

FEATURES:

- ◆ Coverage from 300MHz ~ 6GHz RF
- ◆ Flexible rate 16 bit ADC & 14 bit DAC
- ◆ 2 Tx, 2 Rx, Half or Full Duplex, support TDD & FDD
- ◆ Fully-coherent 2x2 MIMO capability
- ◆ RF ports: 50Ω Matched
- ◆ Rx BW: Up to 100 MHz of real-time bandwidth
- ◆ Tx BW: Up to 250 MHz of real-time bandwidth
- ◆ Observation receiver (ORx) with 2 inputs
- ◆ 23dBm@ 2570-2620MHz, band38 LTE
- ◆ 23dBm@ 5.18~5.825GHz, 802.11
- ◆ 10dBm@ 0.3~6GHz other modulation (P1dB 17dBm)
- ◆ Support Intenal & Extenal LO
- ◆ Support Intenal & Extenal reference clock
- ◆ Support multi-chip (module) baseband synchronization
- ◆ Includes filters, PAs of band38 & 802.11
- ◆ Includes DC power supply
- ◆ JESD204B digital interface
- ◆ GPS Option
- ◆ Dimensions: Standard FMC daughter Board

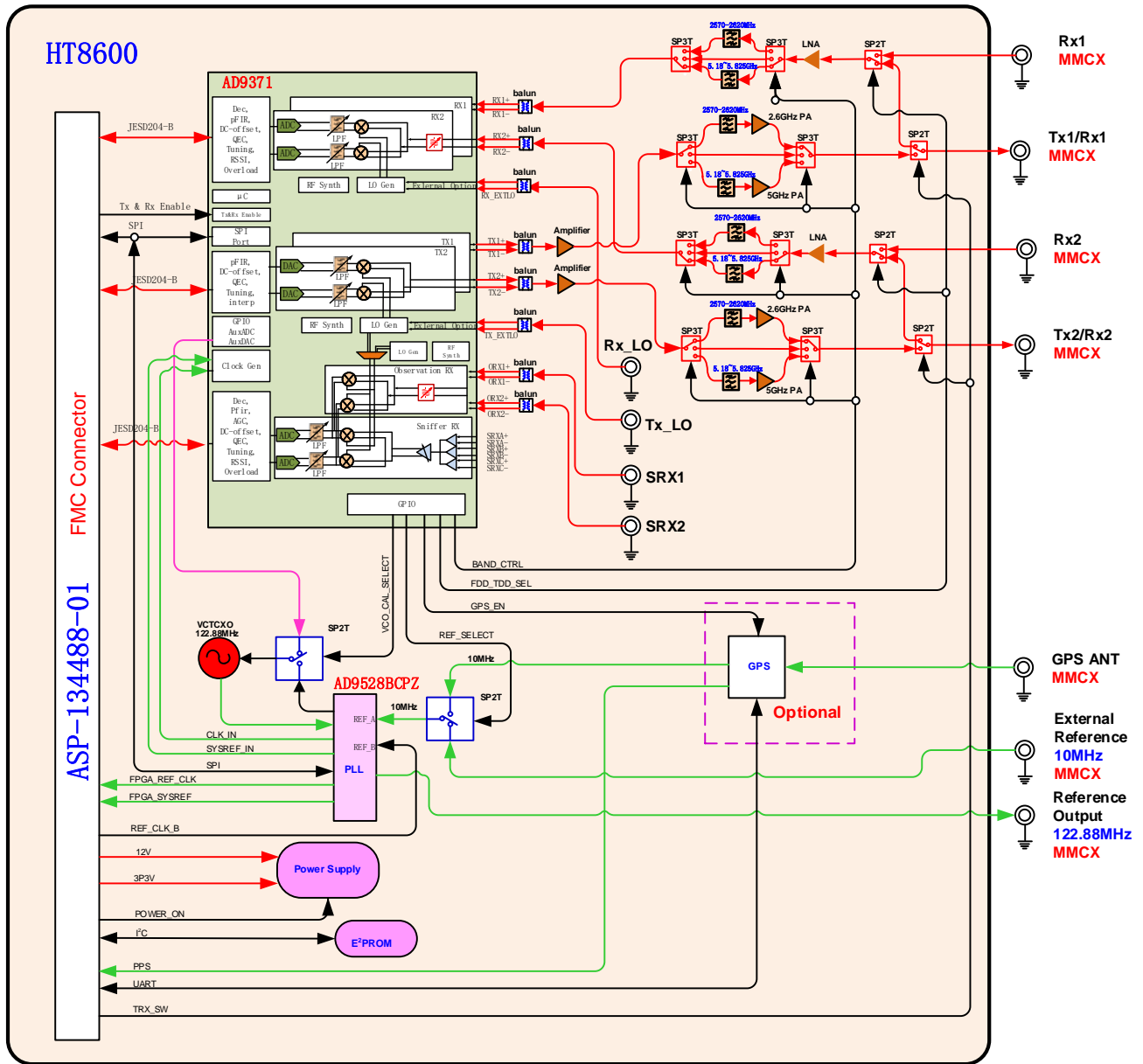
APPLICATIONS:

- ◆ SDR
- ◆ Cellular, e.g.: Femto-cells, Pico-cells, Small-cells, Micro-cell & etc.
- ◆ WiFi
- ◆ WiMAX
- ◆ ISM
- ◆ Proprietary & General Purpose Radios

GENERAL DESCRIPTIONS:

The HT8600 is an easy-to-use RF module covering 300MHz ~ 6GHz with integrated RFIC technology and FMC interface. The RF module features two receive and two transmit channels by using an Analog Devices RFIC, AD9371 to deliver a cost-effective experimentation platform with up to 100 MHz of Rx and 250MHz of Tx instantaneous bandwidth, higher sensitivity, dynamic range, and IP3 performance, which is suitable for wide range of applications including SDR, cellular, WiFi, ISM, proprietary or general purpose radios and so on. With the HT8600, designers can prototype with the AD9371 quickly and easily.

BLOCK DIAGRAM:



CHARACTERISTICS:

	No.	Items	Specifications	Remark
Tx	1	Frequency	300~6000MHz	
	2	Bandwidth	Up to 250 MHz	Tx real-time bandwidth, tunable
	3	Transmission Power	17dBm	300~6000MHz, CW
			23dBm	2570-2620MHz, LTE signal
			23dBm	5.18~5.825GHz, 802.11 signal
	4	EVM	<3%	Typical:23dBm @20MHz bandwidth
	5	Gain Control Range	42dB	
	6	Gain Step	0.05 dB	
	7	ACLR	< -45dBc	@ 23dBm LTE or 802.11 output
	8	Spurious	50dBc	
	9	SSB Suppression	50dBc	
	10	LO Suppression	75dBc	
11	DAC Sample Rate (max)	122.88 MS/s		
12	DAC Resolution	14bits		
Rx	1	Frequency	300~6000MHz	
	2	Bandwidth	8 to 100 MHz	real-time bandwidth, tunable
	3	Sensitivity:	-90dBm@20MHz	Noise Figure < 6dB
	4	EVM	<1.5%	@ -30dBm input
	5	Gain Control Range	30dB	
	6	Gain Step	0.5dB	
	7	Rx Alias Band Rejection	75dB	Due to digital filters
	8	Noise Figure	<6dB	Maximum RX gain
	9	IIP3 (@ typ NF)	-25dBm	
	10	ADC Sample Rate (max)	122.88 MS/s	
	11	ADC Resolution	16bits	
	12	ADC Wideband SFDR	78dBc	
	1	Voltage	3.3V & 12V	
	2	ON/OFF TIME	<6uS	For TDD model
	3	Duplexing Model	TDD or FDD	
	4	W/ GPSDO Reference	0.01ppb	

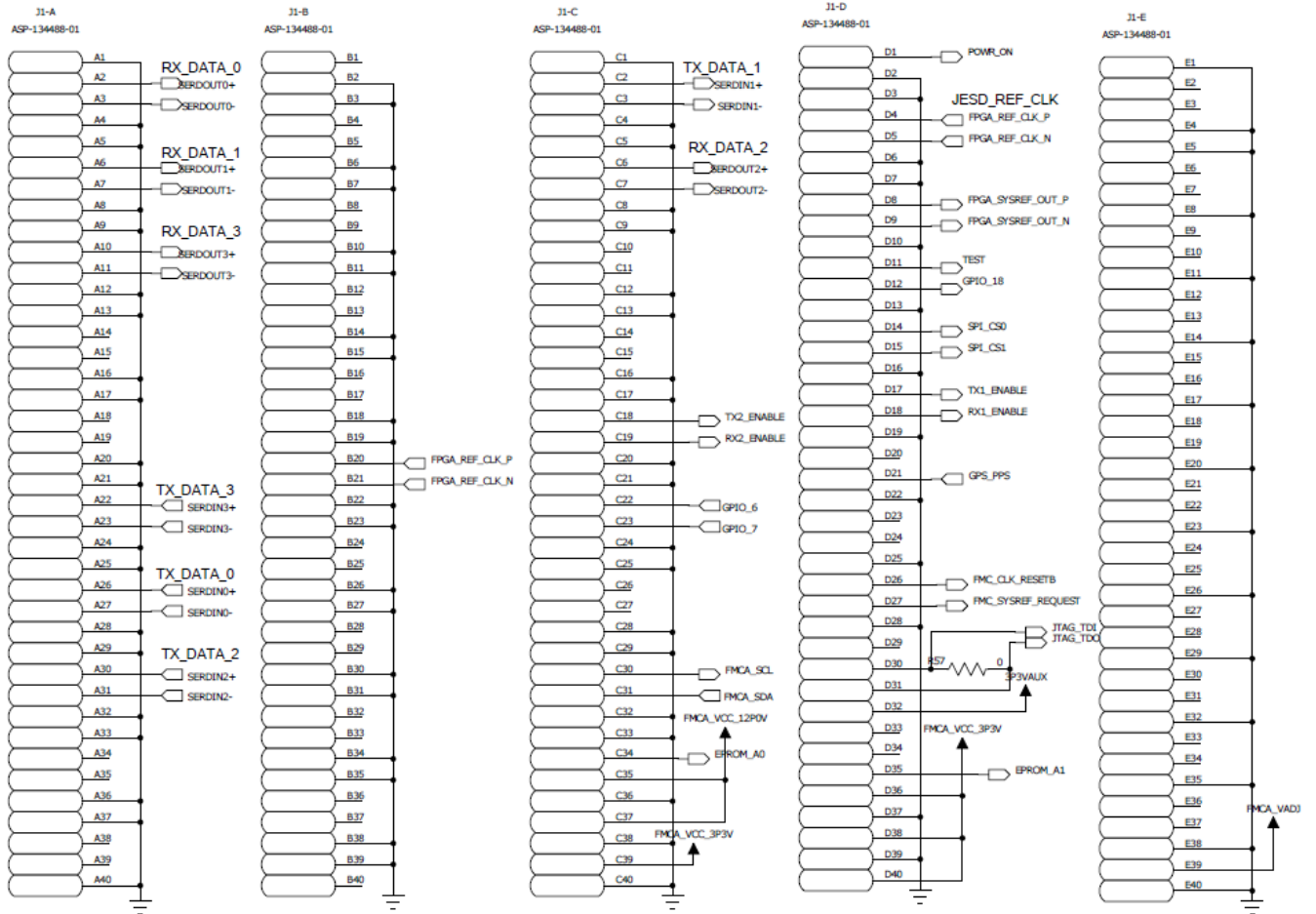
FMC INTERFACE DEFINITION:

PIN No.	Net Name	PIN No.	Net Name	PIN No.	Net Name	PIN No.	Net Name	PIN No.	Net Name
K1	NC	J1	AGND	H1	NC	G1	AGND	F1	VDDA_3P3
K2	AGND	J2	REF_CLK_B+	H2	AGND	G2	GPIO_17	F2	AGND
K3	AGND	J3	REF_CLK_B-	H3	AGND	G3	GPIO_16	F3	AGND
K4	NC	J4	AGND	H4	NC	G4	AGND	F4	NC
K5	NC	J5	AGND	H5	NC	G5	AGND	F5	NC
K6	AGND	J6	NC	H6	AGND	G6	FPGA_SYSREF_P	F6	AGND
K7	NC	J7	NC	H7	SYNCOUTB0+	G7	FPGA_SYSREF_N	F7	NC
K8	NC	J8	AGND	H8	SYNCOUTB0-	G8	AGND	F8	NC
K9	AGND	J9	NC	H9	AGND	G9	SYNCINTB0+	F9	AGND
K10	NC	J10	NC	H10	RESETB	G10	SYNCINTB0-	F10	NC
K11	NC	J11	AGND	H11	GP_INTERRUPT	G11	AGND	F11	NC
K12	AGND	J12	NC	H12	AGND	G12	SPI_DOUT	F12	AGND
K13	NC	J13	NC	H13	SPI_CLK	G13	NC	F13	NC
K14	NC	J14	AGND	H14	SPI_DIN	G14	AGND	F14	NC
K15	AGND	J15	NC	H15	AGND	G15	NC	F15	AGND
K16	NC	J16	NC	H16	NC	G16	NC	F16	NC
K17	NC	J17	AGND	H17	NC	G17	AGND	F17	NC
K18	AGND	J18	NC	H18	AGND	G18	GPIO_2	F18	AGND
K19	NC	J19	NC	H19	GPIO_0	G19	GPIO_3	F19	NC
K20	NC	J20	AGND	H20	GPIO_1	G20	AGND	F20	NC
K21	AGND	J21	NC	H21	AGND	G21	GPIO_11	F21	AGND
K22	NC	J22	NC	H22	GPIO_9	G22	GPIO_12	F22	NC
K23	NC	J23	AGND	H23	GPIO_10	G23	AGND	F23	NC
K24	AGND	J24	NC	H24	AGND	G24	GPIO_15	F24	AGND
K25	NC	J25	NC	H25	GPIO_4	G25	GPIO_8	F25	NC
K26	NC	J26	AGND	H26	GPIO_5	G26	AGND	F26	NC
K27	AGND	J27	NC	H27	AGND	G27	SYNCINTB1+	F27	AGND
K28	NC	J28	NC	H28	NC	G28	SYNCINTB1-	F28	NC
K29	NC	J29	AGND	H29	NC	G29	AGND	F29	NC
K30	AGND	J30	NC	H30	AGND	G30	GPIO_14	F30	AGND
K31	NC	J31	NC	H31	NC	G31	GPIO_13	F31	NC
K32	NC	J32	AGND	H32	NC	G32	AGND	F32	NC
K33	AGND	J33	NC	H33	AGND	G33	UART_TX	F33	AGND
K34	NC	J34	NC	H34	NC	G34	UART_RX	F34	NC
K35	NC	J35	AGND	H35	NC	G35	AGND	F35	NC
K36	AGND	J36	NC	H36	AGND	G36	NC	F36	AGND
K37	NC	J37	NC	H37	NC	G37	TRX_SW	F37	NC
K38	NC	J38	AGND	H38	NC	G38	AGND	F38	NC
K39	AGND	J39	VDD_IF	H39	AGND	G39	FMCA_VADJ	F39	AGND
K40	VDD_IF	J40	AGND	H40	FMCA_VADJ	G40	AGND	F40	FMCA_VADJ

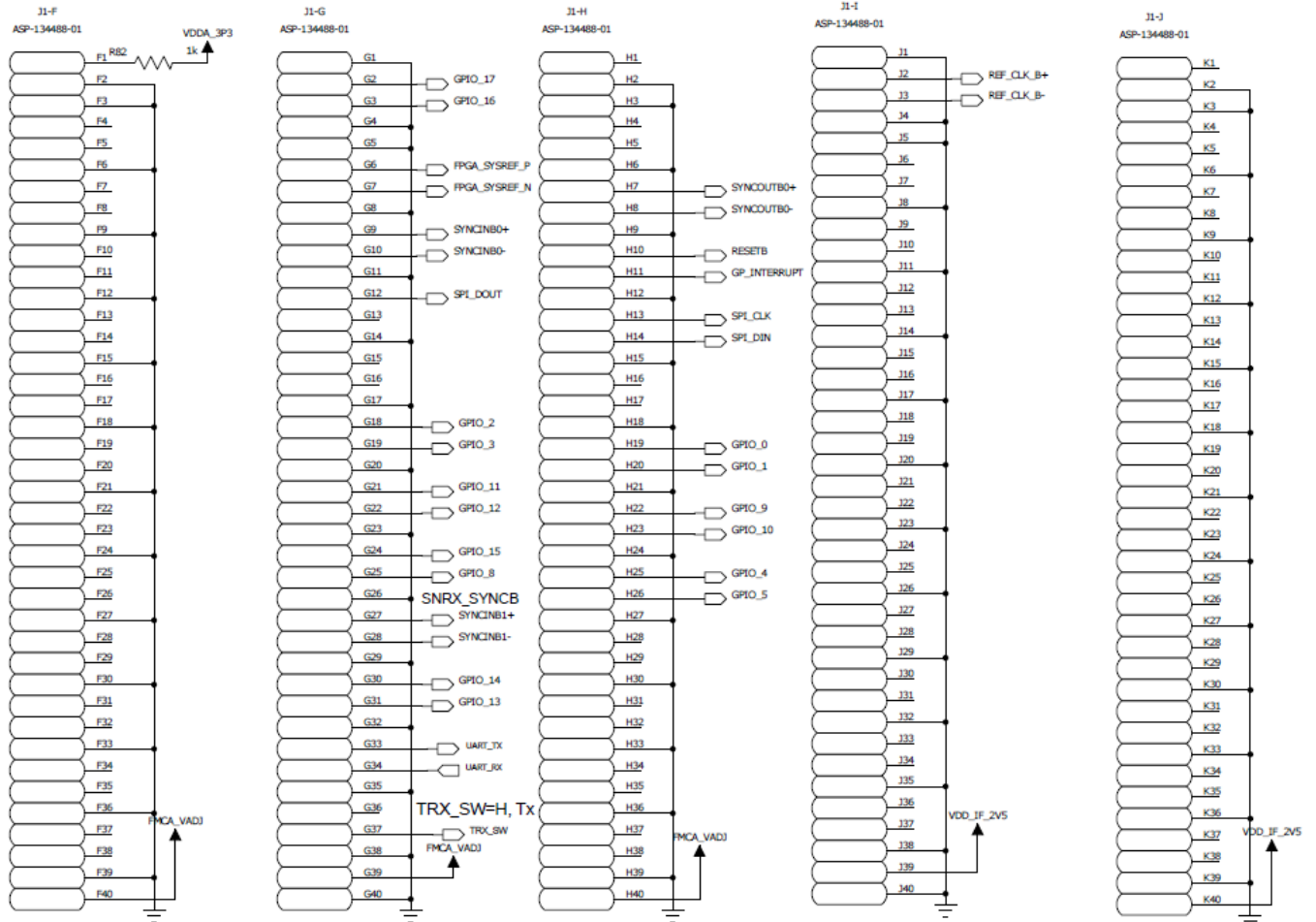
FMC INTERFACE DEFINITION (Continued):

PIN No.	Net Name	PIN No.	Net Name'	PIN No.	Net Name	PIN No.	Net Name	PIN No.	Net Name
E1	AGND	D1	POWER_ON	C1	AGND	B1	NC	A1	AGND
E2	NC	D2	AGND	C2	SERDIN1+	B2	AGND	A2	SERDOUT0+
E3	NC	D3	AGND	C3	SERDIN1-	B3	AGND	A3	SERDOUT0-
E4	AGND	D4	FPGA_REF_CLK_P	C4	AGND	B4	NC	A4	AGND
E5	AGND	D5	FPGA_REF_CLK_N	C5	AGND	B5	NC	A5	AGND
E6	NC	D6	AGND	C6	SERDOUT2+	B6	AGND	A6	SERDOUT1+
E7	NC	D7	AGND	C7	SERDOUT2-	B7	AGND	A7	SERDOUT1-
E8	AGND	D8	FPGA_SYSREF_OUT_P	C8	AGND	B8	NC	A8	AGND
E9	NC	D9	FPGA_SYSREF_OUT_N	C9	AGND	B9	NC	A9	AGND
E10	NC	D10	AGND	C10	NC	B10	AGND	A10	SERDOUT3+
E11	AGND	D11	TEST	C11	NC	B11	AGND	A11	SERDOUT3-
E12	NC	D12	GPIO_18	C12	AGND	B12	NC	A12	AGND
E13	NC	D13	AGND	C13	AGND	B13	NC	A13	AGND
E14	AGND	D14	SPI_CS0	C14	NC	B14	AGND	A14	NC
E15	NC	D15	SPI_CS1	C15	NC	B15	AGND	A15	NC
E16	NC	D16	AGND	C16	AGND	B16	NC	A16	AGND
E17	AGND	D17	TX1_ENABLE	C17	AGND	B17	NC	A17	AGND
E18	NC	D18	RX1_ENABLE	C18	TX2_ENABLE	B18	AGND	A18	NC
E19	NC	D19	AGND	C19	RX2_ENABLE	B19	AGND	A19	NC
E20	AGND	D20	NC	C20	AGND	B20	FPGA_REF_CLK_P	A20	AGND
E21	NC	D21	GPS_PPS	C21	AGND	B21	FPGA_REF_CLK_N	A21	AGND
E22	NC	D22	AGND	C22	GPIO_6	B22	AGND	A22	SERDIN3+
E23	AGND	D23	NC	C23	GPIO_7	B23	AGND	A23	SERDIN3-
E24	NC	D24	NC	C24	AGND	B24	NC	A24	AGND
E25	NC	D25	AGND	C25	AGND	B25	NC	A25	AGND
E26	AGND	D26	FMC_CLK_RESETB	C26	NC	B26	AGND	A26	SERDINO+
E27	NC	D27	FMC_SYSREF_REQUEST	C27	NC	B27	AGND	A27	SERDINO-
E28	NC	D28	AGND	C28	AGND	B28	NC	A28	AGND
E29	AGND	D29	NC	C29	AGND	B29	NC	A29	AGND
E30	NC	D30	JTAG_TDI	C30	FMCA_SCL	B30	AGND	A30	SERDIN2+
E31	NC	D31	JTAG_TDO	C31	FMCA_SDA	B31	AGND	A31	SERDIN2-
E32	AGND	D32	3P3VAUX	C32	AGND	B32	NC	A32	AGND
E33	NC	D33	NC	C33	AGND	B33	NC	A33	AGND
E34	NC	D34	NC	C34	EPROM_A0	B34	AGND	A34	NC
E35	AGND	D35	EPROM_A1	C35	FMCA_VCC_12P0V	B35	AGND	A35	NC
E36	NC	D36	FMCA_VCC_3P3V	C36	AGND	B36	NC	A36	AGND
E37	NC	D37	AGND	C37	FMCA_VCC_12P0V	B37	NC	A37	AGND
E38	AGND	D38	FMCA_VCC_3P3V	C38	AGND	B38	AGND	A38	NC
E39	FMCA_VADJ	D39	AGND	C39	FMCA_VCC_3P3V	B39	AGND	A39	NC
E40	AGND	D40	FMCA_VCC_3P3V	C40	AGND	B40	NC	A40	AGND

FMC INTERFACE DEFINITION (Continued):



FMC INTERFACE DEFINITION (Continued):



Truth Table:

◆ Band control

Frequency [MHz]	BAND_CTRL_THROUGH	BAND_CTRL_2GHZ	BAND_CTRL_5GHZ
300~6000	1	0	0
2570~2620	0	1	0
5180~5825	0	0	1

◆ Module Power ON/OFF

Power ON/OFF	POWR_ON
Power ON	1
Power OFF	0

◆ GPS Enable

GPS Enable	GPS_EN
Enable	1
Disable	0

◆ Tx-Rx Switch

Function	TRX_SW
Transmitting	1
Receiving	0

◆ FDD&TDD Mode Switch

Duplexing Mode	FDD_TDD_SEL
FDD	1
TDD	0

◆ Reference Selection Switch

Reference Source	REF_SELECT
External Reference	1
Internal Reference	0

◆ VCO Calibration Switch

VCO Calibration	VCO_CAL_SELECT
From AD9371 AUXDAC	1
PLL Loopback	0

OUTLINE DIMENSIONS:

