

### ENR 3.1 LOWER ATS ROUTES

Amendment 1/12

Route Designator Significant Points Coordinates	Track (MAG) Dist (NM)	Upper Limit Lower Limit	Lateral Limits (NM)	Cruising Levels		Remarks Controlling Units
		MNM FLT ALT Airspace Classification		Odd	Even	
1	2	3	4	5		6
M522						
▲ KOTA KINABALU DVOR/DME (VJN) 055357.3N 1160202.3E	188° 008	FL 460 FL 135	20	↑		No Pre Departure Coordination (No PDC) arrangement :
▲ MAMOK (FIR BDRY) 040506N 1154712E	110 NM	MNM FL 140			↓	Flights departing from aerodromes within Kota Kinabalu FIR via RNAV M754 will be cleared to FL270. Succeeding acft cleared to same level provided at least 10 mins longitudinal separation using MNT with no closing speed.  <b>Controlling Authority :</b> Kinabalu ACC – 126.1 Mhz
M646 (RNP 10)						
▲ OSANU (FIR BDRY) 074124N 1171736E	215° 035°	FL 460 FL 135	20	↓		LONGITUDINAL SEPARATION OF 10 MINS BETWEEN RNAV EQUIPPED AIRCRAFT APPLYING MACH NUMBER TECHNIQUE.
▲ KOTA KINABALU DVOR/DME (VJN) 055357.3N 1160202.3E	130.1NM	MNM FL 140				
▲ BRUNEI DVOR/DME (BRU) 045230N 1145254E	228° 048°	FL 460 6 500 FT ALT				
▲ 50 DME BRU 043437N 1140607E	92.0 NM	MNM 7 000 FT				
△ SAKMA 042428N 1133955E	249° 069°	FL 460 7 500 FT ALT				
▲ DARMU 040139.0N 1124036.0E	50.0 NM	MNM 8 000 FT				
▲ KAMIN (FIR BDRY) 023442N 1085536E	28.0 NM	FL460 FL135				
	63.5 NM 249° 069°	MNM FL 140		↑		NON-RNAV EQUIPPED AIRCRAFT CAN OPERATE ON THIS RNAV ROUTE AT FL280 OR BELOW (BELOW RVSM)
	241 NM					

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		MNM FLT ALT Airspace Classification		Odd	Even	
1	2	3	4	5		6
M754						
▲ SUMLA (FIR BDRY) 080242N 1160054E	200° 020°	FL 460 FL 135  MNM FL 140	20	↓   ↑	No Pre Departure Coordination (No PDC) arrangement :  Flights departing from aerodromes within Kota Kinabalu FIR via RNAV route M754 will be cleared to FL270. Succeeding acft may be cleared to same level provided 10 mins longitudinal separation using MNT exists with no closing speed.  <b>Controlling Authority :</b> Kinabalu ACC – 126.1Mhz.	
▲ VIDIP 054106N 1151003E	150NM 200° 020°					
▲ UKIBA 051849N 1150209E	24NM 200° 020°					
▲ BRUNEI DVOR/DME (BRU) 045230N 1145254E	28 NM					
M759						
▲ OLKIT (FIR BDRY) 045012N 115118E	089° 269°	FL 460 6 500FT ALT	20	↑ ↓	No Pre Departure Coordination (No PDC) arrangement :  Flights departing from aerodromes within Kota Kinabalu FIR via RNAV route M759/M758 will be cleared to FL310. Succeeding acft may be cleared to same level provided 10 mins longitudinal separation using MNT exists with no closing speed.  Controlling Authority : Kinabalu ACC – 126.1 Mhz	
▲ BRUNEI DVOR/DME (BRU) 045230N 1145254E	181NM	MNM 7 000FT				
M768						
▲ BRUNEI DVOR/DME (BRU) 045230N 1145254E	131° 311°	FL 460 10 500 FT ALT	20	↑   ↓	No Pre Departure Coordination (No PDC) arrangement :.  Flights departing from aerodromes within Kota Kinabalu FIR via RNAV route M768 will be cleared to FL280. Succeeding aircraft may be cleared to same level provided 10mins longitudinal separation using MNT exists with no closing speed.  Controlling Authority : Kinabalu ACC – 126.1 Mhz.	
△ TMA BDRY 041923.2N 1153036.1E	50NM 131° 311°					
▲ MAMOK (FIR BDRY) 040506N 1154712E	22NM	MNM 11 000 FT			# except that part of ATS route within Brunei TMA – Brunei Approach – 127.1 Mhz.	

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M768						
▲ BRUNEI DVOR/DME (BRU) 045230N 1145254E	306° 126°	FL 460 6 500 FT ALT	20	↓          ↑	No Pre Departure Coordination (No PDC) arrangement :  Flights departing from aerodromes within Kota Kinabalu FIR via RNAV route M768 will be cleared to FL280. Succeeding acft may be cleared to same level provided 10 min longitudinal separation using MNT exists with no closing speed.  <b>Controlling Authority :</b> Kinabalu ACC – 126.1 Mhz	
▲ DOGOG 052518N 1140742E	56 NM 306° 126°	MNM 7 000 FT				
▲ ASISU (FIR BDRY) 055906N 1132046E	58 NM					
R223						
▲ BRUNEI DVOR/DME (BRU) 045230N 1145254E	181° 001°	FL 460 FL 135	20	↓          ↑	<b>Controlling Authority :</b> Kinabalu ACC – 128.3 Mhz	
▲ BUTAX 042613N 1145232E	26 NM 181° 001°	MNM FL 140				
▲ AGSON (FIR BDRY) 021500N 1145124E	131 NM					
W420						
▲ KOTA KINABALU DVOR/DME (VJN) 055358.8N 1160147.8E	038° 218°	FL 460 8 500 FT ALT	20*	↓          ↑	*Lateral Limits : 5NM either side of centerline from VJN DVOR/DME to KUDAT funneling out at an angle of 7½° on either side fm VJN to 10 NM either side of centerline.  5NM either side of centerline fm VSN VOR/DME to KUDAT funneling out at an angle of 7½° on either side fm VSN to 10NM either side of centerline.  The western bdry of Awy W420. VJN-KUDAT and the eastern bdry. VSN-KUDAT are joined by an arc of 10NM centred at KUDAT.  <b>Controlling Authority :</b> Kinabalu ACC	
▲ KUDAT 065430N 1165000E	77 NM 129° 309°	MNM 9 500FT				
▲ SANDAKAN DVOR/DME (VSN) 055421.8N 1180405.9E	96 NM	FL 460 5 500 FT ALT MNM 6 000FT				

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W421						
▲ SANDAKAN DVOR/DME (VSN) 055421.8N 1180405.9E  ▲ LAHAD DATU (LHD) LOCATOR 050129.1N 1182010.7E	163 ° 343 °	FL 460 6 500 FT ALT	20	↓	↑	Controlling Authority : Kinabalu ACC
	55 NM	MNM 7 000 FT				
W441						
▲ DOGOG 052518N 1140742E  ▲ UKIBA 051849N 1150209E  ▲ LABUAN DVOR/DME (VLB) 051724.0N 1151506.2E	097 ° 277 °	FL 460 FL 135	20	↓	↑	Controlling Authority : Kinabalu ACC – 128.3Mhz
	55 NM	MNM FL 140				
	097 ° 277 °					
	13 NM					
W442						
▲ OLKIT 045012N 1115118E  ▲ SAKMA 042428N 1133955E  ▲ MIRI DVOR/DME (VMI) 042016.0N 1135939.0E	103 ° 283°	FL 460 FL 135	20	↓	↑	Controlling Authority : Kinabalu ACC – 128.3 Mhz
	111 NM	MNM FL 140				
	103 ° 283°	FL 460 8 500 FT ALT				
	20 NM	MNM 9 000 FT				

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W449						
▲ MIRI DVOR/DME (VMI) 042016.0N 1135939.0E  ▲ 8 DME VZU 040449N 1144014E  ▲ MULU DVOR/DME (VZU) 040158.0N 1144743.0E	110 ° 290°	FL 245 4 500 FT ALT	20	↓   		

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W449						
▲ MIRI DVOR/DME (VMI) 042016.0N 1135939.0E  ▲ 8 DME VZU 040449N 1144014E  ▲ MULU DVOR/DME (VZU) 040158.0N 1144743.0E	110 ° 290°	FL 245 4 500 FT ALT	20	↓  <		

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W452						
▲ MULU DVOR/DME (VZU) 040158.0N 1144743.0E  ▲ 16 DME VZU 041740N 1145104E  ▲ BUTAX 042613N 1145232E	012 ° 192 °	FL 245 9 500 FT ALT	20	↓  ↑	Controlling Authority : Kinabalu ACC – 128.3 Mhz except within Miri TMA Miri APP : 129.9Mhz ( P ) : 122.7 Mhz ( S ) Within Brunei TMA Brunei APP : 127.1 Mhz Mulu Twr : 129.200 Mhz (P) : 121.7 Mhz (S)  Caution : Acft intending to hold over VZU DVOR/DME or DVOR must <b>cross 16 DME VZU at 10000ft</b> or enter minimum holding pattern at 10000ft due to high terrain east of VZU DVOR	
	16 NM	MNM 10 000 FT				
	012 ° 192 °	FL 245 7 000 FT ALT				
	9 NM	MNM 7 000 FT				
Y445						
▲ LEDAM 045149N 1134706E  ▲ ASISU 055906N 1132046E	339 ° 159 °	FL 460 FL 195	20	↓  ↑	Controlling Authority : Kinabalu ACC	
	72 NM					



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