

HIVE v2.1

Quick Start Guide

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Revision 007, July 2024

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1 Revision History

Revision	Date	Published by	Revision Comments
001	31/07/2022	Konstantinos Papakostas	Initial Release
002	02/08/2023	Konstantinos Papakostas	FCC related information
007	18/07/2024	Konstantinos Papakostas	Updates for new bands support

2 References

The below documents are used or referenced throughout the Quick start Guide and should be reviewed in order to get all necessary information for the system:

No.	Document Title	Link to Document
1	GI2 Thin Client User Manual	
2		
3		
4		
5		
6		

3 Introduction

This document is designed to provide the user with information on the features and how to use the HIVE v2.1 system. The document also provides a typical operational overview of the device.

3.1 System Overview

Cognyte® Hive is a 6x BTS small form factor solution, designed for urban, indoor and highly covert operational use cases.

The unit is powered from an AC/DC Power supply. A power button is used to turn the unit ON, and various LEDs are available to indicate system status.

Summarizing:

- HIVE is a 6 BTS small form factor solution
- It is designed for indoor/outdoor close range covert operations
- It is comprised from a 6 BTS unit controlled via a Laptop or a tablet through a wired LAN connection

3.2 Terminology

- Product – HIVE
- Unit – Hardware Device
- Application – software application installed on the tablet or laptop
- Control device – The tablet or laptop that the application is installed on

3.3 User Notice

It is noted that based on **FCC rule part 15.21** that changes or modifications not expressly approved by the party responsible for compliance (Cognyte), could void the user's authority to operate the equipment.

4 System Components

The HIVE is delivered as a complete solution installed inside a backpack appropriately modified to allow for covert operations while utilizing the system to its full potential. The kit that is provided with the system contains the following items:

- 1x HIVE v2.1 Core unit (including 6x BTS)
- 1x Lenovo T14 Laptop control device
- Various antennas connected to enable all system functions:
 - TX
 - RX
 - Network Scanners

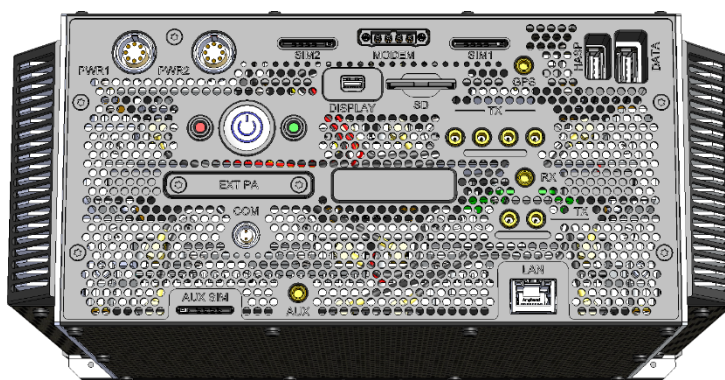


Figure 1: HIVE v2.1 System Core (6BTS)

5 System Control & Connectivity

The HIVE v2.1 unit uses a LAN connection to establish a connection between the system and the control device

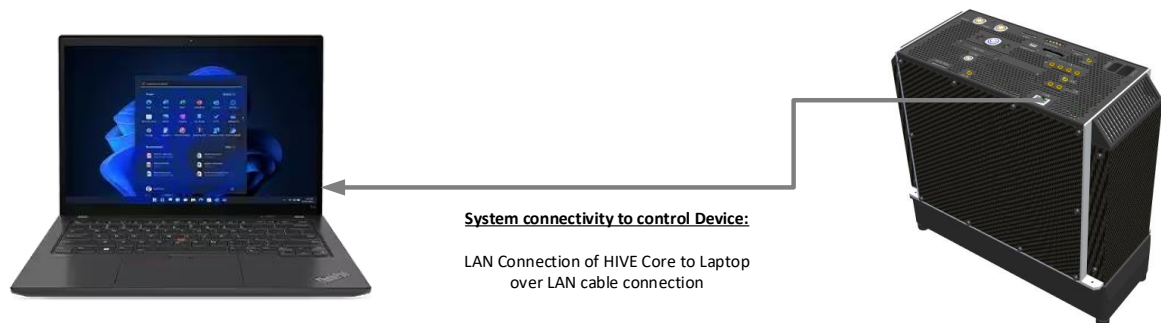


Figure 2: HIVE Connectivity Diagram

The configuration on the HIVE units to allow connectivity is as follows:

- **LAN:**
 - Laptop ethernet adapter is configured to communicate with the systems internal network and be able to control it

6 External Interfaces

The HIVE v2.1 core unit has the following external interfaces & controls:

6.1 Front Panel Connections (6 BTS Configuration)

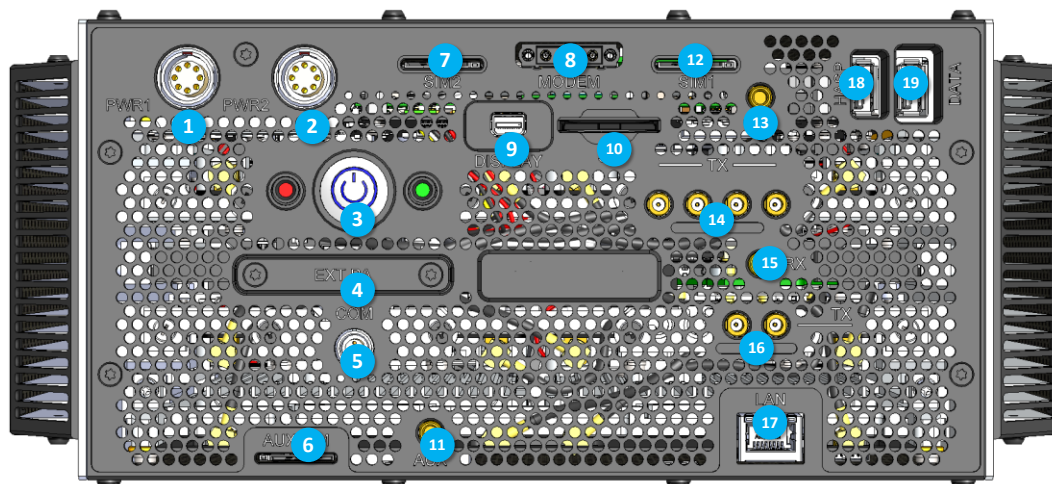


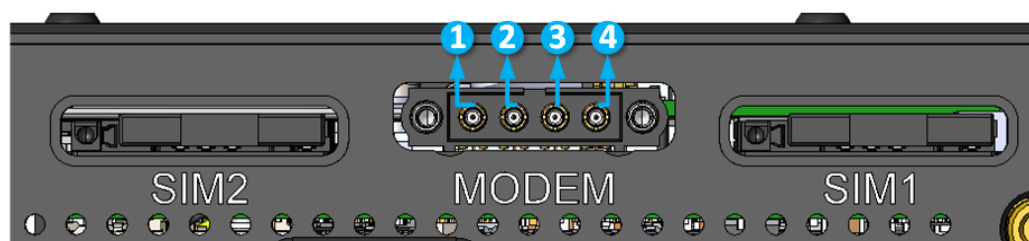
Figure 3: System Top Panel

No.	Description
1	Power In Connector (1)
2	Power In Connector (2)
3	Power ON Button
4	Ext. PA Connector (For Future Use)
5	Nanosniper ON/OFF Connector (For Future Use)
6	Auxiliary (DASI) SIM – (Not in use)
7	MG SIM (1) - (Not in use)
8	Modem Antennas Connector (Not active)
9	Mini Display Port (For Debug/Service)
10	SD Card Slot (For Future Use)
11	Auxiliary Antenna Connector (DASI NWL)
12	MG SIM (2) (Not in use)
13	GPS
14	TX Ports (1 – 4)
15	HIVE RX Port
16	TX Ports (5 – 6)
17	LAN (RJ45)

No.	Description
18	USB Port HASP
19	USB Port for Data Key

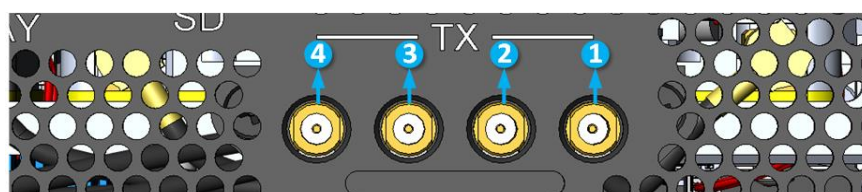
Below are extended illustrations of the multipin connectors included on the HIVE unit:

- Modem Antennas Connector:



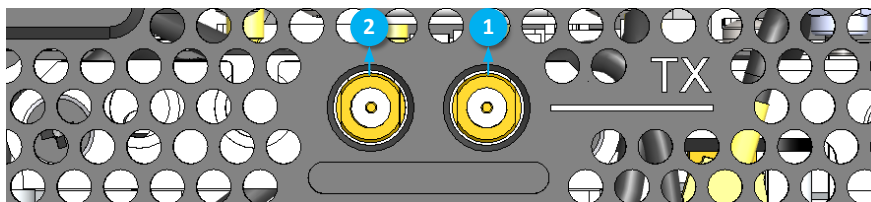
No.	Description
1	Internal PC Bluetooth (Not active)
2	MG Modem Scanner
3	Internal PC Wi-Fi (Not active)
4	Access Point (Not active)

- TX Ports (1-4):



No.	Description
1	TX 1
2	TX 2
3	TX 3
4	TX 4

- TX Ports (5-6)



No.	Description
1	TX 5
2	TX 6

7 Operational preparation overview

This section will cover a typical operational preparation using the HIVE v2.1 product. Items that will be covered include:

- Preparation for the mission
 - Device Check-up
- During The mission
 - Unit Health Monitoring

7.1 Preparation for the mission

Prior to proceeding with any mission, the user should ensure the system's operational readiness and prepare the unit depending on the mission needs.

7.1.1 System Check-ups

In order to prepare properly for a new mission, the user should perform the following checks:

- Ensure the unit is installed properly and ready to be turned on with the below checks:
 - Ensure the HIVE v2.1 Core is properly secured
 - Ensure all Antenna connections are securely in place
 - Ensure that the AC/DC Power supply is plugged in on the device and power is activated
- Ensure the laptop is fully charged
- Turn on the unit and make sure all devices (RANs, etc) are connected and available

7.2 During the mission

During the mission, the user can perform routine checks to increase mission success probability:

- Routinely check the battery level of the laptop and to ensure operational continuity
- Ensure the unit antenna is facing towards the direction of interest
- Ensure that the system ventilation inlets/outlets are not covered to allow the unit to operate normally.

8 System Specifications

Feature	Specifications
Overall System Specifications	
Number of BTS	6x BTS
Control Device	Laptop
Communication with Control Device	LAN Connection
System Specifications – RF	
Power Output	LTE – TDD: 18 dBm $\pm$ 1dBm 5G – TDD: 21 dBm $\pm$ 1dBm
Receiver Sensitivity	> -95dBm (according to Band)
Antenna Gain (TX & RX)	Hemispherical Antenna 1 – 3dBi
Antenna Gain (NWL)	Omnidirectional Antenna 0.5 – 2dBi
System Specifications – Power	
Power Consumption (Typical)	160 Watts
Power Consumption (Peak)	240 Watts
Operational Voltage	36 – 52V DC
AC Adaptor Specifications	1. Input: 85 – 264VAC 2. Output: 48VDC / 280W
System Specifications – Mechanical / Environmental	
Dimensions (HIVE Core + Fans)	H: 274mm / D: 114mm / W: 287mm
Weight (System Core Only)	5 Kgs
Operating Temperature Range	0 ° to 45° Celsius
Storage Temperature Range	-40 ° to 85° Celsius

9 Supported Bands

Band	GSM	UMTS	LTE (FDD)	LTE (TDD)	5G NR
Band 12 (700 a)	-	-	Yes	-	-
Band 13 (700 c)	-	-	Yes	-	-
Band 14 (700 PS)	-	-	Yes	-	-
Band 26 (850+)	-	-	Yes	-	Yes
Band 30 (2300 WCS)	-	-	Yes	-	-
Band 41 (TD 2500)	-	-	-	Yes	Yes
Band 66 (AWS)	-	-	Yes	-	-
Band 71 (600)	-	-	Yes	-	Yes
Band n77 (TD 3700)	-	-	-	-	Yes

10 RF Exposure Information

In the table below, Power and Gain are entered in units of dBm and dBi respectively and conversions to linear forms are used for the calculations.

Non-colocated transmitters									
Band	Mode	Separ. Distance (cm)	Output AVG Power (dBm)	Ant. Gain (dBi)	EIRP (dBm)	Duty Cycle (%)	EIRP (mW)	FCC PD (mW/cm ²)	FCC PD Limit (mW/cm ²)
LTE 12	QPSK	20.00	26.50	-2.00	24.50	100.0	281.84	0.06	1.00
LTE 13	QPSK	20.00	21.49	-2.00	19.49	100.0	88.92	0.02	1.00
LTE 14	QPSK	20.00	22.39	-2.00	20.39	100.0	109.40	0.02	1.00
LTE 26 (22H)	QPSK	20.00	26.95	1.00	27.95	100.0	623.73	0.12	1.00
LTE 26 (90S)	QPSK	20.00	27.30	1.00	28.30	100.0	676.08	0.13	1.00
LTE 30	QPSK	20.00	10.37	5.50	15.87	100.0	38.64	0.01	1.00
LTE 66	QPSK	20.00	27.62	5.50	33.12	100.0	2051.16	0.41	1.00
LTE 71	QPSK	20.00	17.27	-2.00	15.27	100.0	33.65	0.01	1.00
5G NR n26 (22H)	QPSK	20.00	23.80	1.00	24.80	100.0	302.00	0.06	1.00
5G NR n26 (90S)	QPSK	20.00	24.29	1.00	25.29	100.0	338.06	0.07	1.00
5G NR n71	QPSK	20.00	12.79	-2.00	10.79	100.0	11.99	0.00	1.00
5G NR n77(27#)	QPSK	20.00	12.46	6.00	18.46	100.0	70.15	0.01	1.00
5G NR n77(96#)	QPSK	20.00	13.21	6.00	19.21	100.0	83.37	0.02	1.00
5G NR n77(27#)	QPSK	20.00	15.87	6.00	21.87	100.0	153.82	0.03	1.00

Notes:

1. The minimum separation distance – physical distance between the transmitting antenna and a person – is 20cm (8 inches)
2. The manufacturer configures output power so that the maximum power after accounting for manufacturing tolerances, will never exceed the maximum power level measured
3. The output power in the table above is the maximum power per chain among various channels and various modes within the specific band
4. The antenna gain in the table above is the maximum antenna gain among various channels within the specified band

11 FCC Information

Supplier's Declaration of Conformity 47 CFR § 2.1077 Compliance Information

FCC ID: 2A7A2-FNH1

Unique identifier: HIVE

Responsible party – US contact information

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FCC Compliance statement subject to Part 15.105

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.