

2.5. Recommended Radar Sensor Arrangement

Figure 2-4 is the recommended arrangement of the SC1240AR3 on the wall-mounted installation. XZ plane is azimuth plane and ZY plane is elevation plane.
The angular accuracy of the SC1240AR3 in the XZ plane is higher than that in the ZY plane.

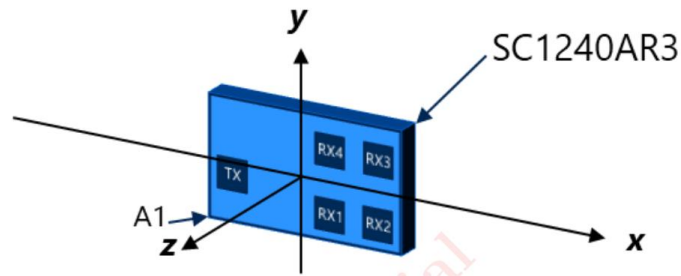


Figure 2-4 Recommended Radar Sensor Arrangement

Table 3-9 Antenna Section

Parameter		Symbol	Conditions	Limits			Unit
				Min	Typ	Max	
E1	RX antenna Gain ^{Note 8)}	Grxa	fRF=60.5GHz		2		dBi
E2	TX antenna Gain ^{Note 8)}	Gtxa	fRF=60.5GHz		3		dBi

Note 8) Without the line loss between RF-SoC and antenna.

Table 3-10 LO Section

Parameter		Symbol	Conditions	Limits			Unit
				Min	Typ	Max	
E3	LO frequency	fLO		57.1		63.9	GHz
E4	LO phase noise	PN	fLO=60.5GHz 1MHz offset		-70		dBc/Hz
E5	PLL lock-up time	Tlock	fLO=60.5GHz		20		us
E6	Chirp linearity ^{Note 9)}	Clin	Tc=110us BW=6.8GHz			1	%
E7	Ramp rate ^{Note 10)}		Tc=55us BW=6.8GHz			124	MHz/us

Note 9) The ratio of the RMS frequency error of ramp frequency and chirp bandwidth (BW).

Note 10) Ramp rate = BW/Tc.

Table 3-11 Receiver Section

Transmitter is powered down.

Parameter		Symbol	Conditions	Limits			Unit
				Min	Typ	Max	
E8	RF input Frequency range	f_{RX}		57.1		63.9	GHz
E9	NF Note 11), Note 12)	NF_{gma} x	High gain mode $f_{RX} = 60.5GHz$ $f_{IF} = 100kHz$		12.5	21	dB
E10	Receiver Gain Note 11), Note 12)	Grx1	High gain mode $f_{RX} = 60.5GHz$ $f_{IF} = 100kHz$	53	60	65	dB
E11		Grx2	Middle gain mode $f_{RX} = 60.5GHz$ $f_{IF} = 100kHz$	42	49	54	dB
E12		Grx3	Low gain mode $f_{RX} = 60.5GHz$ $f_{IF} = 100kHz$	33	40	45	dB
E13	Receiver Gain variation Note 12)	Grxvar	High gain mode $f_{RX} = 57.1GHz$ to 63.9GHz $f_{IF} = 100kHz$		4		dB
E14	Typical Baseband HPF Bandwidth range (-3dB) Note 13), Note 14)	f_{HPF}		5k		400k	Hz
E15	3dB HPF bandwidth Tolerance	ToH1	f_{HPF} : 5,10,20,50,100,200 (kHz)	-20		+20	%
E16		ToH2	f_{HPF} : 400 (kHz)	-30		+20	%
E17	Typical Baseband LPF Bandwidth range (-3dB) Note 13), Note 15)	f_{LPF}		500k		1M	Hz
E18	3dB LPF bandwidth Tolerance	ToL1		-20		+20	%

Note 11) Including the line loss between RF-SoC and antenna.

 Note 12) Measured with $f_{HPF} = 5$ kHz and $f_{LPF} = 1MHz$.

Note 13) The order of both high pass and low pass baseband filter is the second order.

 Note 14) Available HPF corner frequency (f_{HPF}): 5,10,20,50,100,200,400(kHz)

 Note 15) Available LPF corner frequency (f_{LPF}): 500kHz,1MHz

Table 3-13 Transmitter Section

Parameter		Symbol	Conditions	Limit			Unit
				Min	Typ	Max	
E21	RF transmit Frequency range	f_{TX}		57.1		63.9	GHz
E22	RF Transmit Power Note 16)	PAout1	$f_{TX} = 60.5GHz$ $T_{opr} = 25^{\circ}C$ -10dBm mode		-11.5		dBm
E23		PAout2	$f_{TX} = 60.5GHz$ $T_{opr} = 25^{\circ}C$ 0dBm mode		0		dBm
E24	Transmit Power Accuracy	PAacc	$f_{TX} = 60.5GHz$ $T_{opr} = 25^{\circ}C$	-1.5		1.5	dB
E25	Transmit Power Variation	PAvar1	$f_{TX} = 57.1GHz$ to 63.9GHz -10dBm mode		3		dB
E26		PAvar2	$f_{TX} = 57.1GHz$ to 63.9GHz 0dBm mode		3.5		dB

Note 16) Including the line loss between RF-SoC and antenna.