



Spectrum Management System for Developing Countries (SMS4DC)

Training on SMS4DC

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Livingstone, ZAMBIA

Ahmed BORAUD

ahmed.boraud@gmail.com





FREQUENCY ASSIGNMENT





FREQUENCY ASSIGNMENT

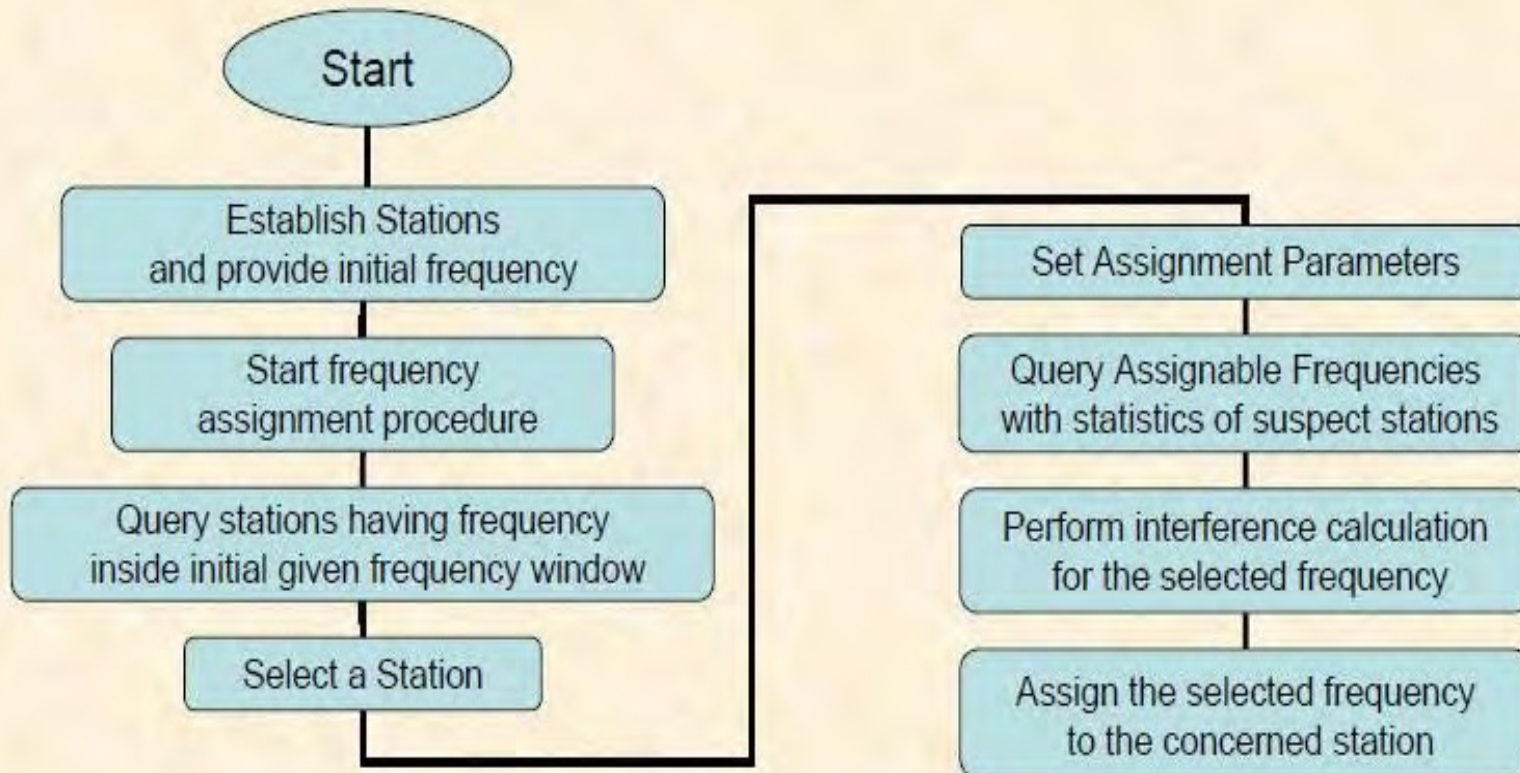
➤ ASSIGNMENT (OF A RADIO FREQUENCY OR RADIO FREQUENCY CHANNEL) IS AUTHORIZATION GIVEN BY AN ADMINISTRATION FOR A RADIO STATION TO USE A RADIO FREQUENCY OR RADIO FREQUENCY CHANNEL UNDER SPECIFIED CONDITIONS

➤ SMS4DC IS POWERED BY AN ADVANCED METHOD OF ASSIGNMENT OF FREQUENCY:

- BASED ON INTERFERENCE CALCULATIONS TO/FROM ANY OTHER STATIONS (IN THESE SERVICES) IN A GIVEN FREQUENCY BAND INSIDE A CIRCULAR SEARCH AREA
- THIS PROCEDURE IS IMPLEMENTED IN THE ITEM “FREQUENCY ALLOCATIONS --> FREQUENCY ASSIGNMENT”
- THE PROCEDURE STARTS BY SELECTING FROM A LIST OF STATIONS THE NATIONAL STATION FOR WHICH A TRANSMITTING FREQUENCY ASSIGNMENT HAS BEEN REQUESTED.
- AFTER COMPREHENSIVE INTERFERENCE ANALYSIS, SMS4DC WILL SUGGEST A SUITABLE FREQUENCIES FOR ASSIGNMENT



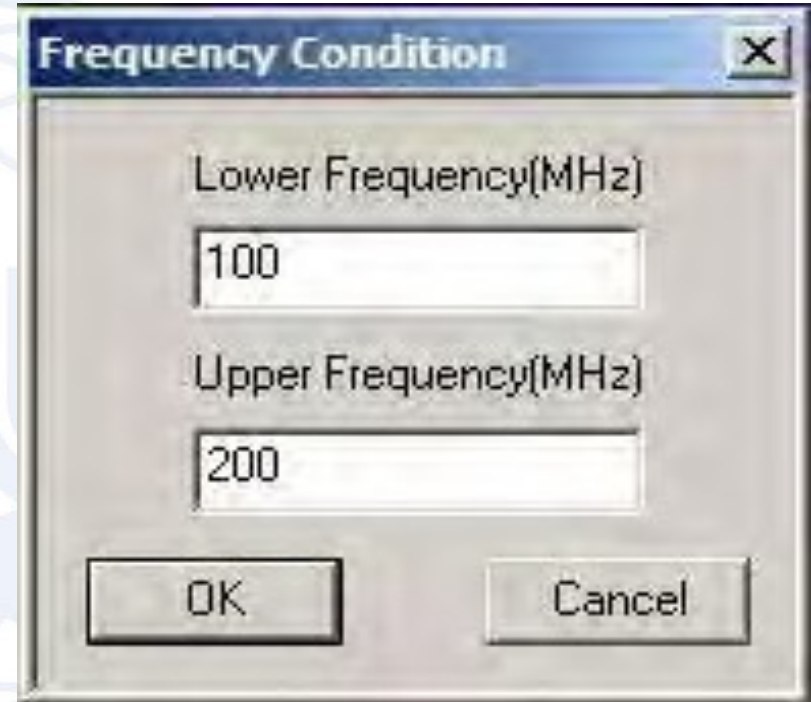
FREQUENCY ASSIGNMENT PROCEDURE



FREQUENCY ASSIGNMENT PROCEDURE (2)

SINCE THE NUMBER OF NATIONAL STATIONS STORED IN THE LOCAL DATABASE MAY BECOME THOUSANDS, SMS4DC MAKES IT EASIER TO FIND THE CONCERNED STATION BY APPLYING A FREQUENCY CONDITION (FILTER).

THIS FILTER SHORTENS THE LIST TO SHOW ONLY THOSE STATIONS WITHIN A LIMITED FREQUENCY RANGE SPECIFIED TO INCLUDE THE CONCERNED STATION.



Frequency Condition

Lower Frequency(MHz)
100

Upper Frequency(MHz)
200

OK Cancel

FREQUENCY ASSIGNMENT PROCEDURE (3)

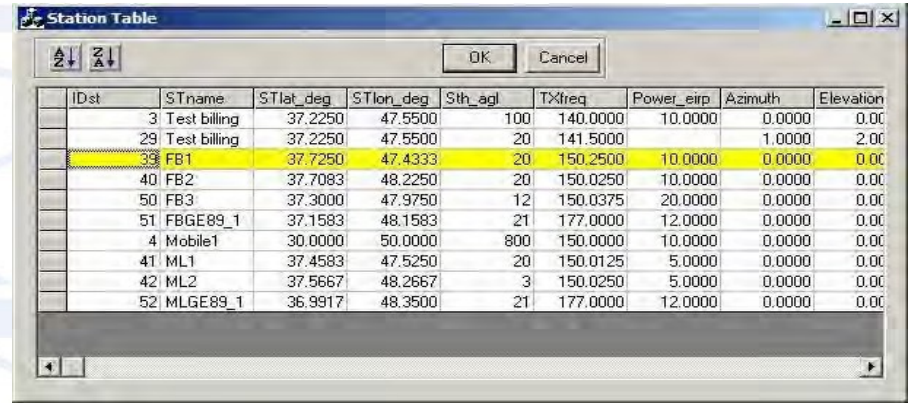
- THEREFORE, WHENEVER THIS ITEM IS SELECTED, A DIALOGUE BOX IS OPENED FOR THE USER TO DEFINE THE FREQUENCY RANGE IN WHICH AN ASSIGNMENT IS REQUIRED AND THEREBY LIMIT THE NUMBER OF STATIONS LISTED IN THE STATION SELECTION SPREADSHEET.
- SELECTION OF A STATION CAN BE MADE BY A LEFT CLICK ON THE RECORD-SELECT COLUMN OF THE CONCERNED ROW



IDst	STname	STlat_deg	STlon_deg	Sth_agl	TXfreq	Power_eirp	Azimuth	Elevation
3	Test billing	37.2250	47.5500	100	140.0000	10.0000	0.0000	0.00
29	Test billing	37.2250	47.5500	20	141.5000		1.0000	2.00
39	FB1	37.7250	47.4333	20	150.2500	10.0000	0.0000	0.00
40	FB2	37.7083	48.2250	20	150.0250	10.0000	0.0000	0.00
50	FB3	37.3000	47.9750	12	150.0375	20.0000	0.0000	0.00
51	FBGE89_1	37.1583	48.1583	21	177.0000	12.0000	0.0000	0.00
4	Mobile1	30.0000	50.0000	800	150.0000	10.0000	0.0000	0.00
41	ML1	37.4583	47.5250	20	150.0125	5.0000	0.0000	0.00
42	ML2	37.5667	48.2667	3	150.0250	5.0000	0.0000	0.00
52	MLGE89_1	36.9917	48.3500	21	177.0000	12.0000	0.0000	0.00

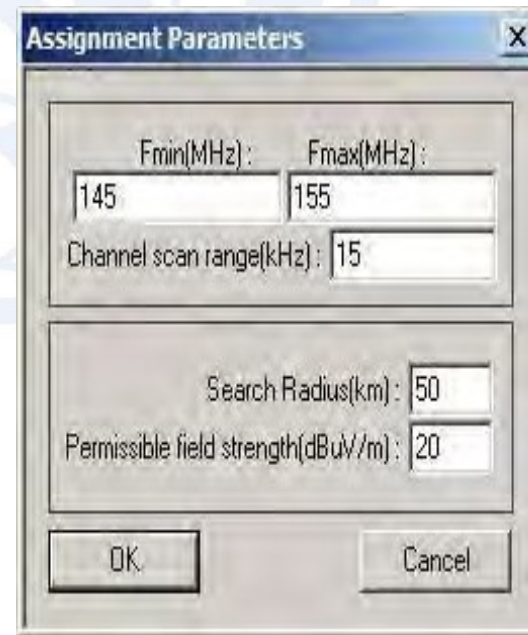
FREQUENCY ASSIGNMENT PROCEDURE (4)

- THE ASSIGNMENT ALGORITHM SEARCHES FOR SUITABLE CHANNELS TO ASSIGN WITHIN ANY CHANNEL PLAN ARRANGEMENT IN THE RANGE BETWEEN FMIN AND FMAX.



IDst	SName	Slat_deg	Slon_deg	Sth_agl	TXfreq	Power_eirp	Azimuth	Elevation
3	Test billing	37.2250	47.5500	100	140.0000	10.0000	0.0000	0.00
29	Test billing	37.2250	47.5500	20	141.5000	20.0000	1.0000	2.00
39	FB1	37.7250	47.4333	20	150.2500	10.0000	0.0000	0.00
40	FB2	37.7083	48.2250	20	150.0250	10.0000	0.0000	0.00
50	FB3	37.3000	47.9750	12	150.0375	20.0000	0.0000	0.00
51	FBGE89_1	37.1583	48.1583	21	177.0000	12.0000	0.0000	0.00
4	Mobile1	30.0000	50.0000	800	150.0000	10.0000	0.0000	0.00
41	ML1	37.4583	47.5250	20	150.0125	5.0000	0.0000	0.00
42	ML2	37.5667	48.2667	3	150.0250	5.0000	0.0000	0.00
52	MLGE89_1	36.9917	48.3500	21	177.0000	12.0000	0.0000	0.00

- THEN, ALL EXISTING STATIONS WITHIN THE “CHANNEL SCAN RANGE” OF EACH CHANNEL IN THAT PLAN AND WITHIN THE SEARCH RADIUS SPECIFIED ARE EXAMINED FOR POTENTIAL INTERFERENCE



Assignment Parameters

Fmin(MHz): 145 Fmax(MHz): 155

Channel scan range(kHz): 15

Search Radius(km): 50

Permissible field strength(dBuW/m): 20

OK Cancel

FREQUENCY ASSIGNMENT PROCEDURE (5)

- ONCE THE ASSIGNMENT PARAMETERS HAVE BEEN SET, ALL FREQUENCIES AVAILABLE WITHIN THOSE PARAMETERS ARE EXAMINED FOR POTENTIAL INTERFERENCE AND THE RESULTS ARE DISPLAYED IN THE RESULT DIALOGUE BOX.

Assignment Results

List of Frequencies :

No	F _n	F' _n	Bandwidth	Num of Stations	PlanID	Srv Priority
19	148.2375	150.2375	0.0125	0	1490.0000125	Primary
20	148.25	150.25	0.0125	0	1490.0000125	Primary
21	150.0125	148.0125	0.0125	3	1490.0000125	Primary
22	150.025	148.025	0.0125	4	1490.0000125	Primary
23	150.0375	148.0375	0.0125	3	1490.0000125	Primary
24	150.05	148.05	0.0125	1	1490.0000125	Primary
25	150.0625	148.0625	0.0125	0	1490.0000125	Primary
26	150.075	148.075	0.0125	0	1490.0000125	Primary
27	150.0875	148.0875	0.0125	0	1490.0000125	Primary
28	150.1	148.1	0.0125	0	1490.0000125	Primary

List of Stations :

No	ID	Name(2)	Service	Frequency	Coordinates	Dist_km	E1_2	E2_1	dE1_2

Selected Station:

Service : Land Mobile
 Station Name(1) : FB1
 Location : 047E2600 37N4330
 Emission : 8K50F3E--
 Frequency(MHz) : 150.25
 Selected Channel(MHz) : **150.0625**

No of Channels :
 Total : 40 With Interference : 4

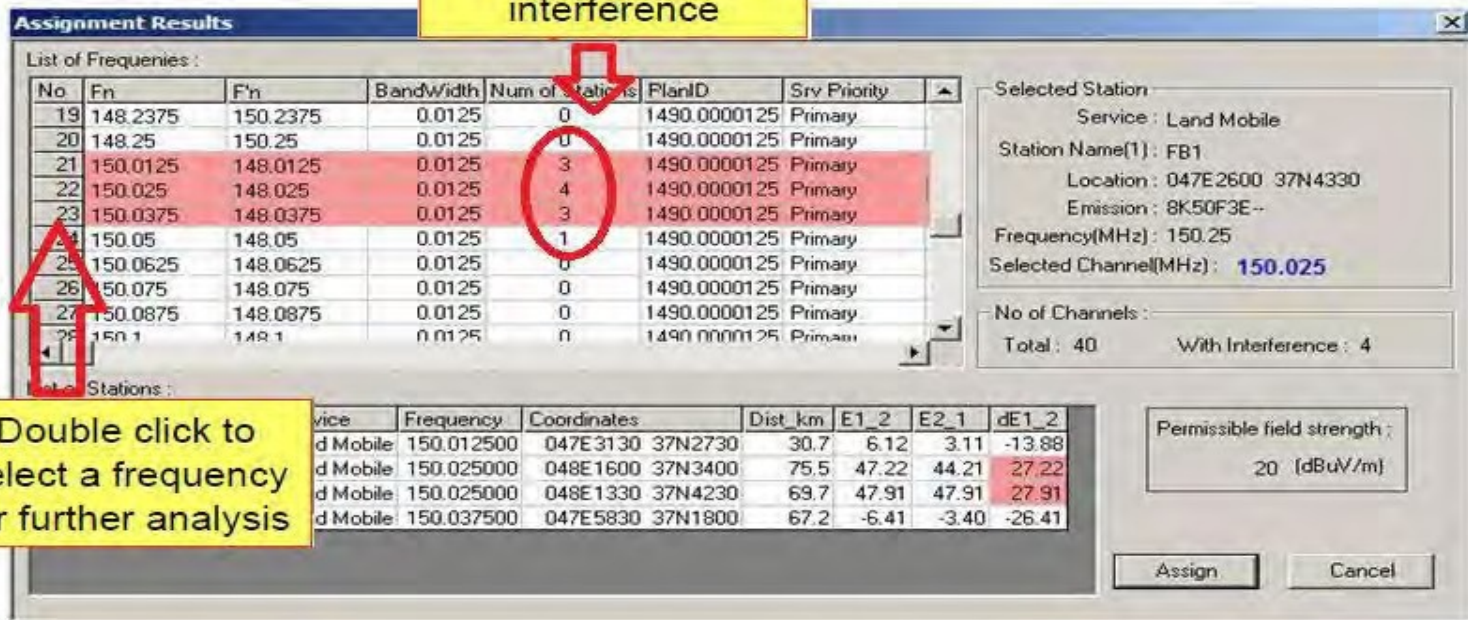
Permissible field strength :
 20 (dBuV/m)

Assign Cancel

FREQUENCY ASSIGNMENT PROCEDURE (6)

- CHOOSING ANY ROW WITH YELLOW HIGHLIGHT FROM THE LIST OF FREQUENCIES BY A MOUSE DOUBLE LEFT-CLICK, INITIATES DETAILED INTERFERENCE CALCULATIONS,

Frequencies may cause or receive interference



Assignment Results

List of Frequencies:

No	F _n	F' _n	Bandwidth	Num of Stations	PlanID	Srv Priority
19	148.2375	150.2375	0.0125	0	1490.0000125	Primary
20	148.25	150.25	0.0125	0	1490.0000125	Primary
21	150.0125	148.0125	0.0125	3	1490.0000125	Primary
22	150.025	148.025	0.0125	4	1490.0000125	Primary
23	150.0375	148.0375	0.0125	3	1490.0000125	Primary
24	150.05	148.05	0.0125	1	1490.0000125	Primary
25	150.0625	148.0625	0.0125	0	1490.0000125	Primary
26	150.075	148.075	0.0125	0	1490.0000125	Primary
27	150.0875	148.0875	0.0125	0	1490.0000125	Primary
28	150.1	148.1	0.0125	0	1490.0000125	Primary

Selected Station:
Service: Land Mobile
Station Name(1): FB1
Location: 047E2600 37N4330
Emission: 8K50F3E--
Frequency(MHz): 150.25
Selected Channel(MHz): 150.025

No of Channels:
Total: 40 With Interference: 4

Permissible field strength:
20 (dBuV/m)

Assign Cancel

Stations:

Service	Frequency	Coordinates	Dist_km	E1_2	E2_1	dE1_2
d Mobile	150.012500	047E3130 37N2730	30.7	6.12	3.11	-13.88
d Mobile	150.025000	048E1600 37N3400	75.5	47.22	44.21	27.22
d Mobile	150.025000	048E1330 37N4230	69.7	47.91	47.91	27.91
d Mobile	150.037500	047E5830 37N1800	67.2	-6.41	-3.40	-26.41



FREQUENCY ASSIGNMENT PROCEDURE (7)

- AFTER CONSIDERING THE RESULTS, A SUITABLE FREQUENCY FOR ASSIGNMENT MAY BE SELECTED BY A DOUBLE RIGHT MOUSE CLICK ON THE “NO.” (CHANNEL NUMBER) COLUMN AND THE ROW FOR THE FREQUENCY TO BE SELECTED.
- ONCE THE “ASSIGN” PUSH BUTTON IS USED, THE SELECTED TRANSMITTING FREQUENCY IN THE LIST AND ITS CORRESPONDING RECEIVING FREQUENCY WILL BE ASSIGNED TO THE CONCERNED STATION



