



TADAAM Fixed Wireless Access
CPE specification
for Free Modem regulation

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1. Conventions & Abbreviations

a. Conventions

Throughout this document, the words that are used to define the significance of particular requirements are capitalized. These words are:

"MUST, SHALL" This word means that the item is an absolute requirement of this specification.

"MUST NOT" This phrase means that the item is an absolute prohibition of this specification.

"SHOULD" This word means that there MAY exist valid reasons in particular circumstances to ignore this item, but the full implications SHOULD be understood and the case carefully weighed before choosing a different course.

"SHOULD NOT" This phrase means that there MAY exist valid reasons in particular circumstances when the listed behaviour is acceptable or even useful, but the full implications SHOULD be understood and the case carefully weighed before implementing any behaviour described with this label.

"MAY" This word means that this item is truly optional.

b. Abbreviations

CA	Carrier Aggregation
DL/UL	Downlink/Uplink
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
MIMO	Multiple input - Multiple Output
NSA/SA	Non Standalone / Standalone

2. Contact

The contact for this specification can be found on the TADAAM web page.

Please note that the above is an address for hardware vendors only. Information for individual customers regarding the use of own devices on the Telenet network is available on TADAAM.be

3. Scope

This document contains the hardware & firmware requirements for a Fixed Wireless Access modem to be used to connect to TADAAM internet service.

This specification may be changed at any time and may break backward compatibility with previous versions. Manufacturers are therefore asked to provide regular software updates. The end-user of this hardware has to check for the newest version available.

4. Technical Requirements

The FWA modem for TADAAM internet service must to be compliant with the following specifications:

a. 3GPP Specifications

Item	Minimum Requirement	
3GPP Protocol	Release 16 or higher	MUST
5G-4G interworking	NSA option 3/3x, SA option 2	MUST

b. 5G Technology

Item	Minimum Requirement	
Frequency Band	FDD : N1/N3/N7/N8/N20/N28 SDL : N75	MUST
Bandwidth	TDD: 50/40/20MHz FDD: 20/15/10/5MHz	MUST
MIMO	4*4 MIMO: N1/N3/N7 2*2 MIMO: N8/N20/N28 2*0 MIMO N75	MUST
DL/UL modulation	256QAM DL, 64QAM UL	MUST
DL/UL Peak throughput	5G NR 1Gbps/100Mbps capable (@100MHz,SA TDD 8:2 ratio)	SHOULD
No. of Carriers	NR 2CC DL CA NR 2CC UL CA	MUST
Dual Connectivity	Combination LTE/5G 1NR + LTE 3CA	MUST

c. 4G Technology (as fallback if 5G not available)

Item	Minimum Requirement	
Frequency Band	B1/B3/B7/B8/B20/B28/B32	MUST
MIMO	4*4: B1/B3/B7 2*2: B8/B20/B28 2*0 : B32	MUST
DL/UL modulation	256QAM DL, 64QAM UL	MUST
CA	4CA according to band support	MUST

d. Antenna

Item	Minimum Requirement	
Antenna Gain	Min. per band 6 dBi	MUST

e. General requirements

- Device must conform to the latest WAN and IP RFC's, and specifically the relevant IPv6 RFC's: RFC4443, RFC8200, RFC8201, RFC8415, RFC3646, RFC3769, RFC7084, RFC9096, RFC6333, RFC6334, RFC8106, RFC4861, RFC4862
- Software used must always be signed
- Best practice cybersecurity practices must be followed for any CPE. In preparation for upcoming CE RED new cybersecurity regulation, the modem must already support these basic security aspects:
 - Unique login name and password for end-user access to device configuration, so unique per device
 - Regular software updates to be made available for any required security updates
 - Pen testing and related reviews should be done by the manufacturer
 - The equipment shall be resilient against brute force attacks to any authentication mechanisms
 - Auto-generated passwords must be random as seed
- If the device contains Wi-Fi it should follow best practices to ensure good co-existence in typical Belgium density and the challenges of Wi-Fi shared spectrum aspects.
 - 2.4GHz band frequency settings should be selectable for channels 1, 6 and 11 to avoid overlap
 - 5GHz bandwidth setting should be 80MHz maximum or lower bandwidth
 - There should be a channel selection algorithm that chooses the lowest utilized channel
 - 5GHz radio should support the full spectrum available including DFS channels
 - Wi-Fi 6 should be the minimal norm for Docsis 3.1 related gateways

CE regulation and EIRP emission limits must be strictly adhered to, and should be assessed using audits of mass production samples to ensure continuous regulatory compliancy and fair usage of the Wi-Fi medium.

End of document