



ConnectCore MP15

System-on-module

Hardware Reference Manual

Revision history—90002510

Revision	Date	Description
1P	December 2022	Initial draft.
2P	March 2023	Added mapping between SOM pads and ADC channels to IOMUX tables; added note regarding data matrix on SOM label; added comment on pad B13; revised VCC_LICELL description; changed VSYS minimum voltage.
A	October 2023	Added certifications.

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Trace (if possible)
Description of issue
Steps to reproduce

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About the ConnectCore MP15

The Digi ConnectCore® MP15 System-on-Module (SOM) platform is a highly integrated, cost-effective, connected, secure embedded solution, built on the STM32MP15x MPU family. It integrates memory, power management, the Digi Microcontroller Assist™, pre-certified wireless connectivity and advanced Digi TrustFence device security with a complete, open-source Linux software platform based on the Yocto Project.

Features and functionality

- The ConnectCore MP15 system-on-module is based on the STM32MP processor from STMicroelectronics. This processor offers a number of interfaces, most of them multiplexed and not available simultaneously. The module has the following features:
- STM32MP157C dual ARM Cortex-A7 and single Cortex-M4 cores:
 - Cortex-A7 operating at up to 650 MHz.
 - 32 KB L1 instruction cache.
 - 32 KB L1 data cache.
 - 256 KB level 2 cache.
 - 3D GPU (Vivante - OpenGL ES 2.0) running at up to 533 MHz with performances up to 26 Mtriangle/s, 133 Mpixel/s.
 - Cortex-M4 operating at up to 209 MHz.
- Up to 512 MB, 16-bit DDR3 memory.
- Up to 512 GB, 8-bit SLC NAND flash memory.
- STPMIC1A Power Management IC (PMIC):
 - x4 adjustable buck SMPS converter.
 - x1 boost SMPS.
 - x1 USB OTG compliant power switch.
 - x1 general purpose power switch.
 - x4 adjustable general purpose LDOs.
 - x1 DDR reference voltage LDO.
 - x1 DDR3 termination/DDR bypass mode/general purpose LDO.
 - x1 USB PHY LDO.
- IEEE 802.11 a/b/g/n/ac WLAN interface.
- Bluetooth version 5.0.
- Debug interfaces:
 - System JTAG controller for STM32MP157C.
- STM32MP157C interfaces:
 - x6 I2C.
 - x4 UART.

- x4 USART.
- x6 SPI, three I2Ss full-duplex master/slave.
- x4 SAI.
- x1 SPDIF Rx.
- Management data input/output slave (MDIOS).
- x3 SDMMC.
- USB high-speed Host with two ports, two high-speed PHYs and a USB OTG high-speed with full-speed PHY or high-speed PHY shared with second port of USB Host.
- x2 FDCAN, one of them supporting TTCAN mode.
- x1 Gigabit Ethernet.
- HDMI-CED.
- x1 Flexible memory control (FMC) interface.
- x1 Quad-SPI Flash memory interface.
- x2 ADCs with 16-bit max resolution.
- x2 12-bit D/A converters.
- x1 digital filters for sigma delta modulator (DFSDM) with 8 channels/6 filters.
- x1 camera interface for CMOS sensors.
- x1 LCD-TFT display controller.
- x1 MIPI DSI.

Safety instructions

- The ConnectCore MP15 module cannot be guaranteed operation due to the radio link and so should not be used for interlocks in safety critical devices such as machines or automotive applications.
- The ConnectCore MP15 module has not been approved for use in (this list is not exhaustive):
 - nuclear applications
 - explosive or flammable atmospheres
- There are no user serviceable components inside the ConnectCore MP15 module. Do not modify the ConnectCore MP15 in any way. Modifications may exclude the module from any warranty and can cause the ConnectCore MP15 to operate outside of regulatory compliance for a given country, leading to the possible illegal operation of the radio.
- Use industry standard ESD protection when handling the ConnectCore MP15 module.
- Take care while handling to avoid electrical damage to the PCB and components.
- Do not expose ConnectCore MP15 module to water or moisture.
- Use this product with the antennas specified in the ConnectCore MP15 module user guides.
- The end user must be told how to remove power from the ConnectCore MP15 module or to locate the antennas 20 cm from humans or animals.

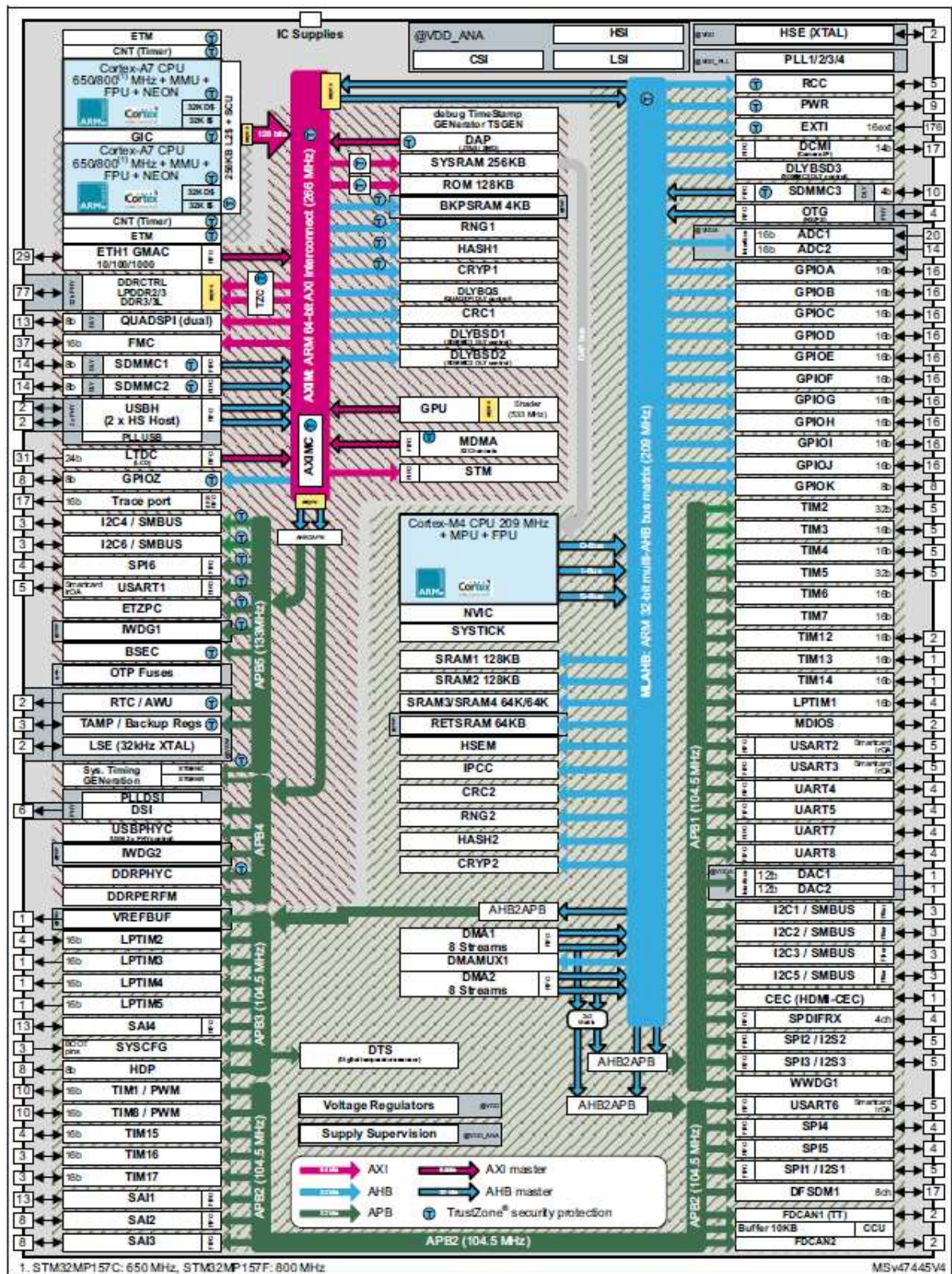
Block diagrams

The figures below show block diagrams of the ConnectCore MP15 module and of the STMicroelectronics STM32MP157 application processor.

ConnectCore MP15 module



STMicroelectronics STM32MP157 application processor



Power interfaces

System-on-module power architecture

The ConnectCore MP15 requires two primary power supply inputs: VSYS and VSYS2, which are the input power supplies to the on-module ST STPMIC1 power management IC (PMIC) that generates all required supply voltages for the module as well as the external interfaces.

The following table summarizes the PMIC regulators and switches on the ConnectCore MP15 SOM:

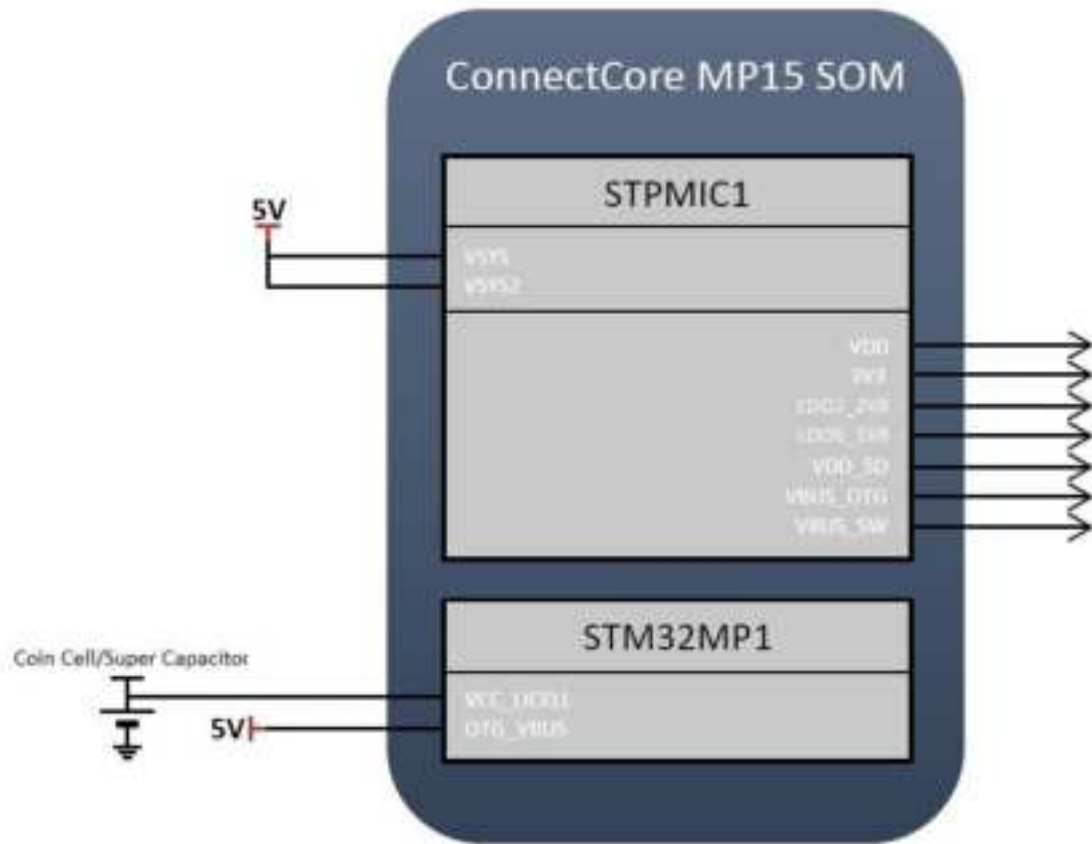
PMIC regulator	SOM power rail name	Input power supply	Internally used	Externally available
BUCK1	-	VSYS2	YES	NO
BUCK2	-	VSYS2	YES	NO
BUCK3	VDD	VSYS	YES	YES
BUCK4	3V3	VSYS	YES	YES
LDO1	-	3V3	YES	NO
LDO2	2V8	3V3	NO	YES
LDO3	-	-	YES	NO
LDO4	-	VSYS	YES	NO
LDO5	VDD_SD	3V3	NO	YES
LDO6	1V8	3V3	NO	YES
PWR_USB_SW	VBUS_OTG	-	NO	YES
PWR_SW	VBUS_SW	-	NO	YES
DDR_REF	-	VSYS2	YES	NO
BOOST	-	VSYS	YES	NO

In addition to the input power supplies of the PMIC, other power domains of the SOM must also be set externally. This allows power management flexibility so you can adapt the input voltage of the different interfaces. The following table lists the input power rails that must be powered externally to the SOM together with the devices/power domains they power:

Input rail	Internally connected to	Description
VCC_LICELL	STM32MP1 CPU, VBAT	Support for RTC, backup registers, RAM retention and backup SRAM on the CPU.
OTG_VBUS	STM32MP1 CPU, OTG_VBUS	

Reference power diagram

The following diagram represents the power architecture of the ConnectCore MP15 module in a typical application:



Electrical characteristics

Input power rails

The following table lists the electrical specifications of all input power rails for the ConnectCore MP15:

Device	SOM power rail	Input voltage (V)		
		Minimum	Typical	Maximum
PMIC	VSYS	3.7	-	5.5
	VSYS2	2.8	-	5.5

Device	SOM power rail	Input voltage (V)		
		Minimum	Typical	Maximum
CPU	VCC_LICELL	1.2	-	3.6
	OTG_VBUS	Vss-0.3 ¹	-	6.0 ¹

¹ Absolute maximum ratings.

Output power rails

The following table lists the electrical specifications of all output power rails for the ConnectCore MP15:

SOM power rail	Used internally in the SOM	Output voltage			Accuracy (%)		Continuous output current (mA) ¹	Turn-on time (us)		Turn-off time (ms)
		Min	Typ	Max	Min	Max		Typ	Max	Max
3V3	YES	-	3.3	-	-4	4	2000	235	400	1.5
VDD	YES	-	3.3	-	-4	4	500	235	400	1.5
VDD_SD	NO	1.7	-	3.9	-2	2	350	160	-	3
LDO2_2V8	NO	1.7	-	3.3	-2	2	350	160	-	3
LDO6_1V8	NO	0.9	-	3.3	-2	2	150	100	-	3
VBUS_OTG	NO	-	-	-	-	-	500	3000	-	3
VBUS_SW	NO	-	-	-	-	-	1000	3000	-	3

Note Some of the electrical characteristics may depend on the configuration and operation mode of the different regulators. For a complete description of the electrical characteristics of the different output power rails (PMIC regulators), see the STPMIC1 datasheet.

¹ The maximum output current involves both external and internal circuitry. For those regulators that are used internally in the SOM, the current available outside will be lower.

Bootstrap

The ConnectCore MP15 module can be configured to boot from different devices and interfaces as determined by the boot ROM. The configuration of the booting process of the CPU is done through the BOOT pin and OTP bytes.

BOOT2	BOOT1	BOOT0	Boot mode
0	0	0	UART and USB port 1
0	0	1	Serial NOR Flash
0	1	0	eMMC (default SDMMC2)
0	1	1	NAND Flash
1	0	0	Reserved
1	0	1	SD card (default SDMMC1)
1	1	0	UART and USB port 2
1	1	1	Serial NAND Flash

Wireless interfaces

The ConnectCore MP15 System-on-module combines a wireless local area network (WLAN) and Bluetooth dual solution to support IEEE802.11 a/b/g/n/ac WLAN standards and Bluetooth 5, enabling seamless integration of WLAN/Bluetooth and Low Energy technology. Digi also offers a non-wireless variant of the ConnectCore MP15 module.

The following sections include specifications for the wireless interfaces available on the ConnectCore MP15 module.

WLAN IEEE 802.11a/b/g/n/ac

The following sections specify the performance of the WLAN IEEE 802.11a/b/g/n/ac interface on the ConnectCore MP15 module.

Modulation and data rates

The following tables list modulation values for the ConnectCore MP15 module, which supports the following WLAN standards:

Mode	Modulation & coding	Rate
802.11b	DBPSK	1 Mbps
	DQPSK	2 Mbps
	CCK	5.5 Mbps
	CCK	11 Mbps

Mode	Modulation & coding	Rate
802.11ga	BPSK-1/2	6 Mbps
	BPSK-3/4	9 Mbps
	QPSK-1/2	12 Mbps
	QPSK-3/4	18 Mbps
	16QAM-1/2	24 Mbps
	16QAM-3/4	36 Mbps
	64QAM-2/3	48 Mbps
	64QAM-3/4	54 Mbps
802.11n	BPSK-1/2	MCS0
	QPSK-1/2	MCS1
	QPSK-3/4	MCS2
	16QAM-1/2	MCS3
	16QAM-3/4	MCS4
	64QAM-2/3	MCS5
	64QAM-3/4	MCS6
	64QAM-5/6	MCS7
802.11ac	BPSK-1/2	MCS0
	QPSK-1/2	MCS1
	QPSK-3/4	MCS2
	16QAM-1/2	MCS3
	16QAM-3/4	MCS4
	64QAM-2/3	MCS5
	64QAM-3/4	MCS6
	64QAM-5/6	MCS7
	256QAM-3/4	MCS8
	256QAM-5/6	MCS9

Data rate (Mbps) - Non Short Guard Interval (Non-SGI)

Data rate (Mbps)		802.11b		802.11ga		802.11n		802.11ac		
		DBPSK	CCK	BPSK-1/2	64QAM-3/4	BPSK-1/2	64QAM-5/6	BPSK-1/2	64QAM-5/6	256QAM-5/6
Modulation		1 Mbps	11 Mbps	6 Mbps	54 Mbps	MCS0	MCS7	MCS0	MCS7	MCS9
2.4 GHz	HT20	1	11	6	54	6.5	65	6.5	65	
	HT40					13.5	135	13.5	135	180
5 GHz	HT20			6	54	6.5	65	6.5	65	
	HT40					13.5	135	13.5	135	180
	HT80							29.3	292.5	390

Data rate (Mbps) - Short Guard Interval (SGI)

Mode		802.11b		802.11ga		802.11n		802.11ac		
		DBPSK	CCK	BPSK-1/2	64QAM-3/4	BPSK-1/2	64QAM-5/6	BPSK-1/2	64QAM-5/6	256QAM-5/6
Modulation		1 Mbps	11 Mbps	6 Mbps	54 Mbps	MCS0	MCS7	MCS0	MCS7	MCS9
2.4 GHz	HT20	1	11	6	54	7.2	72.2	7.2	72.2	
	HT40					15	150	15	150	200
5 GHz	HT20			6	54	7.2	72.2	7.2	72.2	
	HT40					15	150	15	150	200
	HT80							32.5	325	433.3

RF channels

The ConnectCore MP15 module supports the following frequency bands:

RF band	Ch. BW	Ch. spacing	Channel number (Center freq. MHz)
2.4 GHz	20 MHz	5 MHz	1(2412), 2(2417), 3(2422), 4(2427), 5(2432), 6(2437), 7(2442), 8(2447), 9(2452), 10(2457), 11(2462), 12(2467), 13(2472), 14(2484)
	40 MHz	5 MHz	3(2422), 11(2462)

RF band	Ch. BW	Ch. spacing	Channel number (Center freq. MHz)
5 GHz	20 MHz	20 MHz	36(5180), 40(5200), 44(5220), 48(5240), 52(5260), 56(5280), 60(5300), 64(5320), 100(5500), 104(5520), 108(5540), 112(5560), 116(5580), 120(5600), 124(5620), 128(5640), 132(5660), 136(5680), 140(5700), 144(5720), 149(5745), 153(5765), 157(5785), 161(5805), 165(5825)
	40 MHz	40 MHz	38(5190), 46(5230), 54(5270), 62(5310), 102(5510), 110(5550), 118(5590), 126(5630), 134(5670), 142(5710), 151(5755), 159(5795)
	80 MHz	80 MHz	42(5210), 58(5290), 106(5530), 122(5610), 138(5690), 155(5775)

Note Dependent upon regulatory bodies.

2.4 GHz

2.4 GHz band channel #	Center frequency (MHz)	EUROPE (ETSI)	NORTH AMERICA (FCC)	JAPAN
1	2412	✓	✓	✓
2	2417	✓	✓	✓
3	2422	✓	✓	✓
4	2427	✓	✓	✓
5	2432	✓	✓	✓
6	2437	✓	✓	✓
7	2442	✓	✓	✓
8	2447	✓	✓	✓
9	2452	✓	✓	✓
10	2457	✓	✓	✓
11	2462	✓	✓	✓
12	2467	✓	No	✓
13	2472	✓	No	✓
14	2484	No	No	802.11b only

5 GHz

5 GHz band channel #	Center frequency (MHz)	EUROPE (ETSI)	NORTH AMERICA (FCC)	JAPAN
36	5180	Indoors	✓	✓
40	5200	Indoors	✓	✓
44	5220	Indoors	✓	✓
48	5240	Indoors	✓	✓
52	5260	Indoors / DFS / TPC	DFS	DFS / TPC
56	5280	Indoors / DFS / TPC	DFS	DFS / TPC
60	5300	Indoors / DFS / TPC	DFS	DFS / TPC
64	5320	Indoors / DFS / TPC	DFS	DFS / TPC
100	5500	DFS / TPC	DFS	DFS / TPC
104	5520	DFS / TPC	DFS	DFS / TPC
108	5540	DFS / TPC	DFS	DFS / TPC
112	5560	DFS / TPC	DFS	DFS / TPC
116	5580	DFS / TPC	DFS	DFS / TPC
120	5600	DFS / TPC	DFS	DFS / TPC
124	5620	DFS / TPC	DFS	DFS / TPC
128	5640	DFS / TPC	DFS	DFS / TPC
132	5660	DFS / TPC	DFS	DFS / TPC
136	5680	DFS / TPC	DFS	DFS / TPC
140	5700	DFS / TPC	DFS	DFS / TPC
149	5745	SRD	✓	No Access
153	5765	SRD	✓	No Access
157	5785	SRD	✓	No Access
161	5805	SRD	✓	No Access
165	5825	SRD	✓	No Access

Note

DFS = Dynamic Frequency Selection

TPC = Transmit Power Control

SRD = Short Range Devices 25 mW max power

Transmit power

The following table lists nominal transmit power values for the ConnectCore MP15 module based on Murata LBEE5PK2AE-564 specification.

RF band	Standard	Output power (dBm)
2.4 GHz	802.11b	17 (1Mbps) - 17 (11Mbps)
	802.11g	16 (6Mbps) - 16 (54Mbps)
	802.11n	16 (MCS0) - 14 (MCS7)
5 GHz	802.11a	13 (6Mbps) - 14 (54Mbps)
	802.11n (HT20)	16 (MCS0) - 14 (MCS7)
	802.11ac (VHT20)	16 (MCS0) - 13 (MCS8)
	802.11n (HT40)	14 (MCS0) - 13 (MCS7)
	802.11ac (VHT40)	14 (MCS0) - 11 (MCS9)
	802.11ac (VHT80)	13 (MCS0) - 12 (MCS9)

Antenna ports

The ConnectCore MP15 module has one antenna port on the module via a dedicated U.FL connector. The antenna port supports WLAN and Bluetooth functionality.

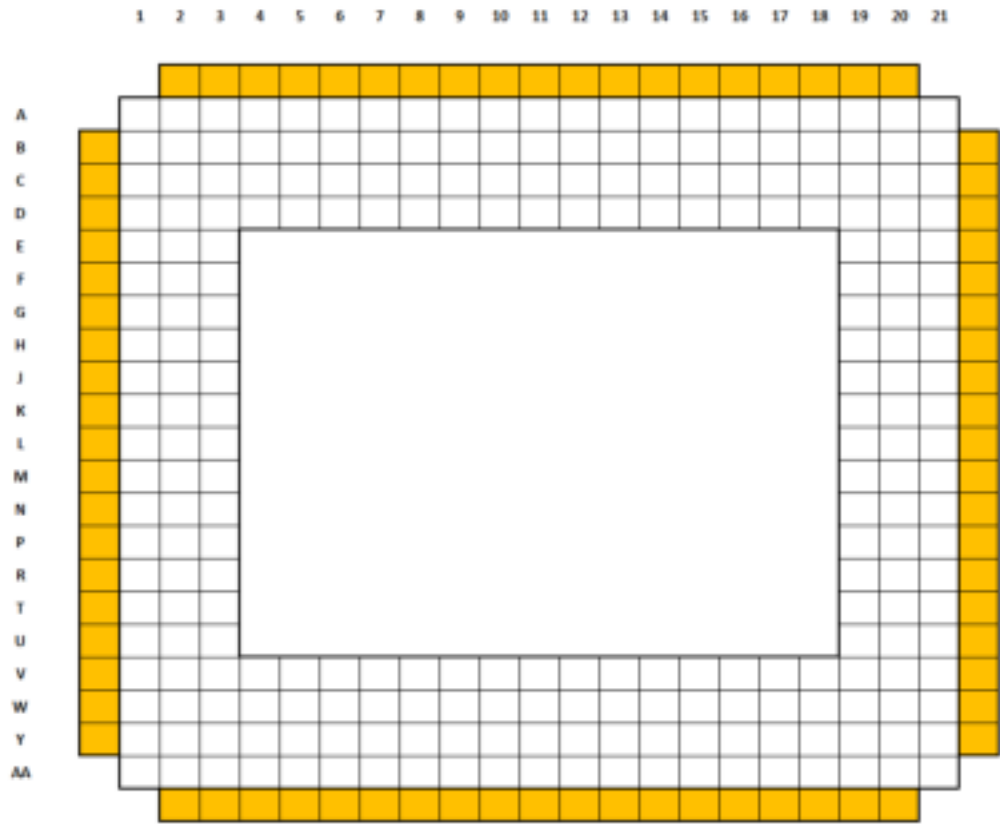
Bluetooth

The ConnectCore MP15 module supports both Bluetooth and Bluetooth Low Energy protocols:

- Bluetooth 5 with all Bluetooth 4.2 optional features. Bluetooth class 1 and class 2 transmitter operation.
- Integrated WLAN-Bluetooth coexistence.

Module pinout

The ConnectCore MP15 module has a mixed pad structure. The module provides 245 LGA pins, 76 of them connected to the peripheral castellated pads. The general layout can be found on the following diagram:



White cells: LGA pads
Orange cells: castellated pads

Note Pad A1 is unconnected. This pad is meant for module-orientation purposes; its shape is square, whereas all other pads are circular. Pad A1 should not be soldered down to a corresponding pad on the carrier board.

External signals and pin multiplexing

The following tables provide the pinout information of the ConnectCore MP15 module. For additional information related to the signals listed in the table, refer to the STMicroelectronics STM32MP1 technical documentation.

Note The Digi ConnectCore Smart IOMUX tool can dramatically simplify pin configuration and resolution. You can enter the list of interfaces required by your project and use the Smart IOMUX graphical interface to mock up configuration options, resulting in full pin assignment and device tree snippets that match your desired functionality. See the [Smart IOMUX User Guide](#) for more information and download instructions.

The microprocessor used on this module, like all CMOS devices, can be driven into a latch-up condition if any I/O pin is driven outside of its associated power rail. Care must be taken to:

- Never drive an I/O pin beyond its positive rail or below ground.
- Never drive an I/O pin from an external power source during the power-on or reset sequences.
- Never hot-swap the module or interrupt its ground connection to external circuitry.



Latch-up is a condition that can cause excessive current draw and result in excessive heating of the microprocessor or its power supplies. This excessive heating can permanently damage the microprocessor and/or its supporting components.

When you use an external supply on the carrier board supporting the ConnectCore MP15 module, make sure this supply is NOT back driving STM32MP1 I/Os while their power rails are not enabled. For example, this can happen when an external 3.3V supply is available on the carrier board and this supply powers components driven by STM32MP1 I/Os. In this case, Digi recommends you enable the external power supply after internal 3.3V is enabled, or add the necessary protection circuitry to avoid back voltage (leakage).

Castellated pad signals and multiplexing

Castellated pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP1 pad name	Alternate functions	Additional functions	Power group	Comments
1 / B1	CPAD1	VCC_LICELL	VBAT	-	-	VCC_LICELL	Coin cell supply.
2 / C1	CPAD2	VSYS	-	-	-	VSYS	Input power line.
3 / D1	CPAD3	NC	-	-	-	-	
4 / E1	CPAD4	NC	-	-	-	-	
5 / F1	CPAD5	GND	-	-	-	-	
6 / G1	CPAD6	VSYS	-	-	-	VSYS	Input power line.
7 / H1	CPAD7	VSYS2	-	-	-	VSYS2	Input power line.
8 / J1	CPAD8	GND	-	-	-	-	
9 / K1	CPAD9	3V3	-	-	-	3V3	Output power line.
10 / L1	CPAD10	LTDC_G4	PH15	AF3: TIM8_CH3N AF13: DCMI_D11 AF14: LCD_G4	-	VDD	
11 / M1	CPAD11	LTDC_G5	PF11	AF5: SPI5_MOSI AF10: SAI2_SD_B AF13: DCMI_D12 AF14: LCD_G5	ADC1_INP2	VDD	
12 / N1	CPAD12	NC	-	-	-	-	
13 / P1	CPAD13	NRST	NRST	-	-	-	Reset line of the CPU. Recommendation:

Castellated pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP1 pad name	Alternate functions	Additional functions	Power group	Comments
							leave this pin floating.
14 / R1	CPAD14	I2S2_WS	PI0	AF2: TIM5_CH4 AF5: SPI2_NSS/I2S2_WS AF13: DCMI_D13 AF14: LCD_G5	-	VDD	
15 / T1	CPAD15	I2S2_CK	PI1	AF3: TIM8_BKIN2 AF5: SPI2_SCK/I2S2_CK AF13: DCMI_D8 AF14: LCD_G6	-	VDD	
16 / U1	CPAD16	SDMMC2_D1	PB15	AF0: RTC_REFIN AF1: TIM1_CH3N AF2: TIM12_CH2 AF3: TIM8_CH3N AF4: USART1_RX AF5: SPI2_MOSI/I2S2_SDO AF6: DFSDM1_CKIN2 AF9: SDMMC2_D1	-	VDD	
17 / V1	CPAD17	SDMMC2_CMD	PG6	AF0: TRACED14 AF1: TIM17_BKIN AF10: SDMMC2_CMD AF13: DCMI_D12 AF14: LCD_R7	-	VDD	
18 / W1	CPAD18	PA13	PA13	AF0: DBTRGO AF1: DBTRGI AF2: MCO1 AF8: UART4_TX	BOOTFAILN	VDD	
19 / Y1	CPAD19	BOOT1	BOOT1	-	-	VDD	
20 / AA2	CPAD20	SDMMC2_D0	PB14	AF1: TIM1_CH2N	-	VDD	

Castellated pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP1 pad name	Alternate functions	Additional functions	Power group	Comments
				AF2: TIM12_CH1 AF3: TIM8_CH2N AF4: USART1_TX AF5: SPI2_MISO/I2S2_SDI AF6: DFSDM1_DATIN2 AF7: USART3_RTS/USART3_DE AF9: SDMMC2_D0			
21 / AA3	CPAD21	SDMMC2_CLK	PE3	AF0: TRACED0 AF4: TIM15_BKIN AF6: SAI1_SD_B AF9: SDMMC2_CK AF12: FMC_A19	-	VDD	
22 / AA4	CPAD22	SDMMC2_D2	PB3	AF0: TRACED9 AF1: TIM2_CH2 AF4: SAI4_CK1 AF5: SPI1_SCK/I2S1_CK AF6: SPI3_SCK/I2S3_CK AF8: SPI6_SCK AF9: SDMMC2_D2 AF12: SAI4_MCLK_A AF13: UART7_RX	-	VDD	
23 / AA5	CPAD23	SDMMC2_D3	PB4	AF0: TRACED8 AF1: TIM16_BKIN AF2: TIM3_CH1 AF4: SAI4_CK2 AF5: SPI1_MISO/I2S1_SDI AF6: SPI3_MISO/I2S3_SDI AF7: SPI2_NSS/I2S2_WS AF8: SPI6_MISO AF9: SDMMC2_D3 AF12: SAI4_SCK_A AF13: UART7_TX	-	VDD	

Castellated pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP1 pad name	Alternate functions	Additional functions	Power group	Comments
24 / AA6	CPAD24	UART4_TX	PG11	AF0: TRACED11 AF4: USART1_TX AF6: UART4_TX AF8: SPDIFRX_IN1 AF11: ETH1_GMII_TX_EN/ETH1_MII_TX_EN/ETH1_RGMII_TX_CTL/ETH1_RMII_TX_EN AF13: DCM1_D3 AF14: LCD_B3	-	VDD	
25 / AA7	CPAD25	UART4_RX	PB2	AF0: TRACED4 AF1: RTC_OUT2 AF2: SAI1_D1 AF3: DFSDM1_CKIN1 AF4: USART1_RX AF5: I2S_CKIN AF6: SAI1_SD_A AF7: SPI3_MOSI/I2S3_SDO AF8: UART4_RX AF9: QUADSPI_CLK	-	VDD	
26 / AA8	CPAD26	USB2_D_P	USB_DP2	-	USBH_HS_DP2 OTG_HS_DP	-	
27 / AA9	CPAD27	USB2_D_N	USB_DM2	-	USBH_HS_DM2 OTG_HS_DM	-	
28 / AA10	CPAD28	GND	-	-	-	-	
29 / AA11	CPAD29	OTG_VBUS	OTG_VBUS	-	OTG_FS_VBUS OTG_HS_VBUS	-	Input power line.
30 / AA12	CPAD30	I2S2_SDI	PI2	AF3: TIM8_CH4 AF5: SPI2_MISO/I2S2_SDI AF13: DCM1_D9	-	VDD	

Castellated pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP1 pad name	Alternate functions	Additional functions	Power group	Comments
				AF14: LCD_G7			
31 / AA13	CPAD31	USB_OTG_ID	PA10	AF1: TIM1_CH3 AF5: SPI3_NSS/I2S3_WS AF7: USART1_RX AF11: MDIOS_MDIO AF12: SAI4_FS_B AF13: DCMI_D1 AF14: LCD_B1	OTG_FS_ID OTG_HS_ID	-	
32 / AA14	CPAD32	I2S2_SDO	PI3	AF3: TIM8_ETR AF5: SPI2_MOSI/I2S2_SDO AF13: DCMI_D10	-	VDD	
33 / AA15	CPAD33	BOOT2	BOOT2	-	-	VDD	
34 / AA16	CPAD34	JTMS-SWDIO	JTMS-SWDIO	-	-	-	
35 / AA17	CPAD35	USB1_D_P	USB_DP1	-	USBH_HS_DP1	-	
36 / AA18	CPAD36	USB1_D_N	USB_DM1	-	USBH_HS_DM1	-	
37 / AA19	CPAD37	ETH1_MDC	PC1	AF0: TRACED0 AF2: SAI1_D1 AF3: DFSDM1_DATIN0 AF4: DFSDM1_CKIN4 AF5: SPI2_MOSI/I2S2_SDO AF6: SAI1_SD_A AF9: SDMMC2_CK AF11: ETH1_MDC AF12: MDIOS_MDC	ADC1_INP11 ADC1_INN10 ADC2_INP11 ADC2_INN10 TAMP_IN3 WKUP6	VDD	
38 / AA20	CPAD38	ETH1_MDIO	PA2	AF1: TIM2_CH3 AF2: TIM5_CH3 AF3: LPTIM4_OUT AF4: TIM15_CH1	ADC1_INP14 WKUP2	VDD	

Castellated pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP1 pad name	Alternate functions	Additional functions	Power group	Comments
				AF7: USART2_TX AF8: SAI2_SCK_B AF10: SDMMC2_D0DIR AF11: ETH1_MDIO AF12: MDIOS_MDIO AF14: LCD_R1			
39 / Y21	CPAD39	JTDO-TRACESWO	JTDO-TRACESWO	-	-	-	
40 / W21	CPAD40	JTCK-SWCLK	JTCK-SWCLK	-	-	-	
41 / V21	CPAD41	JTDI	JTDI	-	-	-	
42 / U21	CPAD42	JTRST	JTRST	-	-	-	
43 / T21	CPAD43	USART3_TX	PD8	AF3: DFSDM1_CKIN3 AF6: SAI3_SCK_B AF7: USART3_TX AF9: SPDIFRX_IN2 AF12: FMC_AD13/FMC_D13 AF14: LCD_B7	-	VDD	
44 / R21	CPAD44	USART3_RX	PB12	AF1: TIM1_BKIN AF2: I2C6_SMBA AF4: I2C2_SMBA AF5: SPI2_NSS/I2S2_WS AF6: DFSDM1_CKIN7 AF7: USART3_CK AF8: USART3_RX AF9: FDCAN2_RX AF11: ETH1_GMII_TXD0/ETH1_MII_TXD0/ETH1_RGMII_TXD0/ETH1_RMII_TXD0 AF14: UART5_RX	-	VDD	

Castellated pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP1 pad name	Alternate functions	Additional functions	Power group	Comments
45 / P21	CPAD45	GND	-	-	-	-	
46 / N21	CPAD46	USART3_RTS	PG8	AF0: TRACED15 AF1: TIM2_CH1/TIM2_ETR AF2: ETH_CLK AF3: TIM8_ETR AF5: SPI6_NSS AF6: SAI4_D2 AF7: USART6_RTS/USART6_DE AF8: USART3_RTS/USART3_DE AF9: SPDIFRX_IN3 AF10: SAI4_FS_A AF11: ETH1_PPS_OUT AF14: LCD_G7	-	VDD	
47 / M21	CPAD47	USART3_CTS	PB13	AF1: TIM1_CH1N AF3: DFSDM1_CKOUT AF4: LPTIM2_OUT AF5: SPI2_SCK/I2S2_CK AF6: DFSDM1_CKIN1 AF7: USART3_CTS/USART3_NSS AF9: FDCAN2_TX AF11: ETH1_GMII_TXD1/ETH1_MII_TXD1/ETH1_RGMII_TXD1/ETH1_RMII_TXD1 AF14: UART5_TX	-	VDD	
48 / L21	CPAD48	ETH1_RXD0	PC4	AF3: DFSDM1_CKIN2 AF5: I2S1_MCK AF9: SPDIFRX_IN3 AF11: ETH1_GMII_RXD0/ETH1_RGMII_RXD0/ETH1_RMII_RXD0	ADC1_INP4 ADC2_INP4	VDD	

Castellated pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP1 pad name	Alternate functions	Additional functions	Power group	Comments
49 / K21	CPAD49	ETH1_RX_DV	PA7	AF1: TIM1_CH1N AF2: TIM3_CH2 AF3: TIM8_CH1N AF4: SAI4_D1 AF5: SPI1_MOSI/I2S1_SDO AF8: SPI6_MOSI AF9: TIM14_CH1 AF10: QUADSPI_CLK AF11: ETH1_GMII_RX_DV/ETH1_MII_RX_DV/ETH1_RGMII_RX_CTL/ETH1_RMII_CRS_DV AF12: SAI4_SD_A	ADC1_INP7 ADC1_INN3 ADC2_INP7 ADC2_INN3	VDD	
50 / J21	CPAD50	ETH1_RX_ER	PB10	AF1: TIM2_CH3 AF3: LPTIM2_IN1 AF4: I2C2_SCL AF5: SPI2_SCK/I2S2_CK AF6: DFSDM1_DATIN7 AF7: USART3_TX AF9: QUADSPI_BK1_NCS AF11: ETH1_GMII_RX_ER/ETH1_MII_RX_ER AF14: LCD_G4	-	VDD	
51 / H21	CPAD51	ETH1_TXD1	PG14	AF0: TRACED1 AF1: LPTIM1_ETR AF5: SPI6_MOSI AF6: SAI4_DI AF7: USART6_TX AF9: QUADSPI_BK2_IO3 AF10: SAI4_SD_A AF11: ETH1_GMII_TXD1/ETH1_MII_TXD1/ETH1_RGMII_	-	VDD	

Castellated pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP1 pad name	Alternate functions	Additional functions	Power group	Comments
				TXD1/ETH1_RMII_TXD1 AF12: FMC_A25 AF14: LCD_B0			
52 / G21	CPAD52	ETH1_TX_EN	PB11	AF1: TIM2_CH4 AF3: LPTIM2_ETR AF4: I2C2_SDA AF6: DFSDM1_CKIN7 AF7: USART3_RX AF11: ETH1_GMII_TX_EN/ETH1_MII_TX_EN/ETH1_RGMII_TX_CTL/ETH1_RMII_TX_EN AF13: DSI_TE AF14: LCD_G5	-	VDD	
53 / F21	CPAD53	ETH1_REF_CLK	PA1	AF0: ETH_CLK AF1: TIM2_CH2 AF2: TIM5_CH2 AF3: LPTIM3_OUT AF4: TIM15_CH1N AF7: USART2_RTS/USART2_DE AF8: UART4_RX AF9: QUADSPI_BK1_IO3 AF10: SAI2_MCLK_B AF11: ETH1_GMII_RX_CLK/ETH1_MII_RX_CLK/ETH1_RGMII_RX_CLK/ETH1_RMII_REF_CLK AF14: LCD_R2	ADC1_INP17 ADC1_INN16	VDD	
54 / E21	CPAD54	ETH1_RXD1	PC5	AF2: SAI1_D3 AF3: DFSDM1_DATIN2 AF4: SAI4_D4 AF6: SAI1_D4	ADC1_INP8 ADC1_INN4 ADC2_INP8 ADC2_INN4	VDD	

Castellated pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP1 pad name	Alternate functions	Additional functions	Power group	Comments
				AF9: SPDIFRX_IN4 AF11: ETH1_GMII_RXD1/ETH1_MII_RXD1/ETH1_RGMII_RXD1/ETH1_RMII_RXD1 AF12: SAI4_D3			
55 / D21	CPAD55	ETH1_TXD0	PG13	AF0: TRACED0 AF1: LPTIM1_OUT AF2: SAI1_CK2 AF4: SAI4_CK1 AF5: SPI6_SCK AF6: SAI1_SCK_A AF7: USART6_CTS/USART6_NSS AF10: SAI4_MCLK_A AF11: ETH1_GMII_TXD0/ETH1_MII_TXD0/ETH1_RGMII_TXD0/ETH1_RMII_TXD0 AF12: FMC_A24 AF14: LCD_R0	-	VDD	
56 / C21	CPAD56	LTDC_CLK	PG7	AF0: TRACED5 AF6: SAI1_MCLK_A AF7: USART6_CK AF8: UART8_RTS/UART8_DE AF9: QUADSPI_CLK AF11: QUADSPI_BK2_IO3 AF13: DCMI_D13 AF14: LCD_CLK	-	VDD	
57 / B21	CPAD57	LTDC_HSYNC	PI10	AF0: HDP0 AF8: USART3_CTS/USART3_NSS AF11: ETH1_GMII_RX_ER/ETH1_MII_RX_ER	-	VDD	

Castellated pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP1 pad name	Alternate functions	Additional functions	Power group	Comments
				AF14: LCD_HSYNC			
58 / A20	CPAD58	LTDC_B6	PI6	AF3: TIM8_CH2 AF10: SAI2_SD_A AF13: DCMI_D6 AF14: LCD_B6	-	VDD	
59 / A19	CPAD59	LTDC_B0	PE4	AF0: TRACED1 AF2: SAI1_D2 AF3: DFSDM1_DATIN3 AF4: TIM15_CH1N AF5: SPI4_NSS AF6: SAI1_FS_A AF7: SDMMC2_CKIN AF8: SDMMC1_CKIN AF9: SDMMC2_D4 AF11: SDMMC1_D4 AF12: FMC_A20 AF13: DCMI_D4 AF14: LCD_B0	-	VDD	
60 / A18	CPAD60	LTDC_B2	PA3	AF1: TIM2_CH4 AF2: TIM5_CH4 AF3: LPTIM5_OUT AF4: TIM15_CH2 AF7: USART2_RX AF9: LCD_B2 AF11: ETH1_GMII_COL/ETH1_MII_COL AF14: LCD_B5	ADC1_INP15 PVD_IN	VDD	
61 / A17	CPAD61	LTDC_B5	PI5	AF3: TIM8_CH1 AF10: SAI2_SCK_A AF13: DCMI_VSYNC AF14: LCD_B5	-	VDD	

Castellated pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP1 pad name	Alternate functions	Additional functions	Power group	Comments
62 / A16	CPAD62	LTDC_G2	PH13	AF3: TIM8_CH1N AF8: UART4_TX AF9: FDCAN1_TX AF14: LCD_G2	-	VDD	
63 / A15	CPAD63	LTDC_G3	PG10	AF0: TRACED10 AF8: UART8_CTS AF9: LCD_G3 AF10: SAI2_SD_B AF11: QUADSPI_BK2_IO2 AF12: FMC_NE3 AF13: DCMI_D2 AF14: LCD_B2	-	VDD	
64 / A14	CPAD64	LTDC_B7	PI7	AF3: TIM8_CH3 AF10: SAI2_FS_A AF13: DCMI_D7 AF14: LCD_B7	-	VDD	
65 / A13	CPAD65	GND	-	-	-	-	
66 / A12	CPAD66	LTDC_B4	PI4	AF3: TIM8_BKIN AF10: SAI2_MCLK_A AF13: DCMI_D5 AF14: LCD_B4	-	VDD	
67 / A11	CPAD67	LTDC_VSYNC	PI9	AF0: HDP1 AF1: UART4_RX AF9: FDCAN1_RX AF14: LCD_VSYNC	-	VDD	
68 / A10	CPAD68	LTDC_B3	PD10	AF0: RTC_REFIN AF1: TIM16_BKIN AF3: DFSDM1_CKOUT AF4: I2C5_SMBA AF5: SPI3_MISO/I2S3_SDI	-	VDD	

Castellated pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP1 pad name	Alternate functions	Additional functions	Power group	Comments
				AF6: SAI3_FS_B AF7: USART3_CK AF12: FMC_AD15/FMC_D15 AF14: LCD_B3			
69 / A9	CPAD69	LTDC_DE	PF10	AF1: TIM16_BKIN AF2: SAI1_D3 AF3: SAI4_D4 AF6: SAI1_D4 AF9: QUADSPI_CLK AF12: SAI4_D3 AF13: DCMI_D11 AF14: LCD_DE	-	VDD	
70 / A8	CPAD70	NC	-	-	-	-	
71 / A7	CPAD71	NC	-	-	-	-	
72 / A6	CPAD72	NC	-	-	-	-	
73 / A5	CPAD73	NC	-	-	-	-	
74 / A4	CPAD74	NC	-	-	-	-	
75 / A3	CPAD75	NC	-	-	-	-	
76 / A2	CPAD76	NC	-	-	-	-	

LGA pad signals and multiplexing

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
A2	LGA_A2	NC	-	-	-	-	
A3	LGA_A3	NC	-	-	-	-	
A4	LGA_A4	NC	-	-	-	-	
A5	LGA_A5	NC	-	-	-	-	
A6	LGA_A6	NC	-	-	-	-	
A7	LGA_A7	NC	-	-	-	-	
A8	LGA_A8	NC	-	-	-	-	
A9	LGA_A9	LTDC_DE	PF10	AF1: TIM16_BKIN AF2: SAI1_D3 AF3: SAI4_D4 AF6: SAI1_D4 AF9: QUADSPI_CLK AF12: SAI4_D3 AF13: DCM1_D11 AF14: LCD_DE	-	VDD	
A10	LGA_A10	LTDC_B3	PD10	AF0: RTC_REFIN AF1: TIM16_BKIN AF3: DFSDM1_CKOUT AF4: I2C5_SMBA AF5: SPI3_MISO/I2S3_SDI AF6: SAI3_FS_B AF7: USART3_CK AF12: FMC_AD15/FMC_	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				D15 AF14: LCD_B3			
A11	LGA_A11	LTDC_VSYNC	PI9	AF0: HDP1 AF1: UART4_RX AF9: FDCAN1_RX AF14: LCD_VSYNC	-	VDD	
A12	LGA_A12	LTDC_B4	PI4	AF3: TIM8_BKIN AF10: SAI2_MCLK_A AF13: DCMI_D5 AF14: LCD_B4	-	VDD	
A13	LGA_A13	GND	-	-	-	-	
A14	LGA_A14	LTDC_B7	PI7	AF3: TIM8_CH3 AF10: SAI2_FS_A AF13: DCMI_D7 AF14: LCD_B7	-	VDD	
A15	LGA_A15	LTDC_G3	PG10	AF0: TRACED10 AF8: UART8_CTS AF9: LCD_G3 AF10: SAI2_SD_B AF11: QUADSPI_BK2_IO2 AF12: FMC_NE3 AF13: DCMI_D2 AF14: LCD_B2	-	VDD	
A16	LGA_A16	LTDC_G2	PH13	AF3: TIM8_CH1N AF8: UART4_TX AF9: FDCAN1_TX AF14: LCD_G2	-	VDD	
A17	LGA_A17	LTDC_B5	PI5	AF3: TIM8_CH1	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				AF10: SAI2_SCK_A AF13: DCM1_VSYNC AF14: LCD_B5			
A18	LGA_A18	LTDC_B2	PA3	AF1: TIM2_CH4 AF2: TIM5_CH4 AF3: LPTIM5_OUT AF4: TIM15_CH2 AF7: USART2_RX AF9: LCD_B2 AF11: ETH1_GMII_COL/ETH1_MII_COL AF14: LCD_B5	ADC1_INP15 PVD_IN	VDD	
A19	LGA_A19	LTDC_B0	PE4	AF0: TRACED1 AF2: SAI1_D2 AF3: DFSDM1_DATIN3 AF4: TIM15_CH1N AF5: SPI4_NSS AF6: SAI1_FS_A AF7: SDMMC2_CKIN AF8: SDMMC1_CKIN AF9: SDMMC2_D4 AF11: SDMMC1_D4 AF12: FMC_A20 AF13: DCM1_D4 AF14: LCD_B0	-	VDD	
A20	LGA_A20	LTDC_B6	PI6	AF3: TIM8_CH2 AF10: SAI2_SD_A AF13: DCM1_D6 AF14: LCD_B6	-	VDD	
A21	LGA_A21	GND	-	-	-	-	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
B1	LGA_B1	VCC_LICELL	VBAT	-	-	-	Coin cell supply.
B2	LGA_B2	NC	-	-	-	-	
B3	LGA_B3	DCMI_D3	PE1	AF1: LPTIM1_IN2 AF5: I2S2_MCK AF6: SAI3_SD_B AF8: UART8_TX AF12: FMC_NBL1 AF13: DCMI_D3	-	VDD	
B4	LGA_B4	DCMI_D4	PH14	AF3: TIM8_CH2N AF8: UART4_RX AF9: FDCAN1_RX AF13: DCMI_D4 AF14: LCD_G3	-	VDD	
B5	LGA_B5	NC	-	-	-	-	
B6	LGA_B6	NC	-	-	-	-	
B7	LGA_B7	RESERVED	-	-	-	-	Reserved pad.
B8	LGA_B8	DCMI_D1	PH10	AF2: TIM5_CH1 AF4: I2C4_SMBA AF5: I2C1_SMBA AF13: DCMI_D1 AF14: LCD_R4	-	VDD	
B9	LGA_B9	DCMI_D2	PH11	AF2: TIM5_CH2 AF4: I2C4_SCL AF5: I2C1_SCL AF13: DCMI_D2 AF14: LCD_R5	-	VDD	
B10	LGA_B10	DCMI_VSYNC	PB7	AF1: TIM17_CH1N AF2: TIM4_CH2	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				AF4: I2C1_SDA AF6: I2C4_SDA AF7: USART1_RX AF10: SDMMC2_D1 AF11: DFSDM1_CKIN5 AF12: FMC_NL AF13: DCMI_VSYNC			
B11	LGA_B11	DCMI_HSYNC	PD9	AF3: DFSDM1_DATIN3 AF6: SAI3_SD_B AF7: USART3_RX AF12: FMC_AD14/FMC_D14 AF13: DCMI_HSYNC AF14: LCD_B0	-	VDD	
B12	LGA_B12	GND	-	-	-	-	
B13	LGA_B13	RF_ANT_EXT	-	-	-	-	External antenna pad. This signal is disconnected inside the module.
B14	LGA_B14	GND	-	-	-	-	
B15	LGA_B15	NC	-	-	-	-	
B16	LGA_B16	GND	-	-	-	-	
B17	LGA_B17	NC	-	-	-	-	
B18	LGA_B18	NC	-	-	-	-	
B19	LGA_B19	NC	-	-	-	-	
B20	LGA_B20	NC	-	-	-	-	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
B21	LGA_B21	LTDC_HSYNC	PI10	AF0: HDP0 AF8: USART3_CTS/USART3_NSS AF11: ETH1_GMII_RX_ER/ETH1_MII_RX_ER AF14: LCD_HSYNC	-	VDD	
C1	LGA_C1	VSYS	-	-	-	VSYS	Input power line.
C2	LGA_C2	VSYS	-	-	-	VSYS	Input power line.
C3	LGA_C3	NC	-	-	-	-	
C4	LGA_C4	NC	-	-	-	-	
C5	LGA_C5	GND	-	-	-	-	
C6	LGA_C6	DSI_CK_P	DSI_CK_P	-	-	VDD	
C7	LGA_C7	DSI_D0_P	DSI_D0_P	-	-	VDD	
C8	LGA_C8	DSI_D0_N	DSI_D0_N	-	-	VDD	
C9	LGA_C9	DSI_D1_P	DSI_D1_P	-	-	VDD	
C10	LGA_C10	DSI_D1_N	DSI_D1_N	-	-	VDD	
C11	LGA_C11	GND	-	-	-	-	
C12	LGA_C12	NC	-	-	-	-	
C13	LGA_C13	GND	-	-	-	-	
C14	LGA_C14	PG3	PG3	AF0: TRACED3 AF3: TIM8_BKIN2 AF4: DFSDM1_CKIN1 AF11: ETH1_GMII_TXD7 AF12: FMC_A13	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
C15	LGA_C15	PG2	PG2	AF0: TRACED2 AF1: MCO2 AF3: TIM8_BKIN AF11: ETH1_GMII_TXD6 AF12: FMC_A12	-	VDD	
C16	LGA_C16	PI8	PI8	-	RTC_OUT2/ RTC_LSCO TAMP_IN2/ TAMP_OUT3 WKUP4	VDD	
C17	LGA_C17	PCM_OUT	-	-	-	-	Signal connected to the Wireless MAC.
C18	LGA_C18	PCM_SYNC	-	-	-	-	Signal connected to the Wireless MAC.
C19	LGA_C19	GND	-	-	-	-	
C20	LGA_C20	PCM_CLK	-	-	-	-	Signal connected to the Wireless MAC.
C21	LGA_C21	LTDC_CLK	PG7	AF0: TRACED5 AF6: SAI1_MCLK_A AF7: USART6_CK AF8: UART8_RTS/UART8_DE AF9: QUADSPI_CLK AF11: QUADSPI_BK2_IO3 AF13: DCM1_D13 AF14: LCD_CLK	-	VDD	
D1	LGA_D1	NC	-	-	-	-	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
D2	LGA_D2	GND	-	-	-	-	
D3	LGA_D3	LDO2_2V8	-	-	-	2V8	Output power line.
D4	LGA_D4	LDO6_1V8	-	-	-	1V8	Output power line.
D5	LGA_D5	GND	-	-	-	-	
D6	LGA_D6	DSI_CK_N	DSI_CK_N	-	-	VDD	
D7	LGA_D7	GND	-	-	-	-	
D8	LGA_D8	NC	-	-	-	-	
D9	LGA_D9	NC	-	-	-	-	
D10	LGA_D10	GND	-	-	-	-	
D11	LGA_D11	DCMI_PIXCLK	PA6	AF1: TIM1_BKIN AF2: TIM3_CH1 AF3: TIM8_BKIN AF4: SAI4_CK2 AF5: SPI1_MISO/I2S1_SDI AF8: SPI6_MISO AF9: TIM13_CH1 AF11: MDIOS_MDC AF12: SAI4_SCK_A AF13: DCMI_PIXCLK AF14: LCD_G2	ADC1_INP3 ADC2_INP3	VDD	
D12	LGA_D12	VDD_SD	-	-	-	VDD_SD	Output power line.
D13	LGA_D13	NC	-	-	-	-	
D14	LGA_D14	NC	-	-	-	-	
D15	LGA_D15	BT_DEV_WAKE	-	-	-	-	Signal connected to the

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
							Wireless MAC.
D16	LGA_D16	BT_UART_CTS	PA11	AF1: TIM1_CH4 AF2: I2C6_SCL AF4: I2C5_SCL AF5: SPI2_NSS/I2S2_WS AF6: UART4_RX AF7: USART1_CTS/USART1_NSS AF9: FDCAN1_RX AF14: LCD_R4	OTG_FS_DM	VDD	Signal only available in non-wireless variants.
D17	LGA_D17	BT_UART_TX	PZ7	AF2: I2C6_SDA AF3: I2C2_SDA AF7: USART1_TX	-	VDD	Signal only available in non-wireless variants.
D18	LGA_D18	BT_UART_RX	PZ1	AF2: I2C6_SDA AF3: I2C2_SDA AF4: I2C5_SDA AF5: SPI1_MISO/I2S1_SDI AF6: I2C4_SDA AF7: USART1_RX AF8: SPI6_MISO	-	VDD	Signal only available in non-wireless variants.
D19	LGA_D19	BT_UART_RTS	PA12	AF1: TIM1_ETR AF2: I2C6_SDA AF4: I2C5_SDA AF6: UART4_TX AF7: USART1_RTS/USART1_DE AF8: SAI2_FS_B AF9: FDCAN1_TX AF14: LCD_R5	OTG_FS_DP	VDD	Signal only available in non-wireless variants.

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
D20	LGA_D20	PCM_IN	-	-	-	-	Signal connected to the Wireless MAC.
D21	LGA_D21	ETH1_TXD0	PG13	AF0: TRACED0 AF1: LPTIM1_OUT AF2: SAI1_CK2 AF4: SAI4_CK1 AF5: SPI6_SCK AF6: SAI1_SCK_A AF7: USART6_CTS/USART6_NSS AF10: SAI4_MCLK_A AF11: ETH1_GMII_TXD0/ETH1_MII_TXD0/ETH1_RGMII_TXD0/ETH1_RMII_TXD0 AF12: FMC_A24 AF14: LCD_R0	-	VDD	
E1	LGA_E1	NC	-	-	-	-	PMIC External LDO gate control line.
E2	LGA_E2	WKUP	PA0	AF1: TIM2_CH1/TIM2_ETR AF2: TIM5_CH1 AF3: TIM8_ETR AF4: TIM15_BKIN AF7: USART2_CTS/USART2_NSS AF8: UART4_TX AF9: SDMMC2_CMD AF10: SAI2_SD_B AF11: ETH1_GMII_CRS/ETH1_MII_CRS	ADC1_INP16 WKUP1	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
E3	LGA_E3	VDD	-	-	-	VDD	Output power line.
E19	LGA_E19	PE0	PE0	AF1: LPTIM1_ETR AF2: TIM4_ETR AF4: LPTIM2_ETR AF5: SPI3_SCK/I2S3_CK AF6: SAI4_MCLK_B AF8: UART8_RX AF10: SAI2_MCLK_A AF12: FMC_NBL0 AF13: DCM1_D2	-	VDD	
E20	LGA_E20	WL_REG_EN	PD13	AF1: LPTIM1_OUT AF2: TIM4_CH2 AF4: I2C4_SDA AF5: I2C1_SDA AF6: I2S3_MCK AF9: QUADSPI_BK1_IO3 AF10: SAI2_SCK_A AF12: FMC_A18 AF13: DSI_TE	-	VDD	Signal only available in non-wireless variants.
E21	LGA_E21	ETH1_RXD1	PC5	AF2: SAI1_D3 AF3: DFSDM1_DATIN2 AF4: SAI4_D4 AF6: SAI1_D4 AF9: SPDIFRX_IN4 AF11: ETH1_GMII_RXD1/ETH1_MII_RXD1/ETH1_RGMII_RXD1/ETH1_RMII_RXD1 AF12: SAI4_D3	ADC1_INP8 ADC1_INN4 ADC2_INP8 ADC2_INN4	VDD	
F1	LGA_F1	GND	-	-	-	-	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
F2	LGA_F2	GND	-	-	-	-	
F3	LGA_F3	VSYS	-	-	-	VSYS	Input power line.
F19	LGA_F19	WL_HOST_WAKE	-	-	-	-	Signal connected to the Wireless MAC.
F20	LGA_F20	PZ2	PZ2	AF2: I2C6_SCL AF3: I2C2_SCL AF4: I2C5_SMBA AF5: SPI1_MOSI/I2S1_SDO AF6: I2C4_SMBA AF7: USART1_TX AF8: SPI6_MOSI	-	VDD	
F21	LGA_F21	ETH1_REF_CLK	PA1	AF0: ETH_CLK AF1: TIM2_CH2 AF2: TIM5_CH2 AF3: LPTIM3_OUT AF4: TIM15_CH1N AF7: USART2_RTS/USART2_DE AF8: UART4_RX AF9: QUADSPI_BK1_IO3 AF10: SAI2_MCLK_B AF11: ETH1_GMII_RX_CLK/ETH1_MII_RX_CLK/ETH1_RGMII_RX_CLK/ETH1_RMII_REF_CLK AF14: LCD_R2	ADC1_INP17 ADC1_INN16	VDD	
G1	LGA_G1	VSYS	-	-	-	VSYS	Input power line.

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
G2	LGA_G2	VSYS	-	-	-	VSYS	Input power line.
G3	LGA_G3	VSYS	-	-	-	VSYS	Input power line.
G19	LGA_G19	BT_REG_EN	PZ6	AF2: I2C6_SCL AF3: I2C2_SCL AF4: USART1_CK AF5: I2S1_MCK AF6: I2C4_SMBA AF7: USART1_RX	-	VDD	Signal only available in non-wireless variants.
G20	LGA_G20	GND	-	-	-	-	
G21	LGA_G21	ETH1_TX_EN	PB11	AF1: TIM2_CH4 AF3: LPTIM2_ETR AF4: I2C2_SDA AF6: DFSDM1_CKIN7 AF7: USART3_RX AF11: ETH1_GMII_TX_EN/ETH1_MII_TX_EN/ETH1_RGMII_TX_CTL/ETH1_RMII_TX_EN AF13: DSI_TE AF14: LCD_G5	-	VDD	
H1	LGA_H1	VSYS2	-	-	-	VSYS2	Input power line.
H2	LGA_H2	VSYS2	-	-	-	VSYS2	Input power line.
H3	LGA_H3	VSYS2	-	-	-	VSYS2	Input power line.
H19	LGA_H19	PG0	PG0	AF0: TRACED0 AF3: DFSDM1_DATIN0 AF11: ETH1_GMII_TXD4 AF12: FMC_A10	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
H20	LGA_H20	BT_HOST_WAKE	-	-	-	-	Signal connected to the Wireless MAC.
H21	LGA_H21	ETH1_TXD1	PG14	AF0: TRACED1 AF1: LPTIM1_ETR AF5: SPI6_MOSI AF6: SAI4_DI AF7: USART6_TX AF9: QUADSPI_BK2_IO3 AF10: SAI4_SD_A AF11: ETH1_GMII_TXD1/ETH1_MII_TXD1/ETH1_RGMII_TXD1/ETH1_RMII_TXD1 AF12: FMC_A25 AF14: LCD_B0	-	VDD	
J1	LGA_J1	GND	-	-	-	-	
J2	LGA_J2	GND	-	-	-	-	
J3	LGA_J3	VSYS2	-	-	-	-	Input power line.
J19	LGA_J19	PF15	PF15	AF0: TRACED7 AF4: I2C4_SDA AF5: I2C1_SDA AF11: ETH1_GMII_RXD7 AF12: FMC_A9	-	VDD	
J20	LGA_J20	3V3_RF_EN/PF2	PF2	AF4: I2C2_SMBA AF9: SDMMC2_D0DIR AF10: SDMMC3_D0DIR AF11: SDMMC1_D0DIR AF12: FMC_A2	-	VDD	Signal only available in non-wireless variants.
J21	LGA_J21	ETH1_RX_ER	PB10	AF1: TIM2_CH3	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				AF3: LPTIM2_IN1 AF4: I2C2_SCL AF5: SPI2_SCK/I2S2_CK AF6: DFSDM1_DATIN7 AF7: USART3_TX AF9: QUADSPI_BK1_NCS AF11: ETH1_GMII_RX_ER/ETH1_MII_RX_ER AF14: LCD_G4			
K1	LGA_K1	3V3	-	-	-	3V3	Output power line.
K2	LGA_K2	3V3	-	-	-	3V3	Output power line.
K3	LGA_K3	3V3	-	-	-	3V3	Output power line.
K19	LGA_K19	WLAN_SD_CLK	PG15	AF0: TRACED7 AF2: SAI1_D2 AF4: I2C2_SDA AF6: SAI1_FS_A AF7: USART6_CTS/USART6_NSS AF10: SDMMC3_CK AF13: DCM1_D13	-	VDD	Signal only available in non-wireless variants.
K20	LGA_K20	WLAN_SD_D2	PF5	AF7: USART2_TX AF9: SDMMC3_D2 AF12: FMC_A5	-	VDD	47K pull-up on module connected to 3V3. Signal only available in non-wireless variants.
K21	LGA_K21	ETH1_RX_DV	PA7	AF1: TIM1_CH1N AF2: TIM3_CH2 AF3: TIM8_CH1N AF4: SAI4_D1 AF5: SPI1_MOSI/I2S1_SDO	ADC1_INP7 ADC1_INN3 ADC2_INP7 ADC2_INN3	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				AF8: SPI6_MOSI AF9: TIM14_CH1 AF10: QUADSPI_CLK AF11: ETH1_GMII_RX_DV/ETH1_MII_RX_DV/ETH1_RGMII_RX_CTL/ETH1_RMII_CRS_DV AF12: SAI4_SD_A			
L1	LGA_L1	LTDC_G4	PH15	AF3: TIM8_CH3N AF13: DCMI_D11 AF14: LCD_G4	-	VDD	
L2	LGA_L2	GND	-	-	-	-	
L3	LGA_L3	VREF+	VREF+	-	-	-	
L19	LGA_L19	WLAN_SD_CMD	PF1	AF4: I2C2_SCL AF9: SDMMC3_CMD AF10: SDMMC3_CDIR AF12: FMC_A1	-	VDD	47K pull-up on module connected to 3V3. Signal only available in non-wireless variants.
L20	LGA_L20	WLAN_SD_D1	PF4	AF7: USART2_RX AF9: SDMMC3_D1 AF10: SDMMC3_D123DIR AF12: FMC_A4	-	VDD	47K pull-up on module connected to 3V3. Signal only available in non-wireless variants.
L21	LGA_L21	ETH1_RXD0	PC4	AF3: DFSDM1_CKIN2 AF5: I2S1_MCK AF9: SPDIFRX_IN3 AF11: ETH1_GMII_RXD0/ETH1_MII_RXD0/ETH1_RGMII_RXD0/ETH1_RMII_RXD0	ADC1_INP4 ADC2_INP4	VDD	
M1	LGA_M1	LTDC_G5	PF11	AF5: SPI5_MOSI	ADC1_INP2	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				AF10: SAI2_SD_B AF13: DCMI_D12 AF14: LCD_G5			
M2	LGA_M2	DCMI_D0	PH9	AF2: TIM12_CH2 AF4: I2C3_SMBA AF13: DCMI_D0 AF14: LCD_R3	-	VDD	
M3	LGA_M3	DCMI_D5	PD3	AF0: HDP5 AF3: DFSDM1_CKOUT AF5: SPI2_SCK/I2S2_CK AF6: DFSDM1_DATIN0 AF7: USART2_CTS/USART2_NSS AF8: SDMMC1_D123DIR AF9: SDMMC2_D7 AF10: SDMMC2_D123DIR AF11: SDMMC1_D7 AF12: FMC_CLK AF13: DCMI_D5 AF14: LCD_G7	-	VDD	
M19	LGA_M19	WLAN_SD_D0	PF0	AF4: I2C2_SDA AF9: SDMMC3_D0 AF10: SDMMC3_CKIN AF12: FMC_A0	-	VDD	47K pull-up on module connected to 3V3. Signal only available in non-wireless variants.
M20	LGA_M20	WLAN_SD_D3	PD7	AF0: TRACED6 AF3: DFSDM1_DATIN4 AF4: I2C2_SCL AF6: DFSDM1_CKIN1 AF7: USART2_CK AF9: SPDIFRX_IN1 AF10: SDMMC3_D3	-	VDD	47K pull-up on module connected to 3V3. Signal only available in non-wireless variants.

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				AF12: FMC_NE1			
M21	LGA_M21	USART3_CTS	PB13	AF1: TIM1_CH1N AF3: DFSDM1_CKOUT AF4: LPTIM2_OUT AF5: SPI2_SCK/I2S2_CK AF6: DFSDM1_CKIN1 AF7: USART3_CTS/USART3_NSS AF9: FDCAN2_TX AF11: ETH1_GMII_TXD1/ETH1_MII_TXD1/ETH1_RGMII_TXD1/ETH1_RMII_TXD1 AF14: UART5_TX	-	VDD	
N1	LGA_N1	NC	-	-	-	-	
N2	LGA_N2	DCMI_D6	PB8	AF0: HDP6 AF1: TIM16_CH1 AF2: TIM4_CH3 AF3: DFSDM1_CKIN7 AF4: I2C1_SCL AF5: SDMMC1_CKIN AF6: I2C4_SCL AF7: SDMMC2_CKIN AF8: UART4_RX AF9: FDCAN1_RX AF10: SDMMC2_D4 AF11: ETH1_GMII_TXD3/ETH1_MII_TXD3/ETH1_RGMII_TXD3 AF12: SDMMC1_D4 AF13: DCMI_D6 AF14: LCD_B6	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
N3	LGA_N3	GND	-		-	-	
N19	LGA_N19	SPI4_MOSI	PE14	AF1: TIM1_CH4 AF5: SPI4_MOSI AF8: UART8_RTS/UART8_DE AF10: SAI2_MCLK_B AF11: SDMMC1_D123DIR AF12: FMC_AD11/FMC_D11 AF13: LCD_G0 AF14: LCD_CLK	-	VDD	
N20	LGA_N20	SPI4_MISO	PE13	AF0: HDP2 AF1: TIM1_CH3 AF3: DFSDM1_CKIN5 AF5: SPI4_MISO AF10: SAI2_FS_B AF12: FMC_AD10/FMC_D10 AF13: DCM1_D6 AF14: LCD_DE	-	VDD	
N21	LGA_N21	USART3_RTS	PG8	AF0: TRACED15 AF1: TIM2_CH1/TIM2_ETR AF2: ETH_CLK AF3: TIM8_ETR AF5: SPI6_NSS AF6: SAI4_D2 AF7: USART6_RTS/USART6_DE AF8: USART3_RTS/USART3_DE AF9: SPDIFRX_IN3	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				AF10: SAI4_FS_A AF11: ETH1_PPS_OUT AF14: LCD_G7			
P1	LGA_P1	NRST	NRST	-	-	VDD	Reset line of the CPU. Recommendation: leave this pin floating.
P2	LGA_P2	3V3	-	-	-	3V3	Output power line.
P3	LGA_P3	GND	-	-	-	-	
P19	LGA_P19	UART7_RTS	PF8	AF0: TRACED12 AF1: TIM16_CH1N AF5: SPI5_MISO AF6: SAI1_SCK_B AF7: UART7_RTS/UART7_DE AF9: TIM13_CH1 AF10: QUADSPI_BK1_IO0	-	VDD	
P20	LGA_P20	UART7_CTS	PF9	AF0: TRACED13 AF1: TIM17_CH1N AF5: SPI5_MOSI AF6: SAI1_FS_B AF7: UART7_CTS AF9: TIM14_CH1 AF10: QUADSPI_BK1_IO1	-	VDD	
P21	LGA_P21	GND	-	-	-	-	
R1	LGA_R1	I2S2_WS	PI0	AF2: TIM5_CH4 AF5: SPI2_NSS/I2S2_WS AF13: DCMI_D13	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				AF14: LCD_G5			
R2	LGA_R2	DCMI_D7	PB9	AF0: HDP7 AF1: TIM17_CH1 AF2: TIM4_CH4 AF3: DFSDM1_DATIN7 AF4: I2C1_SDA AF5: SPI2_NSS/I2S2_WS AF6: I2C4_SDA AF7: SDMMC2_CDIR AF8: UART4_TX AF9: FDCAN1_TX AF10: SDMMC2_D5 AF11: SDMMC1_CDIR AF12: SDMMC1_D5 AF13: DCMI_D7 AF14: LCD_B7	-	VDD	
R3	LGA_R3	GND	-	-	-	-	
R19	LGA_R19	UART7_RX	PF6	AF1: TIM16_CH1 AF5: SPI5_NSS AF6: SAI1_SD_B AF7: UART7_RX AF9: QUADSPI_BK1_IO3 AF12: SAI4_SCK_B	-	VDD	
R20	LGA_R20	UART7_TX	PF7	AF1: TIM17_CH1 AF5: SPI5_SCK AF6: SAI1_MCLK_B AF7: UART7_TX AF9: QUADSPI_BK1_IO2	-	VDD	
R21	LGA_R21	USART3_RX	PB12	AF1: TIM1_BKIN AF2: I2C6_SMBA AF4: I2C2_SMBA	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				AF5: SPI2_NSS/I2S2_WS AF6: DFSDM1_CKIN7 AF7: USART3_CK AF8: USART3_RX AF9: FDCAN2_RX AF11: ETH1_GMII_TXD0/ETH1_MII_TXD0/ETH1_RGMII_TXD0/ETH1_RMII_TXD0 AF14: UART5_RX			
T1	LGA_T1	I2S2_CK	PI1	AF3: TIM8_BKIN2 AF5: SPI2_SCK/I2S2_CK AF13: DCMI_D8 AF14: LCD_G6	-	VDD	
T2	LGA_T2	ANA0	ANA0	-	ADC1_INP0 ADC1_INN1 ADC2_INP0 ADC2_INN1	-	
T3	LGA_T3	ANA1	ANA1	-	ADC1_INP1 ADC2_INP1	-	
T19	LGA_T19	SDMMC1_D3	PC11	AF0: TRACED3 AF3: DFSDM1_DATIN5 AF6: SPI3_MISO/I2S3_SDI AF7: USART3_RX AF8: UART4_RX AF9: QUADSPI_BK2_NCS AF10: SAI4_SCK_B AF12: SDMMC1_D3 AF13: DCMI_D4	ANA0	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
T20	LGA_T20	PF12	PF12	AF0: TRACED4 AF11: ETH1_GMII_RXD4 AF12: FMC_A6	ADC1_INP6 ADC1_INN2	VDD	
T21	LGA_T21	USART3_TX	PD8	AF3: DFSDM1_CKIN3 AF6: SAI3_SCK_B AF7: USART3_TX AF9: SPDIFRX_IN2 AF12: FMC_AD13/FMC_D13 AF14: LCD_B7	-	VDD	
U1	LGA_U1	SDMMC2_D1	PB15	AF0: RTC_REFIN AF1: TIM1_CH3N AF2: TIM12_CH2 AF3: TIM8_CH3N AF4: USART1_RX AF5: SPI2_MOSI/I2S2_SDO AF6: DFSDM1_CKIN2 AF9: SDMMC2_D1	-	VDD	
U2	LGA_U2	PF13	PF13	AF0: TRACED5 AF3: DFSDM1_DATIN6 AF4: I2C4_SMBA AF5: I2C1_SMBA AF6: DFSDM1_DATIN3 AF11: ETH1_GMII_RXD5 AF12: FMC_A7	ADC2_INP2	VDD	
U3	LGA_U3	PF14	PF14	AF0: TRACED6 AF3: DFSDM1_CKIN6 AF4: I2C4_SCL AF5: I2C1_SCL AF11: ETH1_GMII_RXD6	ADC2_INP6 ADC2_INN2	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				AF12: FMC_A8			
U19	LGA_U19	PB6	PB6	AF1: TIM16_CH1N AF2: TIM4_CH1 AF4: I2C1_SCL AF5: CEC AF6: I2C4_SCL AF7: USART1_TX AF9: FDCAN2_TX AF10: QUADSPI_BK1_NCS AF11: DFSDM1_DATIN5 AF12: UART5_TX AF13: DCM1_D5	-	VDD	
U20	LGA_U20	LTDC_R3	PB0	AF1: TIM1_CH2N AF2: TIM3_CH3 AF3: TIM8_CH2N AF6: DFSDM1_CKOUT AF8: UART4_CTS AF9: LCD_R3 AF11: ETH1_GMII_RXD2/ETH1_MII_RXD2/ETH1_RGMII_RXD2 AF12: MDIOS_MDIO AF14: LCD_G1	ADC1_INP9 ADC1_INN5 ADC2_INP9 ADC2_INN5	VDD	
U21	LGA_U21	JTRST	JTRST	-	-	-	
V1	LGA_V1	SDMMC2_CMD	PG6	AF0: TRACED14 AF1: TIM17_BKIN AF10: SDMMC2_CMD AF13: DCM1_D12 AF14: LCD_R7	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
V2	LGA_V2	GND	-	-	-	-	
V3	LGA_V3	BOOT0	BOOT0	-	-	VDD	100K pull-up resistor.
V4	LGA_V4	GND	-	-	-	-	
V5	LGA_V5	SDMMC1_D0	PC8	AF0: TRACED0 AF2: TIM3_CH3 AF3: TIM8_CH3 AF6: UART4_TX AF7: USART6_CK AF8: UART5_RTS/UART5_DE AF12: SDMMC1_D0 AF13: DCMI_D2	-	VDD	
V6	LGA_V6	GND	-	-	-	-	
V7	LGA_V7	LTDC_G6	PI11	AF0: MCO1 AF5: I2S_CKIN AF9: LCD_G6	WKUP5	VDD	
V8	LGA_V8	LTDC_R2	PH8	AF2: TIM5_ETR AF4: I2C3_SDA AF13: DCMI_HSYNC AF14: LCD_R2	-	VDD	
V9	LGA_V9	LTDC_R5	PC0	AF3: DFSDM1_CKIN0 AF4: LPTIM2_IN2 AF6: DFSDM1_DATIN4 AF8: SAI2_FS_B AF10: QUADSPI_BK2_NCS AF14: LCD_R5	ADC1_INP10 ADC2_INP10	VDD	
V10	LGA_V10	LTDC_R0	PH2	AF1: LPTIM1_IN2	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				AF9: QUADSPI_BK2_IO0 AF10: SAI2_SCK_B AF11: ETH1_GMII_CRS/ETH1_MII_CRS AF14: LCD_R0			
V11	LGA_V11	GND	-	-	-	-	
V12	LGA_V12	SPI4_SCK	PE12	AF1: TIM1_CH3N AF3: DFSDM1_DATIN5 AF5: SPI4_SCK AF8: SDMMC1_D0DIR AF10: SAI2_SCK_B AF12: FMC_AD9/DMC_D9 AF14: LCD_B4	-	VDD	
V13	LGA_V13	LTDC_G7	PB5	AF0: ETH_CLK AF1: TIM17_BKIN AF2: TIM3_CH2 AF3: SAI4_D1 AF4: I2C1_SMBA AF5: SPI1_MOSI/I2S1_SDO AF6: I2C4_SMBA AF7: SPI3_MOSI/I2S3_SDO AF8: SPI6_MOSI AF9: FDCAN2_RX AF10: SAI4_SD_A AF11: ETH1_PPS_OUT AF12: UART5_RX AF13: DCM1_D10 AF14: LCD_G7	-	VDD	
V14	LGA_V14	SDMMC1_D1	PC9	AF0: TRACED1	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				AF2: TIM3_CH4 AF3: TIM8_CH4 AF4: I2C3_SDA AF5: I2S_CIN AF8: UART5_CTS AF9: QUADSPI_BK1_IO0 AF12: SDMMC1_D1 AF13: DCM1_D3 AF14: LCD_B2			
V15	LGA_V15	SDMMC1_D2	PC10	AF0: TRACED2 AF3: DFSDM1_CKIN5 AF6: SPI3_SCK/I2S3_CK AF7: USART3_TX AF8: UART4_TX AF9: QUADSPI_BK1_IO1 AF10: SAI4_MCLK_B AF12: SDMMC1_D2 AF13: DCM1_D8 AF14: LCD_R2	-	VDD	
V16	LGA_V16	GND	-	-	-	-	
V17	LGA_V17	ETH1_CLK125	PG5	AF1: TIM1_ETR AF11: ETH1_GMII_CLK125/ETH1_RGMII_CLK125 AF12: FMC_A15	-	VDD	
V18	LGA_V18	ETH1_GTX_CLK	PG4	AF1: TIM1_BKIN2 AF11: ETH1_GMII_GTX_CLK/ETH1_RGMII_GTX_CLK AF12: FMC_A14	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
V19	LGA_V19	PC3	PC3	AF0: TRACECLK AF3: DFSDM1_DATIN1 AF5: SPI2_MOSI/I2S2_SDO AF11: ETH1_GMII_TX_CLK/ETH1_MII_TX_CLK	ADC1_INP13 ADC1_INN12	VDD	
V20	LGA_V20	PG1	PG1	AF0: TRACED1 AF11: ETH1_GMII_TXD5 AF12: FMC_A11	-	VDD	
V21	LGA_V21	JTDI	JTDI	-	-	-	
W1	LGA_W1	PA13	PA13	AF0: DBTRGO AF1: DBTRGI AF2: MCO1 AF8: UART4_TX	BOOTFAILN	VDD	
W2	LGA_W2	SDMMC2_D4	PA8	AF0: MCO1 AF1: TIM1_CH1 AF3: TIM8_BKIN2 AF4: I2C3_SCL AF5: SPI3_MOSI/I2S3_SDO AF7: USART1_CK AF8: SDMMC2_CKIN AF9: SDMMC2_D4 AF10: OTG_FS_SOF/OTG_HS_SOF AF12: SAI4_SD_B AF13: UART7_RX AF14: LCD_R6	-	VDD	
W3	LGA_W3	SDMMC2_D6	PE5	AF0: TRACED3 AF2: SAI1_CK2	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				AF3: DFSDM1_CKIN3 AF4: TIM15_CH1 AF5: SPI4_MISO AF6: SAI1_SCK_A AF7: SDMMC2_D0DIR AF8: SDMMC1_D0DIR AF9: SDMMC2_D6 AF11: SDMMC1_D6 AF12: FMC_A21 AF13: DCMI_D6 AF14: LCD_G0			
W4	LGA_W4	PA4	PA4	AF0: HDP0 AF2: TIM5_ETR AF4: SAI4_D2 AF5: SPI1_NSS/I2S1_WS AF6: SPI3_NSS/I2S3_WS AF7: USART2_CK AF8: SPI6_NSS AF12: SAI4_FS_A AF13: DCMI_HSYNC AF14: LCD_VSYNC	ADC1_INP18 ADC2_INP18 DAC_OUT1	VDD	
W5	LGA_W5	SDMMC2_D7	PC7	AF0: HDP4 AF2: TIM3_CH2 AF3: TIM8_CH2 AF4: DFSDM1_DATIN3 AF6: I2S3_MCK AF7: USART6_RX AF8: SDMMC1_D123DIR AF9: SDMMC2_D123DIR AF10: SDMMC2_D7 AF12: SDMMC1_D7 AF13: DCMI_D1 AF14: LCD_G6	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
W6	LGA_W6	GND	-	-	-	-	
W7	LGA_W7	NC	-	-	-	-	
W8	LGA_W8	PMIC_PONKEY_N	-	-	-	VDD	PMIC Power ON key. Recommendation: leave this pin floating.
W9	LGA_W9	PA15	PA15	AF0: DBTRGI AF1: TIM2_CH1/TIM2_ETR AF2: SAI4_D2 AF3: SDMMC1_CDIR AF4: CEC AF5: SPI1_NSS/I2S1_WS AF6: SPI3_NSS/I2S3_WS AF7: SPI6_NSS AF8: UART4_RTS/UART4_DE AF9: SDMMC2_D5 AF10: SDMMC2_CDIR AF11: SDMMC1_D5 AF12: SAI4_FS_A AF13: UART7_TX AF14: LCD_R1	-	VDD	
W10	LGA_W10	LTDC_R6	PH12	AF0: HDP2 AF2: TIM5_CH3 AF4: I2C4_SDA AF5: I2C1_SDA AF13: DCMI_D3 AF14: LCD_R6	-	VDD	
W11	LGA_W11	GND	-	-	-	-	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
W12	LGA_W12	GND	-	-	-	-	
W13	LGA_W13	SDMMC1_CMD	PD2	AF2: TIM3_ETR AF4: I2C5_SMBA AF6: UART4_RX AF8: UART5_RX AF12: SDMMC1_CMD AF13: DCMI_D11	-	VDD	
W14	LGA_W14	PWR_ON	PWR_ON	-	PWR_ONLP	-	CPU core supply enable output. Internally connected to the PMIC. Leave this pin unconnected unless otherwise noted.
W15	LGA_W15	SDMMC1_CLK	PC12	AF0: TRACECLK AF1: MCO2 AF2: SAI4_D3 AF6: SPI3_MOSI/I2S3_SDO AF7: USART3_CK AF8: UART5_TX AF10: SAI4_SD_B AF12: SDMMC1_CK AF13: DCMI_D9	-	VDD	
W16	LGA_W16	GND	-	-	-	-	
W17	LGA_W17	ETH1_RXD2	PH6	AF2: TIM12_CH1 AF4: I2C2_SMBA AF5: SPI5_SCK AF11: ETH1_GMII_RXD2/ETH1_MII_RXD2/ETH1_RGMII_RXD2	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				AF12: MDIOS_MDIO AF13: DCM1_D8			
W18	LGA_W18	ETH1_TXD2	PC2	AF3: DFSDM1_CKIN1 AF5: SPI2_MISO/I2S2_SDI AF6: DFSDM1_CKOUT AF11: ETH1_GMII_TXD2/ETH1_MII_TXD2/ETH1_RGMII_TXD2 AF13: DCM1_PIXCLK	ADC1_INP12 ADC1_INN11	VDD	
W19	LGA_W19	ETH1_RXD3	PH7	AF4: I2C3_SCL AF5: SPI5_MISO AF11: ETH1_GMII_RXD3/ETH1_MII_RXD3/ETH1_RGMII_RXD3 AF12: MDIOS_MDC AF13: DCM1_D9	-	VDD	
W20	LGA_W20	ETH1_TXD3	PE2	AF0: TRACECLK AF2: SAI1_CK1 AF4: I2C4_SCL AF5: SPI4_SCK AF6: SAI1_MCLK_A AF9: QUADSPI_BK1_IO2 AF11: ETH1_GMII_TXD3/ETH1_MII_TXD3/ETH1_RGMII_TXD3 AF12: FMC_A23	-	VDD	
W21	LGA_W21	JTCK-SWCLK	JTCK-SWCLK	-	-	-	
Y1	LGA_Y1	BOOT1	BOOT1	-	-	VDD	100K pull-up resistor.

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
Y2	LGA_Y2	SDMMC2_D5	PA9	AF1: TIM1_CH2 AF4: I2C3_SMBA AF5: SPI2_SCK/I2S2_CK AF7: USART1_TX AF8: SDMMC2_CDIR AF10: SDMMC2_D5 AF13: DCM1_D0 AF14: LCD_R5	-	VDD	
Y3	LGA_Y3	LTDC_B1	PG12	AF1: LPTIM1_IN1 AF5: SPI6_MISO AF6: SAI4_CK2 AF7: USART6_RTS/USART6_DE AF8: SPDIFRX_IN2 AF9: LCD_B4 AF10: SAI4_SCK_A AF11: ETH1_PHY_INTN AF12: FMC_NE4 AF14: LCD_B1	-	VDD	
Y4	LGA_Y4	I2S2_MCK	PC6	AF0: HDP1 AF2: TIM3_CH1 AF3: TIM8_CH1 AF4: DFSDM1_CKIN3 AF5: I2S2_MCK AF7: USART6_TX AF8: SDMMC1_D0DIR AF9: SDMMC2_D0DIR AF10: SDMMC2_D6 AF11: DSI_TE AF12: SDMMC1_D6 AF13: DCM1_D0 AF14: LCD_HSYNC	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
Y5	LGA_Y5	LTDC_G0	PB1	AF1: TIM1_CH3N AF2: TIM3_CH4 AF3: TIM8_CH3N AF6: DFSDM1_DATIN1 AF9: LCD_R6 AF11: ETH1_GMII_RXD3/ETH1_MII_RXD3/ETH1_RGMII_RXD3 AF12: MDIOS_MDC AF14: LCD_G0	ADC1_INP5 ADC2_INP5	VDD	
Y6	LGA_Y6	LTDC_G1	PE6	AF0: TRACED2 AF1: TIM1_BKIN2 AF2: SAI1_D1 AF4: TIM15_CH2 AF5: SPI4_MOSI AF6: SAI1_SD_A AF7: SDMMC2_D0 AF8: SDMMC1_D2 AF10: SAI2_MCLK_B AF12: FMC_A22 AF13: DCM1_D7 AF14: LCD_G1	-	VDD	
Y7	LGA_Y7	I2C2_SCL	PH4	AF4: I2C2_SCL AF9: LCD_G5 AF14: LCD_G4	-	VDD	2.2K pull-up on module connected to VDD.
Y8	LGA_Y8	I2C2_SDA	PH5	AF4: I2C2_SDA AF5: SPI5_NSS AF12: SAI4_SD_B	-	VDD	2.2K pull-up on module connected to VDD.
Y9	LGA_Y9	SPI4_NSS	PE11	AF1: TIM1_CH2 AF3: DFSDM1_CKIN4 AF5: SPI4_NSS	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				AF7: USART6_CK AF10: SAI2_SD_B AF12: FMC_AD8/FMC_D8 AF13: DCM1_D4 AF14: LCD_G3			
Y10	LGA_Y10	GND	-	-	-	-	
Y11	LGA_Y11	VBUS_OTG	-	-	-	-	Output power line.
Y12	LGA_Y12	LTDC_R4	PA5	AF1: TIM2_CH1/TIM2_ETR AF3: TIM8_CH1N AF4: SAI4_CK1 AF5: SPI1_SCK/I2S1_CK AF8: SPI6_SCK AF12: SAI4_MCLK_A AF14: LCD_R4	ADC1_INP19 ADC1_INN18 ADC2_INP19 ADC2_INN18 DAC_OUT2	VDD	
Y13	LGA_Y13	I2C6_SCL	PZ0	AF2: I2C6_SCL AF3: I2C2_SCL AF5: SPI1_SCK/I2S1_CK AF7: USART1_CK AF8: SPI6_SCK	-	VDD	
Y14	LGA_Y14	I2C6_SDA	PZ3	AF2: I2C6_SDA AF3: I2C2_SDA AF4: I2C5_SDA AF5: SPI1_NSS/I2S1_WS AF6: I2C4_SDA AF7: USART1_CTS/USART1_NSS AF8: SPI6_NSS	-	VDD	
Y15	LGA_Y15	VBUS_SW	-	-	-	-	Output power line.

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
Y16	LGA_Y16	VBUS_SW	-	-	-	-	Output power line.
Y17	LGA_Y17	LTDC_R1	PH3	AF3: DFSDM1_CKIN4 AF9: QUADSPI_BK2_IO1 AF10: SAI2_MCLK_B AF11: ETH1_GMII_COL/ETH1_MII_COL AF14: LCD_R1	-	VDD	
Y18	LGA_Y18	NC	-	-	-	-	
Y19	LGA_Y19	PA14	PA14	AF0: DBTRGO AF1: DBTRGI AF2: MCO2	-	VDD	
Y20	LGA_Y20	LTDC_R7	PE15	AF0: HDP3 AF1: TIM1_BKIN AF4: TIM15_BKIN AF7: USART2_CTS/USART2_NSS AF8: UART8_CTS AF10: FMC_NCE2 AF12: FMC_AD12/FMC_D12 AF14: LCD_R7	-	VDD	
Y21	LGA_Y21	JTDO-TRACESWO	JTDO-TRACESWO	-	-	-	
AA1	LGA_AA1	GND	-	-	-	-	
AA2	LGA_AA2	SDMMC2_D0	PB14	AF1: TIM1_CH2N AF2: TIM12_CH1 AF3: TIM8_CH2N AF4: USART1_TX AF5: SPI2_MISO/I2S2_	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				SDI AF6: DFSDM1_DATIN2 AF7: USART3_RTS/USART3_DE AF9: SDMMC2_D0			
AA3	LGA_AA3	SDMMC2_CLK	PE3	AF0: TRACED0 AF4: TIM15_BKIN AF6: SAI1_SD_B AF9: SDMMC2_CK AF12: FMC_A19	-	VDD	
AA4	LGA_AA4	SDMMC2_D2	PB3	AF0: TRACED9 AF1: TIM2_CH2 AF4: SAI4_CK1 AF5: SPI1_SCK/I2S1_CK AF6: SPI3_SCK/I2S3_CK AF8: SPI6_SCK AF9: SDMMC2_D2 AF12: SAI4_MCLK_A AF13: UART7_RX	-	VDD	
AA5	LGA_AA5	SDMMC2_D3	PB4	AF0: TRACED8 AF1: TIM16_BKIN AF2: TIM3_CH1 AF4: SAI4_CK2 AF5: SPI1_MISO/I2S1_SDI AF6: SPI3_MISO/I2S3_SDI AF7: SPI2_NSS/I2S2_WS AF8: SPI6_MISO AF9: SDMMC2_D3 AF12: SAI4_SCK_A AF13: UART7_TX	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
AA6	LGA_AA6	UART4_TX	PG11	AF0: TRACED11 AF4: USART1_TX AF6: UART4_TX AF8: SPDIFRX_IN1 AF11: ETH1_GMII_TX_EN/ETH1_MII_TX_EN/ETH1_RGMII_TX_CTL/ETH1_RMII_TX_EN AF13: DCM1_D3 AF14: LCD_B3	-	VDD	
AA7	LGA_AA7	UART4_RX	PB2	AF0: TRACED4 AF1: RTC_OUT2 AF2: SAI1_D1 AF3: DFSDM1_CKIN1 AF4: USART1_RX AF5: I2S_CKIN AF6: SAI1_SD_A AF7: SPI3_MOSI/I2S3_SDO AF8: UART4_RX AF9: QUADSPI_CLK	-	VDD	
AA8	LGA_AA8	USB2_D_P	USB_DP2	-	USBH_HS_DP2 OTG_HS_DP	-	
AA9	LGA_AA9	USB2_D_N	USB_DM2	-	USBH_HS_DM2 OTG_HS_DM	-	
AA10	LGA_AA10	GND	-	-	-	-	
AA11	LGA_AA11	OTG_VBUS	OTG_VBUS	-	OTG_FS_VBUS OTG_HS_VBUS	-	Input power line.
AA12	LGA_AA12	I2S2_SDI	PI2	AF3: TIM8_CH4 AF5: SPI2_MISO/I2S2_	-	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
				SDI AF13: DCMI_D9 AF14: LCD_G7			
AA13	LGA_AA13	USB_OTG_ID	PA10	AF1: TIM1_CH3 AF5: SPI3_NSS/I2S3_WS AF7: USART1_RX AF11: MDIOS_MDIO AF12: SAI4_FS_B AF13: DCMI_D1 AF14: LCD_B1	OTG_FS_ID OTG_HS_ID	-	
AA14	LGA_AA14	I2S2_SDO	PI3	AF3: TIM8_ETR AF5: SPI2_MOSI/I2S2_SDO AF13: DCMI_D10	-	VDD	
AA15	LGA_AA15	BOOT2	BOOT2	-	-	-	
AA16	LGA_AA16	JTMS-SWDIO	JTMS-SWDIO	-	-	-	
AA17	LGA_AA17	USB1_D_P	USB_DP1	-	USBH_HS_DP1	-	
AA18	LGA_AA18	USB1_D_N	USB_DM1	-	USBH_HS_DM1	-	
AA19	LGA_AA19	ETH1_MDC	PC1	AF0: TRACED0 AF2: SAI1_D1 AF3: DFSDM1_DATIN0 AF4: DFSDM1_CKIN4 AF5: SPI2_MOSI/I2S2_SDO AF6: SAI1_SD_A AF9: SDMMC2_CK AF11: ETH1_MDC AF12: MDIOS_MDC	ADC1_INP11 ADC1_INN10 ADC2_INP11 ADC2_INN10 TAMP_IN3 WKUP6	VDD	

LGA pad	ConnectCore MP15 pad	ConnectCore MP15 signal name	STM32MP157 pad name	Alternate functions	Additional functions	Power group	Comments
AA20	LGA_AA20	ETH1_MDIO	PA2	AF1: TIM2_CH3 AF2: TIM5_CH3 AF3: LPTIM4_OUT AF4: TIM15_CH1 AF7: USART2_TX AF8: SAI2_SCK_B AF10: SDMMC2_D0DIR AF11: ETH1_MDIO AF12: MDIOS_MDIO AF14: LCD_R1	ADC1_INP14 WKUP2	VDD	
AA21	LGA_AA21	GND	-	-	-	-	

Module specifications

The following sections describe the specifications for the ConnectCore MP15 SOM.

Mechanical specifications 76

Environmental specifications 77

Socket options 78

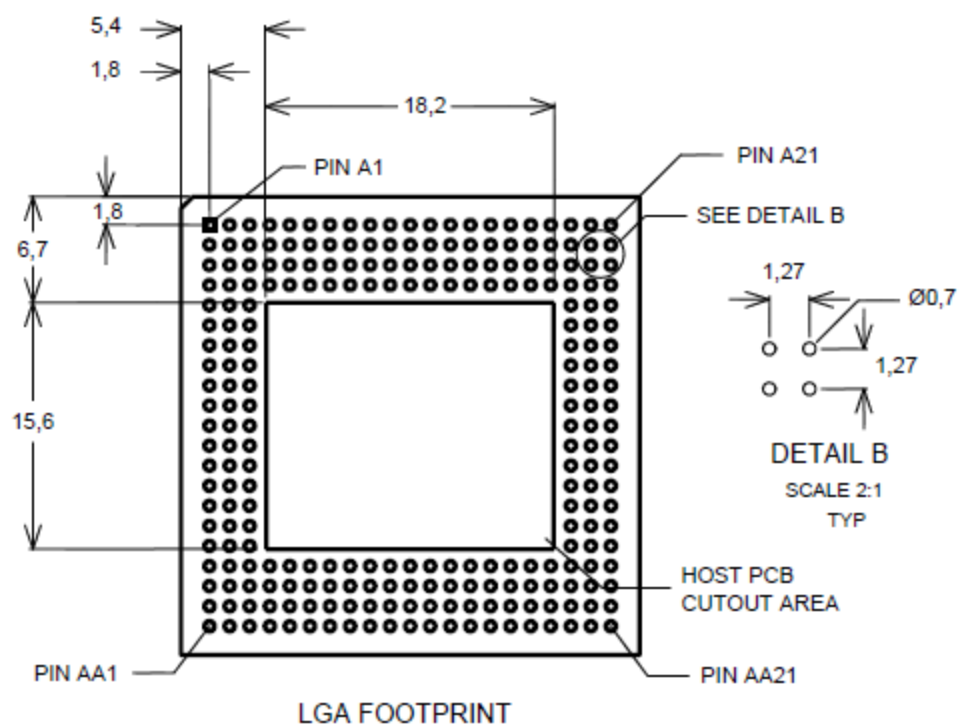
Mechanical specifications

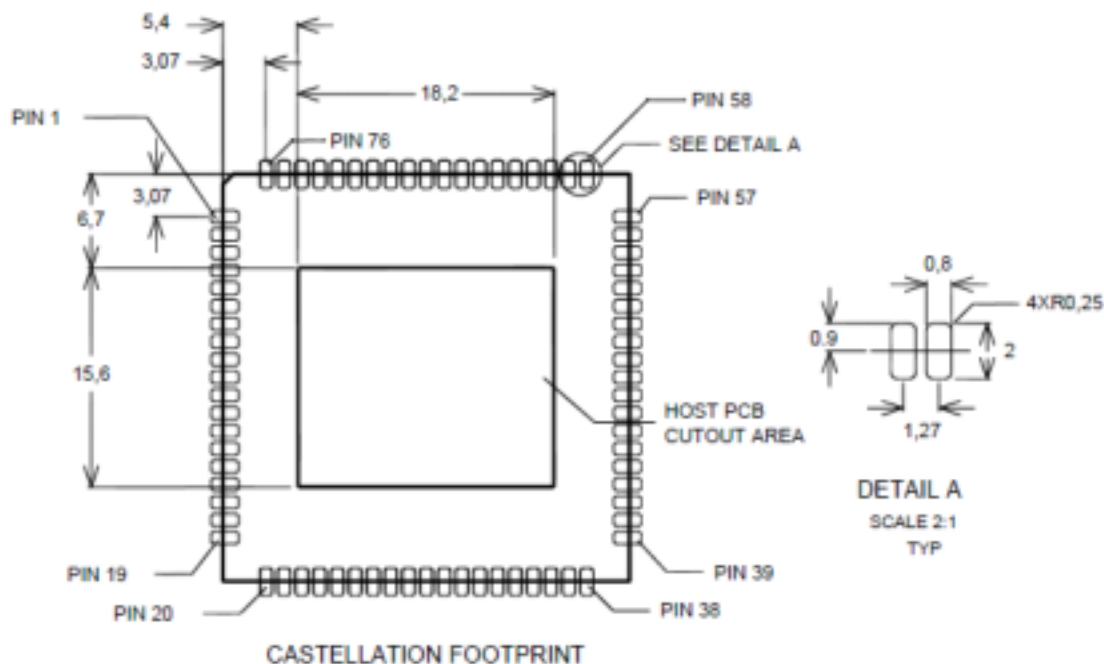
This section provides mechanical dimensions and host PCB footprint guidance for the Digi SMTplus® form factor of the ConnectCore MP15 module.

Host PCB footprint and cutout

Note Host PCBs must have a cutout to accommodate the components on the bottom side of the module.

Digi SMTplus® LGA mounting



Digi SMTplus® Castellated Edge Via mounting**Label**

The MAC address and serial number of the SOM are encoded in the data matrix on the SOM label.

Weight

The weight of the ConnectCore MP15 module (with Wi-Fi/Bluetooth networking and shield) is 6.60 g. The weight of the non-wireless ConnectCore MP15 module variant is 6.35 g.

Note See the ConnectCore MP15 product page for mechanical design documents, drawings, and other resources.

Environmental specifications

Operating temperature: -40 to 85 C.



CAUTION! Your final product may require additional thermal management such as passive (heatsink/spreader) or active (airflow) cooling to achieve the maximum operating temperature without exceeding the processor junction temp limit.

Socket options

For testing, prototyping, and other primarily development-related purposes, Digi International and E-tec Interconnect AG have developed sockets allowing the easy insertion and removal of modules in a carrier board design.

All drawings, user instructions, schematics and PCB footprints are posted on the ConnectCore MP15 technical support website.

Note The ConnectCore MP1 Development Board (Digi P/N CC-WMP157-KIT) has been designed to support a RF-LPF246-129M-21AAEW55L-CCMP1 socket, and can be used as a reference design.

All sockets are sold and built by [E-tec Interconnect AG](#). The table below provides an overview of the available part numbers.

Socket model	E-tec part number
ConnectCore MP15	RF-LPF246-129M-21AAEW55L-CCMP1

Note Please direct all socket-related purchase inquiries to E-tec Interconnect AG (info@e-tec.com).

Regulatory information and certifications

Note The ConnectCore MP15 module complies with Part 15 of the United States FCC rules and regulations.

United States FCC	80
Europe and UK	84
Canada (IC)	87
Japan	89

United States FCC

The ConnectCore MP15 module complies with Part 15 of the FCC rules and regulations. Compliance with the labeling requirements, FCC notices and antenna usage guidelines is required. To fulfill FCC Certification, the OEM must comply with the following regulations:

The system integrator must ensure that the text on top side of the module is placed on the outside of the final product.

The ConnectCore MP15 module may only be used with approved antennas. (See [FCC-approved antennas](#).)

Labeling requirements



WARNING! The Original Equipment Manufacturer (OEM) must ensure that FCC labeling requirements are met. This includes a clearly visible label on the outside of the final product enclosure that displays the contents shown below. Required FCC Label for OEM products containing the ConnectCore MP15 module.

Contains FCC ID: MCQ-CCMP1

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Maximum power and frequency specifications (FCC)

RF band	Peak antenna gain	Technology	Channel bandwidth	Channel number (Center frequency, MHz)
2.4 GHz	2.5 dBi	BT + EDR Bluetooth LE	1	79 non-overlapping channels: 0 (2400) to 78 (2480)
			2	40 non-overlapping channels: 0 (2402) to 39 (2480)
		WLAN	20	1(2412), 2(2417), 3(2422), 4(2427), 5(2432), 6 (2437), 7(2442), 8(2447), 9 (2452), 10(2457), 11 (2462)
			40	3(2422), 4(2427), 5(2432), 6(2437), 7(2442), 8 (2447), 9(2452)
5 GHz	4.6 dBi	WLAN	20	36(5180), 40(5200), 44(5220), 48(5240), 52 (5260), 56(5280), 60(5300), 64 (5320), 100(5500), 104(5520), 108(5540), 112(5560), 116(5580), 120 (5600), 124(5620), 128(5640), 132(5660), 136 (5680), 140(5700), 149 (5745), 153(5765), 157 (5785), 161(5805), 165(5825)
			40	38(5190), 46(5230), 54(5270), 62(5310), 102 (5510), 110(5550), 118(5590), 126(5630), 134

RF band	Peak antenna gain	Technology	Channel bandwidth	Channel number (Center frequency, MHz)
				(5670), 151(5755), 159(5795)
			80	42(5210), 58(5290), 106(5530), 122(5610), 155(5775)

FCC notices

IMPORTANT: The ConnectCore MP15 module has been certified by the FCC for use with other products without any further certification (as per FCC section 2.1091). Modifications not expressly approved by Digi could void the user's authority to operate the equipment.

IMPORTANT: OEMs must test final product to comply with unintentional radiators (FCC section 15.107 & 15.109) before declaring compliance of their final product to Part 15 of the FCC Rules.

IMPORTANT: The ConnectCore MP15 module has been certified for remote and base radio applications. If the module will be used for portable applications, the device must undergo SAR testing. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Re-orient or relocate the receiving antenna, Increase the separation between the equipment and receiver, Connect equipment and receiver to outlets on different circuits, or Consult the dealer or an experienced radio/TV technician for help.

IMPORTANT: This module has been tested and found to comply with the following requirements for Modular Approval.

Part 15.247 - Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

Part 15.407 – General technical requirements.

FCC-approved antennas

The ConnectCore MP15 module can be installed utilizing antennas and cables constructed with non-standard connectors (RPSMA, RPTNC, and so on).

The modules are FCC approved for fixed base station and mobile applications for the channels indicated in the tables below. If the antenna is mounted at least 20 cm (8 in) from nearby persons, the application is considered a mobile application. Antennas not listed in the table must be tested to comply with FCC Section 15.203 (Unique Antenna Connectors) and Section 15.247 (Emissions).

The following table shows the antenna that was used to certify the ConnectCore MP15 wireless module. This antenna can be replaced by others, however further certification testing is required. The number of tests to be carried out can be decreased by using an antenna of the same type, i.e. dualband omnidirectional dipole, showing lower peak gain. In such case, only a spot check may be required by the certification laboratories to keep current certifications valid according to FCC regulations. If replacing by an antenna with higher gain, complete radiated tests according to FCC regulations are required by the certification laboratories.

Antenna used to certify the ConnectCore MP15 wireless module

Antenna Type	Supplier	Antenna part no.	Freq. (MHz)	Peak antenna gain (dBi)	Directional gain (dBi)
Dipole	Linx Technologies Inc.	ANT-DB1-RAF-RPS	2402-2480	2.5	5.51
			5150-5250	4.6	7.61
			5250-5350	4.6	7.61
			5470-5725	4.6	7.61
			5725-5850	4.6	7.61
Dipole	KYOCERA	X9001091-W3DRMB	2402-2480	1.8	-
			5150-5250	4.0	-
			5250-5350	4.0	-
			5470-5725	4.0	-
			5725-5850	4.0	-
Dipole	TAOGLAS	GW.48.A151	2402-2480	3.42	6.43
			5150-5250	4.56	7.57
			5250-5350	4.56	7.57
			5470-5725	4.56	7.57
			5725-5850	4.56	7.57
PCB	ETHERTRONICS	1001932	2402-2480	2.5	5.51
			5150-5250	5	8.01
			5250-	5	8.01

Antenna Type	Supplier	Antenna part no.	Freq. (MHz)	Peak antenna gain (dBi)	Directional gain (dBi)
			5350		
			5470-5725	5	8.01
			5725-5850	5	8.01
PCB	YAGEO	ANTX100P001B24553	2402-2480	4.6	7.61
			5150-5250	4.9	7.91
			5250-5350	3.9	6.91
			5470-5725	5.1	8.11
			5725-5850	5.1	8.11
PCB	KYOCERA	W3P35x8W04-U100D3B0A	2402-2480	2.3	-
			5150-5250	5	-
			5250-5350	5	-
			5470-5725	5	-
			5725-5850	5	-
PCB	TAOGLAS	FXP830.07.0100C *	2402-2480	3.32	6.33
			5150-5250	4.7	7.71
			5250-5350	4.7	7.71
			5470-5725	4.7	7.71
			5725-5850	4.7	7.71
PCB	TAOGLAS	FXP831.07.0100C	2402-	3	6.01

Antenna Type	Supplier	Antenna part no.	Freq. (MHz)	Peak antenna gain (dBi)	Directional gain (dBi)
			2480		
			5150-5250	5.5	8.51
			5250-5350	5.5	8.51
			5470-5725	5.5	8.51
			5725-5850	5.5	8.51

* Antenna gain in free space

Note If using the RF module in a portable application (for example - if the module is used in a hand-held device and the antenna is less than 20 cm (8 in) from the human body when the device is in operation): The integrator is responsible for passing additional SAR (Specific Absorption Rate) testing based on FCC rules 2.1091 and FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields, OET Bulletin and Supplement C. The testing results will be submitted to the FCC for approval prior to selling the integrated unit. The required SAR testing measures emissions from the module and how they affect the person.

RF exposure



CAUTION! To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 20 cm (8 in) or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance are not recommended. The antenna used for this transmitter must not be co-located in conjunction with any other antenna or transmitter. The preceding statement must be included as a CAUTION statement in OEM product manuals in order to alert users of FCC RF Exposure compliance.

Operating frequency

- 802.11 b/g/n: 2412-2462 MHz
- 802.11 a/n/ac : 5150-5250 MHz; 5250-5350 MHz; 5470-5725MHz; 5725-5850 MHz
- Bluetooth : 2402-2480 MHz

Europe and UK

- 2.412 to 2.472 GHz; 13 channels
- 5.180 to 5.320 GHz; 8 channels
- 5.500 to 5.700 GHz, 8 channels (excludes 5.600 to 5.640 GHz)

CE mark

The ConnectCore MP15 module is certified for use in several European countries. For information, visit www.digi.com/resources/certifications.

If the ConnectCore MP15 module is incorporated into a product, the manufacturer must ensure compliance of the final product with articles 3.1a and 3.1b of the RE Directive (Radio Equipment Directive). A Declaration of Conformity must be issued for each of these standards and kept on file as described in the RE Directive (Radio Equipment Directive).

Furthermore, the manufacturer must maintain a copy of the ConnectCore MP15 module user manual documentation and ensure the final product does not exceed the specified power ratings, antenna specifications, and/or installation requirements as specified in the user manual. If any of these specifications are exceeded in the final product, a submission must be made to a notified body for compliance testing to all required standards.

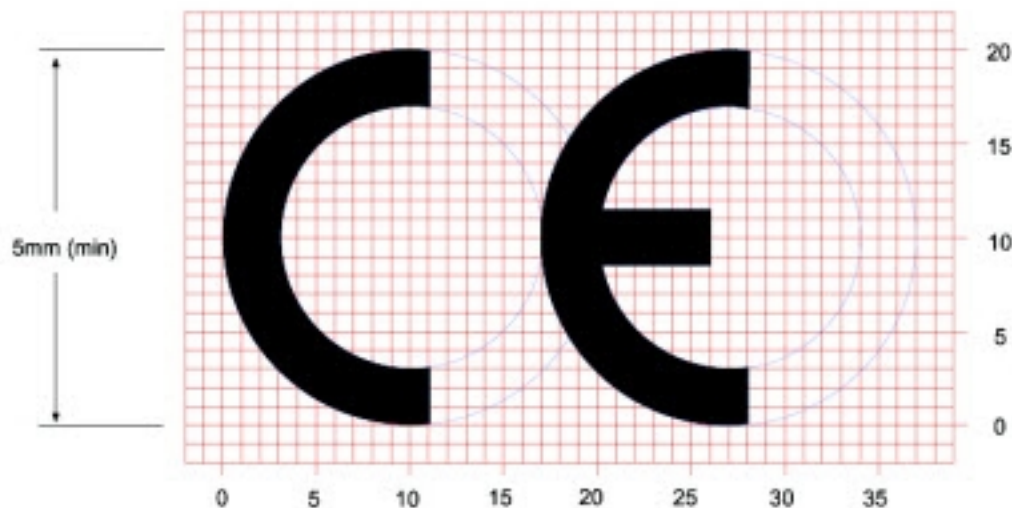
This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

CE and UKCA OEM labeling requirements

The CE and UKCA markings must be clearly visible and legible when you affix it to the product. If this is not possible, you must attach these marks to the packaging (if any) or accompanying documents.

CE labeling requirements

The “CE” marking must be affixed to a visible location on the OEM product. The following figure shows CE labeling requirements.



The CE mark shall consist of the initials “CE” taking the following form:

- If the CE marking is reduced or enlarged, the proportions given in the above graduated drawing must be respected.
- The CE marking must have a height of at least 5 mm except where this is not possible on account of the nature of the apparatus.
- The CE marking must be affixed visibly, legibly, and indelibly.

UK Conformity Assessed (UKCA) labeling requirements

See <https://www.gov.uk/guidance/using-the-ukca-marking> for further details.

You must make sure that:

- if you reduce or enlarge the size of your marking, the letters forming the UKCA marking must be in proportion to the version set out below
- the UKCA marking is at least 5 mm in height – unless a different minimum dimension is specified in the relevant legislation
- the UKCA marking is easily visible, legible (from 1 January 2023 it must be permanently attached)
- the UKCA marking can take different forms (for example, the colour does not have to be solid), as long as it remains visible, legible and maintains the required proportions.

Important note

Digi customers assume full responsibility for learning and meeting the required guidelines for each country in their distribution market. Refer to the radio regulatory agency in the desired countries of operation for more information.

Declarations of Conformity

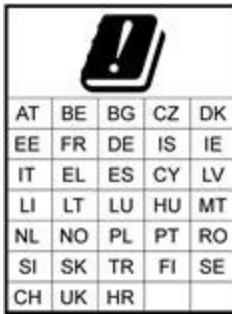
Digi has issued Declarations of Conformity for the ConnectCore MP15 module concerning emissions, EMC, and safety. For more information, see <http://www.digi.com/resources/certifications>.

Important note

Digi customers assume full responsibility for learning and meeting the required guidelines for each country in their distribution market. Refer to the radio regulatory agency in the desired countries of operation for more information.

Approved antennas

The same antennas have been approved for Europe as stated in the FCC table for use with the ConnectCore MP15 module.

Country list

Note This device is restricted to indoor use only when operating in the 5150-5350MHz frequency range within all member states.

Radio Type / Description		Transmitter Frequency (MHz)	Maximum Output Power
Bluetooth	BR+EDR	2402 ~ 2480	15.86 dBm
	Low Energy	2402 ~ 2480	6.88 dBm
WLAN 2.4G	802.11b	2412 ~ 2472	19.24 dBm
	802.11g	2412 ~ 2472	19.31 dBm
	802.11n 20	2412 ~ 2472	19.54 dBm
	802.11n 40	2422 ~ 2462	19.45 dBm
WLAN 5G	802.11a	5150 ~ 5350	22.16 dBm
		5470 ~ 5725	21.99 dBm
		5725 ~ 5850	13.17 dBm
	802.11n_20M 802.11ac_20M	5150 ~ 5350	22.22 dBm
		5470 ~ 5725	22.00 dBm
		5725 ~ 5850	13.16 dBm
	802.11n_40M 802.11ac_40M	5150 ~ 5350	22.55 dBm
		5470 ~ 5725	21.82 dBm
		5725 ~ 5850	13.28 dBm
	80211ac_80M	5150 ~ 5350	21.52 dBm
		5470 ~ 5725	20.90 dBm
		5725 ~ 5850	13.15 dBm

Canada (IC)

IC: 1846A-CCMP1

PMN: ConnectCore MP15

HVIN: 55002119-XX

Canadian Notice

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Avis Canadien

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Labeling requirements

Labeling requirements for Industry Canada are similar to those of the FCC.

Required End Product Labeling

Any device incorporating this module must include an external, visible, permanent marking or label which states:

"Contains IC : 1846A-CCMP1"

Obligation d'étiquetage du produit final:

Tout dispositif intégrant ce module doit comporter un externe, visible, marquage permanent ou une étiquette qui dit:

"Contient IC : 1846A-CCMP1"

Transmitters with detachable antennas

This radio transmitter (IC: 1846A-CCMP1) has been approved by Industry Canada to operate with the antenna types listed in the table above with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (IC: 1846A-CCMP1) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types

d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the

equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

The ConnectCore MP15 module is for professional (OEM) installation only.

Le module ConnectCore MP15 doit impérativement être installé par un professionnel (OEM).

RF exposure



To satisfy Industry Canada RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation.

Pour satisfaire aux exigences d'Industrie Canada concernant l'exposition RF, une distance égale ou supérieure à 20cm doit être respectée entre les antennes de ce produit et les personnes se trouvant à proximité.

The preceding statement must be included as a CAUTION statement in OEM product manuals in order to alert users of Industry Canada RF Exposure compliance.

Cette information doit être incluse dans le manuel du produit OEM afin d'alerter les utilisateurs sur la nécessité de respecter l'exposition RF d'Industrie Canada.

Approved antennas

The same antennas have been approved for Canada as stated in the FCC table for use with the ConnectCore MP15 module.

Japan

電波法により5GHz帯は屋内使用に限ります。

This device has been granted a designation number by Ministry of Internal Affairs and Communications according to:

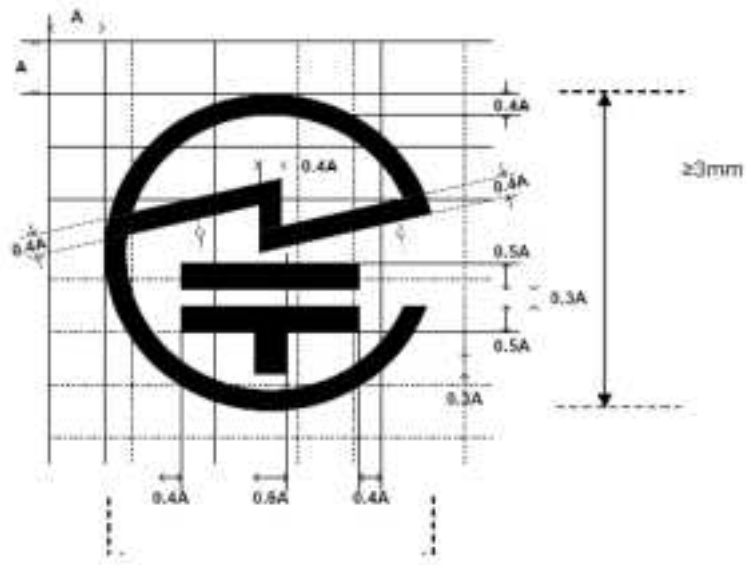
Ordinance concerning Technical Regulations Conformity Certification etc. of Specified Radio Equipment (特定無線設備の技術基準適合証明等に関する規則).

- Article 2, Paragraph 1, Item 19, 19-3, 19-3-2 Category: WW, XW, YW
- Model/Name of equipment: ConnectCore MP15
- Radio label marking:
 - R: 210-207701

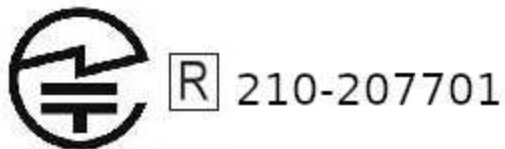
This device should not be modified (otherwise the granted designation number will be invalid).

- 2.412 to 2.472 GHz; 13 channels
- 5.180 to 5.320 GHz; 8 channels
- 5.500 to 5.700 GHz; 11 channels

Approval Label (MIC Marking)



Label text



Note Due to space constraints, the ConnectCore MP15 module label doesn't support radio marking for Japan. If space allows, end product label should support radio marking for Japan. If not, radio marking shall be documented in the user manual.

Note The warning “Indoor only(5GHz)” must go on the end product – or E Label (Display).

Master station: Indoor only

親局:当該無線設備の送信は、屋内のみにおいて使用可能である旨

Slave station: The transmission of radio equipment is indoors use only (Except when communicating with 5.2GHz high power base stations or relay stations)

子局:当該無線設備の送信は、5.2GHz帯高出力データ通信システムの基地局または陸上移動中継局と通信する場合を除き、屋内においてのみ可能である旨。

If the device is too small it can be displayed on the user manual and on the packaging or container.