



**SURUHANJAYA KOMUNIKASI DAN MULTIMEDIA MALAYSIA
MALAYSIAN COMMUNICATIONS AND MULTIMEDIA COMMISSION**

GUIDELINE FOR USAGE OF FEMTOCELL ACCESS POINT DEVICE AND SMART REPEATER

13 June 2012

(SKMM/G/01/12)

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1.0 INTENT

This guideline explains the registration procedure and conditions for the deployment and use for low power femtocell access point ('FAP') devices and smart repeaters ('SR') utilizing the 2G, 3G, WiMAX and IMT spectrums by the mobile network operators (MNOs) for the purpose of improving services to customers.

2.0 BACKGROUND

2.1 Malaysian Communications and Multimedia Commission (the 'Commission') has considered the benefits of low power transmitters such as FAP devices and SR to improve indoor coverage and for fast deployment in remote areas. Details are as per Appendix 1 to this guideline.

2.2 MNOs will be able to deploy indoor low power transmitters to resolve customer poor indoor coverage and improve the cellular quality of service ('QoS') in cost effective way. The Commission also took note the fast deployment of such devices will improve indoor QoS and resolve coverage problems.

2.3 Pursuant to the above, the Commission has approved the deployment and the use of low power transmitters including FAP devices and SR for the purpose of improving services, subject but not limited to the following conditions:

2.3.1 MNOs shall register the FAP devices and SR to be deployed with the Commission;

2.3.2 MNOs shall pay a one-off RM60.00 registration fee for each FAP devices and SR to be deployed;

2.3.3 The transmit power of the FAP devices and SR are limited to a maximum transmit power of 25 dBm or 316mW E.I.R.P. per carrier; and

2.3.4 The FAP devices and SR to be deployed shall not be afforded protection from any interference.

2.4 This deployment of low power transmitters including FAP devices and SR shall not be considered as part of the detailed business plan previously submitted by the MNOs and accepted by the Commission.

3.0 ELIGIBILITY

Persons who are eligible to apply to register the FAP devices and SR shall hold Network Facilities Provider Individual (NFP (I)) Licenses who provide cellular mobile communication transmitters and links, and have rights on use of any of the following spectrum allocation or assignment:

- (a) Allocation of 2G spectrum bands by way of Apparatus Assignment (AA);
- (b) Allocation of WiMAX spectrum bands by way of AA;
- (c) Allocation of 3G spectrum bands by way of Spectrum Assignment (SA); or
- (d) Allocation of future IMT spectrum bands by way of SA or AA.

4.0 REGISTRATION PROCESS

4.1 MNOs shall submit a list of the FAP devices and SR to be deployed in such format as per Appendix 2 to this guideline.

4.2 The registration process for the FAP devices and SR to be deployed is shown in Figure 1, with the following explanations:

4.2.1 Application to register FAP devices and SR to be deployed

All applications are to be submitted to:

*Licensing and Assignment Division (LAD)
Malaysian Communications and Multimedia Commission
Off Persiaran Multimedia
63000 Cyberjaya, Selangor Darul Ehsan*

All applications to register the FAP devices and SR to be deployed shall be accompanied with a cover letter and relevant supporting documents.

All applications shall be accompanied with the registration fee. Payment of the registration fee can be made to the Commission via cheque, money order or postal order and shall be made payable to "*Suruhanjaya Komunikasi dan Multimedia Malaysia*".

4.2.2 Application to be made in Block and Amount of Fee to be Paid

The application for the registration of FAP devices and SR to be deployed shall be made in block. For the avoidance

of doubt, each application shall consist of the provision of a minimum of one hundred (100) FAP devices and SR to be deployed. MNOs shall pay a one-off RM60.00 registration fee for each FAP devices and SR to be deployed.

4.2.3 Commission to Maintain a Register

The Commission shall maintain a register (the 'Register') for the purpose of the deployment of FAP devices and SR in improving the services to customers. The Register shall include particulars and numbers of FAP devices and SR which has been actually deployed and to be deployed in the future. The Commission may publish the Register and the information to be made available in the Register may be arranged generally so as not to jeopardise the MNOs or other persons which may be affected in the disclosure of such information.

4.2.4 MNOs to update the Commission on Deployed FAP Devices and SR

MNOs shall submit to the Commission the particulars and numbers of the deployed FAP devices and SR on monthly basis. The Commission shall update the Register based on the monthly submission made by MNOs.

4.2.5 Full Utilization of Registrations

In the event the registration has been fully utilized, The Commission shall inform and request the MNOs to apply for additional block of registrations.

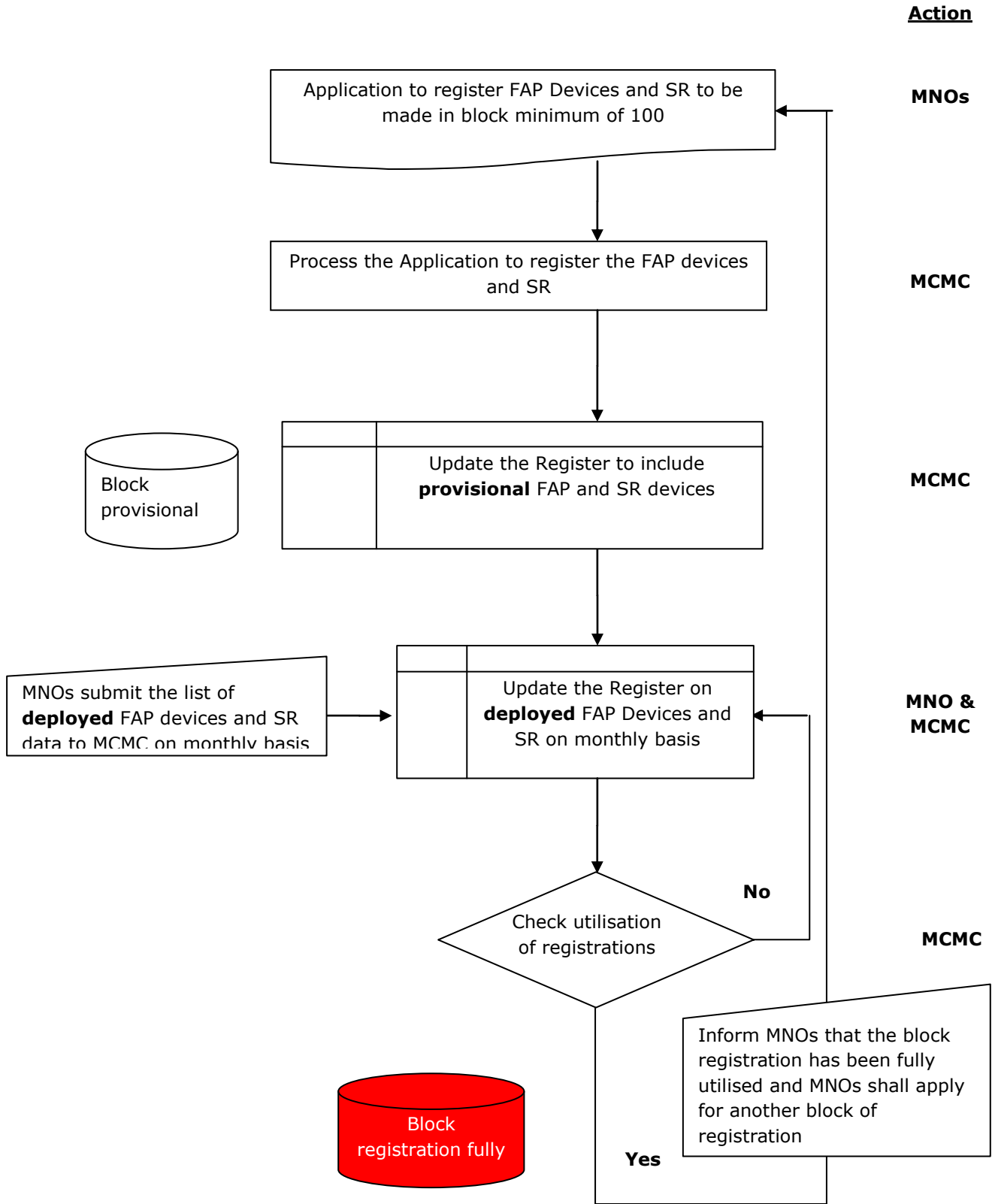


Figure 1: registration process for the FAP devices and SR to be deployed

4.4 The general requirements for the deployment and use of FAP devices and SR are as follows:

4.4.1 Operating Frequencies

The FAP devices and SR shall operate in the frequency bands which MNOs have right to use vide either spectrum assignment or apparatus assignment which are issued in accordance with the Communications and Multimedia Act 1998 and Communications and Multimedia (Spectrum) Regulations 2000;

4.4.2 Certification of Devices

The certification of FAP devices and SR shall be undertaken by SIRIM QAS International Sdn Bhd as the certifying agency registered under the Communications and Multimedia (Technical Standards) Regulations 2000 for all communications equipment;

4.4.3 Protection from Interference

The FAP devices and SR will not be afforded protection from any interference;

4.4.4 Maximum Transmit Power

The transmit power for the FAP devices and SR shall be limited to the maximum of 25 dBm or 316mW E.I.R.P. per carrier;

4.4.5 Devices Redeployments

No charges will be imposed in the redeployment of the same low power transmitter to other locations and/ or the replacement of the same with another due to it being faulty;

4.4.6 Cancellation of Registration

There will be no refund for cancellation of registration.

APPENDIX 1

LOW POWER FEMTOCELL AND SMART REPEATERS IN GENERAL

- A.1 A low power femtocell access point (FAP) device is a base station of the cellular network which operates at low power which may be established by customers of the cellular network but which is or will be used only by and under the control of the MNO, following the establishment of a telecommunications link between the femtocell and the cellular network;
- A.2 The device shall operate using unique MNO spectrum assignment (SA) and apparatus assignment (AA) frequency bands. The femtocell access point is a 'plug and play' device with automatic configuration, zero touch setup, supplied and distributed by MNOs. Currently, the femtocell technology supports 2G, 3G, 4G, and WiMAX standards.
- A.3 The femtocell access point device requires a standard household power supply and a wired internet broadband connection. The femtocell access point device automatically connects to the mobile network operator femtocell gateway through the wired internet broadband connection, to enable secure internet connection to the MNO cellular network. Even though the femtocell is a home base station located in the customer premise, the MNO core network is in total control of the femtocell operation to enable mobile voice and data connectivity.

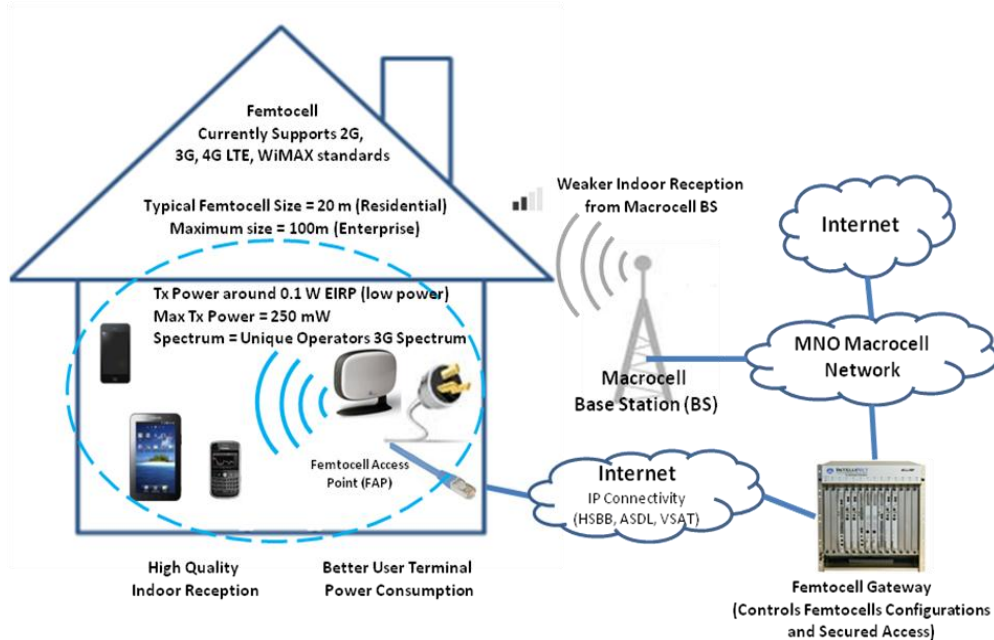


Figure 2: Femtocell setup

- A.4 In order to enable the femtocell access point to communicate to the cellular network, the MNO shall provide the femtocell core network system. The MNO's network will accommodate all voice and data traffic request from the femtocell access point. Hence, the subscriber internet connection only provides a backhaul connection between the femtocell access point and the femtocell gateway for the femtocell traffic.
- A.5 It also possible to deploy femtocell technology in remote areas using a VSAT backhaul to provide mobile phone coverage as it is more cost effective and faster to be deployed by the mobile network operators.
- A.6 The main objective of indoor femtocell deployment is to solve the customer problems of poor indoor signals or coverage served by a 'macrocell' base station in that area. Due to the sharing of spectrum between the outdoor macrocell and indoor

femtocell, the low power femtocell utilizes proven interference mitigation techniques to enable reliable communication.

A.7 A low power smart repeater is a repeater of the cellular network which operates with a low power, which may be established by customers of the cellular network where:

- a) The repeater operates only on the MNO's frequencies;
- b) Must not cause undue interference to other spectrum users; and
- c) The repeater only transmits on the MNO's base station receive frequencies when actively carrying a call (voice, video or data) signalling from serviced handsets.

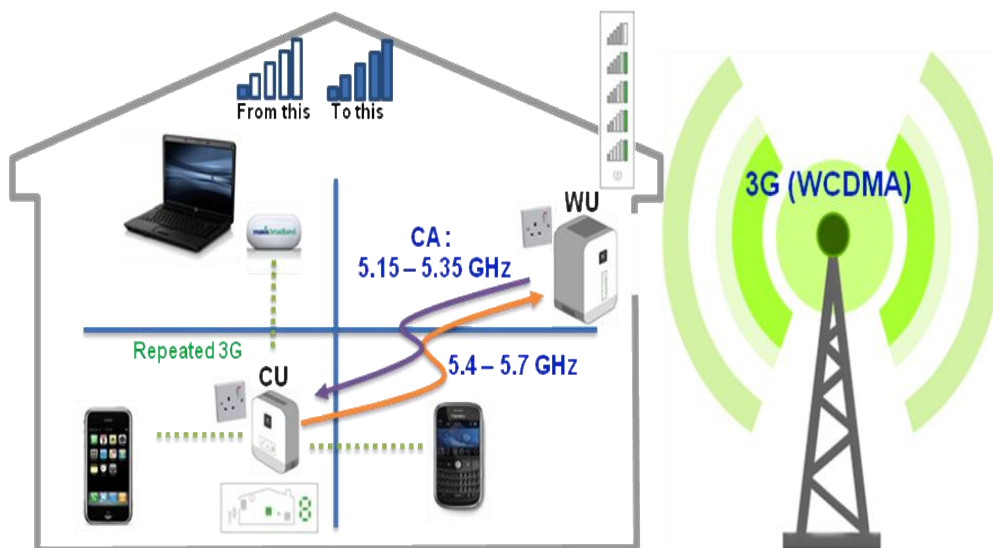


Figure 3: Smart Repeater setup

A.8 Low power smart repeaters can be deployed by the MNOs to improve indoor coverage. An example of such device is the 'Cel-Fi smart repeater' that retransmit the 3G spectrum indoors with low power to boost up the receive signal of the user device as shown above.

APPENDIX 2

SAMPLE FOR DEPLOYED FAP AND SR REGISTER

ABC BERHAD
 CLIENT ID : 22222
 Date submitted : 30 Jun 2012
 Reference No : ABC22222_S010_0106

No	State	Town	District	Site Address	Latitude	Longitude	Equipment					
							Type	Serial No	Man.	Model	Pwr (mW)	App. No
1	P	Georgetown	Taman Delima	Tingkat 6, Sansui Building, Jln Putra, 51000	6.21	100.3566	F	345198894	ALU	9361 HC	20	RAFX/04A/1003/S
2	K	Alor Setar	Kota Setar	Tingkat 6, Menara Sentosa, Jln Tunku Ibrahim	6.1567	100.675	F	345198895	HUAWEI	X600 HC	20	RAFX/04A/1003/S
3	K	Jitra	Kubang Pasu	Lot 2655, Teluk Keluang	6.2367	100.699	F	345198896	ALU	9363 HC	20	RAFX/04A/1003/S
4	P	Bayan Baru	Batu Maung	7th Floor, Kondo TURF	4.981	101.106	F	345198897	ALU	9364 HC	20	RAFX/04A/1003/S
5	A	Parit Buntar	Kerian	1/2 Lot 7956,	5.1345	100.901	F	345198898	ALU	9365 HC	20	RAFX/04A/1003/S

Antenna															
Man.	Model	Height (m)	Gain. (db)	Emission	Bhaul	Struc. Type	Cov. Type	Cov. (m)	Spect. Band	Tx Freq. (MHz)	Rx Freq. (MHz)	Bw (KHz)	Reg Fee (RM)	USP area	Comm. Date
Katherin	742212	0	0	X9W	A	N	I	10	3G	2152.5	1962.5	5000	60	N	1-Jun-12
Katherin	742212	1	0	X9W	F	P	O	15	3G	2152.5	1962.5	5000	60	N	5-Jun-12
Katherin	742212	10	0	X9W	V	P	O	100	3G	2152.5	1962.5	5000	60	Y	6-Jun-12
Katherin	742212	2	0	X9W	A	W	I	10	3G	2152.5	1962.5	5000	60	N	7-Jun-12
Katherin	742212	0	0	X9W	F	N	I	10	3G	2152.5	1962.5	5000	60	N	8-Jun-12
TOTAL FEE													300		

Prepared by :

.....
 Name
 Date :
 Tel No:

Verified by :

.....
 Name
 Date :
 Tel No:

Company Chop:

No	Parameter
1	Station number
2	State (Refer to the code given in the next table)
3	Town
4	District
5	Site Address
6	Latitude (Degree in decimal points)*
7	Longitude (Degree in decimal points)*
8	Equipment Type (Refer to the code given in the next table)
9	Serial Number
10	Equipment Manufacturer
11	Equipment Model No
12	Equipment Transmit Power (miliWatts)
13	Equipment Type Approval No
14	Antenna Manufacture
15	Antenna Model
16	Antenna Height – Above Ground Level (m)*
17	Antenna Gain (dB)
18	Emission
19	Backhaul Type (Refer to the code given in the next table)
20	Structure Type (Refer to the code given in the next table)
21	Coverage Type (Refer to the code given in the next table)
22	Coverage (km)
23	Spectrum Band (Refer to the code given in the next table)
24	Transmit Frequency (MHz)
25	Receive Frequency (MHz)
26	Bandwidth (kHz)
27	Registration fee (RM60.00)
28	USP Area (Refer to the code given in the next table)
29	Commissioning Date (DD/MM/YYYY)

Note: * Not mandatory for individual home users

Register parameter

No	Parameter	Code
2	State	A =Perak B =Selangor C =Pahang D =Kelantan J =Johor K =Kedah (including Langkawi) L =Labuan M =Melaka (Malacca) N =Negeri Sembilan P =Pulau Pinang (Penang) R =Perlis S =Sabah T =Terengganu W =Kuala Lumpur (including Putrajaya) Q =Sarawak
8	Equipment Type	F =Femto R =Repeater
19	Backhaul Type	F =Fiber A =ADSL V =VSAT
20	Structure Type	N =None W =Wall-mounted T =Tower P =Pole R =Rooftop
21	Coverage Type	I =Indoor O =Outdoor
23	Spectrum Band	2G =2G mobile technologies 3G =3G mobile technologies 4G =4G mobile technologies W =WiMAX technologies
28	USP Area	Y =Yes N =No

Code for selected parameters