5G TERRA
5G infrastrucTure and sERvices foR public interest and sociAl inclusion

D4.1 Networks Deployed Year 1

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Editor(s):	Tompras Evangelos (OTE)
Author(s):	Legkas Nikolaos (OTE), Nasios Ioannis (OTE), Dimoulas Vasileios (OTE), Petropoulos Vironas (OTE), Katsonis Christos (OTE), Xagoraris Ioannis (OTE), Karvounis Dimitrios (OTE), Gkougkoulis Konstantinos (OTE), Ioannis Patsouras (WINGS)
Reviewer(s):	Sokratis Barmpounakis (WINGS), Vrettos Agamemnon (OTE)
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Executive Summary

The document provides an overview of the approved and completed, on-going and forthcoming activities performed during the deployment of the 5G-TERRA networks during the first year of the project (2024), including some network testing steps, as well as the integration activities.

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List of Acronyms and Abbreviations

TERM	DESCRIPTION
4G	Fourth Generation
5G	Fifth Generation
5GC	5G Core
6G	Sixth Generation
EETT	Hellenic Telecommunication and Post Commission (NRA)
ENM	Ericsson Network Manager
NRA	National Regulatory Authority
SGI	Services of General Interest
WO	Work Order
WP	Work Package

1 Introduction

As we have discussed in previous deliverables [1] [2], 5G-TERRA will extend OTE 5G network (in terms of construction, configuration, and connection with the rest of the network) with almost 50 new 5G base stations, towards high capacity, reduced latency, and high reliability mobile services for up to now de-prioritized, rural, and sparsely populated areas in Greece as shown in the map that follows (Figure 1).

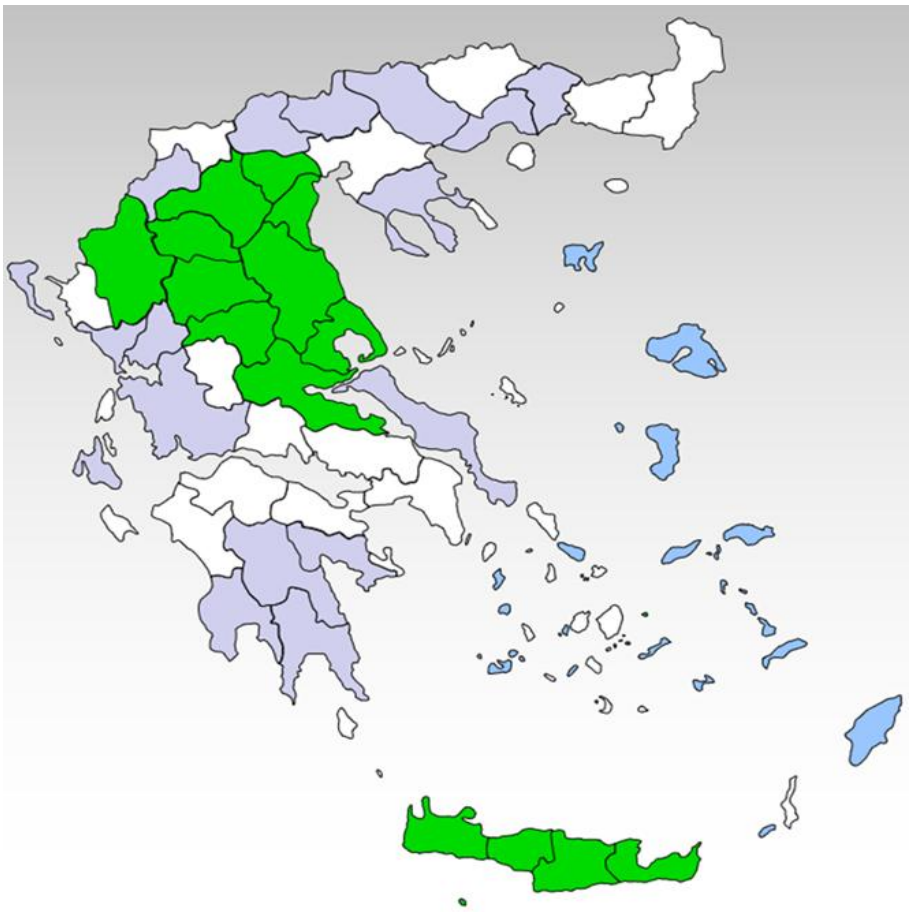


Figure 1: 5G-TERRA target regions

Deliverable 4.1 “Networks Deployed Year 1” addresses the above 5G-TERRA objective and aims specifically to provide information on the sites already rolled out in 2024 as well as those that are safely planned for the 1st quarter of 2025.

The deliverable is produced as part of the Work Package 4 (WP4) “Network Deployment” and marks the completion of the project’s milestone MS6 “Networks Deployed 1st iteration”.

1.1 Structure of the document

The main topics addressed in this deliverable are presented through the following structure:

- Section 2 presents the procedure followed for the new sites’ activation

- Section 3 presents the project's ON-AIR sites of 2024 and the on-going activities (until Q1_2025)
- Section 4 provides a description of the new ON-AIR sites of 2024
- Section 5 provides a view of the sites in the management system.

1.2 Relation to other 5G-TERRA deliverables

Deliverable D4.1 will be followed by D4.2, which will provide information for all 5G-TERRA sites to be deployed in the 2nd year of the project and will be submitted in M25, and finally D4.3 with information for all 5G-TERRA sites to be deployed in the 3rd year of the project, to be submitted towards the end of WP4 (M32).

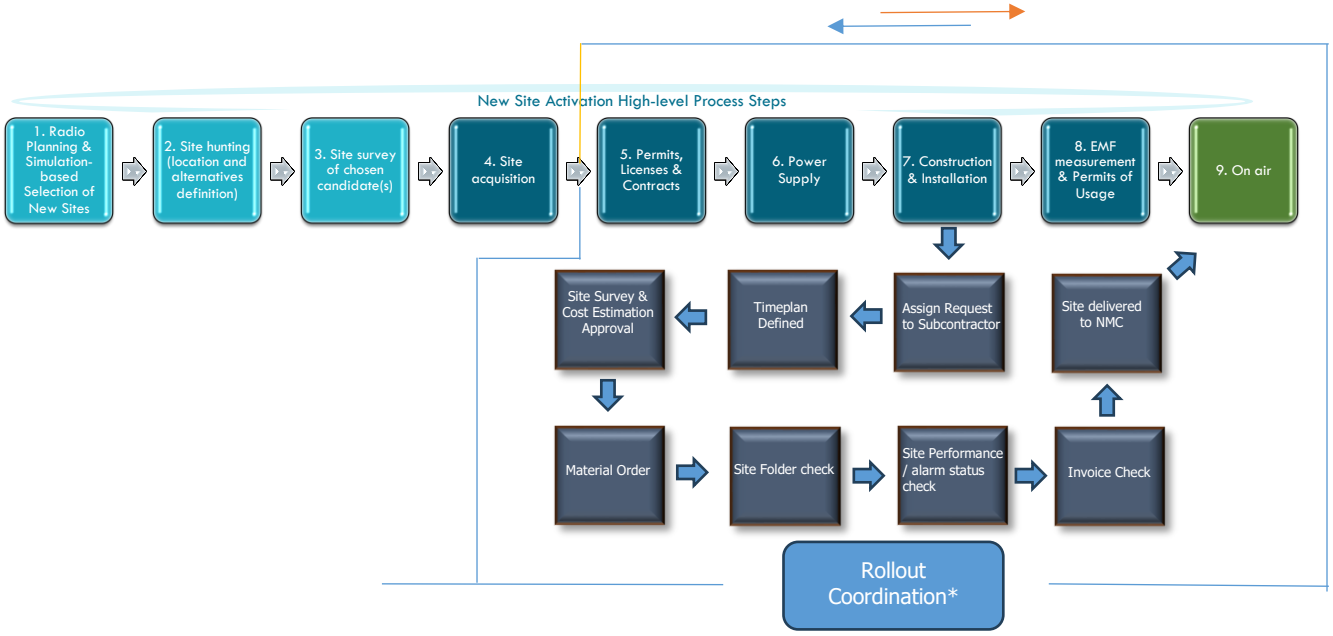
Detailed technical information on the sites planned and deployed in the 1st year is provided in D3.1" Initial Network Planning". However, please note that all WP3 deliverables are denoted SEN, since they contain sensitive information, not possible to be shared publicly.

Deliverable	Description	Lead Beneficiary	Date
D3.1 Initial Network Planning	The document includes the approved radio network planning activities, and the results of the 5G Coverage simulation plan detailing per site the parameter values such as Antenna Direction, antenna Mechanical and Electrical tilt, and Physical Cell IDs. It contains sensitive information, not possible to be shared publicly.	OTE	M13
D4.2 Networks deployed – Year 2	The document provides an overview of the approved and completed on-going and forthcoming activities performed during the deployment of the TERRA networks per year, including network testing, as well as the integration activities.	OTE	M25
D4.3 Networks deployed – Year 3	The document provides an overview of the approved and completed on-going and forthcoming activities performed during the deployment of the TERRA networks per year, including network testing, as well as the integration activities.	OTE	M32

Table 1: Related 5G-TERRA deliverables

2 Procedure for new sites' activation

The procedure for the new sites' activation is a complex task with lots of different stages and actions that need to be completed. Furthermore, the successful completion of the stages is guaranteed by the highly trained OTE's personnel, having as major task to overcome all possible problems that will arise and bring ON-AIR as many base stations as possible. Below are the high-level process steps for the activation of a new site:



*The rollout team receives and sends feedback at all stages of the process until the final activation – ON AIR

Figure 2: New site activation High-level process steps

3 5G TERRA sites ON-AIR and on-going activities (until Q1_2025)

The planned sites for the 2024 & Q1_2025 scope, comprising the initial phase of the project, are depicted in the following table. General information is given about the area and the prefecture for each site (name & unique site code in OTE network). All sites are greenfield (tower/mast on the ground – antennas at the top – relevant telecommunication equipment sited on the mast or ground):

- Sites 1 to 6 correspond to the **green areas** (2 SGIs)
- Sites 10 and 11 correspond to the **blue areas**
- Sites 12 to 19 correspond to the **purple areas**.

The status indication provides information at the time of writing (12/2024) of the rollout process of the sites.

As it can be seen, at the time of writing we have:

- 8 sites ON-AIR
- 1 site will be ON-AIR in the beginning of 2025
- 10 sites are forecast to be implemented by the end of Q1_2025.

For the remaining sites:

- Acquisition procedures and signing of the lease contracts have been completed.
- All licensing procedures have also been completed successfully.

We are currently waiting for:

- The completion of the necessary earthworks for the opening and widening of access road and the shaping of the bearing point of the mast by our subcontractors.
- The necessary works on the part of the Greek electricity distribution network operator for the interconnection of the new infrastructure to the public electricity.

A/A	AREA	PREFECTURE	MUNICIPALITY	SITE CODE	SITE NAME	Site Type	Band (MHz)	# Cells	STATUS
1	CMA	PIER	KATERINI	3924	LOFOS_TK	GREENFIELD	700 MHz	2	**ON AIR** [15/05/24]
2	CMA	PIER	KATERINI	42051	TRILOFOS_TK	GREENFIELD	700 MHz	3	**ON AIR** [15/05/24]
3	TES	KARD	KARDITSAS	46115	XINONERI_TK	GREENFIELD	700 MHz 2100 MHz	2 2	**ON AIR** [31/05/24]
4	TES	LARI	LARISEON	46387	FALLANI_X	GREENFIELD	700 MHz 2100 MHz	4 4	**ON AIR** [27/06/24]
5	TES	MAGN	VOLOU	2608	N_ACHIALOS_TK	GREENFIELD	700 MHz 2100 MHz	3 3	Est. activation 2025_Q1
6	CRE	HAN	SFAKION	44097	IBROS_X	GREENFIELD	700 MHz 2100 MHz	2 2	ON AIR [end of 2024]
7	CRE	RETH	AYIOU VASILIOU	1937	DRIMISKOS_X	GREENFIELD	700 MHz 2100 MHz	2 2	Est. activation 2025_Q1
8	CRE	RETH	MYLOPOTAMOU	1992	SISES_EAST_VOD	GREENFIELD	700 MHz 2100 MHz	2 2	Est. activation 2025_Q1
9	WMA	KOZA	KOZANIS	42032	KROKOS_TK	GREENFIELD	700 MHz 2100 MHz	3 3	Est. activation 2025_Q1
10	SAE	DODE	RODOU	1035	AG_ISIDOROS_X	GREENFIELD	700 MHz 2100 MHz	2 2	**ON AIR** [11/06/24]
11	SAE	KYKL	KIMOLOU	41147	AG_MINAS_X	GREENFIELD	700 MHz 2100 MHz	2 2	Est. activation 2025_Q1
12	STE	AITO	AMFILOHIAS	2923	AGTRIAD_SAR	GREENFIELD	700 MHz	2	**ON AIR** [29/07/24]

A/A	AREA	PREFECTURE	MUNICIPALITY	SITE CODE	SITE NAME	Site Type	Band (MHz)	# Cells	STATUS
							2100 MHz	2	
13	STE	PREV	PREVEZAS	4874	KASTROSIKIA_X	GREENFIELD	700 MHz 2100 MHz	3 3	**ON AIR** [12/11/2024]
14	STE	VIOT	TANAGRAS	2550	KLIDI_X1	GREENFIELD	700 MHz 2100 MHz	2 2	Est. activation 2025_Q1
15	CMA	KILK	KILKIS	41561	AGIONERI_X	GREENFIELD	700 MHz 2100 MHz	2 2	Est. activation 2025_Q1
16	CMA	PELL	PELLAS	41589	N_MYLOTOP_TK	GREENFIELD	700 MHz 2100 MHz	2 2	**ON AIR** [30/05/24]
17	TES	MAGN	SOUTH PILIOU	4007	NIAOU_X	GREENFIELD	700 MHz 2100 MHz	3 3	Est. activation 2025_Q1
18	PEL	MESS	IHALIAS	1117	MARINA_X	GREENFIELD	700 MHz 2100 MHz	1 1	Est. activation 2025_Q1
19	EMA	KAVA	KAVALAS	3786	ZIGOS_X	GREENFIELD	700 MHz 2100 MHz	2 2	Est. activation 2025_Q1

Table 2: Initial Planning -2024 scope- new sites to be implemented

4 Description of new sites

A total of 8 new OTE sites are activated (ON-AIR) from the 2024 rollout. Below is the description of these stations along with indicative Speed Test images:

- **TRILOFOS_TK (42051)** is a MACRO GREENFIELD site, which is located in the prefecture area of PIERIA and especially in the municipality of KATERINI. It was activated on 15/05/24 at WK20 and contains technology (NR) 700MHz (60° - 190° - 330°) with 3 cells (4205191, 4205192, 4205193).

Figure 3: TRILOFOS_TK photos and Speed Test image

- **LOFOS_TK (3924)** is a MACRO GREENFIELD site, which is located in the prefecture area of PIERIA and especially in the municipality of KATERINI. It was activated on 15/05/24 at WK20 and contains technology (NR) 700MHz (60° - 180°) with 2 cells (392491, 392492).

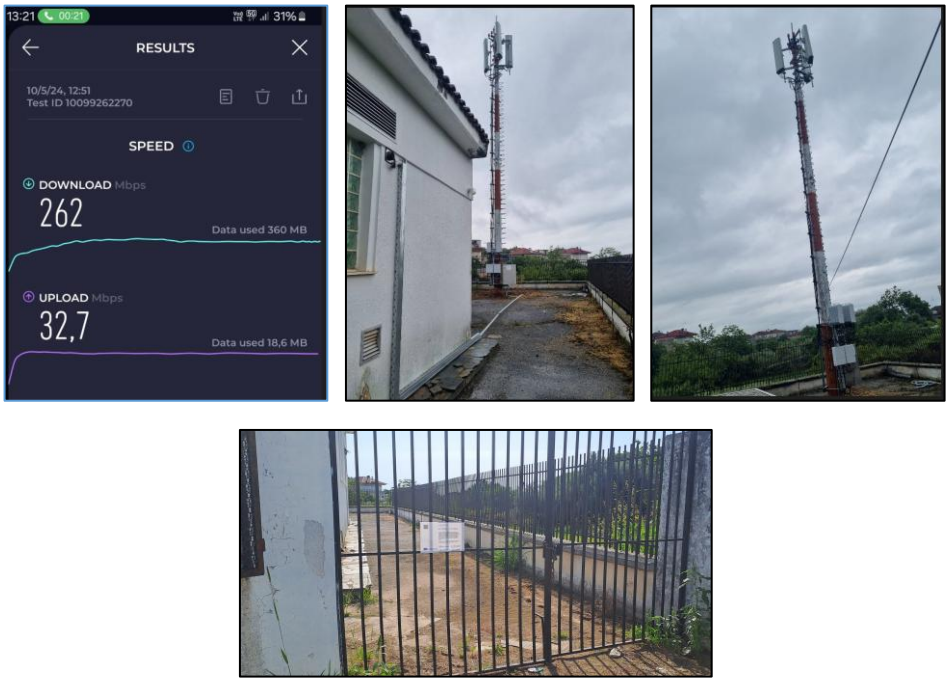


Figure 4: LOFOS_TK photos and Speed Test image

- **XINONERI_TK (46115)** is a MACRO GREENFIELD site, which is located in the prefecture area of KARDITSA and especially in the municipality of KARDITSA. It was activated on 31/05/24 at WK22 and contains technology (NR) 700MHz (5° - 65° - 200° - 300°) with 2 cells (4611591,4611592) & (NR) 2100MHz (5° - 65° - 200° - 300°) with 2 cells (4611541,4611542).

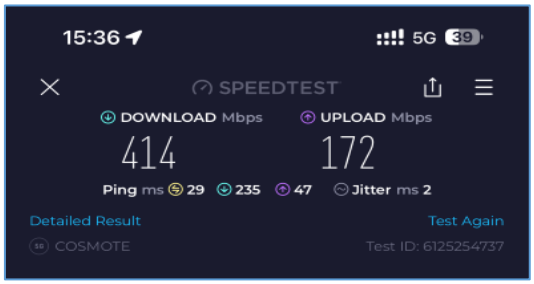


Figure 5: XINONERI_TK photos and Speed Test image

- **AG_ISIDOROS_X (1035)** is a MACRO GREENFIELD site, which is located in the prefecture area of DODECANESE and especially in the municipality of RHODES. It was activated on 11/06/24 at WK24 and contains technology (NR) 700MHz (30° - 100° - 260°) with 2 cells (103591,103592) & (NR) 2100MHz (30° - 100° - 260°) with 2 cells (103541,103542).

Figure 6: AG_ISIDOROS_X photos and Speed Test image

- **N_MYLOTOP_TK (41589)** is a MACRO GREENFIELD site, which is located in the prefecture area of PELLA and especially in the municipality of PELLA. It was activated on 12/06/24 at WK24 and contains technology (NR) 700MHz (30° - 100° - 260°) with 2 cells (4158991,4158992).

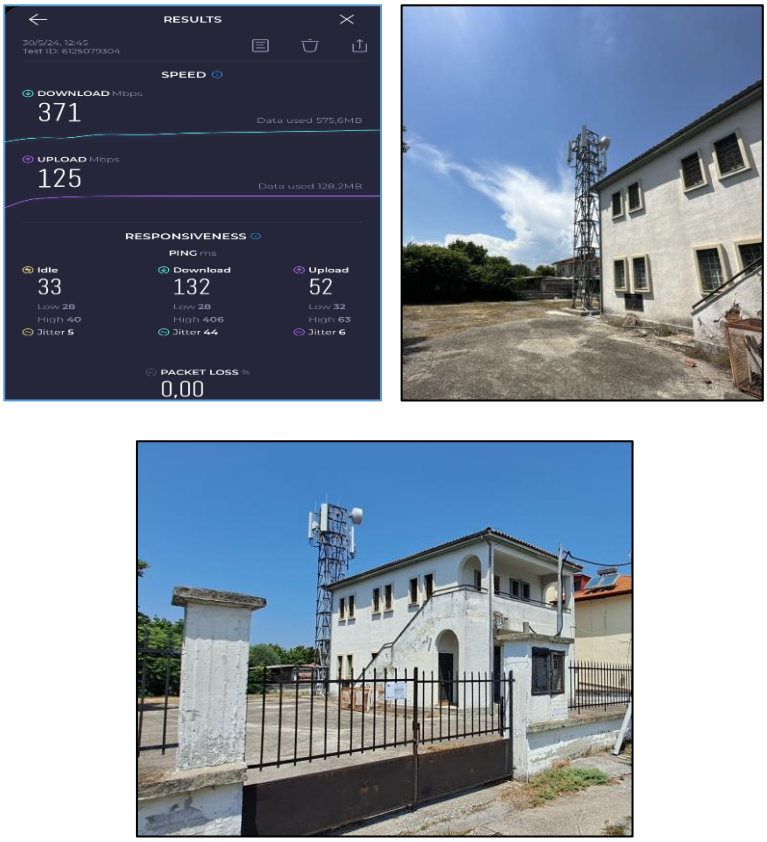


Figure 7: N_MYLOTOP_TK photos and Speed Test image

- **FALLANI_X (46387)** is a MACRO GREENFIELD site, which located in the prefecture area of LARISA and especially in the municipality of LARISA. It was activated on 27/06/24 at WK26 and contains technology (NR) 700MHz (115° - 160° - 240° - 320°) with 4 cells (4638791, 4638792, 4638793, 4638794) & (NR) 2100MHz (115° - 160° - 240° - 320°) with 4 cells (4638741,4638742,4638743,4638744).

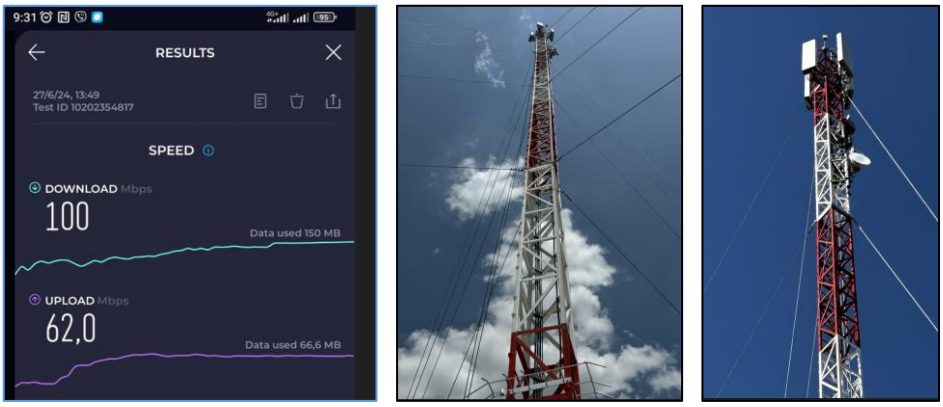


Figure 8: FALLANI_X photos and Speed Test image

- **AGTRIAD_SAR (2923)** is a MACRO GREENFIELD site, which located in the prefecture area of AITOLOAKARNANIA and especially in the municipality of AMFILOCHIA. It was activated on 29/07/24 at WK31 and contains technology (NR) 700MHz (25° - 100° - 260°) with 4 cells (292391,292392) & (NR) 2100MHz (25° - 165° - 270°) with 2 cells (292341,292342).

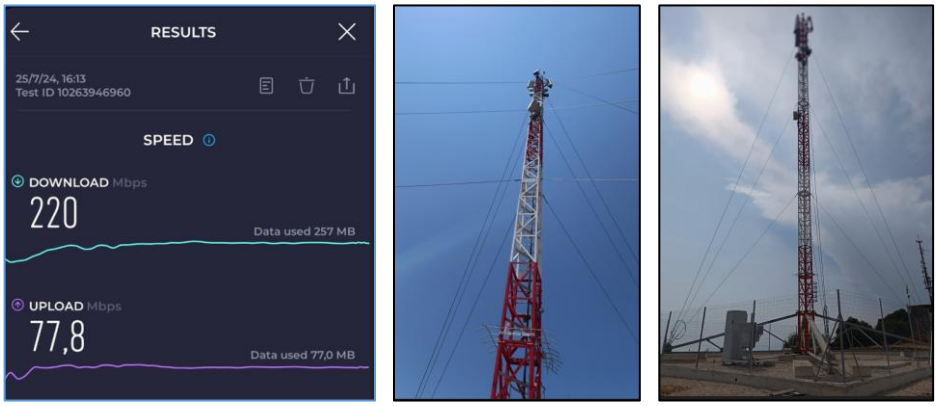


Figure 9: AGSTRIAD_SAR photos and Speed Test image

- **KASTROSIKIA_X (4874)** is a MACRO GREENFIELD site, which is located in the prefecture area of PREVEZA and especially in the municipality of PREVEZA. It was activated on 12/11/24 at WK46 and contains technology (NR) 700MHz (25° - 100° - 260°) with 3 cells (487491,487492,487493) & (NR) 2100MHz (130° - 250° - 310°) with 3 cells (487441,487442,487443).

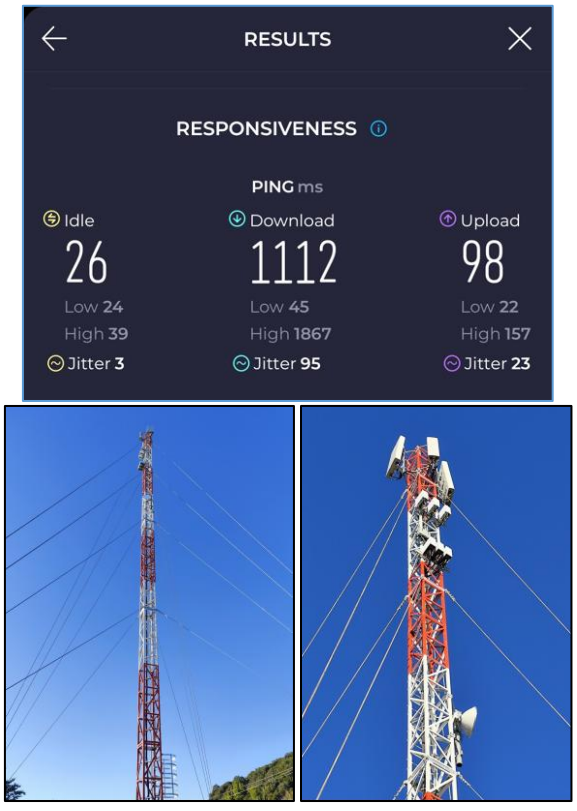
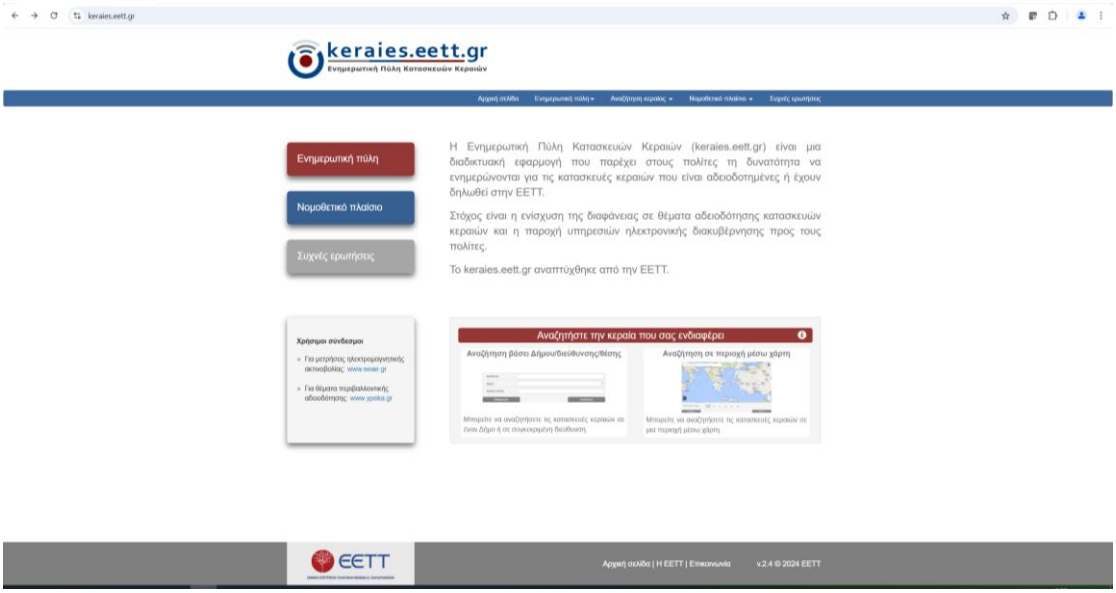


Figure 10: KASTROSIKIA_X photos and Speed Test image

Additional information about architectural designs, topographical drawings and operating licenses for any base station can be found on the official site of [3] Hellenic Telecommunication and Post Commission. The Hellenic Telecommunications and Post Commission (EETT) is an independent authority with administrative and financial autonomy. It acts as the National Regulatory Authority (NRA) in matters of provision of services and networks for electronic communications, related facilities and services, and postal services.



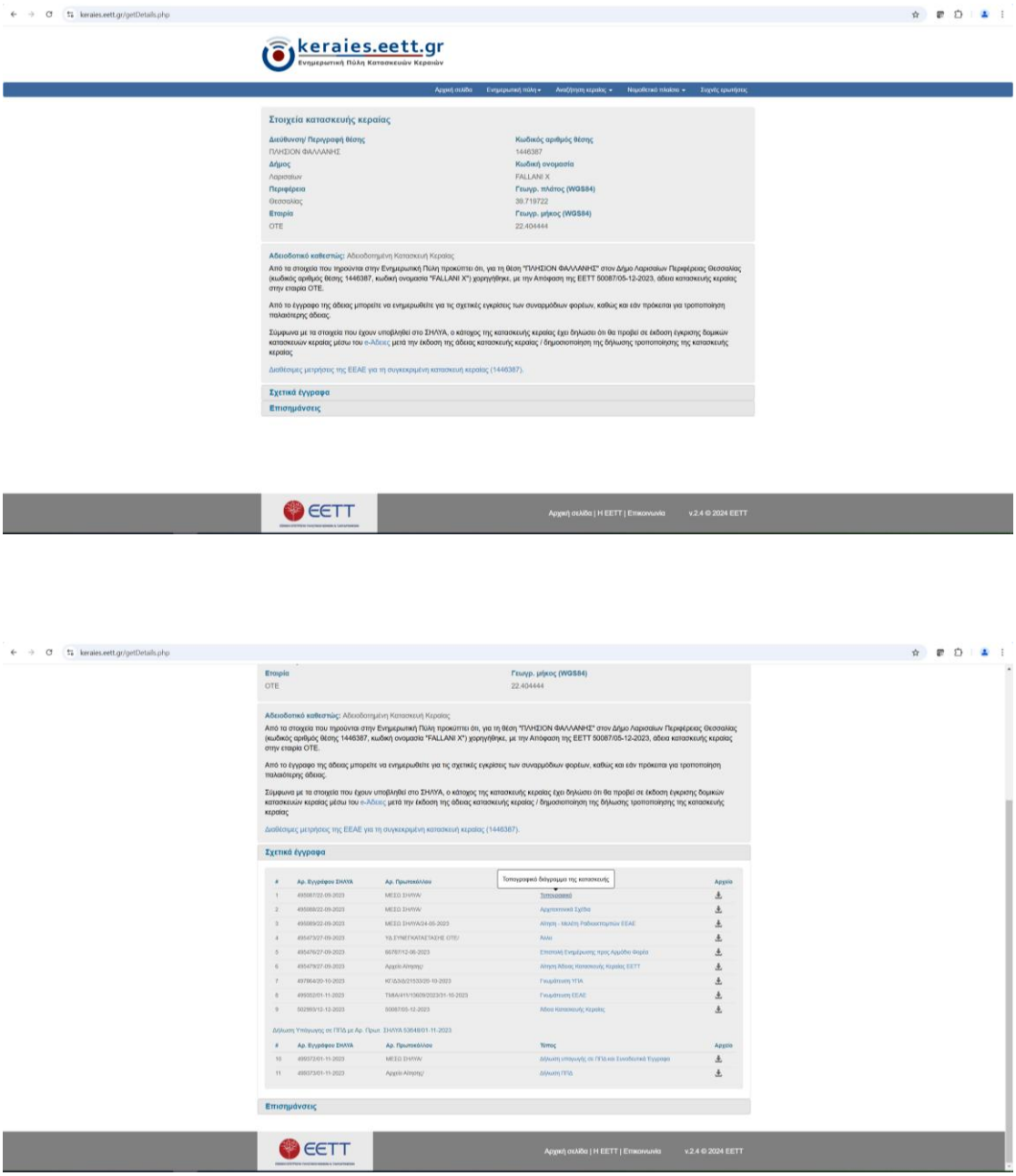


Figure 11: Hellenic Telecommunication and Post Commission site concerning base stations

5 View of sites in the Management System

The view of ON-AIR sites in the Ericsson Network Management (ENM) system:

A/A	Site ID	Site Name	Status	ENM SNAPSHOT
1	42051	TRILOFOS_TK	On Air	Base Station Name: 42051-TRILOFOSTK-GLN; CU Cell Na...: N142051V1, N142051V2, N142051V3; DU Cell Na...: N142051V1, N142051V2, N142051V3; gNodeBId: 142051; NRCellDU.pLMNIdList: [{mcc="202", mnc="01"}]; NRCellD...: 91, 92, 93; NRCellDU.administrativeState: UNLOCKED; NRCellDU.operationalState: ENABLED
2	3924	LOFOS_TK	On Air	Base Station Name: 03924-LOFOSTK-LN1; CU Cell Na...: N103924V1, N103924V2; DU Cell Na...: N103924V1, N103924V2; gNodeBId: 103924; NRCellDU.pLMNIdList: [{mcc="202", mnc="01"}]; NRCellD...: 91, 92; NRCellDU.administrativeState: UNLOCKED; NRCellDU.operationalState: ENABLED
3	1035	AG_ISIDOROS_X	On Air	Base Station Name: 01035-AGISIDOROX-LN1; CU Cell N...: N101035K1, N101035K2, N101035V1, N101035V2; DU Cell Na...: N101035K1, N101035K2, N101035V1, N101035V2; gNodeBId: 101035; NRCellDU.pL...: [{mcc="202", ...; NRCellD...: 41, 42, 91, 92; NRCellDU.administrativeState: UNLOCKED; NRCellDU.operationalState: ENABLED
4	41589	N_MYLOTOP_TK	On Air	Base Station Name: 41589-NMYLOTOPTK-LN1; CU Cell Na...: N141589K1, N141589K2, N141589V1, N141589V2; DU Cell Na...: N141589K1, N141589K2, N141589V1, N141589V2; gNodeBId: 141589; NRCellDU.pLMNIdList: [{mcc="202", mnc="01"}]; NRCellD...: 41, 42, 91, 92; NRCellDU.administrativeState: UNLOCKED; NRCellDU.operationalState: ENABLED
5	46387	FALLANI_X	On Air	Base Station Name: 46387-FALLANIX-LN1; CU Cell Na...: N146387K1, N146387K2, N146387K3, N146387K4, N146387V1, N146387V2, N146387V3, N146387V4; DU Cell Na...: N146387K1, N146387K2, N146387K3, N146387K4, N146387V1, N146387V2, N146387V3, N146387V4; gNodeBId: 146387; NRCellDU.pLMNIdList: [{mcc="202", mnc="01"}]; NRCellD...: 41, 42, 43, 44, 91, 92, 93, 94; NRCellDU.administrativeState: UNLOCKED; NRCellDU.operationalState: ENABLED
6	2923	AGTRIAD_SAR	On Air	Base Station Name: 02923-AGTRIADSAR-LN1; CU Cell Na...: N102923K1, N102923K2, N102923V1, N102923V2; DU Cell Na...: N102923K1, N102923K2, N102923V1, N102923V2; gNodeBId: 102923; NRCellDU.pLMNIdList: [{mcc="202", mnc="01"}]; NRCellD...: 41, 42, 91, 92; NRCellDU.administrativeState: UNLOCKED; NRCellDU.operationalState: ENABLED
7	4874	KASTROSIKIA_X	On Air	Base Station Name: 04874-KASTROSIKX-LN1; CU Cell Na...: N104874K1, N104874K2, N104874K3, N104874V1, N104874V2, N104874V3; DU Cell Na...: N104874K1, N104874K2, N104874K3, N104874V1, N104874V2, N104874V3; gNodeBId: 104874; NRCellDU.pLMNIdList: [{mcc="202", mnc="01"}]; NRCellD...: 41, 42, 43, 91, 92, 93; NRCellDU.administrativeState: UNLOCKED; NRCellDU.operationalState: ENABLED

Table 3: Snips of ON-AIR sites in the Ericsson Network Management (ENM) system

6 References

[1]. D2.1 “Requirements analysis & Use Case definition”, 5G-TERRA, June 2024
[2]. D2.2 “E2E Architecture and Technology Specifications”, 5G-TERRA, October 2024
[3]. https://keraies.eett.gr/

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