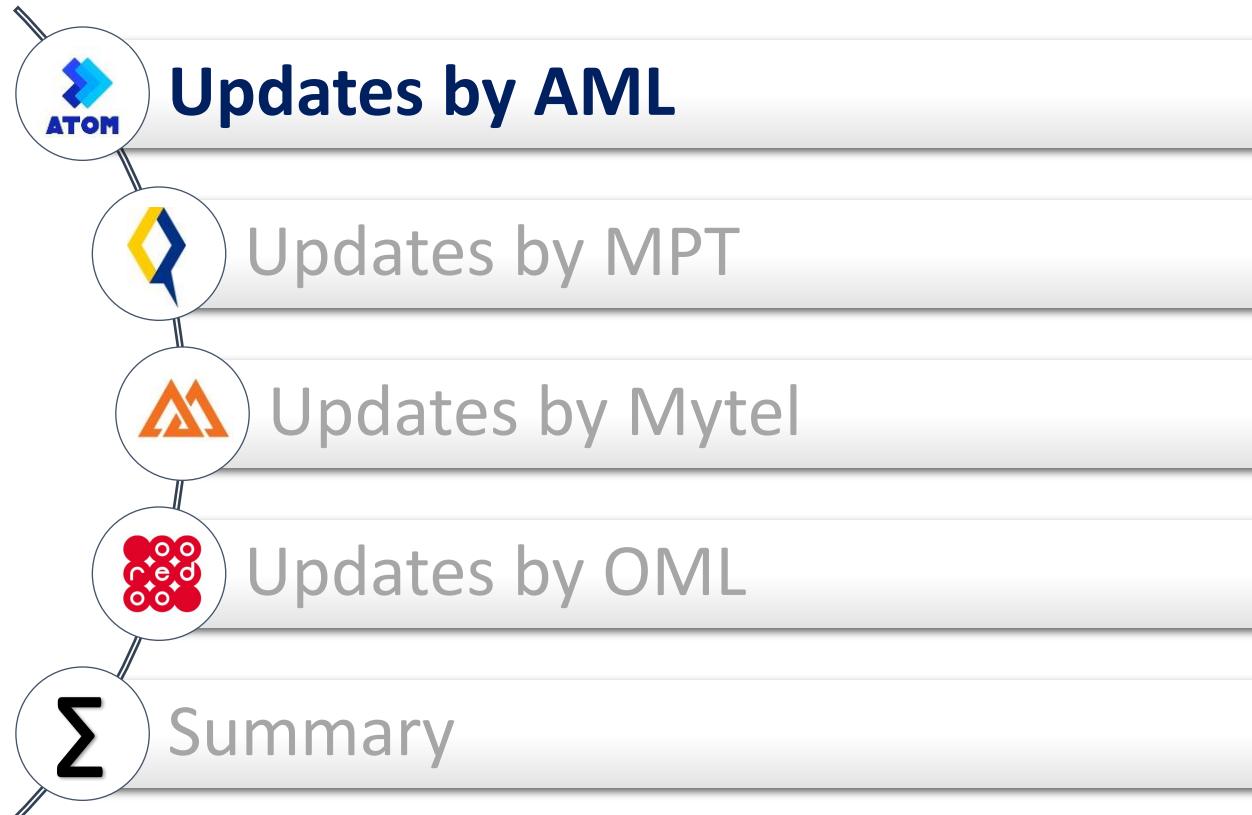


JTC-4 Industry Updates by Myanmar Mobile Network Operators [Feb – July 2022]

Fourth Joint Technical Committee on Coordination and
Assignment of Frequencies along Myanmar – Thailand Border



Contents



AML Spectrum Deployment Status Update For Thailand Border Cities

Spectrum Deployment Status In Thailand Border Cities/Town

Towns	State	GSM (MHz)	UMTS (MHz)	LTE (MHz)	Remarks
Tachileik	Shan	900	2100	1800 and 2100	
Myawaddy	Kayin	900 and 1800	900 and 2100	1800 and 2100	
Hpayarthonesu	Kayin	900	2100	1800 and 2100	
Kyawthoung	Tanintharyi	900	900 and 2100	1800 and 2100	

AML Information Update

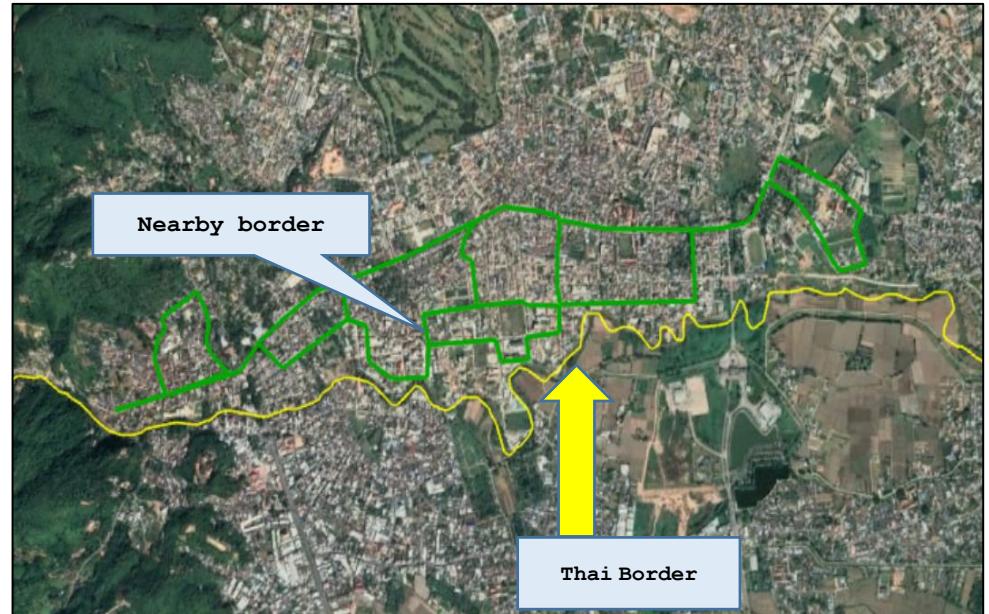
Cross Border Interference Coordination

- AML drive test team conducted in Tachileik in July 2022
- Coordination requests were submitted to AWN (34 cells), TUC (21 cells) and TOT (21 cells) in 2nd week of August 2022 and were promptly acknowledged
- TUC already has done optimization action for overshoot cells and feedback to AML within one week.
- AWN and TOT are taking verification process for the coordination requested cells.
- Testing in other border towns will proceed when accessible

AML Scanning Result Summary For Tachileik

(July 2022 Status)

- Depending on available road access, approx. lines for 0 km is drawn to determine coordination criteria violations.

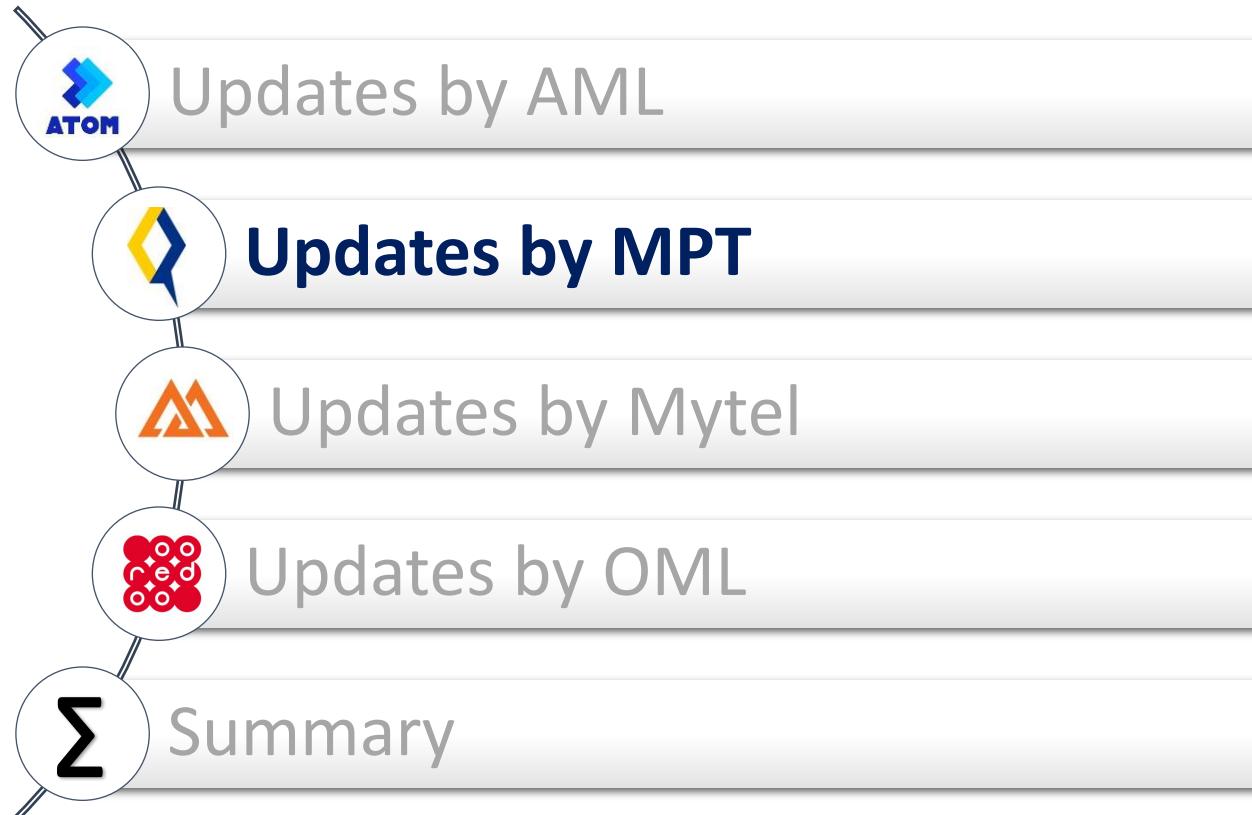


Technology	Operator	Band	ARFCN	Signal Strength	Coordination Criteria	Violating vs Total Data Points	Violating Ratio
LTE	TUC	1800	1275	RSRP	-94 dBm	403/1128	35.73%
	AWN	1800	1450	RSRP	-94 dBm	600/2524	23.77%
		900	3650	RSRP	-94 dBm	1467/2505	58.56%
UMTS	TUC	2100	10787	RSCP	-82 dBm	417/614	67.92%
			10812			158/378	41.80%
GSM	AWN	900	26,27,28,29,30	Rxlev	-82 dBm	1405/1563	89.89%

AML Submitted Cell Count and Optimization Progress Status

Tachileik					
Technology	Operator	Band	ARFCN	Total Cell Count (0Km)	Status
LTE	TUC	1800	1275	21	TUC already done optimization and result need to validate
	AWN	1800	1450	22	AWN is taking verification process
		900	3650	7	AWN is taking verification process
UMTS	TOT	2100	10787	21	TOT is taking verification process.
			10812		TOT is taking verification process.
GSM	AWN	900	26,27,28,29,30	5	AWN is taking verification process

Contents



Cellular Interference Coordination

900 MHz, 1800 MHz, 2100 MHz Bands

- Latest round of drive tests were conducted in **Tachileik (Mae Sai) and Kawthoung (Ranong)** in during March - May 2022
- Coordination requests were submitted to **AWN (30 cells), TUC (76 cells) and DTN (15 cells)** and were promptly acknowledged
- All cases with AWN have been improved and **closed** by early July
- **TUC and DTN** have also **taken actions**. MPT to confirm the results
- Acknowledged coordination requests from TUC in **Mae Sai (Tachileik), Mae Sot (Myawaddy) and Ranong (Kawthoung)**; action plan in progress

850 MHz Band

- Referring to **JTC-3 Agreed Minutes article 6.3.1 and Annex 1**, antenna adjustments (tilt and azimuth change) and transmit power reductions were completed at MECTel CDMA sites and CAT was informed accordingly on **4 March 2020**

Tachileik (July 2022 Status)

Depending on available road access, approx. lines for 0 km and 4 km are drawn to determine coordination criteria violations.



@ 0 km
from
Border ➤

Technology	Operator	Band	ARFCN	Signal Strength	Coordination Criteria	Violating vs Total Data Points	Violating Ratio
LTE	TUC	2100	250	RSRP	-94 dBm	94/232	40.53%
	TUC	900	3750	RSRP	-94 dBm	244/365	66.84%
	AWN	1800	1450	RSRP	-94 dBm	571/762	74.93 %
	DTN	1800	1575	RSRP	-94 dBm	383/605	63.30 %
UMTS	TUC	2100	10638	RSCP	-82 dBm	401/692	57.95%

@ 4 km
from
Border ➤

Technology	Operator	Band	ARFCN	Signal Strength	Coordination Criteria	Violating vs Total Data Points	Violating Ratio
LTE	TUC	2100	250	RSRP	-114 dBm	0/27	0%
	TUC	900	3750	RSRP	-114 dBm	75/75	100%
	AWN	1800	1450	RSRP	-114 dBm	692/774	89.40%
	DTN	1800	1575	RSRP	-114 dBm	656/727	90.23%
UMTS	TUC	2100	10638	RSCP	-102 dBm	260/362	71.82%

Kawthoung (July 2022 Status)

Depending on available road access, approx. lines for 2 km and 6 km are drawn to determine coordination criteria violations.



@ 2 km
from
Border ➤

Technology	Operator	Band	ARFCN	Signal Strength	Coordination Criteria	Violating vs Total Data Points	Violating Ratio
LTE	TUC	2100	250	RSRP	-94 dBm	Not use	Not use
	TUC	900	3750	RSRP	-94 dBm	38/77	49.35%
	AWN	1800	1450	RSRP	-94 dBm	41/156	26.28 %
	DTN	1800	1575	RSRP	-94 dBm	112/268	41.79 %
UMTS	TUC	2100	10638	RSCP	-82 dBm	60/135	44.44%

@ 6 km
from
Border ➤

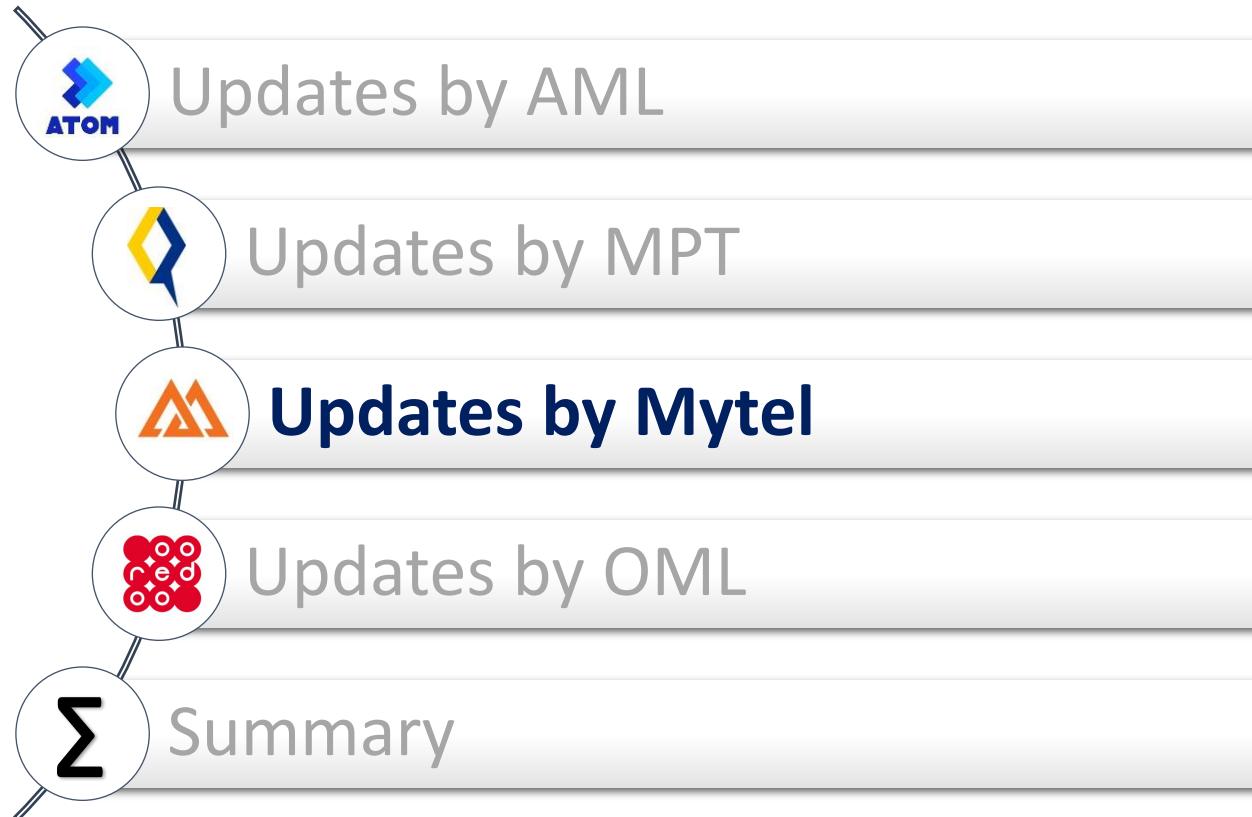
Technology	Operator	Band	ARFCN	Signal Strength	Coordination Criteria	Violating vs Total Data Points	Violating Ratio
LTE	TUC	2100	250	RSRP	-114 dBm	0/27	0%
	TUC	900	3750	RSRP	-114 dBm	No signal coming	No signal coming
	AWN	1800	1450	RSRP	-114 dBm	No signal coming	No signal coming
	DTN	1800	1575	RSRP	-114 dBm	34/44	90.23%
UMTS	TUC	2100	10638	RSCP	-102 dBm	No signal coming	No signal coming

Cell Count (July 2022 Status)

Tachileik					
Technology	Operator	Band	ARFCN	Total Cell count (0+N Km)	Status
LTE	TUC	2100	250	8	Optimization completed, result need to validate
	TUC	900	3750	9	
	AWN	1800	1450	28	Optimization completed and close
	DTN	1800	1575	11	Optimization completed, result need to validate
UMTS	TUC	2100	10638	42	Optimization completed, result need to validate

Kawthoung					
Technology	Operator	Band	ARFCN	Total Cell count (0+N Km)	Status
LTE	TUC	2100	250	0	Optimization completed
	TUC	900	3750	2	
	AWN	1800	1450	2	Optimization completed and close
	DTN	1800	1575	4	
UMTS	TUC	2100	10638	15	Some cells are not serving to Myanmar, and some cells don't have in TUC.

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- 1) Threshold set by 2nd and 3rd JTC meeting agreement
- 2) Myanmar and Thailand - 4 Cross Borders Locations
- 3) MCC & MNC Code for Thailand Operator
- 4) Interference Drive Test Results for Tachileik – Maesai Border
- 5) Interference Drive Test Results for Myawaddy – Maesot Border
- 6) Tachileik Frequency scanning report from RRU side
- 7) Proposal from Mytel

1. Threshold set by 2nd and 3rd JTC meeting agreement

Technology	Signal Strength Threshold Value for Hpayarthonesu– Three Pagodas agreed in JTC 3	Signal Strength Threshold Values for all other borders areas as agreed in JTC 2
GSM	-80dBm@(0)km -102 dBm @ (N)km (N=4)	-82dBm@(0)km -102 dBm @ (N)km (N=4)
UMTS	-80dBm@(0)km -102 dBm @ (N)km (N=4)	-82dBm@(0)km -102 dBm @ (N)km (N=4)
LTE	-87dBm@(0)km -114 dBm @ (N)km (N=4)	-94dBm@(0)km -114 dBm @ (N)km (N=4)

2. Myanmar and Thailand – 4 Cross Borders Locations

No	Myanmar – Thailand Border Name	Interference Test Status
1.	Tachileik – Maesai	Finished interference test on February 2022 for Thai 3 operators (AIS, DTAC, TURE) and Finished interference test on July-2022 for CAT operator.
2.	Myawaddy – Mae Sot	Finished interference test on July-2022 for Thai 3 operators (AIS, DTAC, CAT).
3.	Kawthoung – Ranong	Ongoing
4.	Payathonzu – Takhin Thong	Ongoing

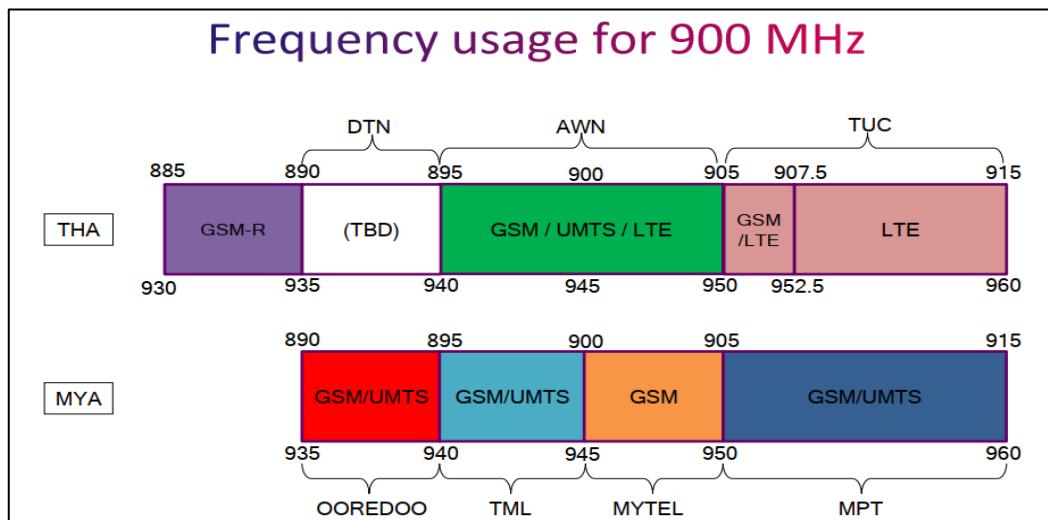
3. MCC & MNC Code for Thailand Operator

- MCC & MNC

Thailand				
MCC	MNC	Network	Operator or brand name	Status
520	0	CAT Telecom	My by CAT	Operational
520	1	Advanced Info Service	AIS	Operational
520	2	CAT Telecom	CAT	Operational
520	3	AWN	AIS 3G	Operational
520	4	Real Future	True Move	Operational
520	5	DTN	dTac	Operational
520	10		WCS	Inactive
520	15	Telephone Organization of Thailand	TOT 3G	Operational
520	18	Total Access Communications (DTAC)	dTac	Operational
520	23	Digital Phone (AIS)	AIS	Operational
520	25	True Corporation	WE PCT	Operational
520	88	True Corporation	True Move H	Inactive
520	99	True Corporation	True Move	Operational

4. Interference Drive Test Results for Tachileik – Maesai Border

- AIS GSM 900

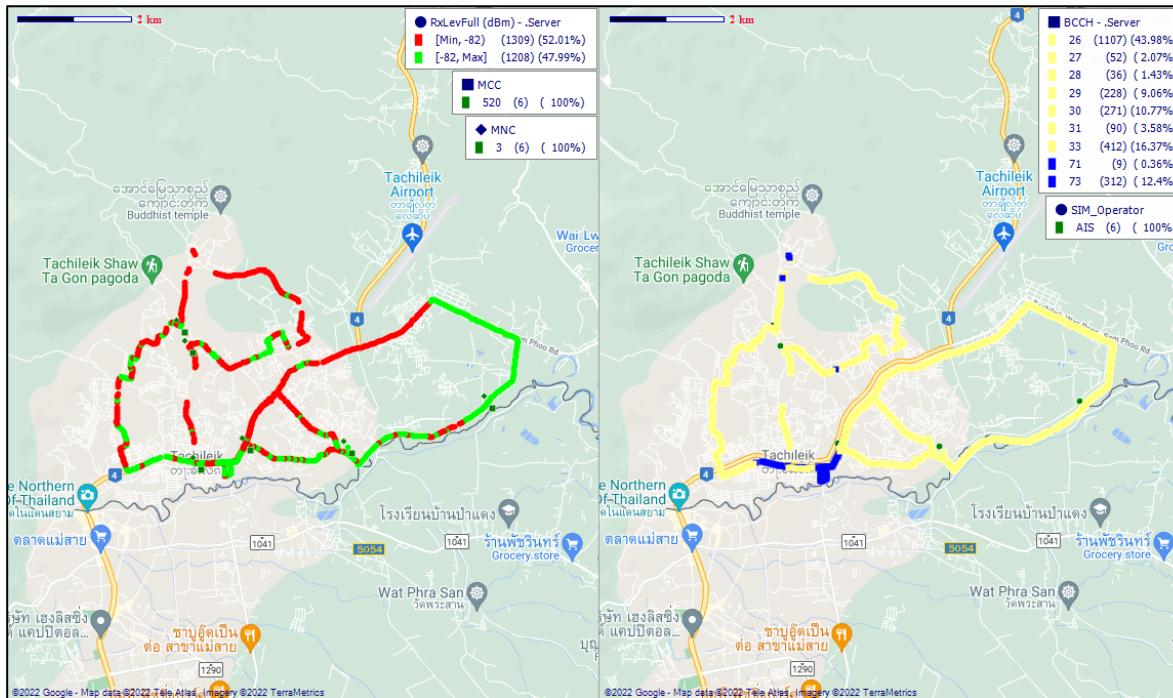


- Drive Test Result (4-Feb-22), AIS Operator PGSM 900 band interference to Mytel PGSM 900(Channel No-73).
- According to MM-THA PTD 2nd JTC meeting , we already have agreement 0 km line -82dBm and 4 km -102dBm.

Operator	MCC	MNC	Carrier Number	UL_DL	Cell ID	RxLev (JTC agreement)	@0 km RxLev Sample(>-82dbm)
AIS	520	3	73	904.6_949.6	21151	(-82dbm)	258

4. Interference Drive Test Results for Tachileik – Maesai Border

- AIS GSM 900 testing result.
- According to AIS GSM 900 lock driving test result, carrier no 73 was strong in Myanmar side for about sample 258 that to under -82dBm threshold.



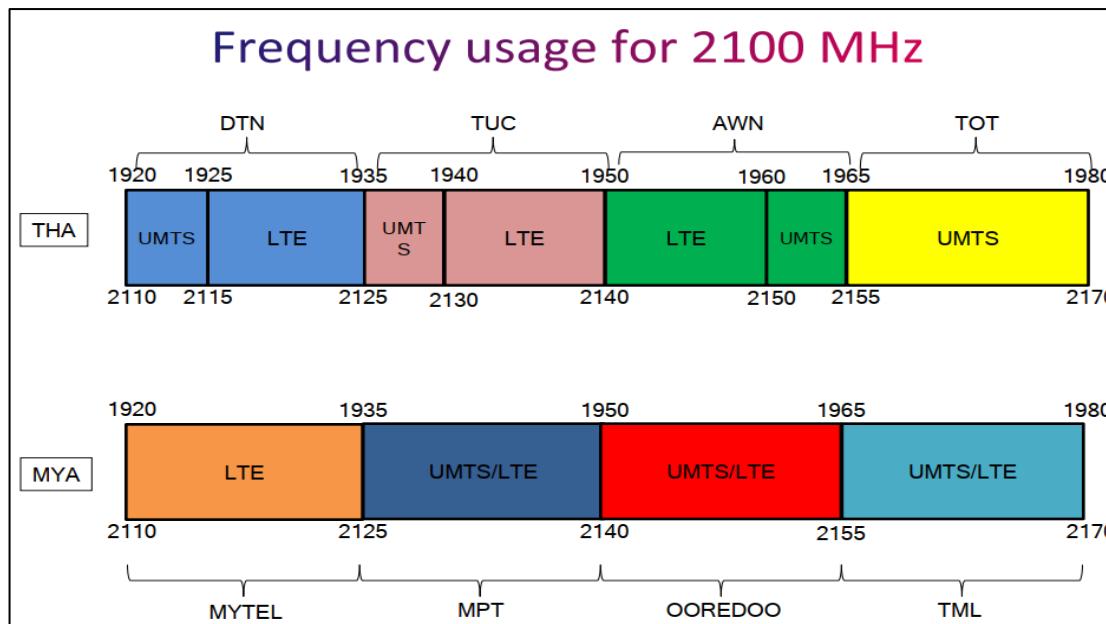
AIS 2G 900
Tachileik



AIS 2G 900 Tachileik.rar

4. Interference Drive Test Results for Tachileik – Maesai Border

- DTN UMTS 2100

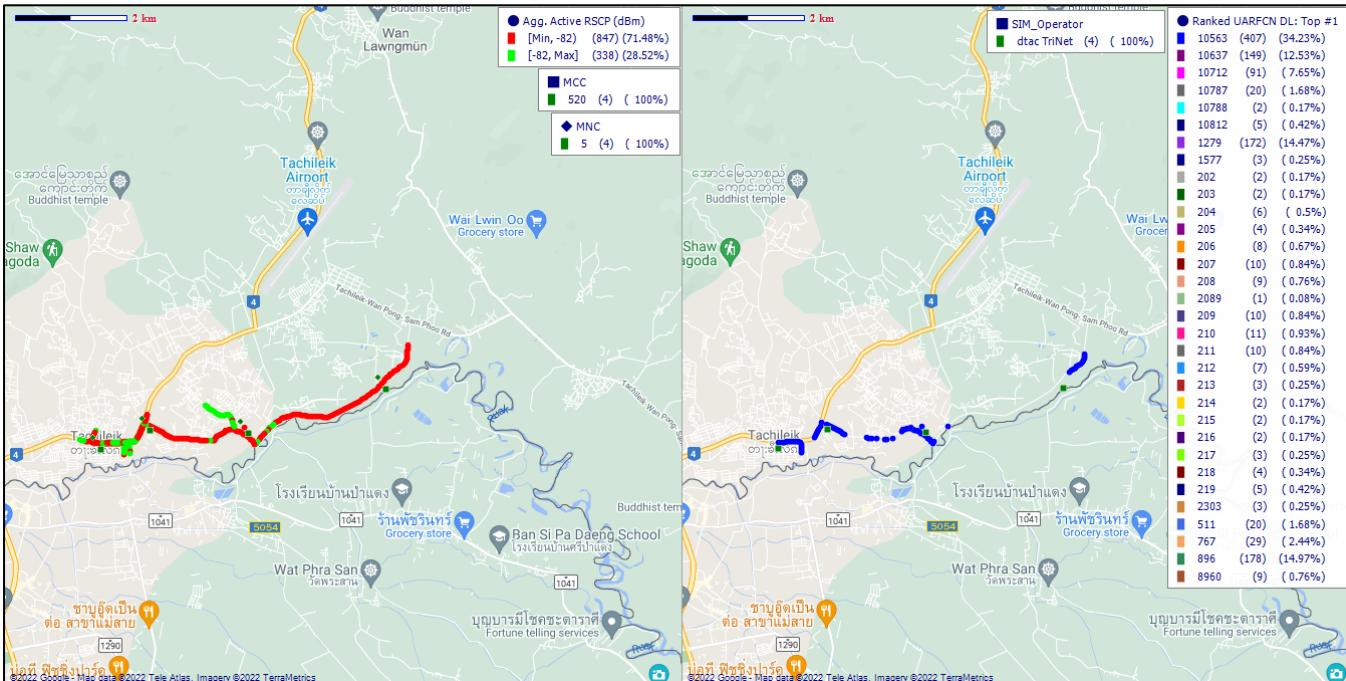


- Drive Test Result (4-Feb-22), DTN Operator UMTS 2100 band interference to Mytel LTE 2100.
- According to MM-THA PTD 2nd JTC meeting ,we already have agreement 0 km line -82dbm and 4 km - 102dbm.

Operator	MCC	MNC	Carrier Number	UL_DL freq	RSCP(JTC agreement)	@0 km RSCP Sample (>-82dbm)
DTN	520	5	10563	1922.6_2112.6	(-82dbm)	49

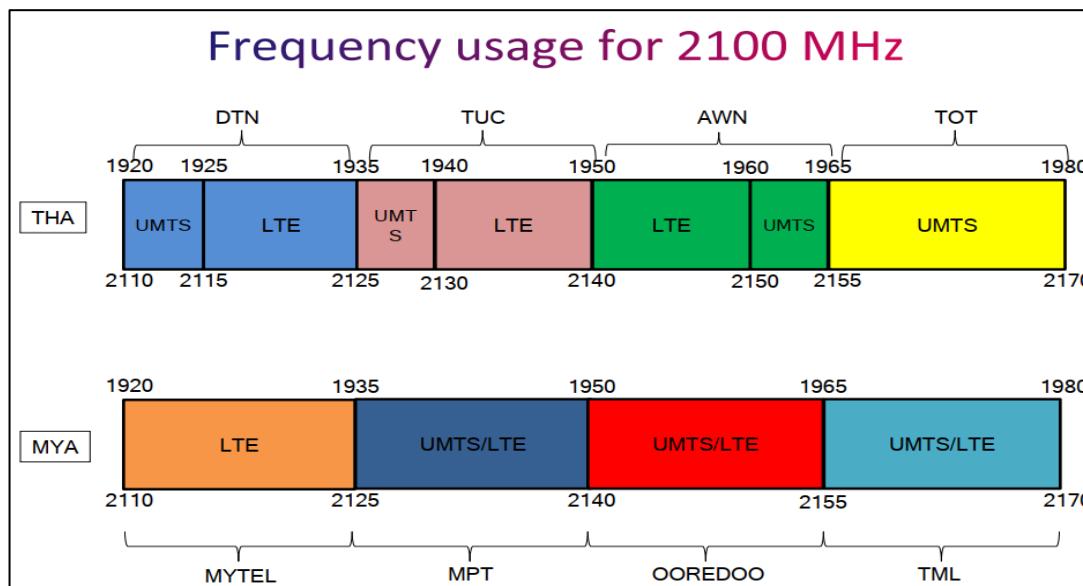
4. Interference Drive Test Results for Tachileik – Maesai Border

- DTN UMTS 2100 testing result.
- According to DTN UMTS 2100 lock driving test result, carrier no 10563 was strong in Myanmar side for about sample 49 that to under -82dBm threshold.



4. Interference Drive Test Results for Tachileik – Maesai Border

- DTN LTE 2100

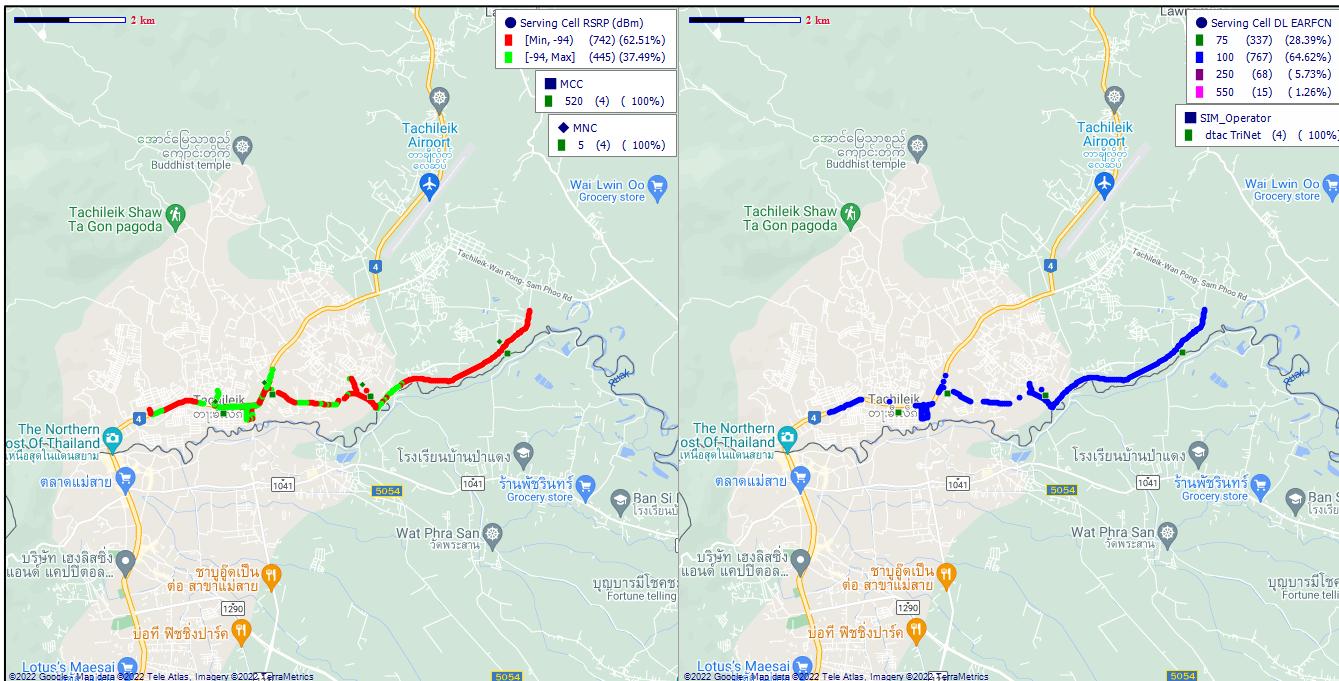


- Drive Test Result (17-Feb-22), DTN Operator LTE 2100 band interference to Mytel LTE 2100.
- According to MM-THA PTD 2nd JTC meeting , we already have agreement 0 km line -94dbm and 4 km - 114dbm.

Operator	MCC	MNC	DL EARFCN	UL_DL Freq	RSRP(JTC agreement)	@0 km RSRP Sample (> -94dbm)
DTN	520	5	100	1930-2120	(-94dbm)	112

4. Interference Drive Test Results for Tachileik – Maesai Border

- DTN LTE 2100 testing result.
- According to DTN LTE 2100 lock driving test result, DL EARFCN 100 was strong in Myanmar side for about sample 112 that to under -94dBm threshold.



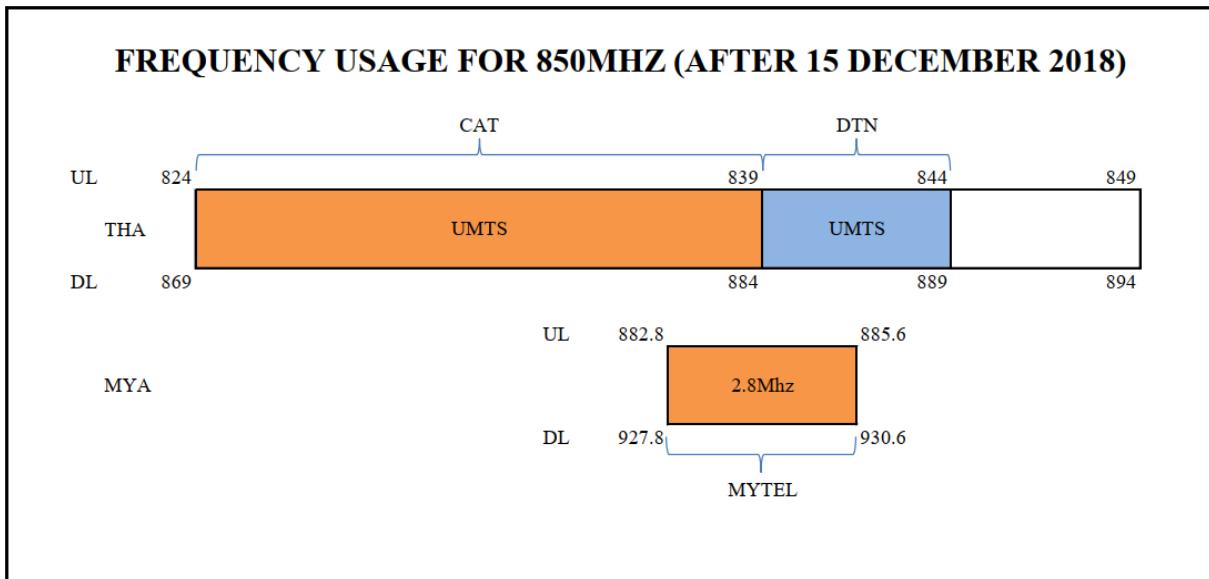
 DTN 4G 2100
Tachileik



DTAC 4G 2100 Tachileik.rar

4. Interference Drive Test Results for Tachileik – Maesai Border

- CAT UMTS 850 MHz

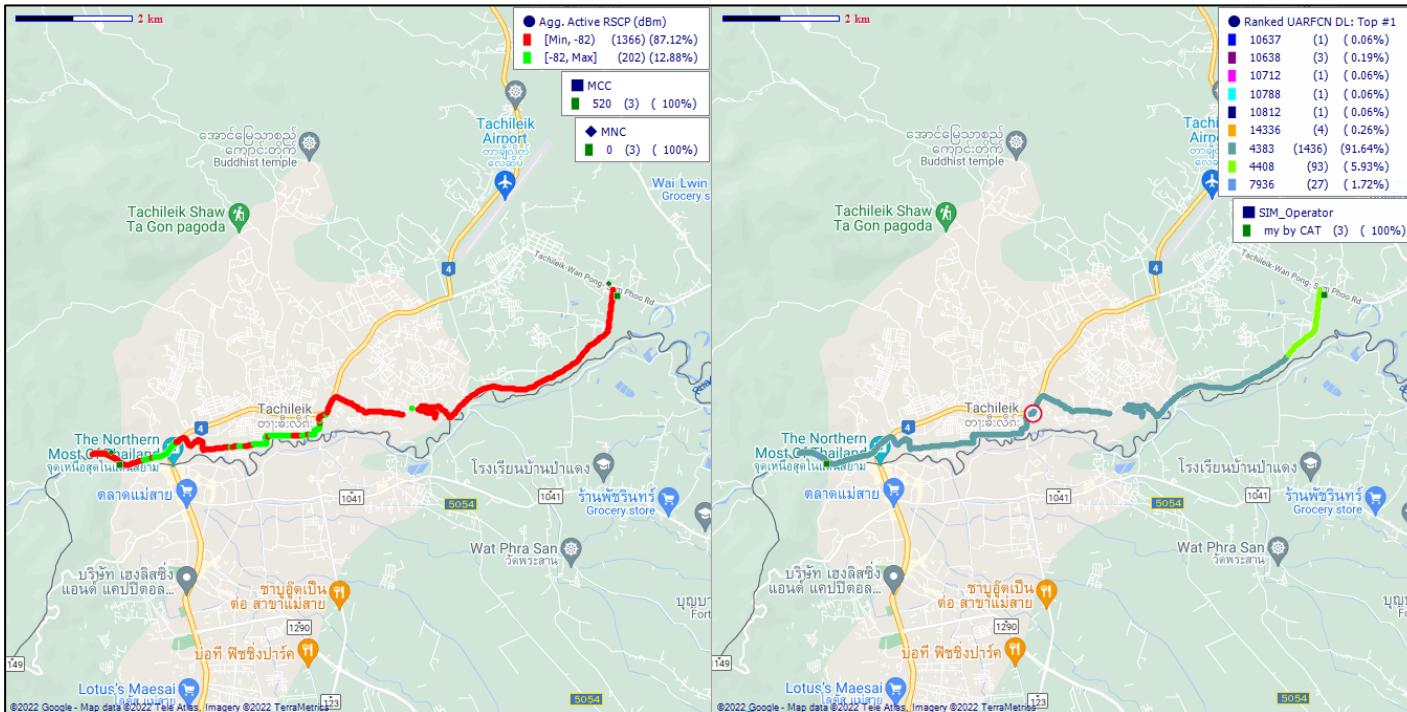


- According to MM-THA PTD 2nd JTC meeting , we already have agreement 0 km line -82dbm and 4 km -102dbm.
- Drive Test Result (7-July-22), CAT Operator UMTS 850 MHz down link band no interference to Mytel LTE 900 uplink at Tachileik_Maesai Border.

Operator	MCC	MNC	UARFCN DL	UARFCN UL	UL_DL	MYTEL UL Bandwidth	MYTEL DL Bandwidth	RSCP (JTC agreement)	@0 km RSCP Sample(>-82dbm)	Remark
CAT	520	0	4383	4158	831.6_876.6	882.8-885.6	927.8-930.6	(-82dbm)	187	No Interference because of non overlap with Mytel frequency
CAT	520	0	4408	4183	836.6_881.6	882.8-885.6	927.8-930.6	(-82dbm)	0	No Interference because of non overlap with Mytel frequency

4. Interference Drive Test Results for Tachileik – Maesai Border

- CAT UMTS 850MHZ testing result.



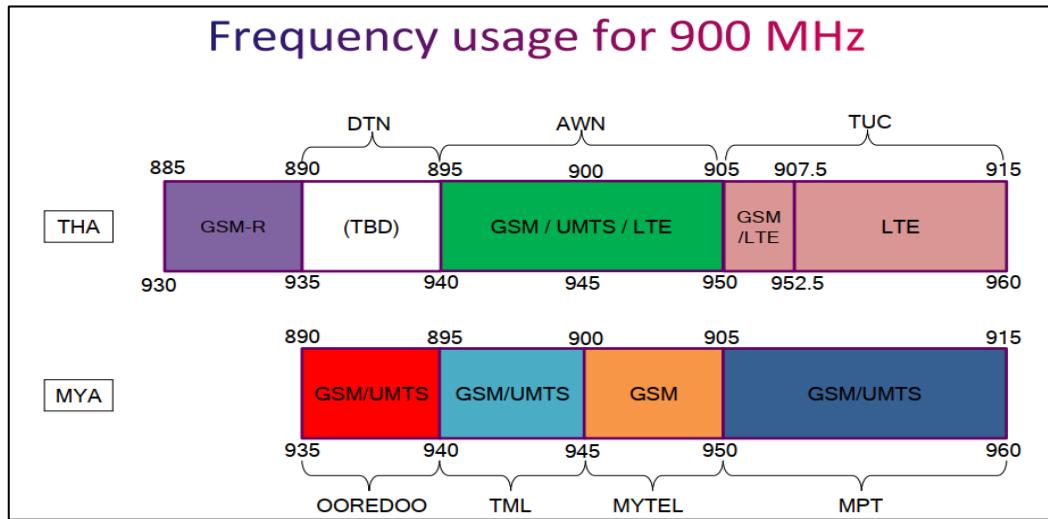
CAT 3G 900
Tachileik



CAT operator for tachileik border.rar

5. Interference Drive Test Results for Myawaddy – Maesot Border

- AIS GSM 900

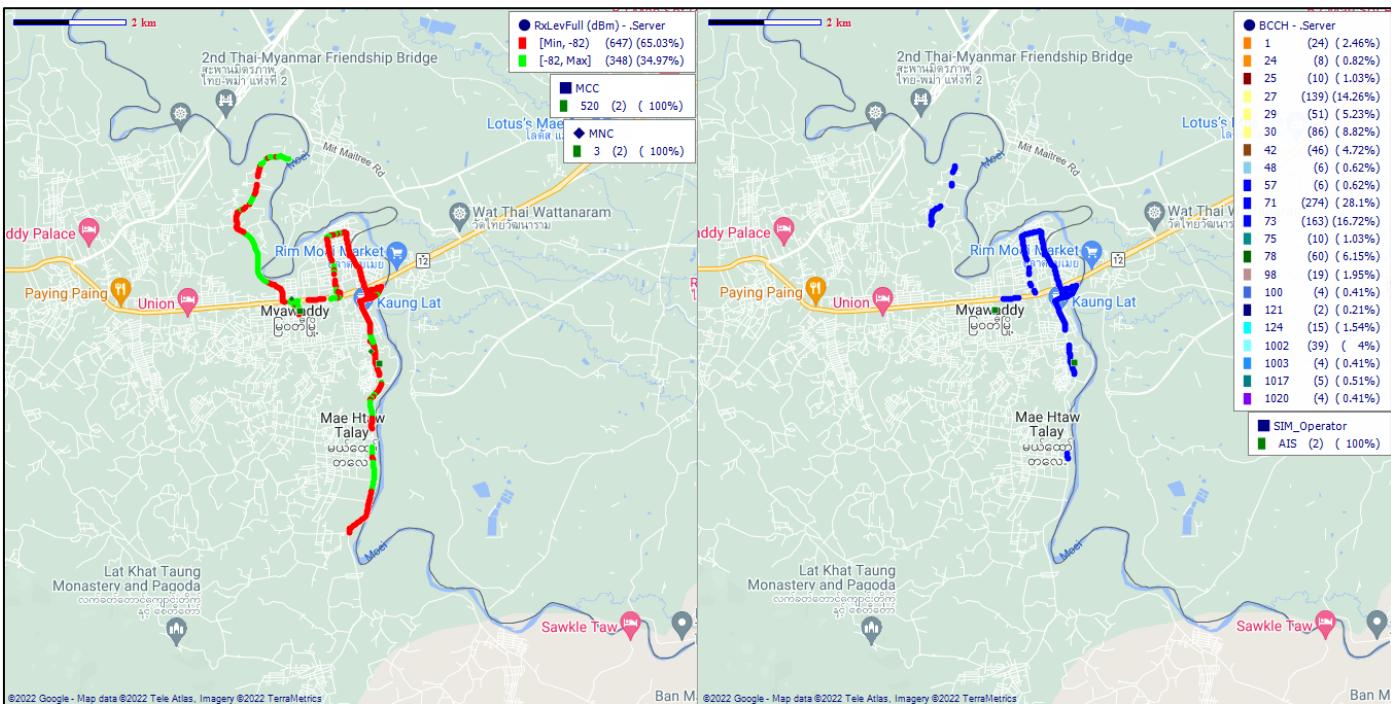


- Drive Test Result (18-July-22), AIS Operator PGSM 900 band interference to Mytel PGSM 900(Channel No- 57,71,73).
- According to MM-THA PTD 2nd JTC meeting , we already have agreement 0 km line -82dBm and 4 km - 102dBm.

Operator	MCC	MNC	Carrier Number	UL_DL	Cell ID	RxLev (JTC agreement)	0 km RxLev Sample(>-82dbm)
AIS	520	3	57	901.4_946.4	43527	(-82dbm)	2
AIS	520	3	71	904.2_949.2	45291	(-82dbm)	5
AIS	520	3	73	904.6_949.6	45371	(-82dbm)	16

5. Interference Drive Test Results for Myawaddy – Maesot Border

- AIS GSM 900 testing result.
- According to AIS GSM 900 lock driving test result, carrier no (57,71,73) was strong in Myanmar side for about 23 samples that to under -82dBm threshold.



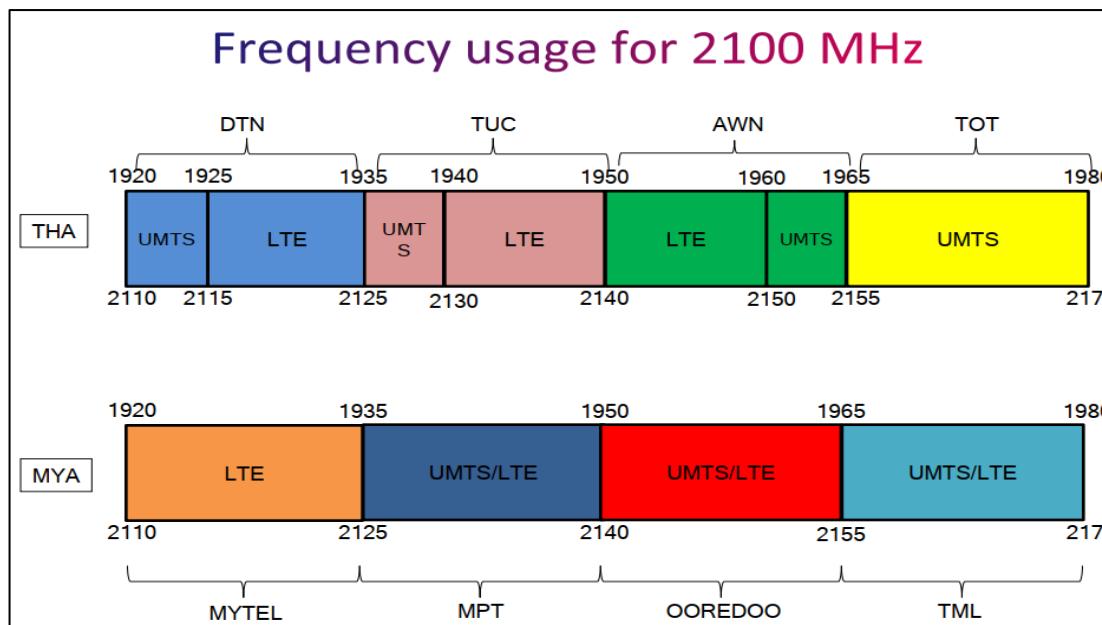
AIS 2G 900 MWD



AIS GSM 900.rar

5. Interference Drive Test Results for Myawaddy – Maesot Border

- DTN UMTS 2100

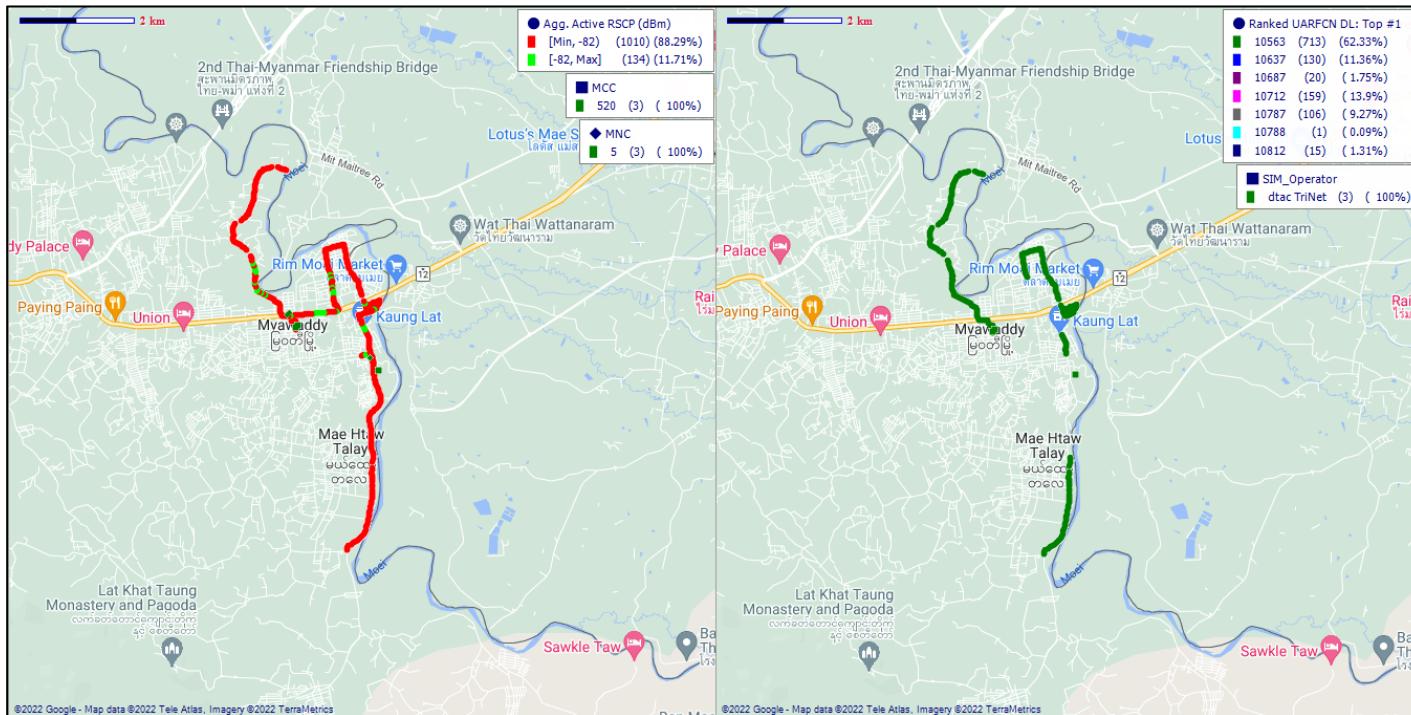


- Drive Test Result (18-July-22), DTN Operator UMTS 2100 band interference to Mytel LTE 2100.
- According to MM-THA PTD 2nd JTC meeting , we already have agreement 0 km line -82dbm and 4 km - 102dbm.

Operator	MCC	MNC	Carrier Number	UL_DL freq	RSCP(JTC agreement)	@0 km RSCP Sample (> -82dbm)
DTN	520	5	10563	1922.6_2112.6	(-82dbm)	48

5. Interference Drive Test Results for Tachileik – Maesai Border

- DTN UMTS 2100 testing result.
- According to DTN UMTS 2100 lock driving test result, carrier no 10563 was strong in Myanmar side for about sample 48 that to under -82dBm threshold.



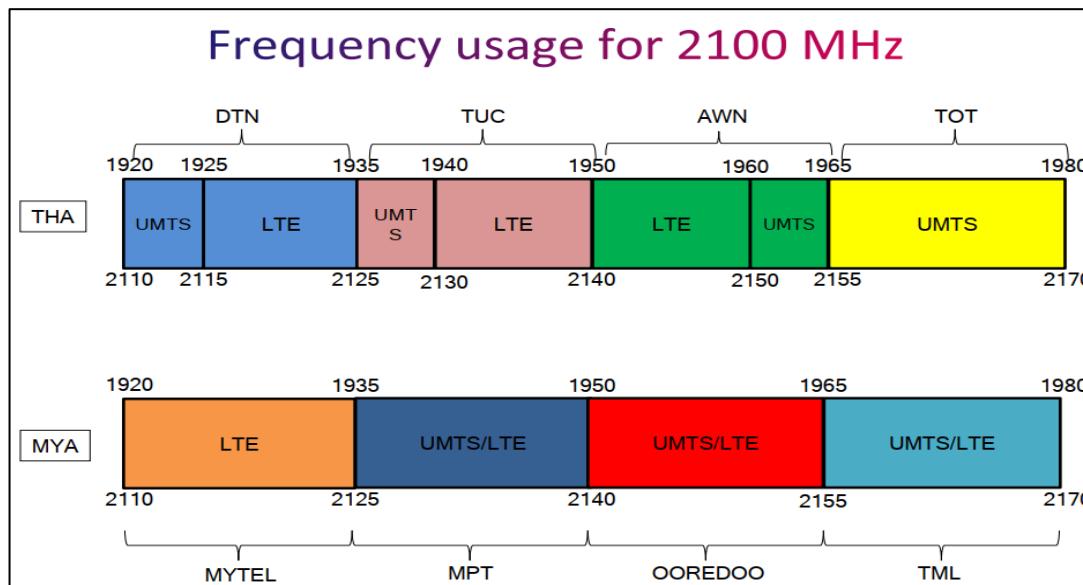
 DTN 3G 2100
MWD



DTN UMTS 2100.rar

5. Interference Drive Test Results for Myawaddy – Maesot Border

- DTN LTE 2100

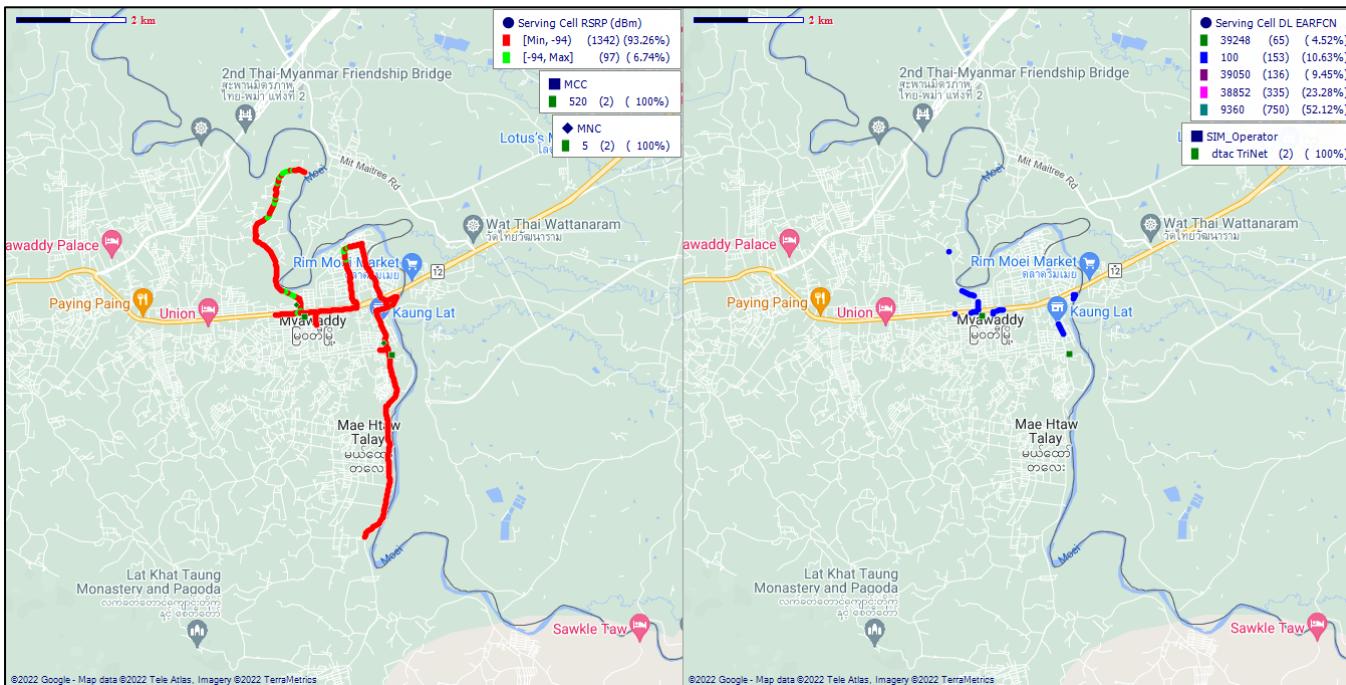


- Drive Test Result (18-July-22), DTN Operator LTE 2100 band interference to Mytel LTE 2100.
- According to MM-THA PTD 2nd JTC meeting , we already have agreement 0 km line -94dbm and 4 km - 114dbm.

Operator	MCC	MNC	DL EARFCN	UL_DL Freq	RSRP(JTC agreement)	@0 km RSRP Sample (> -94dbm)
DTN	520	5	100	1930-2120	(-94dbm)	26

5. Interference Drive Test Results for Myawaddy_Maesot Border

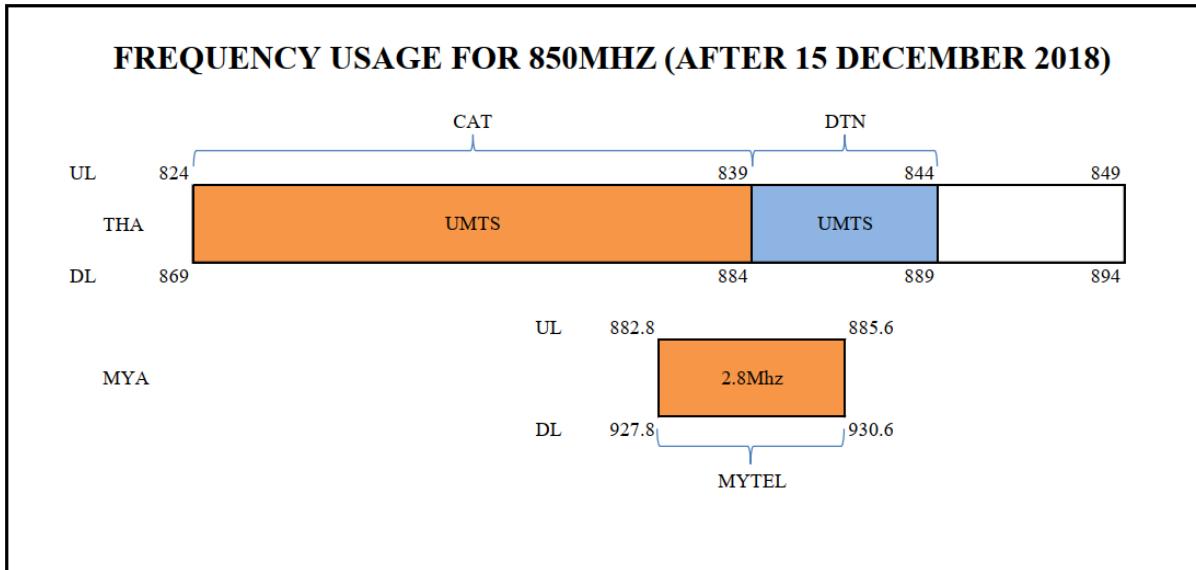
- DTN LTE 2100 testing result.
- According to DTN LTE 2100 lock driving test result, DL EARFCN 100 was strong in Myanmar side for about sample 26 that to under -94dBm threshold.



DTN LTE 2100.rar

5. Interference Drive Test Results for Myawaddy–MaeSot Border

- CAT UMTS 850 MHz

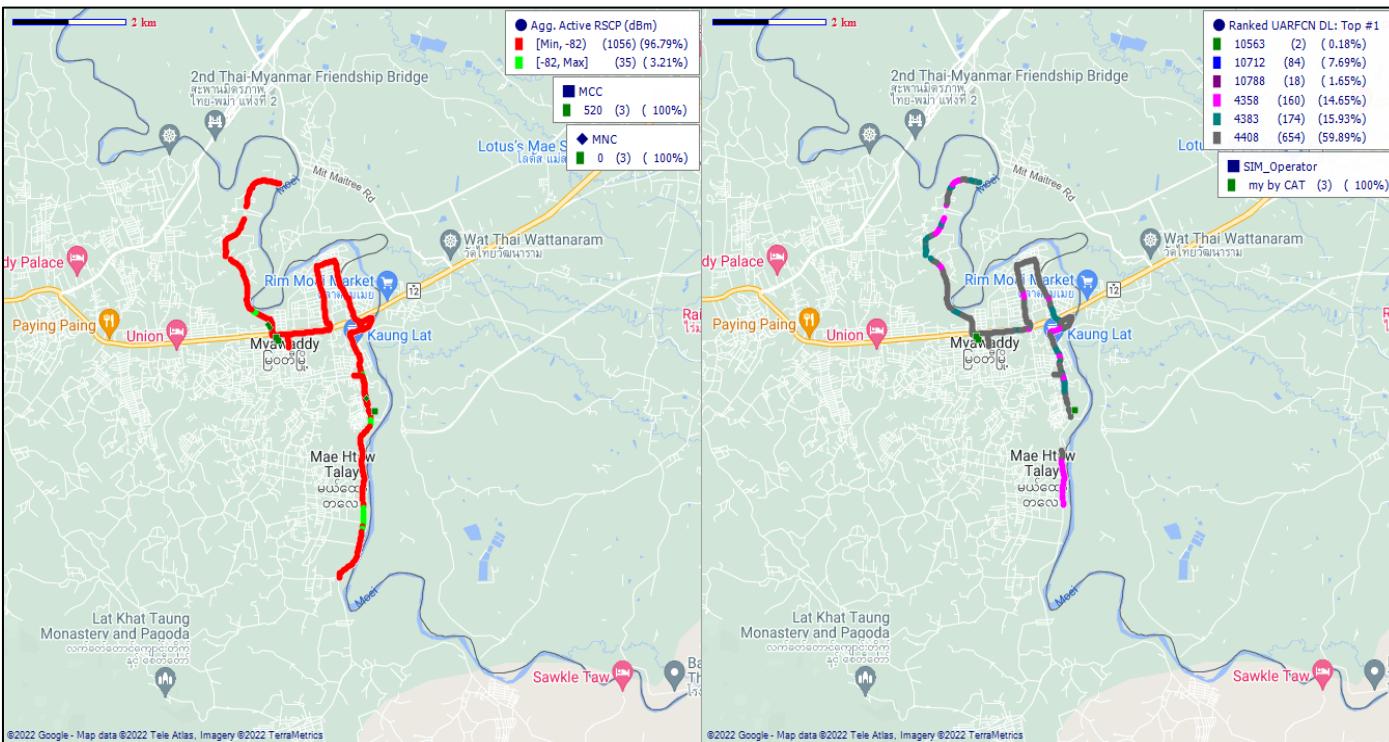


- According to MM-THA PTD 2nd JTC meeting , we already have agreement 0 km line -82dbm and 4 km -102dbm.
- Drive Test Result (18-July-22), CAT Operator UMTS 850 MHz down link band no interference to Mytel LTE 900 uplink at Myawaddy_Maesot Border.

Operator	MCC	MNC	UARFCN DL	UARFCN UL	UL_DL	MYTEL UL Bandwidth	MYTEL DL Bandwidth	RSCP (JTC agreement)	@0 km RSCP Sample(>-82dbm)	Remark
CAT	520	0	4358	4133	826.6_871.6	882.8-885.6	927.8-930.6	(-80dbm)	0	No Interference with each other
CAT	520	0	4383	4158	831.6_876.6	882.8-885.6	927.8-930.6	(-80dbm)	13	No Interference with each other
CAT	520	0	4408	4183	836.6_881.6	882.8-885.6	927.8-930.6	(-80dbm)	2	Just Only 2 Sample interference

5. Interference Drive Test Results for Myawaddy–MaeSot Border

- CAT UMTS 850MHZ testing result.



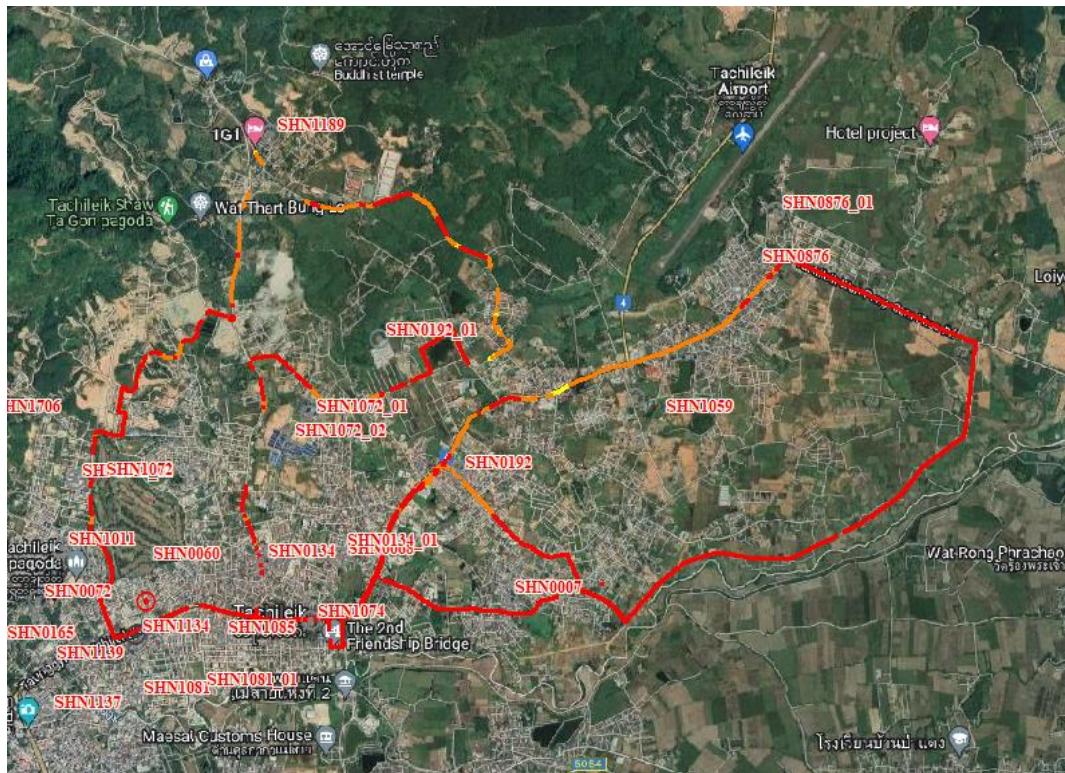
CAT 3G 900 MWD



CAT MWD UMTS.rar

6. Tachileik Frequency scanning report from RRU side

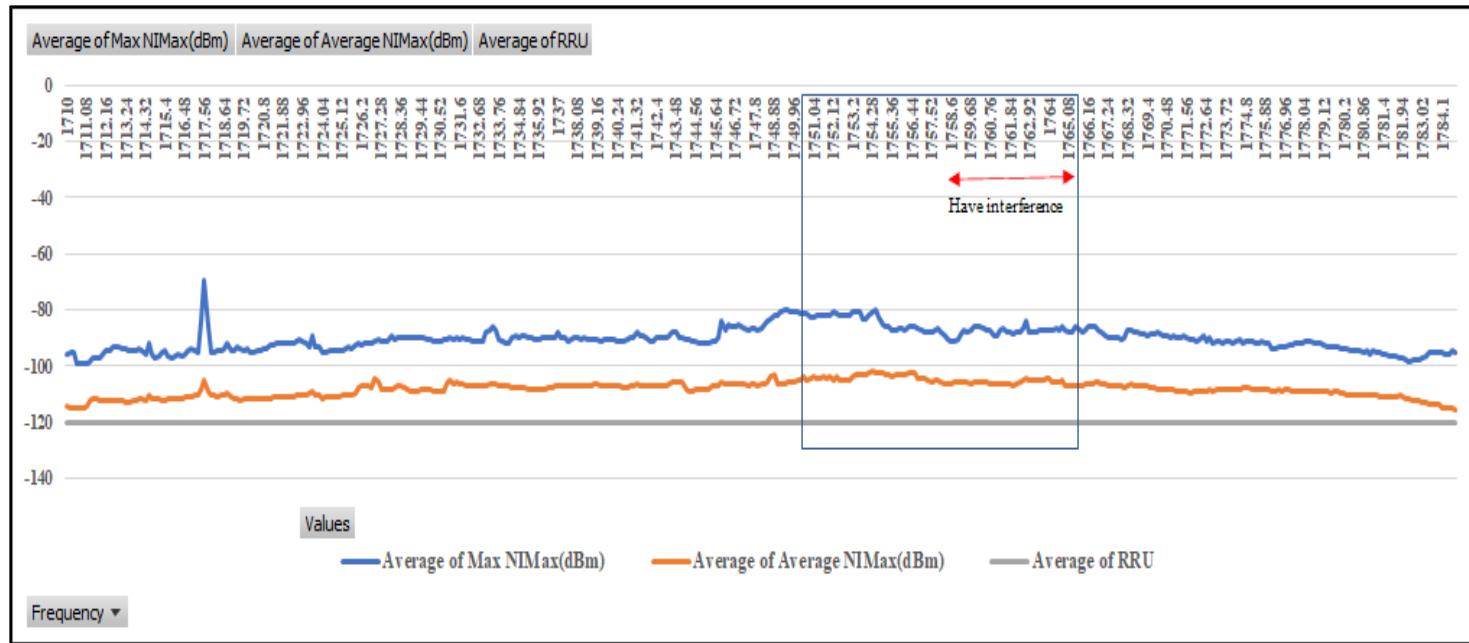
1. Band 900



Average interference level: -82.5dBm. Strongest interference band.

6. Tachileik Frequency scanning report from RRU side

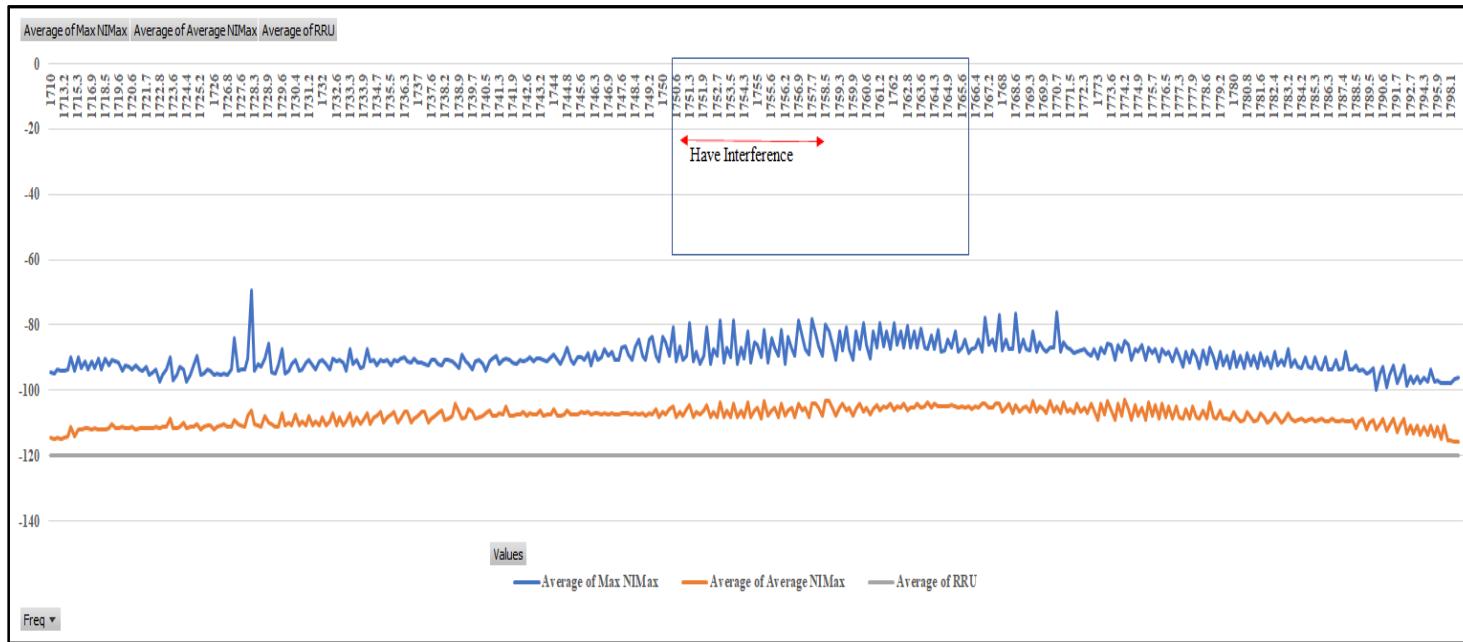
2. Band 1800 Scan Freq 1752.5-1757.5



Average interference level: -105.87 dBm

6. Tachileik Frequency scanning report from RRU side

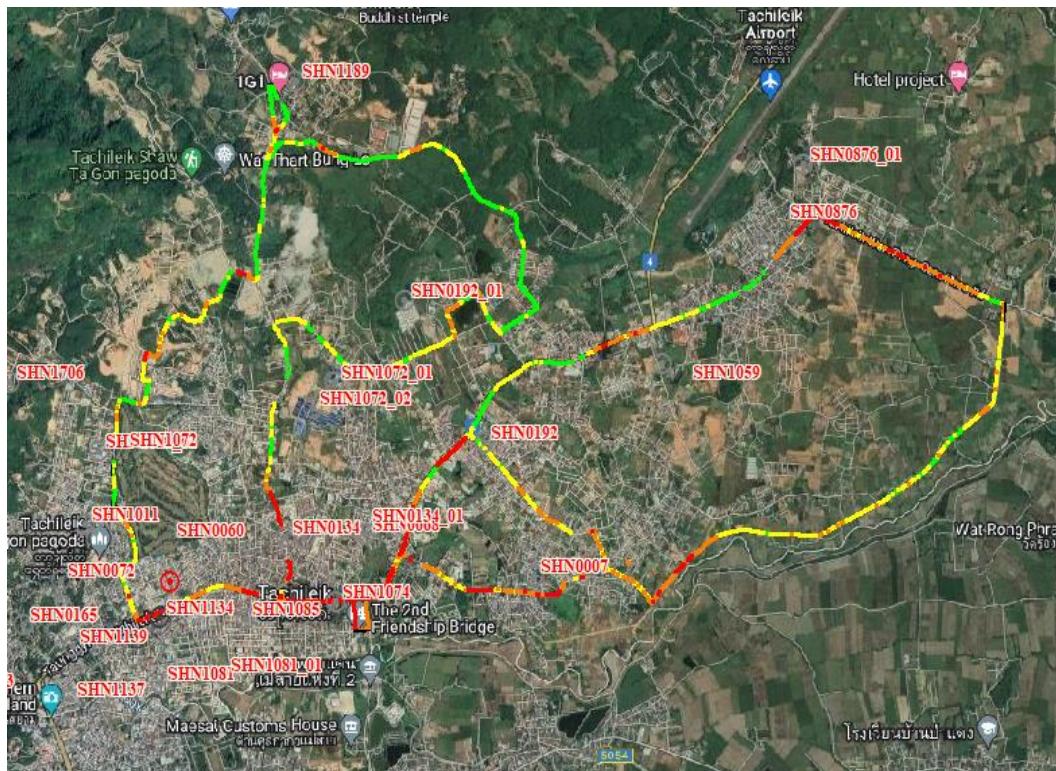
3. Band 1800 Scan Freq 1757.5-1762.5



Average interference level: -106.43 dBm

6. Tachileik Frequency scanning report from RRU side

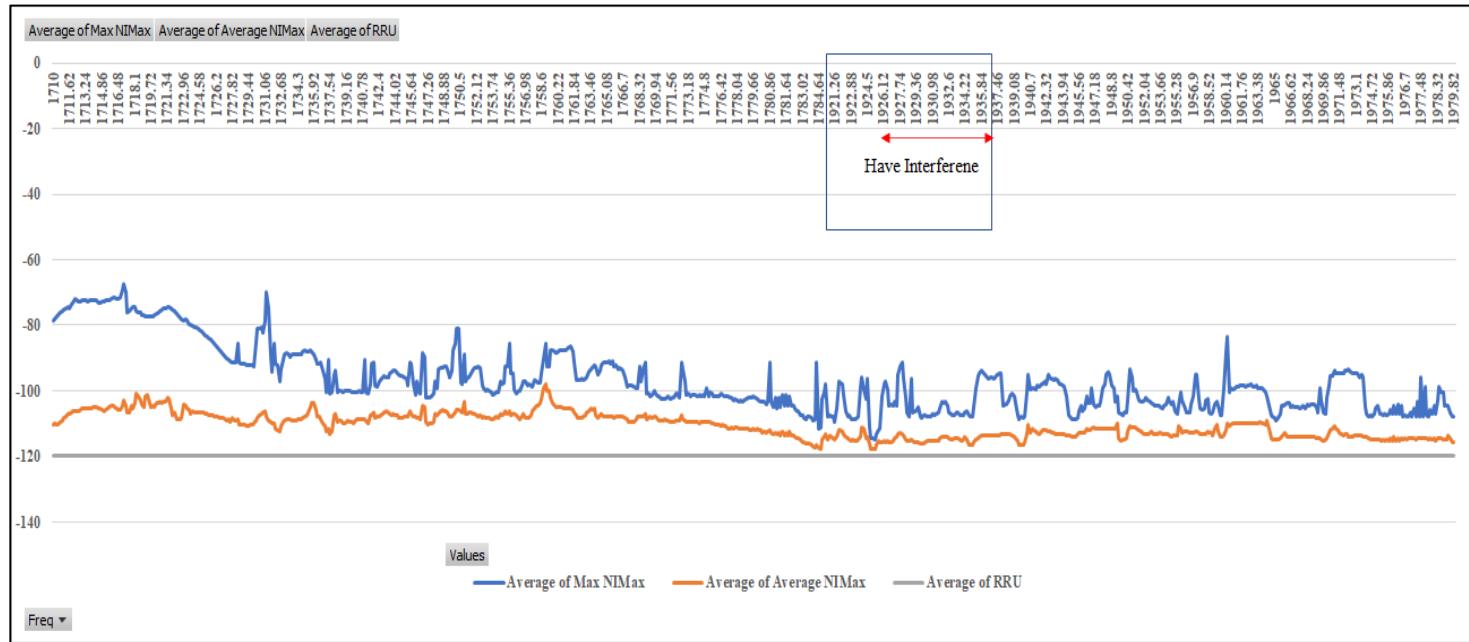
4. Band 2100



Average interference level: -102dBm.

6. Tachileik Frequency scanning report from RRU side

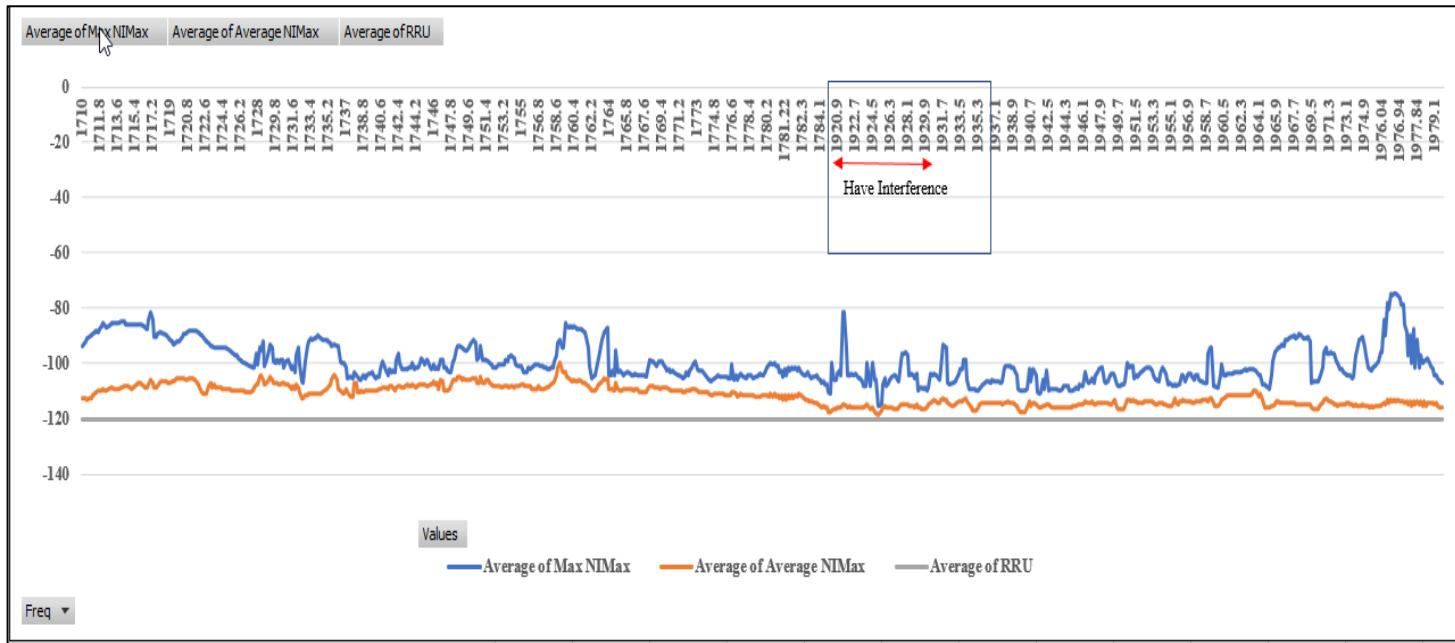
5. Band 2100 Scan Freq from 1920-1925



Average interference level: -114.99 dBm

6. Tachileik Frequency scanning report from RRU side

6. Band 2100 Scan Freq from 1930-1935

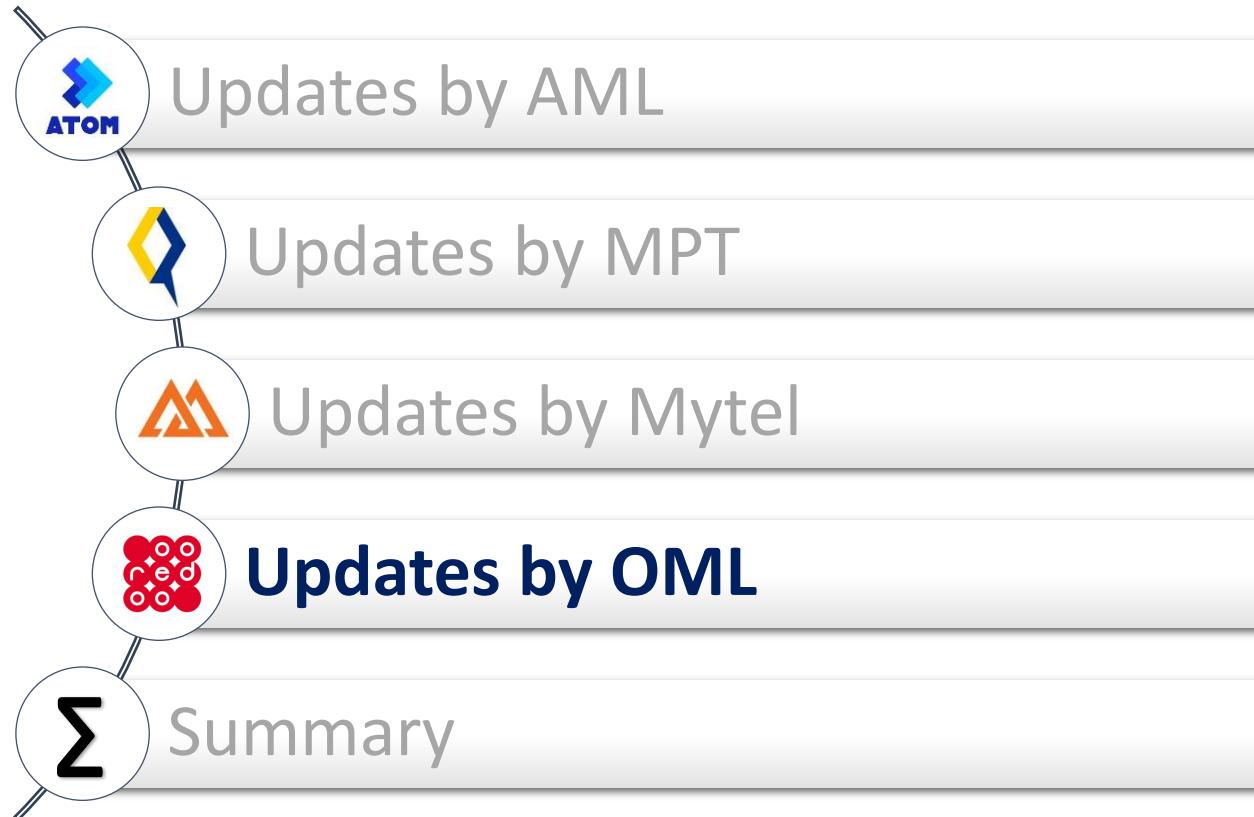


Average interference level: -115.99 dBm

7. Proposal from Mytel

- To avoid interference: request to AIS operator that to reduce power and adjustment azimuth & Tilt for around of **Tachileik – Maesai & Myawaddy – Maesot border** at 900 GSM sites.
- To avoid interference: request to DTAC operator that to reduce power and adjustment azimuth & Tilt for around of **Tachileik – Maesai & Myawaddy – Maesot border** at UMTS 2100 sites.
- To avoid interference: request to DTAC operator that to reduce power and adjustment azimuth & Tilt for around of **Tachileik – Maesai & Myawaddy – Maesot border** at LTE 2100 sites.
- As per above MYTEL – CAT operator interference Driving test result, there is no interference between Mytel & CAT operator at **Tachileik – Maesai and Myawaddy – Mae Sot borders**.
- As per Myanmar - Thailand 2019 update frequency allocation comparison file, Mytel 1800 band have didn't overlap with any Thailand operator. Therefore, request to have 2022 update frequency allocation comparison file.

Contents



Border Interference Status Update (by DT)

Latest Drive test was done on **last week of April 2022**

➤ DTAC for U900

Townships	Status by Latest Drive Test		
	Closed	Open	New Cells
Tachileik	18	-	3
Kawthoung	11	-	2

➤ AIS for U2100

Townships	Status by Latest Drive Test		
	Closed	Open	New Cells
Tachileik	4	7	19
Kawthoung	2	3	4

Border Interference Status Update (by OSS)

➤ Interference Impacted Cells in G900

Border Cities	Critical ICM
Myawaddy	2
Tachileik	4
Hpayarthonesu	1

➤ Interference Impacted Cells in L900

Border Cities	Blocked due to Extreme RSSI	High RSSI
Myawaddy	2	5
Tachileik	-	1

➤ Interference Impacted Cells in G1800

Border Cities	Critical ICM
Myawaddy	3

➤ Interference Impacted Cells in L1800

Border Cities	Blocked due to Extreme RSSI	High RSSI
Myawaddy	-	1
Tachileik	2	1

➤ Interference Impacted Cells in U900

Border Cities	Blocked due to Extreme RTWP	High RTWP
Hpayarthonesu	1	1

➤ Interference Impacted Cells in L2100

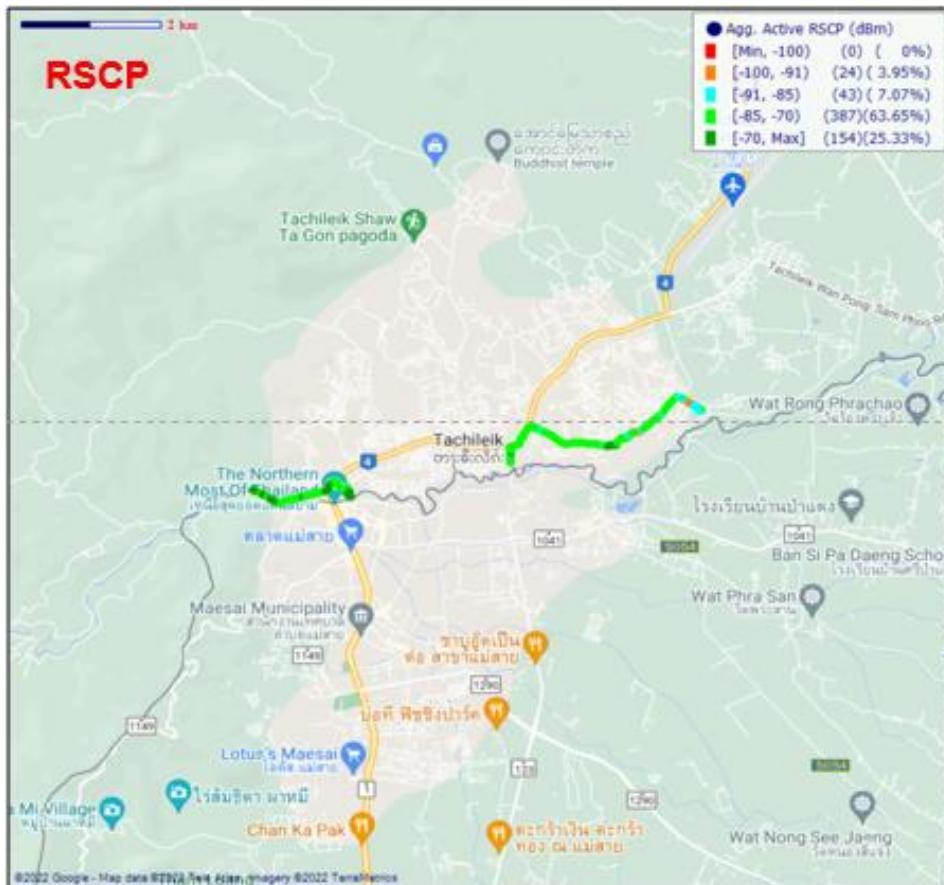
Border Cities	Blocked due to Extreme RSSI	High RSSI
Myawaddy	-	1
Kawthoung	-	1
Tachileik	-	2

➤ Interference Impacted Cells in U2100

Border Cities	Blocked due to Extreme RTWP	High RTWP
Myawaddy	4	10
Tachileik	4	8

Interference Scanning : Tachileik Border

0~4 km Radius Serving and Coverage



AIS coverage at 2100 Band (10762)

0Km Zone				
Cell ID	UARFCN	RSCP Max	RSCP(Ave)	Escalation Date
5040	10762	-60.8	-69.57234	
22481	10762	-77.7	-79.533333	
22991	10762	-65.6	-74.576923	
23206	10762	-60	-72.307692	
23226	10762	-66.9	-69.785715	
24071	10762	-57.3	-79.741096	
24072	10762	-67.9	-82.566379	
24076	10762	-71.5	-78.6875	
24101	10762	-64.5	-79.274258	
24106	10762	-77.1	-77.099998	
24133	10762	-60.8	-67.509524	
24134	10762	-58.8	-69.409756	

4 Km Zone

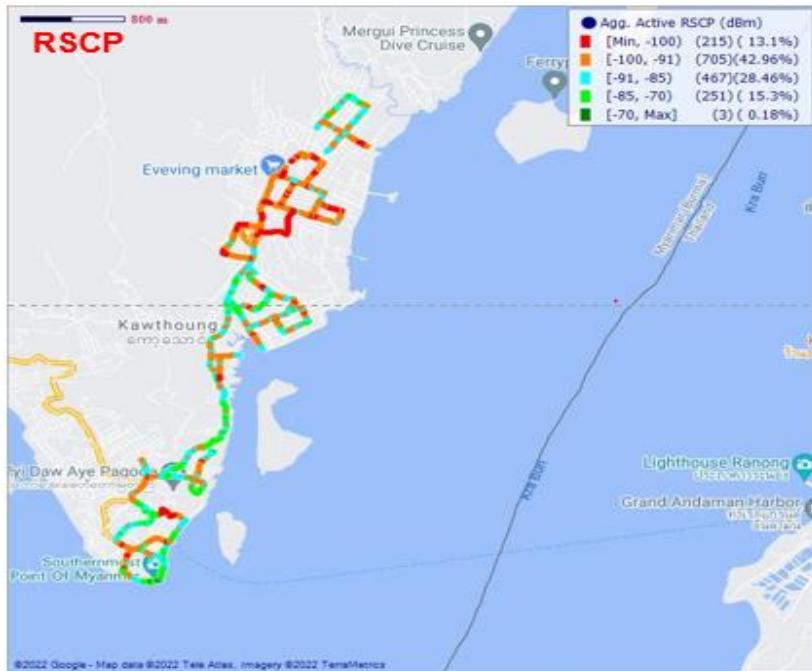
Cell ID	UARFCN	RSCP Max	RSCP(Ave)	Escalation Date
10365	10762	-83.1	-100.31011	
13846	10762	-71.3	-80.595556	
17546	10762	-86.1	-87.559999	
22544	10762	-77.3	-84.738463	
22605	10762	-81.3	-86.500003	
22991	10762	-91.7	-98.858065	
22993	10762	-85.9	-96.358334	
23864	10762	-73	-86.846667	
23925	10762	-76.1	-99.827692	
24071	10762	-75.9	-91.310092	
24076	10762	-72.3	-91.502282	
24101	10762	-78.6	-94.848276	
24191	10762	-86.3	-94.57353	
26892	10762	-53.2	-79.37037	
26893	10762	-53.1	-79.732386	
26953	10762	-80.6	-86.420001	
33733	10762	-70.3	-85.227684	
36641	10762	-90.6	-94.414286	

DTAC coverage at 850 Band (2987)

0Km Zone				
Cell ID	UARFCN	RSCP Max	RSCP(Ave)	Escalation Date
2579	2987	-53.6	-74.6391608	
2580	2987	-67.7	-78.8862071	
10248	2987	-60.3	-69.8910003	

Interference Scanning : Kawthoung Border

0~6 km Radius Serving and Coverage



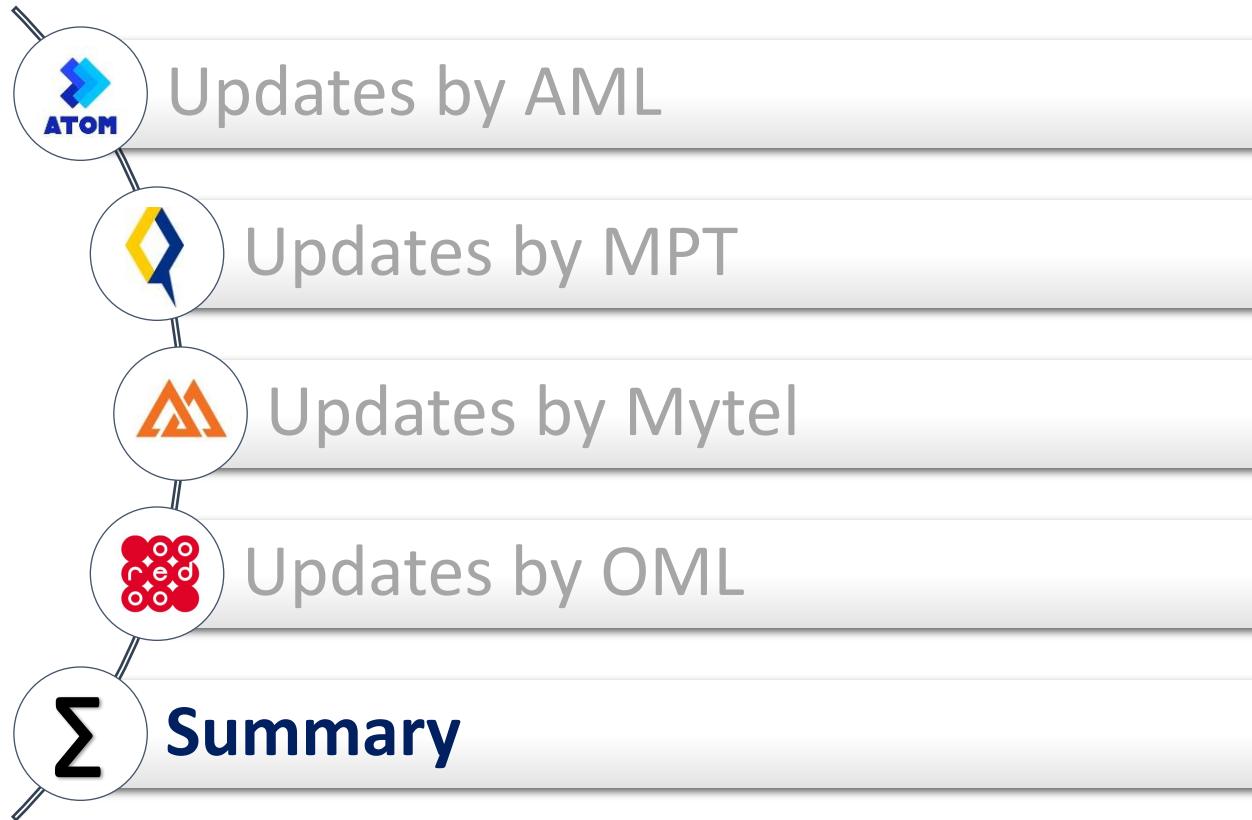
AIS coverage at 2100 Band (10762)

6Km Zone				
Cell ID	UARFCN	RSCP Max	RSCP(Ave)	Escalation Date
29693	10762	-75.9	-87.03	
32334	10762	-72.5	-90.01	
30833	10762	-73.2	-94.51	
27734	10762	-74.6	-86.9	
30126	10762	-79.3	-93.19	
30125	10762	-67.5	-89.24	
31445	10762	-81.1	-91.11	

DTAC coverage at 850 Band (2987)

6Km Zone				
Cell ID	UARFCN	RSCP Max	RSCP(Ave)	Escalation Date
36147	2987	-88.2	-88.2	
36220	2987	-81.8	-94.39	

Contents



Summary of Coordination Status

 ATOM	 MPT	 Mytel	 OML
<ul style="list-style-type: none">• 78 cells from Tachileik (Mae Sai) submitted to AWN, TUC and TOT• TUC already completed optimization and results under verification by AML	<ul style="list-style-type: none">• 121 cells from Tachileik (Mae Sai) and Kawthoung (Ranong) submitted to AWN, TUC and DTN; actions taken for all; under verification by MPT• Received 50 cells from TUC in Tachileik (Mae Sai), Myawaddy (Mae Sot) and Kawthoung (Ranong); action plan in progress	<ul style="list-style-type: none">• Identified new cases in Tachileik (Mae Sai) and Myawaddy (Mae Sot)• Ongoing drive tests in Kawthoung (Ranong) and Hpayarthonesu (Three Pagodoas)• Request to update 1800 MHz allocation in THA	<ul style="list-style-type: none">• 28 new cells from Tachileik (Mae Sai) and Kawthoung (Ranong) submitted to AWN and DTN• 10 cells pending from previous requests