

IFO	DESCRIPTION	LABEL	POINT*	GLOBAL (mm)			GLOBAL ALIGNED, CHAMBER CENTERED (mm)			BLDG.	BUILDING COORD. GRAVITY ALIGNED (mm)			HEIGHT ABOVE FLOOR (mm)	OpLev TM Tx Assy	OpLev & Pcal TM Rx Assy, LH	OpLev & Pcal TM Rx Assy, RH	OpLev PR3/SR3 Tx Assy	OpLev PR3/SR3 Rx Assy, LH	OpLev SR3 Rx Assy, RH	OpLev HAM Tx/Rx Assy
				X	Y	Z	X	Y	Z		X	Y	Z								
*center, unless otherwise specified																					
H1	OPTICAL LEVERS (OptLev)																				
	OptLev BS Tx & Rx Viewport	OL BS VP	outer face	1032.0	-1032.0	0.0	BSC2	1032.0	-1032.0	0.0	CORNER	1032.0	-1032.0	-0.7	1888						
	OptLev BS Transmitter	OL BS Tx	outer face	1230.0	-1253.0	0.0	BSC2	1230.0	-1253.0	0.0	CORNER	1230.0	-1253.0	-0.8	1888						
	OptLev BS Receiver	OL BS Rx	outer face	1258.6	-1229.4	0.0	BSC2	1258.6	-1229.4	0.0	CORNER	1258.6	-1229.4	-0.8	1888						
	OptLev BS periscope mirror 1	OL BS M1	HR	850.0	-850.0	0.0	BSC2	850.0	-850.0	0.0	CORNER	850.0	-850.0	-0.5	1889						
	OptLev BS periscope mirror 2	OL BS M2	HR	637.9	-1062.1	0.0	BSC2	637.9	-1062.1	0.0	CORNER	637.9	-1062.1	-0.4	1889						
	OptLev HAM2, TX & Rx Viewport	OL HAM2 VP	outer face	-6147.5	469.9	-913.9	HAM2	13974.5	469.9	-913.9	CORNER	-6148.1	469.9	-910.1	979						
	OptLev HAM2 Transmitter	OL HAM2 Tx	outer face	-5893.5	514.9	-913.9	BSC2	-5893.5	514.9	-913.9	CORNER	-5894.1	514.9	-910.2	979						979
	OptLev HAM2 Receiver	OL HAM2 Rx	outer face	-5918.0	426.8	-913.9	BSC2	-5918.0	426.8	-913.9	CORNER	-5918.6	426.8	-910.2	979						
	OptLev HAM2, Reference Mirror	OL HAM2 M1	HR	-19200.0	75.0	-157.0	HAM2	922.0	75.0	-157.0	CORNER	-19200.1	75.0	-145.1	1744						
	OptLev PR3, Tx Viewport	OL PR3 Tx VP	outer face	-6147.5	-336.8	-977.4	HAM2	13974.5	-336.8	-977.4	CORNER	-6148.1	-336.8	-973.6	916						
	OptLev PR3 Transmitter	OL PR3 Tx	outer face	-5893.5	-336.8	-977.4	BSC2	-5893.5	-336.8	-977.4	CORNER	-5894.1	-336.8	-973.7	915			915			
	OptLev PR3, Rx Viewport	OL PR3 Rx VP	outer face	-6147.5	-336.8	777.4	HAM2	13974.5	-336.8	777.4	CORNER	-6147.0	-336.8	781.2	2670						
	OptLev PR3 Receiver	OL PR3 Rx	outer face	-5918.0	-336.3	782.6	BSC2	-5918.0	-336.3	782.6	CORNER	-5917.5	-336.3	786.3	2675				2675		
	OptLev HAM3, TX & Rx Viewport	OL HAM3 VP	outer face	-17703.1	-469.9	-913.9	HAM3	-13872.1	-469.9	-913.9	CORNER	-17703.7	-469.9	-902.9	986						
	OptLev HAM3 Transmitter	OL HAM3 Tx	outer face	-17957.1	-426.9	-913.9	BSC2	-17957.1	-426.9	-913.9	CORNER	-17957.7	-426.9	-902.8	986						986
	OptLev HAM3 Receiver	OL HAM3 Rx	outer face	-17957.0	-528.9	-913.9	BSC2	-17957.0	-528.9	-913.9	CORNER	-17957.6	-528.9	-902.8	986						
	OptLev HAM3, Reference Mirror	OL HAM3 M1	HR	-4700.0	154.0	-225.0	HAM3	-869.0	154.0	-225.0	CORNER	-4700.1	154.0	-222.1	1667						
	OptLev SR3, Tx Viewport	OL SR3 Tx VP	outer face	-367.2	-6147.5	-965.1	HAM5	-367.2	13974.5	-965.1	CORNER	-367.8	-6147.5	-964.9	924						
	OptLev SR3 Transmitter	OL SR3 Tx	outer face	-367.2	-5893.5	-965.1	BSC2	-367.2	-5893.5	-965.1	CORNER	-367.8	-5893.5	-964.9	924				924		
	OptLev SR3, Rx Viewport	OL SR3 Rx VP	outer face	-367.2	-6147.5	765.1	HAM5	-367.2	13974.5	765.1	CORNER	-366.7	-6147.5	765.2	2654						
	OptLev SR3 Receiver	OL SR3 Rx	outer face	-368.6	-5893.5	772.0	BSC2	-368.6	-5893.5	772.0	CORNER	-368.1	-5893.5	772.2	2661					2661	
	OptLev HAM4, Tx & Rx Viewport	OL HAM4 VP	outer face	469.9	-17703.1	-913.9	HAM4	469.9	-13872.1	-913.9	CORNER	469.3	-17703.1	-914.4	975						
	OptLev HAM4 Transmitter	OL HAM4 Tx	outer face	514.9	-17957.1	-913.9	BSC2	514.9	-17957.1	-913.9	CORNER	514.3	-17957.1	-914.4	975						975
	OptLev HAM4 Receiver	OL HAM4 Rx	outer face	431.6	-17957.1	-913.9	BSC2	431.6	-17957.1	-913.9	CORNER	431.0	-17957.1	-914.4	975						
	OptLev HAM4, Reference Mirror	OL HAM4 M1	HR	114.0	-4700.0	-225.0	HAM4	114.0	-869.0	-225.0	CORNER	113.9	-4700.0	-225.1	1664						
	OptLev HAM5, Tx & Rx Viewport	OL HAM5 VP	outer face	469.9	-6147.5	-913.9	HAM5	469.9	13974.5	-913.9	CORNER	469.3	-6147.5	-914.3	975						
	OptLev HAM5 Transmitter	OL HAM5 Tx	outer face	514.9	-5893.5	-913.9	BSC2	514.9	-5893.5	-913.9	CORNER	514.3	-5893.5	-914.3	975						975
	OptLev HAM5 Receiver	OL HAM5 Rx	outer face	431.1	-5893.5	-913.9	BSC2	431.1	-5893.5	-913.9	CORNER	430.5	-5893.5	-914.2	975						
	OptLev HAM5, Reference Mirror	OL HAM5 M1	HR	75.0	-19250.0	-225.0	HAM5	75.0	872.0	-225.0	CORNER	74.9	-19250.0	-225.3	1664						
	OptLev ITMx, Tx Viewport	OL ITMx Tx VP	outer face	37787.3	145.4	-748.0	BSC3	33207.3	145.4	-748.0	CORNER	37786.8	145.4	-771.4	1118						
	OptLev ITMx Transmitter	OL ITMx Tx	outer face	38051.0	155.0	-685.0	BSC2	38051.0	155.0	-685.0	CORNER	38050.6	155.0	-708.6	1181	1181					
	OptLev ITMx, Rx Viewport	OL ITMx Rx VP	outer face	37787.3	-566.3	509.9	BSC3	33207.3	-566.3	509.9	CORNER	37787.6	-566.3	486.5	2376						
	OptLev ITMx Receiver	OL ITMx Rx	outer face	38051.0	-554.0	525.0	BSC2	38051.0	-554.0	525.0	CORNER	38051.3	-554.0	501.4	2391		2391				
	OptLev ITMy, Tx Viewport	OL ITMy Tx VP	outer face	145.4	37787.3	-748.0	BSC1	145.4	33207.3	-748.0	CORNER	144.9	37787.3	-747.6	1142						
	OptLev ITMy Transmitter	OL ITMy Tx	outer face	155.0	38051.0	-685.0	BSC2	155.0	38051.0	-685.0	CORNER	154.6	38051.0	-684.6	1205	1205					
	OptLev ITMy, Rx Viewport	OL ITMy Rx VP	outer face	-566.3	37787.3	509.9	BSC1	-566.3	33207.3	509.9	CORNER	-566.0	37787.3	510.7	2400						
	OptLev ITMy Receiver	OL ITMy Rx	outer face	-554.0	38051.0	525.0	BSC2	-554.0	38051.0	525.0	CORNER	-553.7	38051.0	525.8	2415			2415			
	OptLev ETMx, Tx Viewport	OL ETMx Tx VP	outer face	3994223.7	145.4	-748.0	BSC9	-5776.3	145.4	-748.0	X-END	-5776.3	145.4	-748.0	1141						
	OptLev ETMx Transmitter	OL ETMx Tx	outer face	3993969.7	168.4	-725.0	BSC9	-6030.3	168.4	-725.0	X-END	-6030.3	168.4	-725.0	1164	1164					
	OptLev ETMx, Rx Viewport	OL ETMx Rx VP	outer face	3994223.7	-566.3	509.9	BSC9	-5776.3	-566.3	509.9	X-END	-5776.3	-566.3	509.8	2399						
	OptLev ETMx Receiver	OL ETMx Rx	outer face	3993969.7	-568.0	564.0	BSC9	-6030.3	-568.0	564.0	X-END	-6030.3	-568.0	563.9	2453			2453			
	OptLev ETMy, Tx Viewport	OL ETMy Tx VP	outer face	145.4	3994223.7	-748.0	BSC10	145.4	-5776.3	-748.0	Y-END	144.9	-5776.1	-750.0	1139						
	OptLev ETMy Transmitter	OL ETMy Tx	outer face	168.4	3993969.7	-725.0	BSC10	168.4	-6030.3	-725.0	Y-END	167.9	-6030.1	-727.1	1162	1162					
	OptLev ETMy, Rx Viewport	OL ETMy Rx VP	outer face	-566.3	3994223.7	509.9	BSC10	-566.3	-5776.3	509.9	Y-END	-566.0	-5776.5	508.4	2397						
	OptLev ETMy Receiver	OL ETMy Rx	outer face	-568.0	3993969.7	564.0	BSC10	-568.0	-6030.3	564.0	Y-END	-567.7	-6030.5	562.4	2452		2452				
	PHOTON CALIBRATION (PCal)																				
	PCal Viewport ETMx Transmit	PC ETMx Tx VP	outer face	3994223.7	762.0	0.0	BSC9	-5776.3	762.0	0.0	X-END	-5776.3	762.0	0.0	1889						
	PCal Viewport ETMx Receive	PC ETMx Rc VP	outer face	3994223.7	-762.0	0.0	BSC9	-5776.3	-762.0	0.0	X-END	-5776.3	-762.0	-0.1	1889						
	PCal Beam 1 ETMx Inject	PC ETMx BEAM1 IN	ref	3993969.7	751.0	0.0	BSC9	-6030.3	751.0	0.0	X-END	-6030.3	751.0	0.0	1889						

*center, unless otherwise specified																OpLev TM Tx Assy	OpLev & Pcal TM Rx Assy, LH	OpLev & Pcal TM Rx Assy, RH	OpLev PR3/SR3 Tx Assy	OpLev PR3/SR3 Rx Assy, LH	OpLev SR3 Rx Assy, RH	OpLev HAM Tx/Rx Assy	
IFO	DESCRIPTION	LABEL	POINT*	GLOBAL (mm)			GLOBAL ALIGNED, CHAMBER CENTERED (mm)			BUILDING COORD. GRAVITY ALIGNED (mm)			HEIGHT ABOVE FLOOR (mm)										
				X	Y	Z	CHAMBER	X	Y	Z	BLDG.	X	Y	Z		D1001339	D1001325	D1001330	D1001334	D1001166	D1001170	D1001851	
	Pcal Beam 2 ETMx Inject	PC ETMX BEAM2 IN	ref	3993969.7	827.0	0.0	BSC9	-6030.3	827.0	0.0	X-END	-6030.3	827.0	0.0	1889								
	Pcal ETMx Periscope 1, Mirror 1	PC ETMX PERI1 M1	HR	3996773.7	-670.0	-295.0	BSC9	-3226.3	-670.0	-295.0	X-END	-3226.3	-670.0	-295.0	1594								
	Pcal ETMx Periscope 1, Mirror 2	PC ETMX PERI1 M2	HR	3996773.7	-820.0	-295.0	BSC9	-3226.3	-820.0	-295.0	X-END	-3226.3	-820.0	-295.0	1594								
	Pcal ETMx Periscope 2, Mirror 1	PC ETMX PERI2 M1	HR	3996773.7	-706.0	48.0	BSC9	-3226.3	-706.0	48.0	X-END	-3226.3	-706.0	48.0	1937								
	Pcal ETMx Periscope 2, Mirror 2	PC ETMX PERI2 M2	HR	3996773.7	-820.0	48.0	BSC9	-3226.3	-820.0	48.0	X-END	-3226.3	-820.0	48.0	1937								
	Pcal Beam 1 ETMx receive	PC ETMX BEAM1 Rc	HR	3993969.7	-705.8	40.0	BSC9	-6030.3	-705.8	40.0	X-END	-6030.3	-705.8	39.9	1929								
	Pcal Beam 2 ETMx receive	PC ETMX BEAM2 Rc	HR	3993969.7	-789.0	40.0	BSC9	-6030.3	-789.0	40.0	X-END	-6030.3	-789.0	39.9	1929								
	Pcal Viewport ETMy Transmit	PC ETMY Tx VP	outer face	-762.0	3994223.7	0.0	BSC10	-762.0	-5776.3	0.0	Y-END	-762.0	-5776.3	-1.4	1888								
	Pcal Viewport ETMy Receive	PC ETMY Rc VP	outer face	762.0	3994223.7	0.0	BSC10	762.0	-5776.3	0.0	Y-END	762.0	-5776.3	-2.4	1887								
	Pcal Beam 1 ETMy Inject	PC ETMY BEAM1 IN	ref	751.0	3993969.7	0.0	BSC10	751.0	-6030.3	0.0	Y-END	751.0	-6030.3	-2.4	1887								
	Pcal Beam 2 ETMy Inject	PC ETMY BEAM2 IN	ref	827.0	3993969.7	0.0	BSC10	827.0	-6030.3	0.0	Y-END	827.0	-6030.3	-2.5	1887								
	Pcal ETMy Periscope 1, Mirror 1	PC ETMY PERI1 M1	HR	-670.0	3996773.7	-289.0	BSC10	-670.0	-3226.3	-289.0	Y-END	-670.2	-3226.2	-289.6	1599								
	Pcal ETMy Periscope 1, Mirror 2	PC ETMY PERI1 M2	HR	-820.0	3996773.7	-289.0	BSC10	-820.0	-3226.3	-289.0	Y-END	-820.2	-3226.2	-289.5	1600								
	Pcal ETMy Periscope 2, Mirror 1	PC ETMY PERI2 M1	HR	-706.0	3996773.7	48.0	BSC10	-706.0	-3226.3	48.0	Y-END	-706.0	-3226.3	47.4	1937								
	Pcal ETMy Periscope 2, Mirror 2	PC ETMY PERI2 M2	HR	-820.0	3996773.7	48.0	BSC10	-820.0	-3226.3	48.0	Y-END	-820.0	-3226.3	47.5	1937								
	Pcal Beam 1 ETMy receive	PC ETMY BEAM1 Rc	HR	-705.8	3993969.7	40.0	BSC10	-705.8	-6030.3	40.0	Y-END	-705.8	-6030.3	38.5	1928								
	Pcal Beam 2 ETMy receive	PC ETMY BEAM2 Rc	HR	-789.0	3993969.7	40.0	BSC10	-789.0	-6030.3	40.0	Y-END	-789.0	-6030.3	38.5	1928								
H2	OPTICAL LEVERS (OptLev)																						
	OptLev BS Tx & Rx Viewport	OL BS VP	outer face	10252.4	8187.6	0.0	BSC4	1032.4	-1032.4	0.0	CORNER	10252.4	8187.6	-6.2	1883								
	OptLev BS Transmitter	OL BS Tx	outer face	10450.0	7967.0	0.0	BSC4	1230.0	-1253.0	0.0	CORNER	10450.0	7967.0	-6.4	1883								
	OptLev BS Receiver	OL BS Rx	outer face	10474.0	7986.0	0.0	BSC4	1254.0	-1234.0	0.0	CORNER	10474.0	7986.0	-6.4	1883								
	OptLev BS periscope mirror 1	OL BS PM1	HR	10090.0	8342.0	0.0	BSC4	870.0	-878.0	0.0	CORNER	10090.0	8342.0	-6.1	1883								
	OptLev BS periscope mirror 2	OL BS PM2	HR	9983.9	8235.9	0.0	BSC4	763.9	-984.1	0.0	CORNER	9983.9	8235.9	-6.1	1883								
	OptLev FMX Tx & Rx Viewport	OL FMX VP	outer face	10401.4	1032.4	0.0	BSC7	1032.4	1032.4	0.0	CORNER	10401.4	1032.4	-6.4	1883								
	OptLev FMX Transmitter	OL FMX Tx	outer face	10641.0	1239.0	0.0	BSC7	1272.0	1239.0	0.0	CORNER	10641.0	1239.0	-6.6	1883								
	OptLev FMX Receiver	OL FMX Rx	outer face	10619.0	1278.0	-1.7	BSC7	1250.0	1278.0	-1.7	CORNER	10619.0	1278.0	-8.3	1881								
	OptLev FMX periscope mirror 1	OL FMX PM1	HR	10180.0	820.0	0.0	BSC7	811.0	820.0	0.0	CORNER	10180.0	820.0	-6.3	1883								
	OptLev FMX periscope mirror 2	OL FMX PM2	HR	9967.9	1032.1	0.0	BSC7	598.9	1032.1	0.0	CORNER	9967.9	1032.1	-6.2	1883								
	OptLev FMY Tx & Rx Viewport	OL FMY VP	outer face	1032.4	10401.4	0.0	BSC8	1032.4	1032.4	0.0	CORNER	1032.4	10401.4	-0.5	1889								
	OptLev FMY Transmitter	OL FMY Tx	outer face	1263.0	10608.0	0.0	BSC8	1263.0	1239.0	0.0	CORNER	1263.0	10608.0	-0.6	1888								
	OptLev FMY Receiver	OL FMY Rx	outer face	1251.0	10646.0	-1.7	BSC8	1251.0	1277.0	-1.7	CORNER	1251.0	10646.0	-2.3	1887								
	OptLev FMY periscope mirror 1	OL FMY PM1	HR	820.0	10180.0	0.0	BSC8	820.0	811.0	0.0	CORNER	820.0	10180.0	-0.4	1889								
	OptLev FMY periscope mirror 2	OL FMY PM2	HR	1032.1	9967.9	0.0	BSC8	1032.1	598.9	0.0	CORNER	1032.1	9967.9	-0.5	1889								
	OptLev HAM8, TX & Rx Viewport	OL HAM8 VP	outer face	15392.3	8750.1	-913.9	HAM8	-13949.7	-469.9	-913.9	CORNER	15391.7	8750.1	-923.3	966								
	OptLev HAM8 Transmitter	OL HAM8 Tx	outer face	15138.3	8687.1	-913.9	HAM8	-14203.7	-532.9	-913.9	CORNER	15137.7	8687.1	-923.2	966								966
	OptLev HAM8 Receiver	OL HAM8 Rx	outer face	15138.3	8812.3	-913.9	HAM8	-14203.7	-407.7	-913.9	CORNER	15137.7	8812.3	-923.2	966								
	OptLev HAM8, Reference Mirror	OL HAM8 M	HR	28420.2	8820.0	-225.0	HAM8	-921.8	-400.0	-225.0	CORNER	28420.1	8820.0	-242.5	1647								
	OptLev PR3, Tx Viewport	OL PR3 Tx VP	outer face	15392.3	9383.2	-1025.5	HAM8	-13949.7	163.2	-1025.5	CORNER	15391.7	9383.2	-1034.9	854								
	OptLev PR3 Transmitter	OL PR3 Tx	outer face	15138.3	9383.2	-1025.5	HAM8	-14203.7	163.2	-1025.5	CORNER	15137.7	9383.2	-1034.8	854								
	OptLev PR3, Rx Viewport	OL PR3 Rx VP	outer face	15392.3	9479.0	803.4	HAM8	-13949.7	259.0	803.4	CORNER	15392.8	9479.0	794.0	2683								
	OptLev PR3 Receiver	OL PR3 Rx	outer face	15138.3	9476.7	811.0	HAM8	-14203.7	256.7	811.0	CORNER	15138.8	9476.7	801.7	2691								
	OptLev HAM9, Tx & Rx Viewport	OL HAM9 VP	outer face	26923.1	9689.9	-913.9	HAM9	13872.1	469.9	-913.9	CORNER	26922.5	9689.9	-930.4	959								
	OptLev HAM9 Transmitter	OL HAM9 Tx	outer face	27177.1	9626.9	-913.9	HAM9	14126.1	406.9	-913.9	CORNER	27176.5	9626.9	-930.6	959								959
	OptLev HAM9 Receiver	OL HAM9 Rx	outer face	27177.1	9742.6	-913.9	HAM9	14126.1	522.6	-913.9	CORNER	27176.5	9742.6	-930.6	959								
	OptLev HAM9, Reference Mirror	OL HAM9 M	HR	13920.2	9570.0	-225.0	HAM9	869.2	350.0	-225.0	CORNER	13920.1	9570.0	-233.5	1656								
	OptLev SR3, Tx Viewport	OL SR3 Tx VP	outer face	8992.6	15392.3	-1012.0	HAM11	-227.4	-13949.7	-1012.0	CORNER	8992.0	15392.3	-1017.4	872								
	OptLev SR3 Transmitter	OL SR3 Tx	outer face	8992.6	15138.3	-1012.0	HAM11	-227.4	-14203.7	-1012.0	CORNER	8992.0	15138.3	-1017.4	872								
	OptLev SR3, Rx Viewport	OL SR3 Rx VP	outer face	8992.6	15392.3	811.9	HAM11	-227.4	-13949.7	811.9	CORNER	8993.1	15392.3	806.5	2696								
	OptLev SR3 Receiver	OL SR3 Rx	outer face	8992.0	15138.3	818.9	HAM11	-228.0	-14203.7	818.9	CORNER	8992.5	15138.3	813.5	2703								2703
	OptLev HAM10, Tx & Rx Viewport	OL HAM10 VP	outer face	8750.1	26923.1	-913.9	HAM10	-469.9	13872.1	-913.9	CORNER	8749.5	26923.1	-919.0	970								

			*center, unless otherwise specified			GLOBAL ALIGNED, CHAMBER CENTERED (mm)			BUILDING COORD. GRAVITY ALIGNED (mm)			HEIGHT ABOVE FLOOR (mm)	OpLev TM Tx Assy	OpLev & Pcal TM Rx Assy, LH	OpLev & Pcal TM Rx Assy, RH	OpLev PR3/SR3 Tx Assy	OpLev PR3/SR3 Rx Assy, LH	OpLev SR3 Rx Assy, RH	OpLev HAM Tx/Rx Assy			
IFO	DESCRIPTION	LABEL	POINT*	GLOBAL (mm)			CHAMBER	X	Y	Z	BLDG.	X	Y	Z	FLOOR (mm)	D1001339	D1001325	D1001330	D1001334	D1001166	D1001170	D1001851
				X	Y	Z	X	Y	Z		X	Y	Z									
	OptLev HAM10 Transmitter	OL HAM10 Tx	outer face	8687.1	27177.1	-913.9	HAM10	-532.9	14126.1	-913.9	CORNER	8686.5	27177.1	-918.9	970							970
	OptLev HAM10 Receiver	OL HAM10 Rx	outer face	8789.2	27177.1	-913.9	HAM10	-430.8	14126.1	-913.9	CORNER	8788.6	27177.1	-919.0	970							
	OptLev HAM10, Reference Mirror	OL HAM10 M	HR	9475.0	13920.0	-225.0	HAM10	255.0	869.0	-225.0	CORNER	9474.9	13920.0	-230.7	1658							
	OptLev HAM11, Tx & Rx Viewport	OL HAM11 VP	outer face	9745.5	15392.3	-879.1	HAM11	525.5	-13949.7	-879.1	CORNER	9745.0	15392.3	-885.0	1004							
	OptLev HAM11 Transmitter	OL HAM11 Tx	outer face	9707.5	15138.3	-879.1	HAM11	487.5	-14203.7	-879.1	CORNER	9707.0	15138.3	-885.0	1004							1004
	OptLev HAM11 Receiver	OL HAM11 Rx	outer face	9805.4	15138.3	-879.1	HAM11	585.4	-14203.7	-879.1	CORNER	9804.9	15138.3	-885.0	1004							
	OptLev HAM11, Reference Mirror	OL HAM11 M	HR	9075.0	28470.0	-225.0	HAM11	-145.0	-872.0	-225.0	CORNER	9074.9	28470.0	-230.3	1659							
	OptLev ITMx, Tx Viewport	OL ITMx Tx VP	outer face	37787.3	-145.4	-748.0	BSC7	28418.3	-145.4	-748.0	CORNER	37786.8	-145.4	-771.4	1118							
	OptLev ITMx Transmitter	OL ITMx Tx	outer face	38051.0	-155.0	-685.0	BSC7	28682.0	-155.0	-685.0	CORNER	38050.6	-155.0	-708.6	1181	1181						
	OptLev ITMx, Rx Viewport	OL ITMx Rx VP	outer face	37787.3	566.3	509.9	BSC7	28418.3	566.3	509.9	CORNER	37787.6	566.3	486.5	2376							
	OptLev ITMx Receiver	OL ITMx Rx	outer face	38051.0	554.0	525.0	BSC7	28682.0	554.0	525.0	CORNER	38051.3	554.0	501.4	2391			2391				
	OptLev ITMy, Tx Viewport	OL ITMy Tx VP	outer face	-145.4	37787.3	-748.0	BSC8	-145.4	28418.3	-748.0	CORNER	-145.9	37787.3	-747.4	1142							
	OptLev ITMy Transmitter	OL ITMy Tx	outer face	-155.0	38051.0	-685.0	BSC8	-155.0	28682.0	-685.0	CORNER	-155.4	38051.0	-684.4	1205	1205						
	OptLev ITMy, Rx Viewport	OL ITMy Rx VP	outer face	566.3	37787.3	509.9	BSC8	566.3	28418.3	509.9	CORNER	566.6	37787.3	510.0	2399							
	OptLev ITMy Receiver	OL ITMy Rx	outer face	554.0	38051.0	525.0	BSC8	554.0	28682.0	525.0	CORNER	554.3	38051.0	525.1	2414		2414					
	OptLev ETMx, Tx Viewport	OL ETMx Tx VP	outer face	4002880.7	-145.4	-748.0	BSC5	-3489.3	-145.4	-748.0	X-END	2880.7	-145.4	-748.0	1141							
	OptLev ETMx Transmitter	OL ETMx Tx	outer face	4002626.7	-160.0	-755.0	BSC5	-3743.3	-160.0	-755.0	X-END	2626.7	-160.0	-755.0	1134	1134						
	OptLev ETMx, Rx Viewport	OL ETMx Rx VP	outer face	4002880.7	566.3	509.9	BSC5	-3489.3	566.3	509.9	X-END	2880.7	566.3	509.9	2399							
	OptLev ETMx Receiver	OL ETMx Rx	outer face	4002626.7	561.0	603.0	BSC5	-3743.3	561.0	603.0	X-END	2626.7	561.0	603.0	2492		2492					
	OptLev ETMy, Tx Viewport	OL ETMy Tx VP	outer face	-145.4	4002880.7	-748.0	BSC6	-145.4	-3489.3	-748.0	Y-END	-145.9	2881.0	-747.0	1142							
	OptLev ETMy Transmitter	OL ETMy Tx	outer face	-160.0	4002626.7	-755.0	BSC6	-160.0	-3743.3	-755.0	Y-END	-160.5	2626.9	-754.0	1135	1135						
	OptLev ETMy, Rx Viewport	OL ETMy Rx VP	outer face	566.3	4002880.7	509.9	BSC6	566.3	-3489.3	509.9	Y-END	566.6	2880.6	510.5	2400							
	OptLev ETMy Receiver	OL ETMy Rx	outer face	556.0	4002626.7	594.0	BSC6	556.0	-3743.3	594.0	Y-END	556.4	2626.5	594.5	2484			2484				
PHOTON CALIBRATION (PCal)																						
	Pcal Viewport ETMx Transmit	Pcal ETMx Tx VP	outer face	4002880.7	-762.0	0.0	BSC5	-3489.3	-762.0	0.0	X-END	2880.7	-762.0	0.0	1889							
	Pcal Viewport ETMx Receive	Pcal ETMx Rx VP	outer face	4002880.7	762.0	0.0	BSC5	-3489.3	762.0	0.0	X-END	2880.7	762.0	0.0	1889							
	Pcal Beam 1 ETMx Inject	Pcal ETMx Tx1	ref	4002626.7	-800.0	0.0	BSC5	-3743.3	-800.0	0.0	X-END	2626.7	-800.0	0.0	1889							
	Pcal Beam 2 ETMx Inject	Pcal ETMx Tx2	ref	4002626.7	-875.8	0.0	BSC5	-3743.3	-875.8	0.0	X-END	2626.7	-875.8	0.0	1889							
	Pcal Beam 1 ETMx Periscope 1, Mirror	Pcal ETMx Per1 M1	HR	4003959.1	796.0	-307.0	BSC5	-2410.9	796.0	-307.0	X-END	3959.1	796.0	-307.0	1582							
	Pcal Beam 1 ETMx Periscope 1, Mirror	Pcal ETMx Per1 M2	HR	4003994.1	690.0	-307.0	BSC5	-2375.9	690.0	-307.0	X-END	3994.1	690.0	-307.0	1582							
	Pcal Beam 2 ETMx Periscope 2, Mirror	Pcal ETMx Per2 M1	HR	4003959.1	844.0	50.5	BSC5	-2410.9	844.0	50.5	X-END	3959.1	844.0	50.5	1940							
	Pcal Beam 2 ETMx Periscope 2, Mirror	Pcal ETMx Per2 M2	HR	4003989.1	690.0	50.5	BSC5	-2380.9	690.0	50.5	X-END	3989.1	690.0	50.5	1940							
	Pcal Viewport ETMy Receive	Pcal ETMy Rx VP	outer face	-762.0	4002880.7	0.0	BSC6	-762.0	-3489.3	0.0	Y-END	-762.0	2880.7	1.4	1891							
	Pcal Viewport ETMy Transmit	Pcal ETMy Tx VP	outer face	762.0	4002880.7	0.0	BSC6	762.0	-3489.3	0.0	Y-END	762.0	2880.7	0.5	1890							
	Pcal Beam 1 ETMy Inject	Pcal ETMy Tx1	ref	-800.0	4002626.7	0.0	BSC6	-800.0	-3743.3	0.0	Y-END	-800.0	2626.7	1.4	1890							
	Pcal Beam 2 ETMy Inject	Pcal ETMy Tx2	ref	-875.8	4002626.7	0.0	BSC6	-875.8	-3743.3	0.0	Y-END	-875.8	2626.7	1.4	1891							
	Pcal Beam 1 ETMy Periscope 1, Mirror	Pcal ETMy Per1 M1	HR	790.0	4003959.1	-307.0	BSC6	790.0	-2410.9	-307.0	Y-END	789.8	3959.2	-306.2	1583							
	Pcal Beam 1 ETMy Periscope 1, Mirror	Pcal ETMy Per1 M2	HR	690.0	4003994.1	-307.0	BSC6	690.0	-2375.9	-307.0	Y-END	689.8	3994.2	-306.1	1583							
	Pcal Beam 2 ETMy Periscope 2, Mirror	Pcal ETMy Per2 M1	HR	840.0	4003959.1	50.5	BSC6	840.0	-2410.9	50.5	Y-END	840.0	3959.1	51.3	1940							
	Pcal Beam 2 ETMy Periscope 2, Mirror	Pcal ETMy Per2 M2	HR	690.0	4003989.1	50.5	BSC6	690.0	-2380.9	50.5	Y-END	690.0	3989.1	51.4	1940							
L1 OPTICAL LEVERS (OptLev)																						
	OptLev BS Tx & Rx Viewport	OL BS VP	outer face	-1005.8	1005.8	0.0	BSC2	-1005.8	1005.8	0.0	CORNER	-1005.8	1005.8	-0.3	1850							
	OptLev BS Transmitter	OL BS Tx	outer face	1230.0	-1253.0	0.0	BSC2	1230.0	-1253.0	0.0	CORNER	1230.0	-1253.0	0.4	1850							
	OptLev BS Receiver	OL BS Rx	outer face	1258.6	-1229.4	0.0	BSC2	1258.6	-1229.4	0.0	CORNER	1258.6	-1229.4	0.4	1850							
	OptLev BS periscope mirror 1	OL BS M1	HR	850.0	-850.0	0.0	BSC2	850.0	-850.0	0.0	CORNER	850.0	-850.0	0.3	1850							
	OptLev BS periscope mirror 2	OL BS M2	HR	637.9	-1062.1	0.0	BSC2	637.9	-1062.1	0.0	CORNER	637.9	-1062.1	0.4	1850							
	OptLev HAM2, TX & Rx Viewport	OL HAM2 VP	outer face	-6147.5	469.9	-913.9	HAM2	13974.5	469.9	-913.9	CORNER	-6147.8	469.3	-912.3	938							
	OptLev HAM2 Transmitter	OL HAM2 Tx	outer face	-5893.5	514.9	-913.9	BSC2	-5893.5	514.9	-913.9	CORNER	-5893.8	514.3	-912.4	938							938
	OptLev HAM2 Receiver	OL HAM2 Rx	outer face	-5918.0	426.8	-913.9	BSC2	-5918.0	426.8	-913.9	CORNER	-5918.3	426.2	-912.3	938							
	OptLev HAM2, Reference Mirror	OL HAM2 M1	HR	-19200.0	75.0	-157.0	HAM2	922.0	75.0	-157.0	CORNER	-19200.0	74.9	-151.1	1699							

IFO	DESCRIPTION	LABEL	POINT*	GLOBAL (mm)			GLOBAL ALIGNED, CHAMBER CENTERED (mm)			BLDG.	BUILDING COORD. GRAVITY ALIGNED (mm)			HEIGHT ABOVE FLOOR (mm)	OpLev TM Tx Assy D1001339	OpLev & Pcal TM Rx Assy, LH D1001325	OpLev & Pcal TM Rx Assy, RH D1001330	OpLev PR3/SR3 Tx Assy D1001334	OpLev PR3/SR3 Rx Assy, LH D1001166	OpLev SR3 Rx Assy, RH D1001170	OpLev HAM Tx/Rx Assy D1001851
				X	Y	Z	X	Y	Z		X	Y	Z								
				*center, unless otherwise specified																	
	OptLev PR3, Tx Viewport	OL PR3 Tx VP	outer face	-6147.5	-336.8	-977.4	HAM2	13974.5	-336.8	-977.4	CORNER	-6147.8	-337.4	-975.3	875						
	OptLev PR3 Transmitter	OL PR3 Tx	outer face	-5893.5	-336.8	-977.4	BSC2	-5893.5	-336.8	-977.4	CORNER	-5893.8	-337.4	-975.3	875				875		
	OptLev PR3, Rx Viewport	OL PR3 Rx VP	outer face	-6147.5	-336.8	777.4	HAM2	13974.5	-336.8	777.4	CORNER	-6147.3	-336.3	779.5	2629						
	OptLev PR3 Receiver	OL PR3 Rx	outer face	-5918.0	-336.3	782.6	BSC2	-5918.0	-336.3	782.6	CORNER	-5917.8	-335.8	784.7	2635				2635		
	OptLev HAM3, TX & Rx Viewport	OL HAM3 VP	outer face	-17703.1	-469.9	-913.9	HAM3	-13872.1	-469.9	-913.9	CORNER	-17703.4	-470.5	-908.1	942						
	OptLev HAM3 Transmitter	OL HAM3 Tx	outer face	-17957.1	-426.9	-913.9	BSC2	-17957.1	-426.9	-913.9	CORNER	-17957.4	-427.5	-908.0	942						942
	OptLev HAM3 Receiver	OL HAM3 Rx	outer face	-17957.0	-528.9	-913.9	BSC2	-17957.0	-528.9	-913.9	CORNER	-17957.3	-529.5	-908.0	942						
	OptLev HAM3, Reference Mirror	OL HAM3 M1	HR	-4700.0	154.0	-225.0	HAM3	-869.0	154.0	-225.0	CORNER	-4700.1	153.9	-223.6	1626						
	OptLev SR3, Tx Viewport	OL SR3 Tx VP	outer face	-367.2	-6147.5	-965.1	HAM5	-367.2	13974.5	-965.1	CORNER	-367.5	-6148.1	-961.2	889						
	OptLev SR3 Transmitter	OL SR3 Tx	outer face	-367.2	-5893.5	-965.1	BSC2	-367.2	-5893.5	-965.1	CORNER	-367.5	-5894.1	-961.4	889				889		
	OptLev SR3, Rx Viewport	OL SR3 Rx VP	outer face	-367.2	-6147.5	765.1	HAM5	-367.2	13974.5	765.1	CORNER	-367.0	-6147.0	769.0	2619						
	OptLev SR3 Receiver	OL SR3 Rx	outer face	-368.6	-5893.5	772.0	BSC2	-368.6	-5893.5	772.0	CORNER	-368.4	-5893.0	775.7	2626				2626		
	OptLev HAM4, Tx & Rx Viewport	OL HAM4 VP	outer face	469.9	-17703.1	-913.9	HAM4	469.9	-13872.1	-913.9	CORNER	469.6	-17703.7	-903.2	947						
	OptLev HAM4 Transmitter	OL HAM4 Tx	outer face	514.9	-17957.1	-913.9	BSC2	514.9	-17957.1	-913.9	CORNER	514.6	-17957.7	-903.1	947						947
	OptLev HAM4 Receiver	OL HAM4 Rx	outer face	431.6	-17957.1	-913.9	BSC2	431.6	-17957.1	-913.9	CORNER	431.3	-17957.7	-903.1	947						
	OptLev HAM4, Reference Mirror	OL HAM4 M1	HR	114.0	-4700.0	-225.0	HAM4	114.0	-869.0	-225.0	CORNER	113.9	-4700.1	-222.2	1628						
	OptLev HAM5, Tx & Rx Viewport	OL HAM5 VP	outer face	469.9	-6147.5	-913.9	HAM5	469.9	13974.5	-913.9	CORNER	469.6	-6148.1	-910.3	940						
	OptLev HAM5 Transmitter	OL HAM5 Tx	outer face	514.9	-5893.5	-913.9	BSC2	514.9	-5893.5	-913.9	CORNER	514.6	-5894.1	-910.5	939						939
	OptLev HAM5 Receiver	OL HAM5 Rx	outer face	431.1	-5893.5	-913.9	BSC2	431.1	-5893.5	-913.9	CORNER	430.8	-5894.1	-910.4	939						
	OptLev HAM5, Reference Mirror	OL HAM5 M1	HR	75.0	-19250.0	-225.0	HAM5	75.0	872.0	-225.0	CORNER	74.9	-19250.1	-213.3	1637						
	OptLev ITMx, Tx Viewport	OL ITMx Tx VP	outer face	37787.3	145.4	-748.0	BSC3	33207.3	145.4	-748.0	CORNER	37787.1	144.9	-759.9	1090						
	OptLev ITMx Transmitter	OL ITMx Tx	outer face	38051.0	155.0	-685.0	BSC2	38051.0	155.0	-685.0	CORNER	38050.8	154.6	-697.0	1153	1153					
	OptLev ITMx, Rx Viewport	OL ITMx Rx VP	outer face	37787.3	-566.3	509.9	BSC3	33207.3	-566.3	509.9	CORNER	37787.5	-566.0	498.5	2348						
	OptLev ITMx Receiver	OL ITMx Rx	outer face	38051.0	-554.0	525.0	BSC2	38051.0	-554.0	525.0	CORNER	38051.2	-553.7	513.5	2363		2363				
	OptLev ITMy, Tx Viewport	OL ITMy Tx VP	outer face	145.4	37787.3	-748.0	BSC1	145.4	33207.3	-748.0	CORNER	145.2	37786.8	-771.1	1079						
	OptLev ITMy Transmitter	OL ITMy Tx	outer face	155.0	38051.0	-685.0	BSC2	155.0	38051.0	-685.0	CORNER	154.8	38050.6	-708.3	1142	1142					
	OptLev ITMy, Rx Viewport	OL ITMy Rx VP	outer face	-566.3	37787.3	509.9	BSC1	-566.3	33207.3	509.9	CORNER	-566.1	37787.6	487.0	2337						
	OptLev ITMy Receiver	OL ITMy Rx	outer face	-554.0	38051.0	525.0	BSC2	-554.0	38051.0	525.0	CORNER	-553.8	38051.3	501.9	2352			2352			
	OptLev ETMx, Tx Viewport	OL ETMx Tx VP	outer face	3994223.7	145.4	-748.0	BSC9	83578.7	-73.7	-591.5	X-END	-5776.1	144.9	-749.9	1100						
	OptLev ETMx Transmitter	OL ETMx Tx	outer face	3993969.7	168.4	-725.0	BSC9	83324.7	-50.7	-568.5	X-END	-6030.1	168.0	-727.0	1123	1123					
	OptLev ETMx, Rx Viewport	OL ETMx Rx VP	outer face	3994223.7	-566.3	509.9	BSC9	83578.7	-785.4	666.4	X-END	-5776.5	-566.0	508.4	2358						
	OptLev ETMx Receiver	OL ETMx Rx	outer face	3993969.7	-568.0	564.0	BSC9	83324.7	-787.1	720.5	X-END	-6030.5	-567.7	562.4	2412			2412			
	OptLev ETMy, Tx Viewport	OL ETMy Tx VP	outer face	145.4	3994223.7	-748.0	BSC10	145.4	-5776.3	-748.0	Y-END	145.2	-5776.3	-748.2	1102						
	OptLev ETMy Transmitter	OL ETMy Tx	outer face	168.4	3993969.7	-725.0	BSC10	168.4	-6030.3	-725.0	Y-END	168.2	-6030.3	-725.2	1125	1125					
	OptLev ETMy, Rx Viewport	OL ETMy Rx VP	outer face	-566.3	3994223.7	509.9	BSC10	-566.3	-5776.3	509.9	Y-END	-566.1	-5776.3	510.0	2360						
	OptLev ETMy Receiver	OL ETMy Rx	outer face	-568.0	3993969.7	564.0	BSC10	-568.0	-6030.3	564.0	Y-END	-567.8	-6030.3	564.1	2414		2414				
	PHOTON CALIBRATION (PCal)																				
	Pcal Viewport ETMx Transmit	PC ETMx Tx VP	outer face	3994223.7	762.0	0.0	BSC9	83578.7	542.9	156.5	X-END	-5776.3	762.0	-2.3	1848						
	Pcal Viewport ETMx Receive	PC ETMx Rc VP	outer face	3994223.7	-762.0	0.0	BSC9	83578.7	-981.1	156.5	X-END	-5776.3	-762.0	-1.4	1849						
	Pcal Beam 1 ETMx Inject	PC ETMx BEAM1 IN	ref	3993969.7	751.0	0.0	BSC9	83324.7	531.9	156.5	X-END	-6030.3	751.0	-2.4	1848						
	Pcal Beam 2 ETMx Inject	PC ETMx BEAM2 IN	ref	3993969.7	827.0	0.0	BSC9	83324.7	607.9	156.5	X-END	-6030.3	827.0	-2.4	1847						
	Pcal ETMx Periscope 1, Mirror 1	PC ETMx PERI1 M1	HR	3996773.7	-670.0	-295.0	BSC9	86128.7	-889.1	-138.5	X-END	-3226.2	-670.2	-295.6	1554						
	Pcal ETMx Periscope 1, Mirror 2	PC ETMx PERI1 M2	HR	3996773.7	-820.0	-295.0	BSC9	86128.7	-1039.1	-138.5	X-END	-3226.2	-820.2	-295.5	1554						
	Pcal ETMx Periscope 2, Mirror 1	PC ETMx PERI2 M1	HR	3996773.7	-706.0	48.0	BSC9	86128.7	-925.1	204.5	X-END	-3226.3	-706.0	47.4	1897						
	Pcal ETMx Periscope 2, Mirror 2	PC ETMx PERI2 M2	HR	3996773.7	-820.0	48.0	BSC9	86128.7	-1039.1	204.5	X-END	-3226.3	-820.0	47.5	1897						
	Pcal Beam 1 ETMx receive	PC ETMx BEAM1 Rc	HR	3993969.7	-705.8	40.0	BSC9	83324.7	-924.9	196.5	X-END	-6030.3	-705.8	38.5	1888						
	Pcal Beam 2 ETMx receive	PC ETMx BEAM2 Rc	HR	3993969.7	-789.0	40.0	BSC9	83324.7	-1008.1	196.5	X-END	-6030.3	-789.0	38.6	1888						
	Pcal Viewport ETMy Transmit	PC ETMy Tx VP	outer face	-762.0	3994223.7	0.0	BSC10	-762.0	-5776.3	0.0	Y-END	-762.0	-5776.3	0.1	1850						
	Pcal Viewport ETMy Receive	PC ETMy Rc VP	outer face	762.0	3994223.7	0.0	BSC10	762.0	-5776.3	0.0	Y-END	762.0	-5776.3	-0.3	1850						
	Pcal Beam 1 ETMy Inject	PC ETMy BEAM1 IN	ref	751.0	3993969.7	0.0	BSC10	751.0	-6030.3	0.0	Y-END	751.0	-6030.3	-0.3	1850						
	Pcal Beam 2 ETMy Inject	PC ETMy BEAM2 IN	ref	827.0	3993969.7	0.0	BSC10	827.0	-6030.3	0.0	Y-END	827.0	-6030.3	-0.4	1850						

*center, unless otherwise specified

IFO	DESCRIPTION	LABEL	POINT*	GLOBAL (mm)			CHAMBER	GLOBAL ALIGNED, CHAMBER CENTERED (mm)			BLDG.	BUILDING COORD. GRAVITY ALIGNED (mm)			HEIGHT ABOVE FLOOR (mm)	OpLev TM Tx Assy	OpLev & Pcal TM Rx Assy, LH	OpLev & Pcal TM Rx Assy, RH	OpLev PR3/SR3 Tx Assy	OpLev PR3/SR3 Rx Assy, LH	OpLev SR3 Rx Assy, RH	OpLev HAM Tx/Rx Assy
				X	Y	Z		X	Y	Z		X	Y	Z								
	PCal ETMy Periscope 1, Mirror 1	PC ETMY PERI1 M1	HR	-670.0	3996773.7	-289.0	BSC10	-670.0	-3226.3	-289.0	Y-END	-670.1	-3226.3	-288.9	1561							
	PCal ETMy Periscope 1, Mirror 2	PC ETMY PERI1 M2	HR	-820.0	3996773.7	-289.0	BSC10	-820.0	-3226.3	-289.0	Y-END	-820.1	-3226.3	-288.8	1561							
	PCal ETMy Periscope 2, Mirror 1	PC ETMY PERI2 M1	HR	-706.0	3996773.7	48.0	BSC10	-706.0	-3226.3	48.0	Y-END	-706.0	-3226.3	48.2	1898							
	PCal ETMy Periscope 2, Mirror 2	PC ETMY PERI2 M2	HR	-820.0	3996773.7	48.0	BSC10	-820.0	-3226.3	48.0	Y-END	-820.0	-3226.3	48.2	1898							
	PCal Beam 1 ETMy receive	PC ETMY BEAM1 Rcd	HR	-705.8	3993969.7	40.0	BSC10	-705.8	-6030.3	40.0	Y-END	-705.8	-6030.3	40.1	1890							
	PCal Beam 2 ETMy receive	PC ETMY BEAM2 Rcd	HR	-789.0	3993969.7	40.0	BSC10	-789.0	-6030.3	40.0	Y-END	-789.0	-6030.3	40.1	1890							

Max Height (mm)	1205	2492	2484	924	2703	2661	1004
Min Height (mm)	1123	2363	2352	854	2635	2626	938
Range (mm)	82	129	132	70	68	36	67
Range (in)	3.22	5.07	5.19	2.75	2.68	1.40	2.62

D1001339	D1001325	D1001330	D1001334	D1001166	D1001170	D1001851
OpLev TM Tx Assy	OpLev & Pcal TM Rx Assy, LH	OpLev & Pcal TM Rx Assy, RH	OpLev PR3/SR3 Tx Assy	OpLev PR3/SR3 Rx Assy, LH	OpLev SR3 Rx Assy, RH	OpLev HAM Tx/Rx Assy