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# HSDPA/WCDMA/EDGE/GPRS DATA MODULE

DTP-600W User Manual / Datasheet

**FC** **CE** 0682

01-DTP-600W-V1-X5

May, 2009

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**AnyDATA CDMA Module Series Reference Design Specification**  
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## Contents

<b>1 Revision History</b> .....	4
<b>2. Overview</b> .....	5
<b>2.1 Application Descriptions</b> .....	5
<b>2.2 Technical Specifications</b> .....	7
2.2.1 General Specifications .....	7
2.2.2 Receive Specifications .....	8
2.2.2.1 WCDMA/HSDPA .....	8
2.2.2.2 GSM / GPRS .....	8
2.2.3 Transmit Specifications .....	9
2.2.3.1 WCDMA/HSDPA .....	9
2.2.3.2 GPRS/EDGE .....	9
2.2.4 QSC6270 Chipset Highlights .....	11
2.2.5 Standards .....	11
2.2.6 Connectivity .....	11
<b>3. PIN Description and Pin outs</b> .....	12
<b>4. Mechanical Dimensions</b> .....	13
<b>4.1 DTP-600W Outline</b> .....	13

## 1 Revision History

The revision history for this document is shown in Table 1-1.

**Table 1-1 Revision History**

<b>Version</b>	<b>Date</b>	<b>Description</b>
V1_X1	Nov. 2008	Initial Release
V1_X2	Mar. 2009	2 <sup>nd</sup> Release
V1_X3	Apr. 2009	3 <sup>rd</sup> Release
V1_X4	May 2009	4 <sup>th</sup> Release. Added FCC warning statement
V1_X5	May 2009	5 <sup>th</sup> Release. Updated FCC and R&TTE warning statement

## 2. Overview


### 2.1 Application Descriptions

The WCDMA Wireless Data Module is a complex consumer communications instrument that relies heavily on both digital signal and embedded processor technologies. The Wireless Data Module manufactured by AnyDATA.NET supports Wide-band-Code-Division-Multiple-Access(WCDMA), High Speed Downlink Packet Access(HSDPA), Global System for Mobile communication(GSM) and General packet Radio Service(GPRS). This operates in both the UMTS and GSM spectrum band.

The DTP-600W is AnyDATA's latest compact Wireless Data Module operating in UMTS and GSM spectrum, also contains complete digital modulation and demodulation system for WCDMA/HSDPA standards as specified in 3GPP TS 34.121, and GSM/GPRS standards as specified in 3GPP TS 51.010-1.

The subsystem within the DTP-600W includes a WCDMA/HSDPA and GSM/GPRS processor (QSC6270), an RS-232 serial interface supporting forward link data communications at a rate of 4Mbps. The DTP-600W provides an external interface that includes the standard RS-232, External reset control, and USIM USB host or slave mode.

The DTP-600W has the capability to power down unused circuits in order to dynamically minimize power consumption.

 **FCC ID: P4M-DTP600W**

 **FCC Regulations:**

- 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.
- This device 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 radiated 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:
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

- The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

 **RF Exposure Information:**

This device meets the government's requirements for exposure to radio waves.

This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

- This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

Maximum antenna gain allowed for use with this device is +2 dBi.

When the module is installed in the host device, the FCC ID label must be visible through a window on the final device or it must be visible when an access panel, door or cover is easily removed. If not, a second label must be placed on the outside of the final device that contains the following text:

**“Contains FCC ID: P4M-DTP600W”**

**CE 0682**

 **R&TTE Regulation:**

In all cases assessment of the final product must be made against the Essential requirements of the R&TTE Directive Articles 3.1(a) and (b), safety and EMC respectively, as well as any relevant Article 3.3 requirements.

The maximum antenna gain for frequency 900 is +2 dBi; for frequency 1800 is +2 dBi and the antenna separation distance is 20cm.

## 2.2 Technical Specifications

### 2.2.1 General Specifications

Parameters	Descriptions	
External Access	Wide band - Code-Division-Multiple-Access (WCDMA)	
	Global System for Mobile communication(GSM) , General Packet Radio Service(GPRS)	
Protocol	3GPP TS 34.121 (WCDMA/HSDPA), 3GPP TS 51.010-1 (GSM/GPRS)	
Data Rate (max)	HSDPA	3.6Mbps (down link), 384Kbps (uplink)
	WCDMA	384Kbps
	GPRS	multi slot class 12 : 48Kbps (up link), 48Kbps (down link)
	EDGE	384Kbps @MSC9 (down/up link)
Transmit/Receive Frequency Interval	WCDMA/HSDPA 850	45MHz
	WCDMA/HSDPA 1900	80MHz
	WCDMA/HSDPA 2100	190MHz
	GPRS/EDGE 850	45MHz
	GPRS/EDGE 900	45MHz
	GPRS/EDGE1800	95MHz,
	GPRS/EDGE1900	80MHz,
Max output power	WCDMA/HSDPA	23dBm (Power class : 3)
	GPRS 850/900	33dBm (Power class : 4)
	GPRS1800/1900	30dBm (Power class : 1)
	EDGE 850/900	27dBm (Power class : E2)
	EDGE 1800/1900	26dBm (Power class : E2)
RF technology	Zero Intermediate Frequency (WCDMA/HSDPA)	
Operating Voltage	VBATT_INT : +3.4V ~ +4.2V	
Current Consumption	Sleep mode ( USB off )	1mA
	Stand by mode	Average 3mA max (GSM MFRM=5, WCDMA DRX=9)
	Traffic mode	Average 700mA ( WCDMA 23dBm) Peak Current 1.2A ( GPRS 33dBm )
Operating Temperature	-10°C ~ +60°C	
Frequency Stability	WCDMA/HSDPA 800	±80Hz
	WCDMA/HSDPA 2100	±170Hz
	GSM/GPRS	±0.1ppm (at carrier frequency)
Size (max)	30 X 50.95X 4.55mm	
Weight	13mg	

## 2.2.2 Receive Specifications

### 2.2.2.1 WCDMA/HSDPA

Parameters	Descriptions	
Frequency Range	DL : 2110 ~ 2170MHz	WCDMA2100
	DL : 1930 ~ 1990MHz	WCDMA1900
	DL : 869 ~ 894MHz	WCDMA850
Reference Sensitivity Level	-107.7 dBm	WCDMA2100
	-105.7 dBm	WCDMA1900
	-104.7 dBm	WCDMA850
Adjacent Channel Selectivity	(-33dBm @±5MHz) : -92.7dBm	
Inter modulation	-46dBm±10MHz, ±20MHz : -10.3.7dBm	
Spurious Response	-44dBm/-103.7dBm	
In-Band Blocking	±5MHz, ±10MHz -103.7dBm	
Peak throughput	3.6Mbps	
		HSDPA

### 2.2.2.2 GSM / GPRS

Parameters	Band	Descriptions	
Frequency Range	GPRS/EDGE 850	DL 869 ~ 894MHz	
	GPRS/EDGE 900	DL 925 ~ 960MHz	
	GPRS/EDGE 1800	DL 1805 ~ 1880MHz	
	GPRS/EDGE 1900	DL 1930 ~ 1990MHz	
Minimum Input level for Reference Performance	GPRS850/900/1800/1900	Type of channel	Propagation condition : Static, BLER : 10% under
		PDTCH/CS-1 (dBm)	-104
		PDTCH/CS-2(dBm)	-104
		PDTCH/CS-3(dBm)	-104
		PDTCH/CS 4(dBm)	-101
	EDGE850/900/1800/1900	PDTCH/MCS-5 (dBm)	-99
		PDTCH/MCS-6 (dBm)	-97
		PDTCH/MCS-7 (dBm)	-94
		PDTCH/MCS-8 (dBm)	-91.5
		PDTCH/MCS-9 (dBm)	-87



## 2.2.3 Transmit Specifications

### 2.2.3.1 WCDMA/HSDPA

Parameters	Descriptions	
Frequency Range	UL : 824 ~ 849MHz	WCDMA850
	UL : 1850 ~ 1910MHz	WCDMA1900
	UL : 1920 ~ 1980MHz	WCDMA2100
Maximum Output Power	21dBm~25dBm, Power Class III	
Minimum Output Power	Below -50dBm	
Spectrum Emission Mask	Below -35dBc @ 2.5~3.5MHz Offset(30KHz) Below -35dBc @ 3.5~7.5MHz Offset (1MHz) Below -39dBc @ 7.5~8.5MHz Offset (1MHz) Below -49dBc @8.5~12.5MHz Offset (1MHz)	
Occupied Bandwidth	Below 5MHz	
ACLR	±5MHz 33dB, ±10MHz 43dB	

### 2.2.3.2 GPRS/EDGE

Parameters	Band	Descriptions			
Frequency Range	GPRS/EDGE850	DL 824 ~ 849MHz			
	GPRS/EDGE900	DL 880 ~ 915MHz			
	GPRS/EDGE1800	DL 1710 ~ 1785MHz			
	GPRS/EDGE1900	DL 1850 ~ 1910MHz			
Frequency error	GPRS/EDGE	±0.1ppm (at carrier frequency)			
Phase error	GPRS	Peak phase error	20 degree		
		RMS phase error	5 degree		
Modulation accuracy	EDGE Quad band : 8PSK	RMS EVM	9% under		
		Peak EVM	30% under		
Transmitter output power	GPRS/EDGE 850/900	Power level	Output power (dBm)	Tolerance (dBm)	EDGE
		5	33	±2	
		6	31	±3	
		7	29	±3	
		8	27	±3	
		9	25	±3	
		10	23	±3	
		11	21	±3	
		12	19	±3	
		13	17	±3	
		14	15	±3	
		15	13	±3	
		16	11	±5	
		17	9	±5	

	GPRS/EDGE1800/1900	18	7	±5			
		19	5	±5			
		0	30	±2			
		1	28	±3			
		2	26	±3			
		3	24	±3			
		4	22	±3			
		5	20	±3			
		6	18	±3			
		7	16	±3			
		8	14	±3			
		9	12	±4			
		10	10	±4			
		11	8	±4			
		12	6	±4			
		13	4	±4			
14	2	±5					
15	0	±5					
ORFS@Spectrum due to modulation	GSM/GPRS 850/900	Frequency offset (KHz)	0 ~ ±100	±200	±250	±400	±600~ <±1800
		Relative (dB)	+0.5	-30	-33	-60	-60
		Absolute (dBm)	-36				
	GSM/GPRS 1800/1900	Frequency offset (KHz)	0 ~ ±100	±200	±250	±400	±600~ <±1800
		Relative (dB)	+0.5	-30	-33	-60	-60
		Absolute (dBm)	-36				
ORFS@Spectrum due to switching transient	GSM/GPRS 850/900	Power (dBm)	Frequency offset (KHz)				
			±400	±600	±1200	±1800	
		33	-19	-21	-21	-24	
		31	-21	-23	-23	-26	
		29	-23	-25	-25	-28	
		27	-23	-26	-27	-30	
		25	-23	-26	-29	-32	
	23	-23	-26	-31	-34		
	≤21	-23	-26	-32	-36		
	GSM/GPRS 1800/1900	Power (dBm)	Frequency offset (KHz)				
			±400	±600	±1200	±1800	
		30	-22	-24	-24	-27	
		28	-23	-25	-26	-29	
		26	-23	-26	-28	-31	
24		-23	-26	-30	-33		
22		-23	-26	-31	-35		
≤20	-23	-26	-32	-36			



### 2.2.4 QSC6270 Chipset Highlights

<b>Enhanced Processing power</b>	a. ARM926EJ-S processor with Java accelerator b. Advanced QDSP4000 DSP cores
<b>Radio-One ZIF Architecture Support</b>	a. Saves board space b. Integrated solution
<b>High Data Rates</b>	HSDPA / EGPRS/GPRS support

### 2.2.5 Standards

- 3GPP TS 34.121(WCDMA/HSDPA)
- 3GPP TS 51.010-1 (GSM/GPRS)
- HSDPA 3.6 Mbps peak rate category 6
- WCDMA (UMTS) R99/GSM Phase 2+
- GPRS/EGPRS Multislot Class 12, Phase 2+
- DTM Multislot Class 11

### 2.2.6 Connectivity

- Universal serial bus (USB 2.0)
- UART

### 3. PIN Description and Pin outs

System connector interface					
Pin #	Type	Name	Pin #	Type	Name
51	Input	UART_DTR/	52	Input	VEXT_3.3V
49	Output	WAN_HOST_WAKE	50	GND	GND
47	Output	UART_RI/	48	Input	N/C
45	Output	UART_DCD/	46	Output	VREG_MSME
43	GND	GND	44	Input	WAN_USB_EN
41	Input	VEXT_3.3V	42	Output	LED_WWAN/
39	Input	VEXT_3.3V	40	GND	GND
37	GND	GND	38	Bi	USB_CON_D_P
35	GND	GND	36	Bi	USB_CON_D_M
33	Bi	RESOUT_N	34	GND	GND
31	Input	TRST/	32	Bi	I2C_DATA
29	GND	GND	30	Output	I2C_CLK
27	GND	GND	28	-	N/C
25	Input	TMS	26	GND	GND
23	Input	TDI	24	Input	VEXT_3.3V
21	GND	GND	22	Input	WAN_SHUTDOWN_N
19	-	PS_HOLD	20	Input	WAN_DISABLE_N
17	Input	TCK	18	GND	GND
15	GND	GND	16	-	N/C
13	Output	TDO	14	Output	UIM_RESET
11	Output	RTCK	12	Output	UIM_CLK
9	GND	GND	10	Bi	UIM_DATA
7	Output	UART_TXD	8	Output	VREG_UIM
5	Input	UART_CTS/	6	-	N/C
3	Input	UART_RXD	4	GND	GND
1	Output	UART_RFR/	2	Input	VEXT_3.3V

## 4. Mechanical Dimensions

### 4.1 DTP-600W Outline

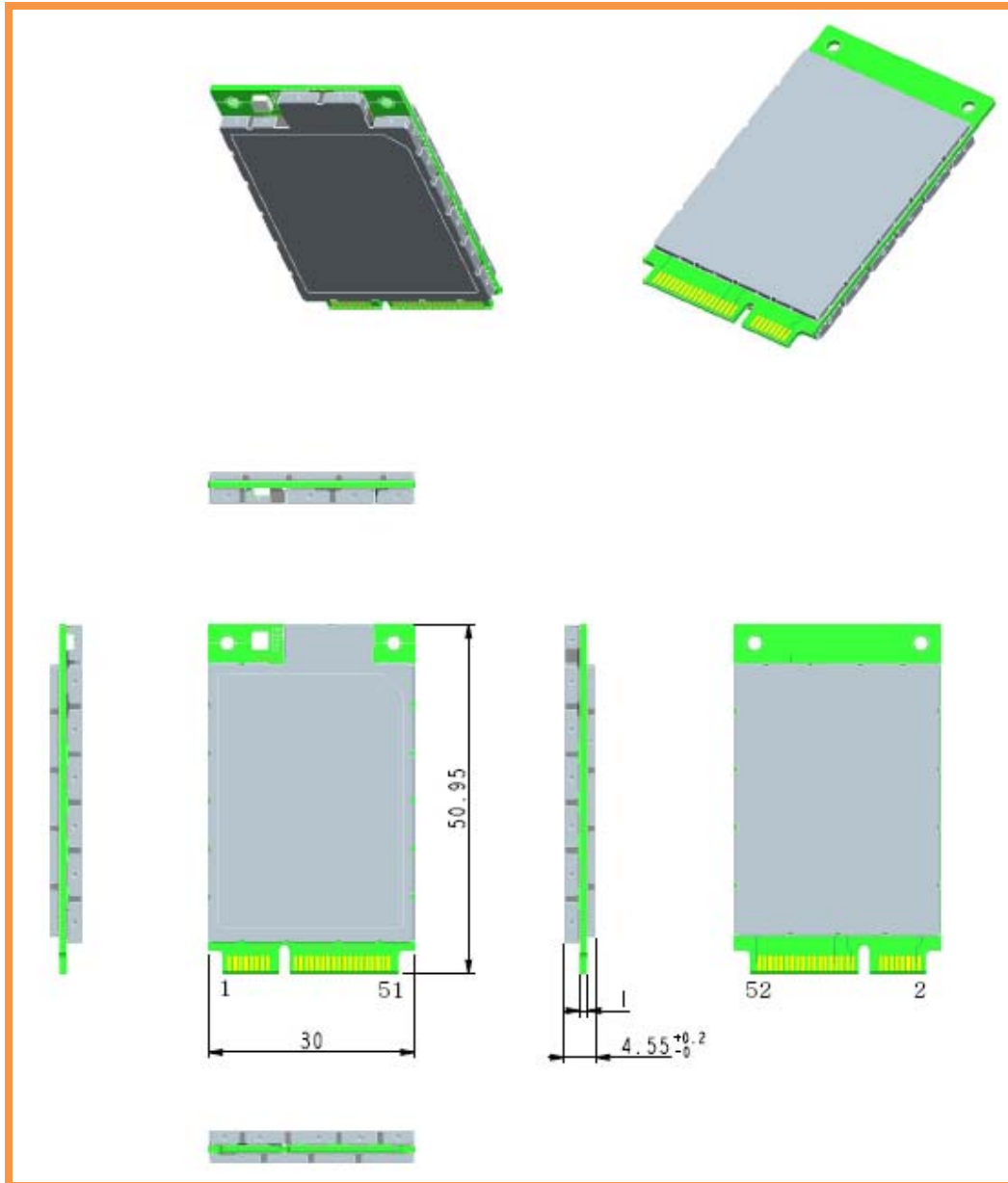


Figure 4-1 DTP-600W Outline (Units: mm)

### 4.2 RF Connector

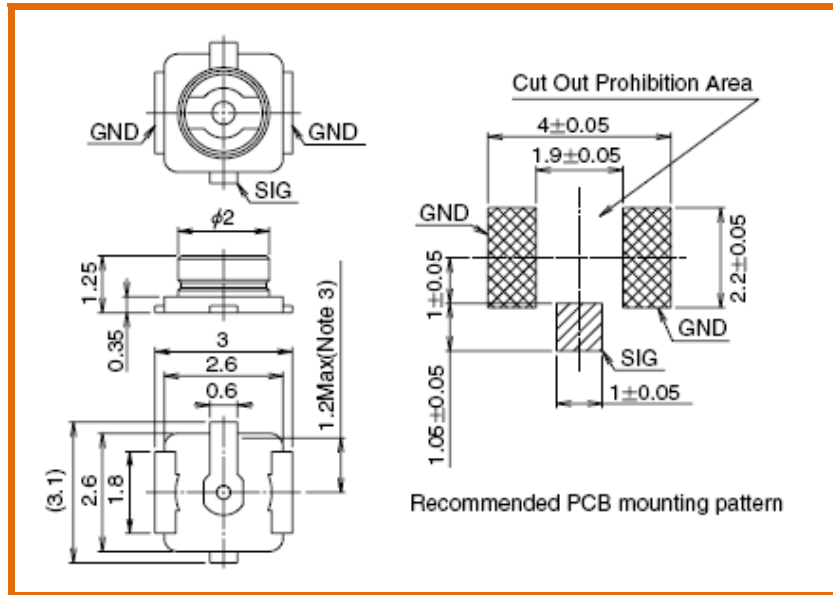


Figure 4-2 RF Connector (Hirose U.FL-R-SMT , Units: mm)

Counter-Part:

■ Cable Assembly (Plug)					
	U.FL-LP-040	U.FL-LP-066	U.FL-LP(V)-040	U.FL-LP-062	U.FL-LP-088
Part No.					
Mated Height	2.5mm Max. (2.4mm Nom.)	2.5mm Max. (2.4mm Nom.)	2.0mm Max. (1.9mm Nom.)	2.4mm Max. (2.3mm Nom.)	2.4mm Max. (2.3mm Nom.)
Applicable cable	Dia. 0.81mm Coaxial cable	Dia. 1.13mm and Dia. 1.32mm Coaxial cable	Dia. 0.81mm Coaxial cable	Dia. 1mm Coaxial cable	Dia. 1.37mm Coaxial cable
Weight (mg)	53.7	59.1	34.8	45.5	71.7

Figure 4-3 Mechanical Characteristics of Cable Harness Assembly (Units: mm)

Part name: U.FL-LP

Note: For more information about the RF connector parts, please refer to the file found at

[http://www.hirose.co.jp/cataloge\\_hp/e32119372.pdf](http://www.hirose.co.jp/cataloge_hp/e32119372.pdf)