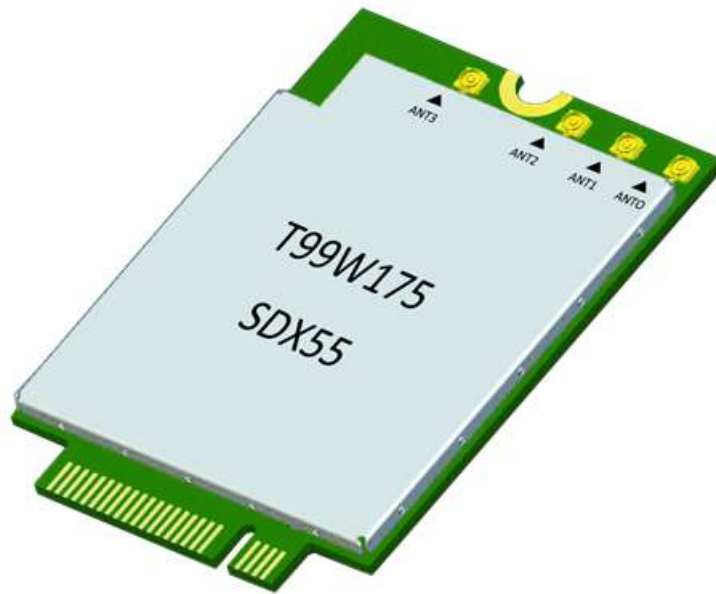


5GNR/ LTE-Advanced PCI Express M.2 Module (Sub 6G, LTE, UMTS)

Engineering Requirements Specification



Project code: T99W175M
Solution: SDX55+SDR865+PMX55
SKU: WW-1-5G

Foxconn PN	Customer PN
T99W175.06	K1YCW
T99W175.08	JP18Y
T99W175.09	FTY9X
T99W175.30	1TFY5
T99W175.31	H75GC
T99W175.32	01PCT

Reviewers

Department	Name	Signature	Review Dates	
			* Plan	** Results
Project Manager	Ai-Ning Song			
Project Leader	Michael. Xiao			
Hardware Engineer	Lynn. Liu			

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Modification History

Rev	Date	Originator	Comment
R1.0	2019/5/9	Lynn. Liu	Initial release
R1.1	2019/5/20	Lynn. Liu	Update base on the customer requirements
R1.2	2019/5/28	Lynn. Liu	Update item 2.4 for antenna requirements; item 1.4.2 for USIM2
R1.3	2019/5/30	Lynn. Liu	Update Pin38/60 description and item 1.5.12 for Coexistence
R1.4	2019/7/9	Lynn. Liu	1. Remove n25/38/40& B43 support due to Qualcomm update (item1.1); 2. Remove n71& GPS L5 due to not in POR and B48 as TBD; 3. Update mmWave IF connector pin definition (item 2.4.2); 4. Update ME drawing (item3.2
R1.5	2019/7/25	Lynn. Liu	1. Update PCIe connection guideline(item1.5.4); 2. Update ME drawing (item3.2); 3. Update antenna configuration (item 2.4.2); 4. Update LTE Rx sensitivity Spec; 5. Update W_Disable# (item1.5.5)
R1.6	2019/9/12	Lynn. Liu	1. Update Pin29/31/35/37(USB3.0) to NC; 2. Need Platform side reserve USB2.0 for factory test (WinPE) (item1.4.2)
R1.7	2019/10/08	Lynn. Liu	1. Disable B48 for NA (item 1); 2. Update operating temperature (item 4.1); 3. Update antenna configuration (item 2.4.2 Figure2-2); 4. Update golden plating drawing; 5. Pin29/31/35/37 as NC and reserve with PCIe Lane 2
R1.8	2020/2/24	Lynn. Liu	1. Remove mmW for Sub6G only SKU; 2. Enable B48 for US& EU 3. Remove Reset (Pin67) requirement; 4. Update antenna configure (Item 2.4.2 Figure2-2); 5. Update HW feature (Item 2); 6. Update initial power consumption Spec (Item 4.2); 7. Update RF performance Spec (Item 5.1& 5.2) & support bandwidth; 8. Add DPS feature
R1.9	2020/3/27	Lynn. Liu	1. Add PN for Olympic MLK& Andrews; 2. Disable B40 to meet FCC requirement; 3. Update Power on/off sequence requirement (Item 1.5.13); 4. Reserve 0.1uF on Pin6(Full card power off) & Pin50 (PERST#) Item 1.5.3& 1.5.4; 5. Add n71 for new Platform POR

CONTENTS

1.	GENERAL DESCRIPTION.....	5
1.1	SYSTEM MAIN FEATURE	6
1.2	EUTRA -NR- DUAL CONNECTIVITY & CARRIER AGGREGATION COMBINATION	10
1.3	HOST INTEGRATION INSTRUCTIONS.....	13
1.4	ANTENNA INFORMATION	14
1.5	HOST PRODUCT TESTING GUIDANCE	16

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1. General Description

T99W175M is designed to enable wireless data connectivity for notebook computer or any other device compatible with the PCI Express M.2 Specification 3042 type Key B slot.

T99W175 is the data card solution that delivers wireless wide-area network (WWAN) connectivity for the 5G NR (Sub 6G), LTE, UMTS (HSDPA/HSUPA/HSPA+DC-HSPA+) and GPS/Glonass/ Beidou/ Galileo protocols in one hardware configuration.

SKU		WW-1-5G / T99W175M
Carrier Support		NA: AT&T, Verizon, Sprint WW: Vodafone, Telefonica-O2 APAC: Telstra, Docomo, KDDI, Softbank * Carrier engagement based on real business agreement
QCT Solution		SDX55+SDR865+SMR526+PMX55
5G	FR1 (Sub 6G)	LB: n5/8/12/20/25/28/71; MB: n1/2/3/66; HB: n7/38/41/77/78/79
	FR2 (mmWave)	NA
	4x4 MIMO	n1/2/3/66/7/38/41/77/78/79
	UE Capability	UL (TBD); DL(TBD)
4G	Support Band	LB: B26(5/18/19)/8/12(17)/13/14/20/28/29/71 MB: B1/2(25)/3/4(66)/32 HB: B7/30/34/38/39/40(Disable for FCC)/41/42/48
	4x4 MIMO	B1/25(2)/3/66(4)/7/30/40/41(38)/42/48
	LAA	B46 (DL only)
	LTE Cat.	ue-CategoryUL 13 (UL: 150Mbps) + ue-CategoryDL 20 (DL: 2Gbps); 7xDL CA, 2xUL CA (Intra-band), 5xDL CA+4X4 MIMO (Up to Cat20)
3G	WCDMA	HSPA+ Rel8 (DL/UL: up to 42/11 Mbps)
	Support Band	B1/2/4/5(6/19)/8/9
GNSS		Dual-Frequency GNSS: L1 GPS/Glonass/Beidou/Galileo,
USIM		Dual SIM interface, Dual SIM Single Active (DSSA)
eSIM		eSIM Dual SIM with eSIM on board (eSIM is option), Dual SIM Single Active (DSSA)
Interface		PCIe3.0; Reserve USB2.0 for factory test (WinPE)
Form factor		3042 PCIe M.2 Key.B

1.1 System Main Feature

Feature	Description
Physical	PCI express M.2 module, size 3042, Key.B,75Pin golden finger
Electrical	Single VCC supply (3.135V~3.63V)
Dimension	Dimensions (L × W × H): 42 mm × 30 mm × 2.5 mm, maximum height=2.6mm (add PCB tolerance=0.1mm)
Shielding design	Shield case on board design, no additional shielding requirement
Weight	Approximately ~8g
USIM	Off-board USIM connector supported on Host through USIM1/USIM2
Operating Bands	<p>WCDMA/HSDPA/HSUPA/HSPA+ operating bands:</p> <ul style="list-style-type: none"> Band 1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL) Band 2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL) Band 4: 1710 to 1755 MHz (UL), 2110 to 2155 MHz (DL) Band 5: 824 to 849 MHz (UL), 869 to 894 MHz (DL) Band 6: 830 to 840 MHz (UL), 875 to 885 MHz (DL) Band 8: 880 to 915 MHz (UL), 925 to 960 MHz (DL) Band 9: 1750 to 1785 MHz (UL), 1845to 1880 MHz (DL) Band 19: 830 to 845 MHz (UL), 875 to 890 MHz (DL)
	<p>LTE FDD/TDD operating bands:</p> <ul style="list-style-type: none"> Band 1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL) Band 2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL) Band 3: 1710 to 1785 MHz (UL), 1805 to 1880 MHz (DL) Band 4: 1710 to 1755 MHz (UL), 2110 to 2155 MHz (DL) Band 5: 824 to 849 MHz (UL), 869 to 894 MHz (DL) Band 7: 2500 to 2570 MHz (UL), 2620 to 2690 MHz (DL) Band 8: 880 to 915 MHz (UL), 925 to 960 MHz (DL) Band 12: 699 to 716 MHz (UL), 729 to 746 MHz (DL) Band 13: 777 to 787 MHz (UL), 746 to 756 MHz (DL) Band 14: 788 to 798 MHz (UL), 758 to 768 MHz (DL) Band 17: 704 to 716 MHz (UL), 734 to 746 MHz (DL) Band 18: 815 to 830 MHz (UL), 860 to 875 MHz (DL) Band 19: 830 to 845 MHz (UL), 875 to 890 MHz (DL) Band 20: 832 to 862 MHz (UL), 791 to 821 MHz (DL) Band 25: 1850 to 1915 MHz (UL), 1930 to 1995 MHz (DL) Band 26: 814 to 849 MHz (UL), 859 to 894 MHz (DL) Band 28: 703 to 748 MHz (UL), 758 to 803 MHz (DL) Band 29: 717 to 728 MHz (DL) Band 30: 2305 to 2315 MHz (UL) 2350 to 2360 MHz (DL) Band 32: 1452 to 1496 MHz (DL) Band 34: 2010 to 2025 MHz (UL/DL) Band 38: 2570 to 2620 MHz (UL/DL) Band 39: 1880 to 1920 MHz (UL/DL) Band 40: 2300 to 2400 MHz (UL/DL) Band 41: 2496 to 2690 MHz (UL/DL) Band 66: 1710 to 1800 MHz (UL), 2110 to 2200 MHz (DL) Band 71: 663 to 698 MHz (UL), 617 to 652 MHz (DL)

Operating Bands	LTE 3.5G Band 42: 3400 to 3600 MHz (UL/DL) Band 48: 3550 to 3700 MHz (UL/DL)
	LAA Band 46: 5150 to 5925 MHz (DL)
	5G NR Sub 6GHz n1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL) n2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL) n3: 1710 to 1785 MHz (UL), 1805 to 1880 MHz (DL) n5: 824 to 849 MHz (UL), 869 to 894 MHz (DL) n7: 2500 to 2570 MHz (UL), 2620 to 2690 MHz (DL) n8: 880 to 915 MHz (UL), 925 to 960 MHz (DL) n12: 699 to 716 MHz (UL), 729 to 746 MHz (DL) n20: 832 to 862 MHz (UL), 791 to 821 MHz (DL) n25: 1850 to 1915 MHz (UL), 1930 to 1995 MHz (DL) n28: 703 to 748 MHz (UL), 758 to 803 MHz (DL) n38: 2570 to 2620 MHz (UL/DL) n41: 2496 to 2690 MHz (UL/DL) n66: 1710 to 1800 MHz (UL), 2110 to 2200 MHz (DL) n71: 663 to 698 MHz (UL), 617 to 652 MHz (DL) n77: 3300 to 4200 MHz (UL/DL) n78: 3300 to 3800 MHz (UL/DL) n79: 4400 to 5000 MHz (UL/DL)
	5G NR mmWave NA
Diversity/2nd Rx	All UMTS operating bands All LTE operating bands
4x4 MIMO Rx	LTE-B1/25(2)/3/66(4)/7/30/40/41(38)/42/48 5G NR-n1/2/3/66/7/41/77/78/79
GNSS	GPS: L1 (1575.42MHz); GLONASS: L1 (1602MHz) BeidouB1(1561.098MHz) Galileo E1 (1575.42);
USIM Voltage	Support 1.8V and 2.85V, and auto detects follow SIM card type
Antenna connectors	ANT0: Support all 5G NR Sub 6G& LTE& UMTS bands ANT1: Support 5G NR Sub 6G& LTE M/H/UHB& UMTS bands ANT2: Support 5G NR Sub 6G& LTE M/H/UHB& UMTS bands ANT3: Support all 5G NR Sub 6G& LTE& UMTS bands and GPS L1 simultaneously ANT4/5/6: NA

Throughput	WCDMA CS: DL 64 kbps /UL 64 kbps WCDMA PS: DL 384 kbps /UL 384 kbps HSPA+:DL 21.6 Mbps /UL 5.76 Mbps DC-HSPA+: DL 42 Mbps/UL 5.76 Mbps LTE Cat20: DL:2Gbps/UL 150 Mbps 5G NR Sub 6G: DL: TBD/UL (TBD) 5G NR mmWave: NA
ENDC DPS	Support NSA mode ENDC Dynamic Power Sharing feature

5G NR Air Interface

- 3GPP Rel15 5G NR Sub-6
Sub-6G
- Modulation UL: 256 QAM; DL: 256 QAM
- Waveform UL: CP-OFDM and DFT-S-OFDM; DL: CP-OFDM
- Sub-Carrier Spacing (SCS): 15 KHz, 30 KHz
- Duplex mode: FDD and TDD
- Operation mode: Standalone mode (SA) and Non-Standalone mode (NSA)
- CA capability: DLCA
- MIMO DL: 4 × 4 MIMO;
- EN-DC: LTE and NR sub-6 GHz dual connectivity

LTE Air Interface

LTE Rel15

- 20 layers and 2 Gbps downlink (DL) throughput – 4 × 4 MIMO across 5x CA
- 150 Mbps uplink (UL) throughput – 40 MHz ULCA and 256 QAM
- LAA (Licensed assist access) across 80 MHz
- CA capability:
 - DLCA
 - Inter-band DLCA
 - Intra band contiguous CA
 - Intra band non contiguous
 - ULCA
 - Inter band ULCA (Depend on Customer requirements)
 - Intra band contiguous CA
- Modulation UL: 256 QAM; DL: 256 QAM
- 4 × 2 MIMO 7x CA (R15)
- 4 × 4 MIMO 5x CA (R15)
- FDD + TDD CA

WCDMA/HSPA Air Interface

- R99:
All modes and data rates for WCDMA FDD
- R5 HSDPA
PS data speeds up to 7.2 Mbps on the downlink
- R6 HSUPA
E-DCH data rates of up to 5.76 Mbps for 2 ms TTI (UE category 6) uplink
- R7 HSPA+
Downlink 64 QAM SISO: up to 21 Mbps
Downlink 16 QAM 2X2 MIMO: up to 28 Mbps
- R8 DC-HSPA+
Downlink dual carrier with 64 QAM (SISO); up to 42 Mbps

GNSS

- GPS, GLONASS, Galileo, and BeiDou support
- Two GNSS paths to support simultaneous L1
- Customizable tracking session
 - Automatic tracking session on startup
 - Concurrent standalone GPS, GLONASS, BeiDou and Galileo
 - gpsOneXTRA with GPS + GLONASS + BeiDou+ Galileo support

1.2 EUTRA -NR- Dual Connectivity & Carrier Aggregation Combination

TBD

For US SKU Spec.

Feature	Description
Physical	PCI express M.2 module, size 3042,Key.B,75Pin golden finger
Electrical	5Vdc (Host Equipment) 3.135Vdc~3.63Vdc (Module)
Shielding design	Shield case on board design, no additional shielding requirement
Operating Bands	<p>WCDMA/HSDPA/HSUPA/HSPA+ operating bands: Band 2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL) Band 4: 1710 to 1755 MHz (UL), 2110 to 2155 MHz (DL) Band 5: 824 to 849 MHz (UL), 869 to 894 MHz (DL) Band 6 (cover by B5): 830 to 840 MHz (UL), 875 to 885 MHz (DL) Band 19 (cover by B5): 830 to 845 MHz (UL), 875 to 890 MHz (DL)</p> <p>LTE FDD/TDD operating bands: Band 2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL) Band 4: 1710 to 1755 MHz (UL), 2110 to 2155 MHz (DL) Band 5: 824 to 849 MHz (UL), 869 to 894 MHz (DL) Band 7: 2500 to 2570 MHz (UL), 2620 to 2690 MHz (DL) Band 12: 699 to 716 MHz (UL), 729 to 746 MHz (DL) Band 13: 777 to 787 MHz (UL), 746 to 756 MHz (DL) Band 14: 788 to 798 MHz (UL), 758 to 768 MHz (DL) Band 17: 704 to 716 MHz (UL), 734 to 746 MHz (DL) Band 25: 1850 to 1915 MHz (UL), 1930 to 1995 MHz (DL) Band 26: 814 to 849 MHz (UL), 859 to 894 MHz (DL) Band 30: 2305 to 2315 MHz (UL) 2350 to 2360 MHz (DL) Band 38: 2570 to 2620 MHz (UL/DL) Band 41: 2496 to 2690 MHz (UL/DL) Band 66: 1710 to 1800 MHz (UL), 2110 to 2200 MHz (DL) Band 71: 663 to 698 MHz (UL), 617 to 652 MHz (DL)</p>
Operating Bands	<p>LTE 3.5G Band 48: 3550 to 3700 MHz (UL/DL)</p>

	<p>5G NR Sub 6GHz (STA Mode) n38: 2570 to 2620 MHz (UL/DL)</p> <p>5G NR FR1 EN_DC</p> <table border="1"> <thead> <tr> <th rowspan="2">5G NR</th> <th colspan="3">FCC 5G FR1</th> <th rowspan="2">ENDC</th> </tr> <tr> <th>Band</th> <th>SCS</th> <th>Bandwidth (MHz)</th> </tr> </thead> <tbody> <tr> <td>n2</td> <td>15kHz</td> <td>5/10/15/20</td> <td>Band 5/12/13/30/48/66</td> </tr> <tr> <td>n5</td> <td>15kHz</td> <td>5/10/15/20</td> <td>Band 2/7/12/48/66</td> </tr> <tr> <td>n7</td> <td>15kHz</td> <td>5/10/15/20</td> <td>Band 5/12</td> </tr> <tr> <td>n12</td> <td>15kHz</td> <td>5/10/15</td> <td>Band 2/66</td> </tr> <tr> <td>n41</td> <td>30kHz</td> <td>20/40/50/60/80/90/100</td> <td>Band 2/25/26/66/41</td> </tr> <tr> <td>n66</td> <td>15kHz</td> <td>5/10/15/20</td> <td>Band 5/12/13/30/48/71</td> </tr> <tr> <td>n71</td> <td>15kHz</td> <td>5/10/15/20</td> <td>Band 2/7/66</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th rowspan="2">5G NR</th> <th colspan="3">FCC 5G FR1</th> <th rowspan="2">ENDC</th> </tr> <tr> <th>Band</th> <th>SCS</th> <th>Bandwidth (MHz)</th> </tr> </thead> <tbody> <tr> <td>n25</td> <td>15kHz</td> <td>5/10/15/20</td> <td>Band 12</td> </tr> <tr> <td>n77</td> <td>30kHz</td> <td>20/40/50/60/80/90/100</td> <td>Band 2/5/7/12/13/14/30/41/66</td> </tr> </tbody> </table>	5G NR	FCC 5G FR1			ENDC	Band	SCS	Bandwidth (MHz)	n2	15kHz	5/10/15/20	Band 5/12/13/30/48/66	n5	15kHz	5/10/15/20	Band 2/7/12/48/66	n7	15kHz	5/10/15/20	Band 5/12	n12	15kHz	5/10/15	Band 2/66	n41	30kHz	20/40/50/60/80/90/100	Band 2/25/26/66/41	n66	15kHz	5/10/15/20	Band 5/12/13/30/48/71	n71	15kHz	5/10/15/20	Band 2/7/66	5G NR	FCC 5G FR1			ENDC	Band	SCS	Bandwidth (MHz)	n25	15kHz	5/10/15/20	Band 12	n77	30kHz	20/40/50/60/80/90/100	Band 2/5/7/12/13/14/30/41/66
5G NR	FCC 5G FR1			ENDC																																																	
	Band	SCS	Bandwidth (MHz)																																																		
n2	15kHz	5/10/15/20	Band 5/12/13/30/48/66																																																		
n5	15kHz	5/10/15/20	Band 2/7/12/48/66																																																		
n7	15kHz	5/10/15/20	Band 5/12																																																		
n12	15kHz	5/10/15	Band 2/66																																																		
n41	30kHz	20/40/50/60/80/90/100	Band 2/25/26/66/41																																																		
n66	15kHz	5/10/15/20	Band 5/12/13/30/48/71																																																		
n71	15kHz	5/10/15/20	Band 2/7/66																																																		
5G NR	FCC 5G FR1			ENDC																																																	
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n25	15kHz	5/10/15/20	Band 12																																																		
n77	30kHz	20/40/50/60/80/90/100	Band 2/5/7/12/13/14/30/41/66																																																		
Diversity/2nd Rx	<p>All UMTS operating bands</p> <p>All LTE operating bands</p>																																																				
MIMO 4 Rx	<p>LTE-B1/25(2)/3/66(4)/7/30/40/41(38)/42/48</p> <p>5G NR-n1/2/3/66/7/41/77/78/79</p>																																																				
GNSS	<p>GPS: L1 (1575.42MHz); L5 (1176MHz)</p> <p>GLONASS: L1 (1602MHz)</p> <p>BeidouB1(1561.098MHz)</p> <p>Galileo E1 (1575.42); E5a (1176MHz)</p>																																																				
Throughput	<p>WCDMA CS: DL 64 kbps /UL 64 kbps</p> <p>WCDMA PS: DL 384 kbps /UL 384 kbps</p> <p>HSPA+:DL 21.6 Mbps /UL 5.76 Mbps</p> <p>DC-HSPA+: DL 42 Mbps/UL 5.76 Mbps</p> <p>LTE Cat20: DL:2Gbps/UL 150 Mbps</p> <p>5G NR Sub 6G: DL:TBD/UL (TBD)</p>																																																				

5G NR Air Interface

- 3GPP Rel15 5G NR sub-6
Sub-6G
- Modulation UL: 256 QAM; DL: 256 QAM
- Waveform UL: CP-OFDM and DFT-S-OFDM; DL: CP-OFDM
- Sub-Carrier Spacing (SCS): 15 KHz, 30 KHz
- Duplex mode: FDD and TDD
- Operation mode: Standalone mode (SA) and Non-Standalone mode (NSA)
- CA capability: DLCA
- EN-DC: LTE and NR sub-6 GHz dual connectivity
- **MIMO: 1 TX × 4 RX**

LTE Air Interface

LTE Rel14

- 20 layers and 2 Gbps downlink (DL) throughput – **4 RX MIMO** across 5x CA
- 200 Mbps uplink (UL) throughput – 40 MHz ULCA and 256 QAM

- LAA (Licensed assist access) across 80 MHz
- CA capability:
 - DLCA
 - Inter-band DLCA
 - Intra band contiguous CA
 - Intra band non contiguous
 - ULCA
 - Intra band contiguous CA
- Modulation UL: 256 QAM; DL: 1024 QAM
- FDD + TDD CA
- **MIMO: 1 TX × 4 RX**

WCDMA/HSPA Air Interface

- R99:
 - All modes and data rates for WCDMA FDD
- R5 HSDPA
 - PS data speeds up to 7.2 Mbps on the downlink
- R6 HSUPA
 - E-DCH data rates of up to 5.76 Mbps for 2 ms TTI (UE category 6) uplink
- R7 HSPA+
 - Downlink 64 QAM SISO: up to 21 Mbps
 - Downlink 16 QAM 2X2 MIMO: up to 28 Mbps
- R8 DC-HSPA+
 - Downlink dual carrier with 64 QAM (SISO); up to 42 Mbps
- **MIMO: 1 TX × 4 RX**

GNSS

- GPS, GLONASS, Galileo, and BeiDou support
- Two GNSS paths to support simultaneous L1 and /L5
- Customizable tracking session
 - Automatic tracking session on startup
 - Concurrent standalone GPS, GLONASS , BeiDou and Galileo
 - gpsOneXTRA with GPS + GLONASS + BeiDou+ Galileo support

1.3 Host integration instructions

Install module through golden finger.

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1.4 Antenna information

Antenna No.	RF Chain No.	Brand	Model	Antenna Net Gain(dBi)	Frequency range (MHz)	Antenna Type	Connector Type
1		WHA YU	C107-511720-A	4.41	660~803	PCB	I-PEX
2		WHA YU	C107-511721-A	3.81 4.03	791~960 1447.9~1606	PCB	I-PEX
3		WHA YU	C107-511722-A	4.27 5.31	1710~2170 2500~2690	PCB	I-PEX
4		WHA YU	C107-511723-A	2.99 0.92	2300~2400 3500~3700	PCB	I-PEX
5		WHA YU	C107-511724-A	6.45	5150~5925	PCB	I-PEX
6		WHA YU	C107-511725-A	4.89	3400~3700	PCB	I-PEX
7		AVX	5000106-R1-X01	2.91	699~803	Monopole	I-PEX
8		AVX	5000107-R1-X01	2.59	791~960	Monopole	I-PEX
9		AVX	5000108-R1-X01	2.85	1427~1610	Monopole	I-PEX
10		AVX	5000109-R1-X01	2.23 2.94	1710~2200 5150~5925	Monopole	I-PEX
11		AVX	5000110-R1-X01	0.9	2300~2690	Monopole	I-PEX
12		AVX	5000111-R1-X01	0.87	3300~5000	Monopole	I-PEX
Antenna No.	RF Chain No.	Brand	Model	Antenna Net Gain(dBi)	Frequency range (MHz)	Antenna Type	Connector Type
13	Tx1/ Rx1	Ethertronic s	5003806	0.4 -1.61 0.39 2.95 1.98 0.38 0.83 2.31	698-821 824-960 1425-1515 1710-2200 2300-2690 3300-4200 4400-5000 5150-5925	PIFA	I-PEX
	Rx2	Ethertronic s	5003807	-2.24 -4.52 2.87 2.99 2.93 2.91 2.23 -0.85	716-821 824-960 1425-1515 1557-1610 1805-2200 2300-2690 3300-4200 4400-5000	PIFA	I-PEX

				-3.04	5150-5925		
	Tx2/ Rx3	Ethertronic s	5003806	2.21 2.25 -0.45 2.6	1710-2200 2300-2690 3300-4200 4400-5000	PIFA	I-PEX
	Rx4	Ethertronic s	5003700	1.38 2.87 0.6 -2.09	1805-2200 2300-2690 3300-4200 4400-5000	PIFA	I-PEX
14	Ant. 0 (TX/R X)	Master Wave	NA	2.4 2.2 2.9 2.9 2.9 NA	880~960 1020~2170 2545~2595 3565~3600 3900~4000 GPS	PCB	I-PEX
	Ant. 2 (TX/R X)	Master Wave	NA	NA 2.2 2.8 2.9 2.8 NA	880~960 1020~2170 2545~2595 3565~3600 3900~4000 GPS	PCB	I-PEX
	Ant. 1 (RX)	Master Wave	NA	NA 5.3 5.1 4.3 4.5 NA	880~960 1020~2170 2545~2595 3565~3600 3900~4000 GPS	PCB	I-PEX
	Ant. 3 (RX)	Master Wave	NA	1.3 6.8 3.7 6.4 6.2 3.7	880~960 1020~2170 2545~2595 3565~3600 3900~4000 GPS	PCB	I-PEX

1.5 Host product testing guidance

HOST must follow section 3 of KDB 996369 D04 Module Integration Guide v01, to verify that the host product meets all the applicable FCC rules.

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