

Marvelmind Robotics

Indoor Positioning System

location update rate and user data transfer rate table

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Update rate vs submap size. Setup: 2D submap, radio 500 kbps, 1 hedge, streaming

Settings	2 m	3 m	5 m	10 m	20 m	30 m	50 m
NIA, boost on, Hz	46.3	40.8	33.0	22.3	13.5	9.7	6.2
IA, boost on, Hz	40.5	40.5	31.8	22.2	13.5	9.7	6.1
NIA, boost off, Hz	19.9	18.8	16.9	13.6	9.7	7.6	5.2
IA, boost off, Hz	17.8	17.8	16.2	13.1	9.5	7.4	5.2

IA

Setup: 2D submap 2 m, IA, radio 500 kbps, boost ON, 1 hedge

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	Other settings
0	0	40.5	0	0	Hedge stream off
0	0	35.1	0	0	Hedge stream 500 kbps
48	0	28.7	11,021	0	
240	0	19.0	36,480	0	
0	48	30.3	0	11,635	
0	240	19.6	0	37,632	
48	48	25.5	9,792	9,792	
240	240	13.3	25,536	25,536	

Setup: 2D submap 2 m, IA, radio 500 kbps, boost ON, 2 hedges

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	Other settings
0	0	34.1	0	0	Hedge stream off
0	0	30.2	0	0	Hedge stream 500 kbps
48	0	21.9	8,410	0	
240	0	12.3	23,616	0	
0	48	26.6	0	10,214	
0	240	18.0	0	34,560	
48	48	20.0	7,680	7,680	
240	240	9.6	18,432	18,432	

Setup: 2D submap 2 m, IA, radio 500 kbps, boost ON, 3 hedges

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	Other settings
0	0	29.5	0	0	Hedge stream off
0	0	26.4	0	0	Hedge stream 500 kbps
48	0	17.7	6,797	0	
240	0	9.1	17,472	0	
0	48	23.8	0	9,139	
0	240	16.6	0	31,872	
48	48	16.4	6,298	6,298	
240	240	7.5	14,400	14,400	

Setup: 2D submap 2 m, IA, radio 500 kbps, boost OFF, 1 hedges

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	Other settings
0	0	17.8	0	0	Hedge stream off
0	0	16.7	0	0	Hedge stream 500 kbps
48	0	13.8	5,299	0	
240	0	9.2	17,664	0	
0	48	15.5	0	5,952	
0	240	12.1	0	23,232	
48	48	13.0	4,992	4,992	
240	240	7.6	14,592	14,592	

Setup: 2D submap 2 m, IA, radio 500 kbps, boost OFF, 2 hedges

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	Other settings
0	0	16.5	0	0	Hedge stream off
0	0	15.5	0	0	Hedge stream 500 kbps
48	0	12.0	4,608	0	
240	0	7.3	14,016	0	
0	48	14.5	0	5,568	
0	240	11.5	0	22,080	
48	48	11.4	4,378	4,378	
240	240	6.2	11,904	11,904	

Setup: 2D submap 2 m, IA, radio 500 kbps, boost OFF, 3 hedges

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	Other settings
0	0	15.3	0	0	Hedge stream off
0	0	14.5	0	0	Hedge stream 500 kbps
48	0	10.6	4,070	0	
240	0	6.0	11,520	0	
0	48	13.6	0	5,222	
0	240	10.9	0	20,928	
48	48	10.1	3,878	3,878	
240	240	5.3	10,176	10,176	

Setup: 2D submap 5 m, IA, radio 500 kbps, boost ON

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	
0	0	29.1	0	0	
48	0	24.6	9,446	0	
240	0	17.1	32,832	0	
0	48	25.7	0	9,869	
0	240	17.6	0	33,792	
48	48	22.2	8,525	8,525	
240	240	12.3	23,616	23,616	

Setup: 2D submap 5 m, IA, radio 500 kbps, boost OFF

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps
0	0	15.2	0	0
48	0	12.8	4,915	0
240	0	8.7	16,704	0
0	48	14.2	0	5,453
0	240	11.3	0	21,696
48	48	12.1	4,646	4,646
240	240	7.3	14,016	14,016

Setup: 2D submap 30 m, IA, radio 500 kbps, boost ON

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps
0	0	9.3	0	0
48	0	8.8	3,379	0
240	0	7.6	14,592	0
0	48	8.9	0	3,418
0	240	7.7	0	14,784
48	48	8.5	3,264	3,264
240	240	6.5	12,480	12,480

Setup: 2D submap 30 m, IA, radio 500 kbps, boost OFF

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps
0	0	7.2	0	0
48	0	6.6	2,534	0
240	0	5.3	10,176	0
0	48	7.0	0	2,688
0	240	6.2	0	11,904
48	48	6.4	2,458	2,458
240	240	4.7	9,024	9,024

---- 100 kbps

Setup: 2D submap 5 m, IA, radio 100 kbps, boost ON

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	
0	0	22.1	0	0	
48	0	17.8	6,835	0	
240	0	10.8	20,736	0	
0	48	18.4	0	7,066	
0	240	11.0	0	21,120	
48	48	15.3	5,875	5,875	
240	240	7.2	13,824	13,824	

Setup: 2D submap 5 m, IA, radio 100 kbps, boost OFF

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	
0	0	11.0	0	0	
48	0	8.8	3,379	0	
240	0	5.3	10,176	0	
0	48	10.0	0	3,840	
0	240	6.3	0	12,096	
48	48	8.2	3,149	3,149	
240	240	4.3	8,256	8,256	

Setup: 2D submap 30 m, IA, radio 100 kbps, boost ON

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	
0	0	8.5	0	0	
48	0	7.8	2,995	0	
240	0	6.1	11,712	0	
0	48	7.9	0	3,034	
0	240	6.1	0	11,712	
48	48	7.3	2,803	2,803	
240	240	4.7	9,024	9,024	

Setup: 2D submap 30 m, IA, radio 100 kbps, boost OFF

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	
0	0	6.1	0	0	
48	0	5.4	2,074	0	
240	0	3.8	7,296	0	
0	48	5.8	0	2,227	
0	240	4.8	0	9,216	
48	48	5.1	1,958	1,958	
240	240	3.3	6,336	6,336	

NIA

Setup: 2D submap 2 m, NIA, radio 500 kbps, boost ON, 1 hedge

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	Other settings
0	0	40.8	0	0	Hedge stream off
0	0	40.8	0	0	Hedge stream 500 kbps
48	0	40.8	15,667	0	
240	0	26.7	51,264	0	
0	48	34.6	0	13,286	
0	240	21.4	0	41,088	
48	48	34.6	13,286	13,286	
240	240	16.7	32,064	32,064	

Setup: 2D submap 2 m, NIA, radio 500 kbps, boost OFF, 1 hedge

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	Other settings
0	0	18.8	0	0	Hedge stream off
0	0	18.8	0	0	Hedge stream 500 kbps
48	0	18.8	7,219	0	
240	0	15.6	29,952	0	
0	48	17.3	0	6,643	
0	240	13.2	0	25,344	
48	48	17.3	6,643	6,643	
240	240	11.5	22,080	22,080	

Setup: 2D submap 5 m, NIA, radio 500 kbps, boost ON

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	
0	0	33.0	0	0	
48	0	33.0	12,672	0	
240	0	26.7	51,264	0	
0	48	28.8	0	11,059	
0	240	19.0	0	36,480	
48	48	28.8	11,059	11,059	
240	240	16.7	32,064	32,064	

Setup: 2D submap 5 m, NIA, radio 500 kbps, boost OFF

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	
0	0	16.9	0	0	
48	0	16.9	6,490	0	
240	0	15.6	29,952	0	
0	48	18.4	0	7,066	
0	240	12.3	0	23,616	
48	48	15.7	6,029	6,029	
240	240	11.5	22,080	22,080	

Setup: 2D submap 30 m, NIA, radio 500 kbps, boost ON

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	
0	0	9.7	0	0	
48	0	9.7	3,725	0	
240	0	9.7	18,624	0	
0	48	9.3	0	3,571	
0	240	8.0	0	15,360	
48	48	9.3	3,571	3,571	
240	240	8.0	15,360	15,360	

Setup: 2D submap 30 m, NIA, radio 500 kbps, boost OFF

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	
0	0	7.6	0	0	
48	0	7.6	2,918	0	
240	0	7.6	14,592	0	
0	48	7.3	0	2,803	
0	240	6.5	0	12,480	
48	48	7.3	2,803	2,803	
240	240	6.5	12,480	12,480	

100 kbps

Setup: 2D submap 5 m, NIA, radio 100 kbps, boost ON

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	
0	0	21.8	0	0	
48	0	21.8	8,371	0	
240	0	12.7	24,384	0	
0	48	18.2	0	6,989	
0	240	10.9	0	20,928	
48	48	18.2	6,989	6,989	
240	240	8.0	15,360	15,360	

Setup: 2D submap 5 m, NIA, radio 100 kbps, boost OFF

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	
0	0	11.8	0	0	
48	0	11.8	4,531	0	
240	0	8.6	16,512	0	
0	48	10.6	0	4,070	
0	240	7.6	0	14,592	
48	48	10.6	4,070	4,070	
240	240	6.2	11,904	11,904	

Setup: 2D submap 30 m, NIA, radio 100 kbps, boost ON

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	
0	0	8.4	0	0	
48	0	8.4	3,226	0	
240	0	8.4	16,128	0	
0	48	7.8	0	2,995	
0	240	6.1	0	11,712	
48	48	7.8	2,995	2,995	
240	240	6.1	11,712	11,712	

Setup: 2D submap 30 m, NIA, radio 100 kbps, boost OFF

Payload from beacon to modem, bytes per location update	Payload from modem to mobile beacon, bytes per location update	Resulting update rate, Hz	Resulting bitrate from beacon, bps	Resulting bitrate to beacon, bps	
0	0	6.3	0	0	
48	0	6.3	2,419	0	
240	0	6.3	12,096	0	
0	48	6.0	0	2,304	
0	240	4.9	0	9,408	
48	48	6.0	2,304	2,304	
240	240	4.9	9,408	9,408	