed budget which includes procurement of the necessary telecommunication equipment, importation costs, any required type approval, core network integration, installation and testing of equipment, maintenance, monitoring and support throughout the contract period.

**The costs should be disaggregated into two categories: non-recurring upfront charges (procurement of equipment, installation, and set-up costs, etc.); and recurring charges, like broadband internet service monthly fees and maintenance.**

The applicant should also provide in the financial proposal the disaggregated costs to connect each one of the schools in Annex A.

## **10. SUPPORT SERVICES**

Through the provision of reliable and continuous internet connectivity services, students and teachers within schools are connected to information, opportunity, and choice. This service provision must ensure that the schools' connectivity speeds and users' experience with the internet is compliant with the minimum target of 20 Mbps per school. Service providers should consider all the necessary range of services; including the installation of network hardware, provision of data connectivity services, servicing, and monitoring, among others to ensure that the schools' connectivity is not compromised. The provider must include contact and availability information for the customer services representative.

Applicants should also provide references (e.g. CVs and samples of work) for the key personnel that will be assigned to this project. The lead project manager for the assignment shall have a minimum of 5 years of professional experience in managing complex connectivity projects. They shall be supported by a team of experts with requisite and proven technical skills and experience to implement project of a similar scale.

Applicants must provide samples of their work as well as information on the implementation of similar projects in the references section of the proposal.

## **11. ESTIMATED DURATION OF CONTRACT AND TENTATIVE DATES**

Duration: 12 months

Dates: 1<sup>st</sup> of January 2022 to 30<sup>th</sup> of December 2022

## **12. PROPOSED PAYMENT SCHEDULE:**

Payment will be made to the selected contractor on monthly basis upon successful completion of the services to the selected schools.

Contractors can submit their proposed payment schedule for each of the milestones listed below:

<b>Tasks/Milestone:</b>	<b>Deliverables/Outputs:</b>	<b>Date</b>	<b>Budget Amount</b>
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Provision of the detailed implementation plan for each one of the schools identified in Annex A, with timelines indicating when each identified school shall be connected. Including the provision of 1) fixed IP addresses for each school, 2) periodical updates (at least daily) on the quality-of-service data through an API (or other means) to be uploaded to Giga's Project Connect to monitor the connectivity status and speed for each access point. There will be a quality check to ensure that the data and the mechanism for its provisioning (e.g. API) provides the required data points at agreed intervals.	Implementation plan and detailed timeline for installation available	Within 1 week of contract signature	
Procurement of telecommunication equipment	Completion of Procurement	Within 5 weeks of contract issuing	payment for equipment procurement according to contract upon completion of the Installation
Installation of the connectivity equipment with a functioning controlling, monitoring, and servicing system in place. Site installation sign-off will have to include a network performance test.	<p>Completion of installation of connectivity equipment and connectivity services available for 80% of the sites</p> <p>Completion of installation of connectivity equipment and connectivity services available for 100% of the sites</p>	<p>Within 6 weeks of procurement</p> <p>Within 10 weeks of contract procurement</p>	<p>Complete payment for equipment upon delivery and installation in schools</p> <p>During the 12 months of service the provider must comply with the speeds and quality of service agreed on the SLA, payments will be according to quality of service and speeds.</p>



			Giga and MTIT will use Project Connect to monitor speeds and quality of service in real-time.
provision of a strategy, along with its implementation plan, with requirements to replicate the proposed technological and business model solution to connect other schools in the country and use them to extend connectivity to the surrounding community.	Scale up strategy	1 month prior to contract completion	

### 13. GEOGRAPHICAL AREA TO BE COVERED

Please note that a list of the pre-identified schools with their geo-coordinates is attached to this document (Annex A), to allow solution providers to submit an adequately informed proposal, indicating the proposed choice for the connectivity solution to be deployed, including microwave, mobile, fixed wireless, satellite, TVWS, among others.

Interested solution providers are encouraged to conduct site visit for detailed assessment of requirements.

### 14. EVALUATION PROCESS AND METHODS

- Proposals will be reviewed by a technical committee consisting of representatives from the State of Palestine, represented by MoE and MTIT, UNICEF and the ITU.
- The weight allocated between technical and price proposal will be **70% for technical** and **30% for financial**.
- Only technically qualified bidders who score the Minimum Technical Qualification point of **70% of the Technical Points (49/70 and above)** will be considered for next stage of financial evaluation.
- Proposals will be assessed based on the below technical criteria and relative points indicated in the table.
- Selected proposals may be subject to further negotiation.

#### 14.1 TECHNICAL EVALUATION CRITERIA

ITEM	TECHNICAL EVALUATION CRITERIA	MAX OBTAINABLE POINTS
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<b>1</b>	<b>Overall Response</b> <i>Overall Response, including the understanding of the assignment by the proposer and the alignment of the proposal submitted with the ToR:</i>	<b>5</b>
<b>1.1</b>	<i>Completeness of response addressing the mandatory point (1. <b>Provide Connectivity for Schools at the Required Speeds and Report Status on Real-Time</b>) in section 6. Methodology and Major Tasks to be Accomplished</i>	<b>2</b>
<b>1.2</b>	<i>Overall concord between TOR/needs and proposal: Completeness and quality of the proposal based on the responses to <b>section 3. Description of the Assignment.</b></i>	<b>3</b>
<b>2</b>	<b>Company and Key Personnel</b>	<b>15</b>
<b>2.1</b>	<i>Range and depth of organizational experience with similar projects (including samples and results from previous work)</i>	<b>5</b>
<b>2.2</b>	<i>Number of customers, size of projects, number of staff per project</i>	<b>5</b>
<b>2.3</b>	<i>Key personnel: Relevant experience (number of similar projects implemented successfully, references) and qualifications of the proposed lead project manager and team for the assignment (including CVs).</i>	<b>5</b>
<b>3</b>	<b>Proposed Methodology and Approach</b>	<b>50</b>
<b>3.1</b>	<i>Work plan showing detailed sampling methods, project implementation plan in line with the project and timeframe</i>	
	<ul style="list-style-type: none"> <li>• <b>Percentage of schools in Annex A that the provider can connect:</b> At least 25% of schools</li> </ul>	<b>2</b>
	<ul style="list-style-type: none"> <li>• <b>Technology selection:</b> Analysis that considers each school's context to recommend the most appropriate technology to provide reliable, affordable unlimited data at 20 Mbps minimum to schools.</li> </ul>	<b>20</b>
	<ul style="list-style-type: none"> <li>• <b>Implementation plan:</b> The proposal specifies the implementation plan and the activities that the provider will execute for the deployment of the technology for connecting schools (procurement, set-up, delivery, required trainings for school personnel) and the provision of connectivity services to the schools. The implementation plan should include a detailed timeline showing the actions to fulfill in order to provide connectivity to schools in the required deadlines.</li> </ul>	<b>10</b>
	<ul style="list-style-type: none"> <li>• <b>Real-time monitoring of school connectivity:</b> The proposal specifies the approach, technologies, and software to use for monitoring the</li> </ul>	<b>3</b>

	<p>connectivity that each school receives and to report or share automatically this information to Giga (through an API or other) to be uploaded to Project Connect and monitored by MTIT and Giga. The provider should specify the mechanism and willingness to test the approach prior to contract.</p> <ul style="list-style-type: none"> <li>• <b>Project management, monitoring and quality assurance process:</b> <ol style="list-style-type: none"> <li>a. Proposal should specify the minimum level of performance (download / upload speeds) for each school to connect, as well as the target values for the selected KPIs in Annex B.</li> <li>b. Provider must show evidence of the implementation of a technical support service protocol, with response times defined, scalation matrix, communication channels, among others.</li> </ol> </li> </ul>	10
3.2	<ul style="list-style-type: none"> <li>• Locally owned company or with a presence (providing connectivity services) in the country.</li> </ul>	2
3.3	<ul style="list-style-type: none"> <li>• Future capacity for scaling and expansion based on the assessment of the proposed technology (capex and opex costs) and business model.</li> </ul>	3
<b>TOTAL TECHNICAL SCORE</b>		<b>70</b>
<b>TOTAL FINANCIAL SCORE</b>		<b>30</b>
<b>SUMMARY OF TECHNICAL &amp; FINANCIAL SCORE</b>		<b>100</b>

#### 14.2 MINIMUM QUALIFICATIONS REQUIRED:

The lead project manager for the assignment shall have a minimum of 5 years of professional experience in managing complex connectivity projects. They shall be supported by a team of experts with requisite and proven technical skills and experience to implement project of a similar scale.

Applicants should provide samples of their work as well as information on the implementation of similar projects in the reference section of the proposal.



The equal share of female and male experts is highly valuable, as UNICEF is committed to diversity and inclusion within its workforce, and encourages all applicants, irrespective of gender, nationality, religious and ethnic backgrounds, including persons living with disabilities.

Innovative approach and understanding of UNICEF Innovation Principles would be required

#### **15. QUALITY ASSURANCE:**

The applicant should include the proposed terms of their Service Level Agreement (SLA) that, upon specific approval of UNICEF Palestine, will be included in the contract. These proposed terms should include the following:

- A proposal for the technology solution and bandwidth for each one of the schools in Annex A.
- The minimum level of performance (download / upload speeds) proposed for each site listed in Annex A, not the average level to be achieved for all sites.
- The technical escalation matrix with response times per site/region, key personnel to contact in case of technical issues, and a commitment to working to address QoS issues related to internet services and deployed equipment.
- Selected quality of service parameters as KPIs, to assess the quality of services provided to each school. An example is listed in Annex B (where this is technologically feasible).
- The operational maintenance and technology refreshing approaches, including relevant trainings in each site for the resolution of basic technical issues and others that might be required in view of the solution package proposed. As part of the proposal, the applicants should provide an outline of the training that they will deliver to school personnel to solve basic technical issues.
- The mechanism that the provider will use for reporting real-time data on connectivity speeds and quality of service delivered to each school (for example, through an API connected to their Network Management System that will feed this information to Giga's Project Connect).
- The accounting system or mechanisms that the provider will use to track the resources raised by the business model implemented to provide sustainable connectivity to schools.

#### **16. GENERAL CONDITIONS**

No contract may commence unless the contract is signed by both UNICEF and the service provider.

- The selection process for the service provider will strictly follow UNICEF's internal procurement rules
- The service provider will provide continuous updates on the service to UNICEF
- The service provider will provide draft report for review and amend as requested before submitting the final report

#### **17. REPORTING REQUIREMENTS**

The identified solution provider is expected to deliver the following reports to UNICEF Palestine through the Giga focal point and project coordinator in UNICEF Palestine, as proof of delivery of services and as a basis for any payments to be made as per the identified deliverables specified above.

- Detailed implementation plan for each one of the identified schools in Annex A, with timelines indicating when each identified school shall be connected to be provided as soft copy in PDF format.
- Detailed implementation report and user manual.
- Monthly reports specifying the usage, up-time and down-time, adherence to the agreed upon terms in the applicant's service level agreements, download and upload volumes of each of the connected schools as well as overall, this information shall be provided in an aggregated manner.

- A strategy, along with its implementation plan, with requirements to replicate the proposed technological solution to connect other schools in the country.

## **18. ADMINISTRATIVE MATTERS**

Interested bidders are requested to provide an all-inclusive cost in the financial proposal, including all costs required for the service including the purchasing and installation of hardware, connectivity services, maintenance, monitoring, servicing, and in-country travel. The solution provider is expected to use their own office facilities and services to deliver on the agreed upon tasks. Neither the State of Palestine nor UNICEF Palestine will provide office space for the assignment.

## **19. PROJECT MANAGEMENT**

This project will be managed in partnership and close collaboration between the Ministry of Education (MoE), the Ministry of Telecommunications and Information Technology from the State of Palestine (MTIT), UNICEF Palestine Office and ITU Regional Office, through the Giga focal point and project coordinator in UNICEF Palestine.

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**Annex A: List of schools in Palestine to connect and explore the implementation of sustainable business models**

	School ID number	Directorate Name	Area code	المدرسة(بالعربي)	School Name	Students number	School Stage	Electricity system in school	Is there WIFI Network	Devices computer/tablets per school	Latitude	Longitude	To be filled by applicant			
													Connection Type	Tech selection	Down / upload speed	Dedicated or shared bandwidth
1	22112028	Bethlehem	B	الرشيدة الثانوية المختلطة	Al Rashaida Secondary Coed /School	206	Secondary	Jerusalem District Electricity Company	No	15	31.664	35.232	Microwave Link			
2	22112070	Bethlehem	C	كيسان الثانوية المختلطة	Kisan secondary Coed school	147	Secondary	Jerusalem District Electricity Company	No	7	31.573	35.232	Microwave Link			
3	22112132	Bethlehem	C	المنيا الاساسية المختلطة	Minia basic Coed School	174	Basic	Jerusalem District Electricity Company	No	2	31.567	35.235	Microwave Link			
4	22112100	Bethlehem	B	بنات الرشيدة الثانوية	Al Rashaida Girls secondary School	212	Secondary	Jerusalem District Electricity Company	No	26	31.632	35.216	Microwave Link			
5	22112094	Bethlehem	C	النبي زكريا الاساسية المختلطة	Al nabi-Zakanya Mixed Basic School	51	Basic	Jerusalem District Electricity Company	No	2	31.663	35.123	Microwave Link			
6	22112059	Bethlehem	C	العقبان الاساسية المختلطة	Al-Oqban basic coed school	263	Basic	Jerusalem District Electricity Company	No	17	31.612	35.224	Microwave Link			
7	22112029	Bethlehem	C	الرواعين الاساسية المختلطة	Alrawaein Basic Coed School	86	Basic	NO Electricity	No	1	31.544	35.256	Not Connected			
8	22112001	Bethlehem	C	التحدي 5 الاساسية المختلطة	Al-Tahady 5 Basic Coed School	43	Basic	Jerusalem District Electricity Company	No	1	31.668	35.248	Microwave Link			
9	10112229	Jenin	C	امروحة الاساسية المختلطة- مدارس التحدي	The challenge School Imreha mixed school	48	Basic	Israel Electric Corporation	No	4	32.427	35.143	Not Connected			

10	10112230	Jerin	C	ظهر المالح الاساسية - منازل التحدي	Thaheer AlMaleh Mixed School	38	primary	Israel Electric Corporation	No		4	32.473	35.161	Not Connected		
11	24112008	Jericho	C	الزبدات الثانوية المختلطة	al zobaidat secondary school	259	Secondary	The main electric company	No		27	32.171	35.528	Microwave Link		
12	24112003	Jericho	C	مج نجمة الثانوية المختلطة	marj najah secondary school mixed	239	Secondary	The main electric company	No		22	32.185	35.538	Microwave Link		
13	24112016	Jericho	B	مج الغزال الثانوية للبنات	marj al ghazal secondary girls school	237	Secondary	The main electric company	No		23	32.171	35.529	Microwave Link		
14	24112021	Jericho	C	خالد بن الوليد الاساسية المختلطة	khalid bin alwaleed school	147	Basic	The main electric company	No		17	32.034	35.436	Microwave Link		
15	24112075	Jericho	C	بدو الكعابنة الاساسية المختلطة	badw al khabna basic school	71	Basic	The main electric company	No		15	31.915	35.404	Microwave Link		
16	24112017	Jericho	C	الجفتك الثانوية المختلطة	al jiftiq co secondary school	123	Secondary	The main electric company	No		17	32.158	35.469	Microwave Link		
17	24111006	Jericho	C	مدرسة شلال الوجا الاساسية المختلطة	Shalal Al- Aulia Mixed Primary	110	Primary	solar cells	No		2	31.963	35.369	Microwave Link		
18	24112012	Jericho	C	مج الغزال الاساسية المختلطة	marj al ghazal Mixed Primary	52	Primary	The main electric company	No		14	32.169	35.526	Microwave Link		
19	24111016	Jericho	C	عمر بن الخطاب	Omar Bin Alkhtab	105	basic	Jerusalem District Electricity Company	No		2	31.896	31.896	Microwave Link		
20	20123043	Jerusalem	C	بنات المسيرة الثانوية	Al-Masirah Secondary Girls' School	166	Secondary	Jerusalem District Electricity Company	No		18	32.19	35.45	ADSL		
21	20122050	Jerusalem	C	التي صموئيل الاساسية المختلطة	Annabi Samuel Basic Coed School	39	Basics	Jerusalem District Electricity Company	No		8	31.833	35.182	ADSL		



22	20121008	Jerusalem	C	ذكور الشيخ سعد الثانوية	Asheikh Sa'ad Secondary Boys' School	216	Secondary and Basics	Jerusalem District Electricity Company	No		27	31.734	35.256	ADSL		
23	20122009	Jerusalem	C	بنات الشيخ سعد الثانوية	Asheikh Sa'ad Secondary Girls' School	270	Secondary and Basics	Jerusalem District Electricity Company	No		26	31.739	35.256	ADSL		
24	20121036	Jerusalem	C	الروضة الحديثة الثانوية المختلطة	Arrawdah Al- Hadeethah Secondary Coed School	175	Secondary and Basics	Jerusalem District Electricity Company	No		18	31.788	35.266	ADSL		
25	19112073	jerusalem Suburbs	C	ابو نوار الأساسية المختلطة	Abu Nuwwar Mixed School	143	Secondary	Jerusalem Electricity Co.	No		11	31.761	35.261	Microwave Link		
26	19112065	jerusalem Suburbs	C	ذكور مخيم عرب الجهالين الأساسية	Arab Jahaleen Camp Basic School	146	Secondary	Solar Power System	No		26	31.759	35.283	Microwave Link		
27	19112062	jerusalem Suburbs	C	الخان الأحمر الأساسية المختلطة	Alkhan Al Ahmar Mixed Basic School	146	Secondary	Solar Power System	No		26	31.811	35.338	Microwave Link		
28	19112075	jerusalem Suburbs	C	مخيم عرب الجهالين الأساسية المختلطة	Arab Aljahleen Camp Basic Mixed School	140	Basic	Jerusalem Electricity .Co	No		11	31.76	35.283	Microwave Link		
29	19112046	jerusalem Suburbs	C	بنات مخيم عرب الجهالين الثانوية	Arab Aljahaleen Camp Secondary School for Girls	143	Secondary	Jerusalem Electricity .Co	No		1	31.76	35.283	Microwave Link		
30	19112038	jerusalem Suburbs	C	عرب الجهالين الأساسية المختلطة	Arab Jahaleen Basic Mixed School	73	Basic	Solar Power System	No		3	31.758	35.313	Microwave Link		
31	19112005	Jerusalem suburbs	C	قلنديا الأساسية المختلطة	Qalandia mixed basic school	115	basic	Jerusalem Electricity .Co	No		2	31.861	35.206	Microwave Link		

32	19112022	Jerusalem suburbs	C	خربة ام اللحم المختلطة الأساسية	Khirbit um-lahem mixed basic boys school	46	basic	Jerusalem Electricity Co	No		4	31.84	35.092	Microwave Link			
33	19112071	Jerusalem suburbs	C	بادية القدس المختلطة الأساسية	badiat alquds basic mixed school	57	basic	NO Electricity	No		2	31.853	35.263	Microwave Link			
34	12112039	Nablus	C	فروش بيت دجن الثانوية المختلطة	Froosh Beit Dajan secondary Mixed	150	Secondary	The main electric company	No		2	31.444	35.199	Microwave Link			
35	25112818	North Hebron	C	الحاج زين الدين عابد شلالدة المختلطة الأساسية	Zain Addin Abed Shaladah Mixed primary School	107	Primary	Municipality of Saeir	No		2	31.598	35.154	Sim Card			
36	25112097	North Hebron	C	الدير الأساسية المختلطة	Addair Mixed primary School	89	Primary	Municipality of Soreef	No		15	31.655	35.034	Sim Card			
37	25112100	North Hebron	C	وادي الريم الأساسية المختلطة	Wady Areem Mixed primary School	100	Secondary	Hebron Electricity	No		14	31.543	35.179	Sim Card			
38	25112099	North Hebron	C	بادية بني نعيم الأساسية المختلطة	Badiat Bany Nuaim Mixed primary School	95	Primary	Municipality of BanyNuaim	No		1	31.502	35.212	Not Connected			
39	25112101	North Hebron	C	جلا الأساسية المختلطة	Jala Mixed primary School	65	Primary	Municipality of BaitOmmar	No		4	31.622	35.071	Not Connected			
40	25112811	North Hebron	C	بئرلين الأساسية المختلطة	Beraen Mixed primary School	42	Primary	solar cells	No		3	31.5	35.159	Microwave Link			
41	16112080	Qalqilia	C	الرماضين الأساسية المختلطة	Aramadain Secondary Co-Ed School	89	Secondary	Hableh Municipality	No		7	32.175	34.989	Not Connected			



42	18113240	Ramallah & Albireh	C	مدرسة التحدي بادية رام الله الأساسية المختلطة	Altahdi Badiet Ramallah Basic mexid school	100	basic	The main electricity company + solar cells	No		3	31.915	35.323	Microwave Link		
43	18113244	Ramallah & Albireh	C	واد السلطان الأساسية المختلطة	Wad salman Basic Mixed school	39	basic	The main electricity company + solar cells	No		4	31.879	35.088	Microwave Link		
44	18113248	Ramallah & Albireh	C	رأس التين الأساسية المختلطة - بادية المغير (مهمشة)	Badet Wad Ateen Basic mixed school	50	basic	village council	No		0	35.366	31.998	Sim Card		
45	18113249	Ramallah & Albireh	C	عين سامية الأساسية المختلطة بادية كفر مالك (مهمشة) قيد الإنشاء	Ean Samieh Basic mixed school	50	basic	village council	No		0	35.334	31.989	Microwave Link		
46	27112253	South Hebron	C	عرب الفريجات الأساسية المختلطة	ArabFrejat Coed School	115	Basic	SELCO +Solar Cells	No		24	31.355	34.921	Microwave Link		
47	27112265	South Hebron	B	شركة الاساسية المختلطة	Shweke Coed School	234	Basic	SELCO	No		17	31.401	35.007	Microwave Link		
48	27113442	South Hebron	C	الرحمة الاساسية المختلطة	AlRahama Coed School	76	Basic	SELCO	No		2	31.509	34.985	Microwave Link		
49	27113454	South Hebron	C	زفوتا الأساسية المختلطة	Zanota Coed School	25	Basic	SELCO	No		2	31.372	34.996	Microwave Link		
50	27113458	South Hebron	C	التحدي 13/السيميا الأساسية المختلطة	AlTahadi 13/Simia School Coed	19	Basic	Samou Municipality	No		2	31.422	35.033	Microwave Link		
51	27113455	South Hebron	C	بادية الرماضين الأساسية المختلطة	Badiet Alrmadeen Mixed School	20	Basic	SELCO	No		1	31.359	34.911	Microwave Link		
52	27113435	South Hebron	C	غوين الاساسية المختلطة	Ghween Mixed School	13	Basic	Solar Cells	No		1	31.361	35.079	Microwave Link		
53	11112078	south nabulus	c	خربة الطويل الأساسية المختلطة	Khirbat atwail Basic mix.school	30	Basic	Aqraba Municipality	No		1	32.114	35.36	Microwave Link		

54	11112035	south nablus	C	يانون الاساسية المختلطة	Yanon Basic mix.school	13	Basic	Aqraba Municipality	No		1	32.159	35.359	Microwave Link		
55	19112076	sub Jerusalem	C	المنطار الاساسية المختلطة	Almenthar Basics School	36	Primary	Solar Cells	No		1	31.752	35.328	Microwave Link		
56	29112044	Tubas	C	عين البيضاء الثانوية المختلطة	Ain Al-Bayda Secondary Girls Schools	174	Secondary	Israel Electric Corporation	No		17	32.382	35.507	Microwave Link		
57	29112010	Tubas	C	بردة الثانوية المختلطة	Bardala Secondary Mixed School	178	Secondary	Israel Electric Corporation	No		18	32.387	35.484	Microwave Link		
58	29112012	Tubas	C	بنات بردة الثانوية	Bardala Secondary Girls School	198	Secondary	Israel Electric Corporation	No		17	32.388	35.482	Microwave Link		
59	29112011	Tubas	C	بنات عين البيضاء الثانوية	Ain Al-Bayda Secondary Mixed Schools	210	Secondary	Israel Electric Corporation	No		20	32.382	35.507	Microwave Link		
60	29112046	Tubas	C	بردلا الاساسية المختلطة	Bardala Basics Mixed School	98	Basics	Israel Electric Corporation	No		1	32.388	35.483	Microwave Link		
61	29112034	Tubas	C	عاطوف الثانوية المختلطة	Atouf secondary Mixed school	59	Basics	Tubas Electric Company	No		11	32.265	35.438	Not Connected		
62	29112055	Tubas	C	كردلا الاساسية المختلطة	kardala Basics Mixed School	34	Basics	Israel Electric Corporation	No		1	32.379	35.491	Not Connected		
63	29112054	Tubas	C	الزريق الاساسية المختلطة	Ibeziq Basics School	33	Basics	Solar energy	No		1	32.368	35.396	Sim Card		
64	14112119	Tulkarm	C	الحافسي الاساسية المختلطة	ALHafasi basic mixed school	161	basic	Al Kufor labeled municipality	No		4	32.291	35.077	Microwave Link		
65	23112038	yatta	C	الزوين الثانوية المختلطة	alzweeden mixed secondary school	326	seconadry	The main electric company	No		17	31.423	35.23	Microwave Link		



66	23112075	yatta	C	بنات الزوئدين الثانوية	alzweeden girls secondary school	104	seconadry	The main electric company	No		10	31.464	35.14	Microwave Link		
67	23112045	yatta	C	منيزل الثانوية المختلطة	monazel mixed secondary school	113	seconadry	The main electric company	No		14	31.464	35.16	Microwave Link		
68	23112046	yatta	C	ذكور الصرايعة الثانوية	alsaray'a secondary school	116	seconadry	The main electric company	No		14	31.406	35.21	Microwave Link		
69	23112091	yatta	C	بنات أم الخير الثانوية	om al kher girls secondary school	123	seconadry	The main electric company	No		14	31.464	35.14	Microwave Link		
70	23112059	yatta	C	المرات الثانوية المختلطة	alderat mixed basic school	125	basic	The main electricity company + solar cells	No		16	31.446	35.17	Microwave Link		
71	23112083	yatta	C	الحديدية الأساسية المختلطة	alhedaydeah mixed basic school	126	basic	The main electric company	No		2	31.412	35.15	Microwave Link		
72	23112034	yatta	C	التوانة الثانوية المختلطة	altwanah mixed secondary school	132	seconadry	The main electric company	No		14	31.439	35.13	Microwave Link		
73	23112069	yatta	C	صف الأساسية المختلطة	safad mixed basic school	142	basic	The main electric company	No		5	31.447	35.16	Microwave Link		
74	23112080	yatta	C	بنات زيف الأساسية	zief girls basic school	160	basic	The main electric company	No		13	31.426	35.19	Microwave Link		
75	23112042	yatta	C	الكعجة الثانوية المختلطة	alkaabna mixed basic school	198	basic	The main electric company	No		10	31.425	35.20	Microwave Link		
76	23112050	yatta	C	الويب الثانوية المختلطة	albweb mixed basic school	205	basic	The main electric company	No		3	31.37	35.11	Microwave Link		
77	23112039	yatta	C	ذكور زيف الأساسية	zief boys basic school	249	basic	The main electric company	No		8	31.446	35.20	Microwave Link		
78	23112044	yatta	C	الخالين الأساسية المختلطة	alhathaleen mixed basic school	269	basic	The main electric company	No		11	31.423	35.23	Microwave Link		
79	23112088	yatta	C	عسقلان الأساسية المختلطة	asqalan mixed basic school	112	basic	The main electric company	No		2	31.471	35.09	Microwave Link		

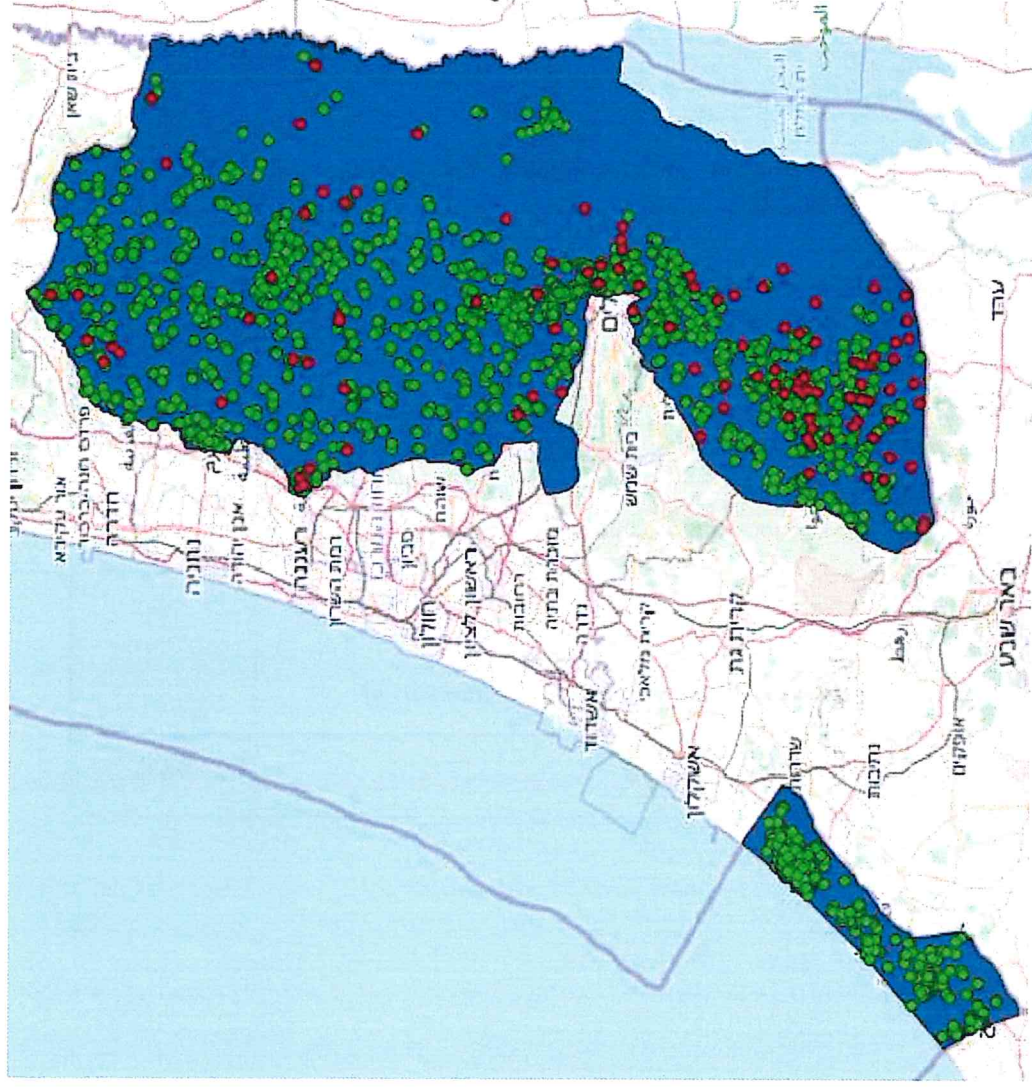
80	23112101	yatta	C	فلسطين الاساسية المختلطة	palestine mixed basic school	30	basic	The main electric company	No		2	35.094	31.418	Microwave Link		
81	23112092	yatta	C	الرعاية الأساسية المختلطة	Al Erfaiea mixed basic school	71	basic	The main electric company	No		3	31.448	35.152	Microwave Link		
82	23112061	yatta	C	الدقيقة الاساسية المختلطة	edqayqa mixed basic school	56	basic	solar cells	No		7	31.381	35.223	Sim Card		
83	23112062	yatta	C	مسافر يطا الثانوية المختلطة	masafer yatta mixed secondary school	54	secondary	solar cells	No		10	31.377	35.165	Microwave Link		
84	23112081	yatta	C	شعب البطم الاساسية المختلطة	sheheb albottom mixed basic school	44	basic	solar cells	No		8	31.397	35.138	Sim Card		
85	23112063	yatta	C	سوسيا الاساسية المختلطة	sosia mixed basic school	41	basic	solar cells	No		24	31.402	35.097	Microwave Link		
86	23112071	yatta	C	جنبة الاساسية المختلطة	jenbah mixed baisc school	37	basic	solar cells	No		4	31.364	35.139	Microwave Link		
87	23112077	yatta	C	المجاز الاساسية المختلطة	majaz mixed basic school	37	basic	solar cells	No		2	31.381	35.189	Microwave Link		
88	23112098	yatta	C	خلة الضبع الاساسية المختلطة	khallet aldabeh mixed basic school	12	basic	solar cells	No		2	31.394	35.16	Microwave Link		
89	23112102	yatta	C	ام قصبة الاساسية المختلطة	om gossa mixed basic school	20	basic	solar cells	No		2	31.438	35.177	Microwave Link		

### Unconnected Schools in Palestine (89 unconnected schools in WB and Jerusalem)

Green – connected schools (>5 Mbps)

Red – unconnected schools





Source: 1. <https://projectconnect.unicef.org/map/country/ps>, 2. <https://data.humdata.org/dataset/state-of-palestine-administrative-boundaries>

## Annex B: Selected KPIs for Quality of Service

The measurement conditions that are not stated in the table below should be identified and described in the measurement methodology provided by the applicant along with measured KPIs.

y Performance Indicators for End User Test Cases		
	Selected QoS KPIs:	Threshold
1	<b>Web page Access Success Rate (%)</b> <b>Definition:</b> Percentage of times that the subscriber is able to access web browsing service over the total number of attempts <b>Condition:</b> PDP context is activated <b>Trigger Points:</b> Start: user initiates the web page request Stop: first content is received <b>Computation:</b> $(1 - (\text{Unsuccessful\_Attempts\_to\_Retrieve\_Web\_page\_Content} / \text{Total\_Number\_of\_Web\_page\_Retrieve\_Attempts})) * 100$	>= 99%
2	<b>Web page Completion Success rate (%)</b> <b>Definition:</b> Proportion of times that the web page is successfully retrieved ones the download has already started over the total number of times that the service is accessible <b>Condition:</b> The web browsing service is accessible and the first data content has already arrived to the UE <b>Trigger Points:</b> Start: first content arrives to the UE Stop: the whole web page is retrieved <b>Computation:</b> $(1 - (\text{Number\_of\_incomplete\_HTTP\_data\_retrievals} / \text{Total\_number\_of\_successfully\_started\_HTTP\_retrievals})) * 100$	>= 98%
3	<b>Web page Download time (s)</b> <b>Definition:</b> Time needed to successfully retrieve the content of a web page <b>Condition:</b> The web page retrieval has been successful <b>Trigger Points:</b> Start: user request the web page content Stop: all the web page content has been retrieved <b>Computation:</b> $t_{\text{web\_page\_contents\_retrieved}} - t_{\text{user\_requests\_web\_page}}$	(s)
4	<b>Video streaming set up Success rate</b> <b>Definition:</b> Ratio of successful stream reproduction starts user request the stream <b>Condition:</b> PDP context is activated <b>Trigger Points:</b> Start: user initiates the video request Stop: the video streaming starts <b>Computation:</b> $(1 - (\text{Number\_of\_reproductions\_NOT\_started} / \text{Total\_number\_of\_streaming\_Attempts})) * 100$	>= 99%
5	<b>Video streaming completion Success rate</b>	>= 98%



	<p><b>Definition:</b> Proportion of the times that the video is reproduced until the end and the number of times that the reproduction is started</p> <p><b>Condition:</b> Streaming reproduction has started successfully</p> <p><b>Trigger Points:</b></p> <p>Start: streaming reproduction starts</p> <p>Stop: reproduction reaches the end of the stream</p> <p><b>Computation:</b> <math>(1 - (\text{Number\_of\_reproduction\_drops} / \text{Total\_number\_of\_streaming\_started})) \times 100</math></p>																																																														
6	<p><b>Data Upload Speed</b></p> <p>Methodology</p> <ul style="list-style-type: none"><li>• Attach a 5 MB file to web based email</li><li>• Test to be repeated in T1, T2 &amp; T3 &amp; Calculate the actual speed</li><li>• Data upload speed =Size of the test file (data) (in MB) / Transmission Time (in seconds)</li></ul> <table><tr><td></td><td colspan="2">T1</td><td colspan="2">T2</td><td colspan="2">T3</td><td rowspan="2">Average upload speed (Kbps)</td></tr><tr><td></td><td>Transmission time</td><td>Upload speed</td><td>Transmission time</td><td>Upload speed</td><td>Transmission time</td><td>Upload speed</td></tr><tr><td>Day 1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Day 2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Day 3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Day N...</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Average</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>								T1		T2		T3		Average upload speed (Kbps)		Transmission time	Upload speed	Transmission time	Upload speed	Transmission time	Upload speed	Day 1								Day 2								Day 3								Day N...								Average								Kbps
	T1		T2		T3		Average upload speed (Kbps)																																																								
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7	<p><b>Data Download Speed</b></p> <p>Methodology</p> <ul style="list-style-type: none"><li>• Download a 5 MB file from web based email</li><li>• Test to be repeated in T1, T2 &amp; T3 &amp; Calculate the actual speed</li><li>• Data download speed =Size of the test file (data) (in MB) / Transmission Time (in seconds)</li></ul> <table><tr><td></td><td colspan="2">T1</td><td colspan="2">T2</td><td colspan="2">T3</td><td rowspan="2">Average download speed (Kbps)</td></tr><tr><td></td><td>Transmission time</td><td>Download speed</td><td>Transmission time</td><td>Download speed</td><td>Transmission time</td><td>Download speed</td></tr><tr><td>Day 1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Day 2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Day 3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Day N...</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Average</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>								T1		T2		T3		Average download speed (Kbps)		Transmission time	Download speed	Transmission time	Download speed	Transmission time	Download speed	Day 1								Day 2								Day 3								Day N...								Average								Kbps
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Day 3																																																															
Day N...																																																															
Average																																																															

**6 PART TWO – Internal (UNICEF)**

**7 Programme Area and specific Project involved:**

Programme:

Project and activity codes:

Work Plan Activity:

Budget Code/PBA No : GS200012

Budget Ceiling

**Contract Supervisor:** Panji Chamdimba <pchamdimba@unicef.org> , Chief of Education and Adolescent

**8 Modality for the selection process:**

**a) Dissemination of ToR n/a**

**Modality of dissemination:**

Newspaper ☐ E-mail ☒ NICEF Website ☒ f/External websites ☐  
UN Agencies ☐

Other ☐ Please specify:

**b) Selection from Roster** ☐

**c) Other** Please specify:

**d) Interviews planned: Yes**

**9 Estimated amount budgeted for this Activity:**

Six months technical consultancy fees, including DSA and travel costs

**10 Chargeable Budget Code for this Activity:**

**Certified by:**

Name: Panji Chamdimba <pchamdimba@unicef.org> , Chief of Education and Adolescent

Signature: 

Date: 18/11/2021

**Endorsed by:**

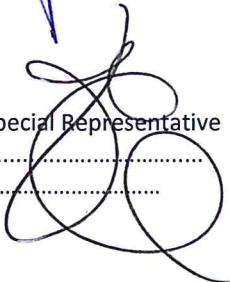
Name: Laura Bill, Special Deputy Representative

Signature: 

Date: 18/11/2021

**Approved by:**

Name: Lucia Emi, Special Representative

Signature: 

Date: 18/11/2021