PHSMoU News

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PHS MoU Group

Bimonthly of the
PHS MoU Group

First PHS Latin America Summit in Miami

The First PHS Latin America Summit, PHS symposium organized by IBC Asia Limited (who also organized the PHS World Congress) and supported by PHS MoU Group, was held on March 11 and 12 in Miami, Florida, USA.

Addressing the opportunities in the vast market of Latin America...

- *Can PHS work for the Latin American Market?*
- *How far is PHS toward becoming an international cordless standard?*
- *Is PHS on its way to becoming an obsolete technology?*
- *What is happening with PHS in Japan?*

The 2-day Summit was chaired by Mr. Martin Cooper, CEO and Chairman of ArrayComm Inc. and Ing. Graciela Piedras, who also spoke, and represented CITEL, Comision Interamericana de Telecommunicaciones. The Latin America operators attending the summit showed great interest in PHS technology for wireless local loop applications.

The opening address was given by Mr. Cooper, who addressed the issue that is on everyone's minds these days. He gave an impressive update on the reality of PHS, both currently deployed, and trailblazing new markets such as Latin America.

The Latin American speakers updated the audience on the wireless opportunities in various markets such as Brazil, Mexico, Chile, Urguay, Colombia and others. Spectrum allocation was another important issue discussed especially in view of the current privatization of the telecoms sector there.

Distorted bad news about PHS operations in Japan has been circulating. Mr. Chika, General Manager of DDI Pocket, presented the facts about PHS public operations in Japan, and cleared up any doubts

Delegates at the First PHS Latin America Summit

or misunderstandings participants' may have had about PHS; The accumulated number of subscribers has shown a marginal decline in recent months, caused mainly by the PHS operators' marketing policy of cutting off bad subscribers.

Subscriber "quality" is improving. Total communications time has increased despite fewer subscribers. The high-speed 32 kbit/s data transmission services, which are one of PHS's advantages, started

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in April 1997 and have been gradually increasing usage. Nearly 10% of total communications is data transmission. There is no doubt that PHS public service operations in Japan are improving.

The other presentations touched on the issues of economic viability and value added services to be offered in PHS. The conclusion was that PHS is definitely a good technology, well worth considering for wireless local loop, for fast deployment of telephony services given the low tele-density rates in Latin America.

The audience actively participated in the discussions and especially the Latin operators present, who gave very good feedback on the situations in their individual markets.

Service Info

Strong PHS Public Service in Japan

Have you heard "PHS public service in Japan is in trouble; PHS is dead." This is dead Wrong! PHS public services in Japan are improving and increasing. PHS is thriving and in excellent health. The facts prove it.

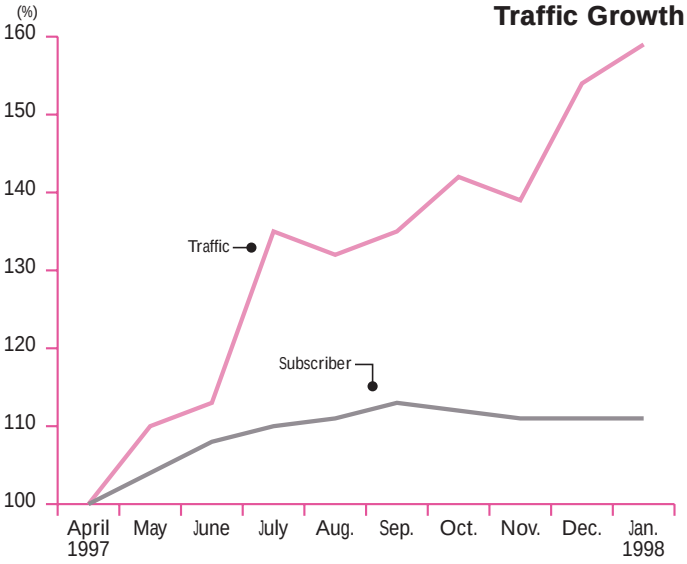


Figure 1

Critics of PHS say, "There's a problem, subscriber growth has flattened out."

It is true that the accumulated number of PHS subscribers has slightly decreased in the past few months. This is partly due to some subscribers changing to cellular services for broader service area or more mobility. However, the major factor for the decline is that the PHS operators have been cutting off "bad" subscribers, those who intentionally do not pay their bills. These bad subscribers were signed-up initially, as a result of the intense competition between the PHS operators.

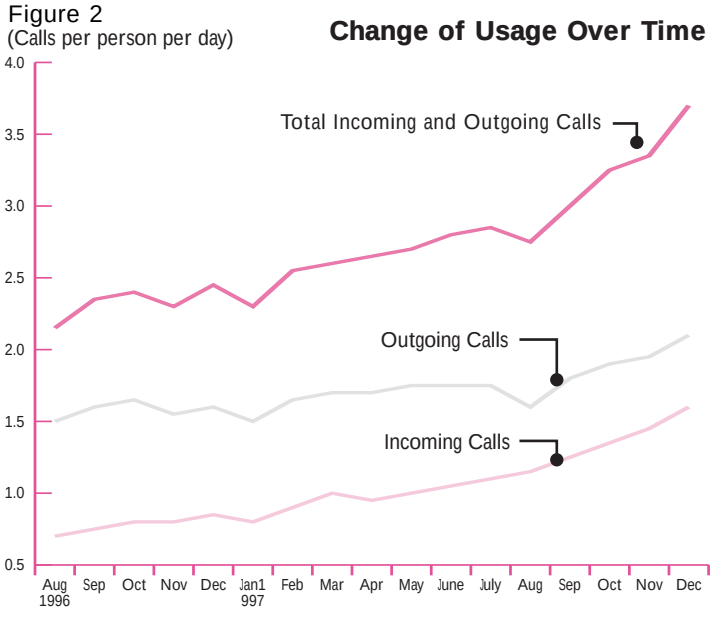
New subscribers have been joining steadily, but the number of bad subscribers cut off has been greater. So, accumulated subscriptions have declined slightly.

As a result of this improvement in subscriber quality, usage over time has increased (see Figure 1), and total communications traffic has increased (see Figure 2), this is the largest component of revenue generation for operators, despite the decrease in subscribers.

Critics also say, "There's another problem, PHS operators have been suffering such heavy losses recently."

In the case of infrastructure communication industries such as PHS public service, huge initial investment is required, and management plans executed over the long-term. Losses are inevitable in the initial stage, operating profits come only after 4-to-5 years, and cumulative losses are cleared only after 6-to-7 years.

Figure 2



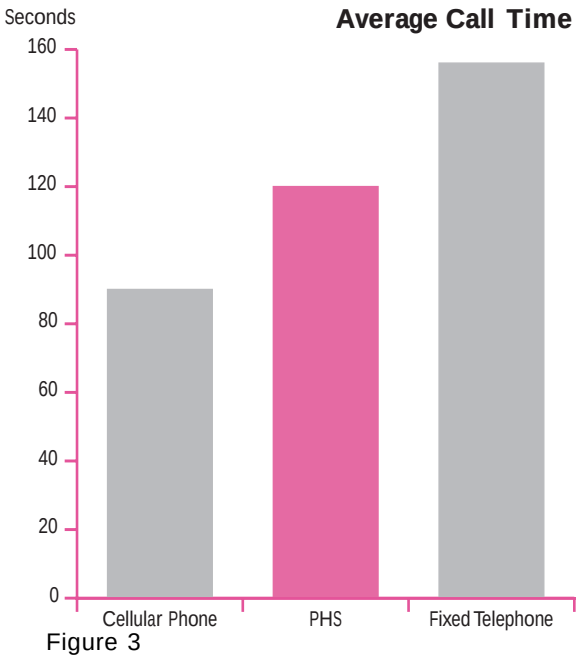


Figure 3

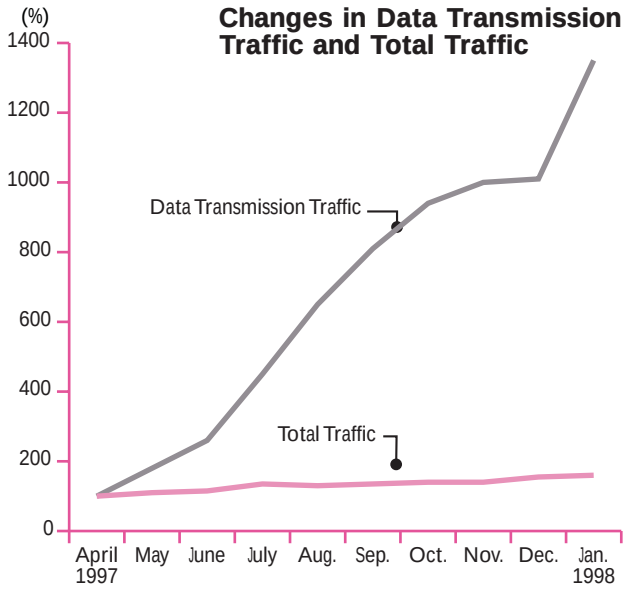
Looked at like this, PHS operations in Japan are proceeding in line with long-term plans, with the situation for the operators steadily improving.

PHS was never intended to, and does not, compete head-to-head for the same market as cellular. Focused on "personal" use, the demographics of PHS subscribers are vastly different from cellular. Figure 3 shows that PHS is located in-between cellular and fixed telephone in terms of average call time.

The 32 kbit/s data transmission services were started in April 1997. Since then, data transmission traffic has leaped ahead (see Figure 4), and now has a near 10% share of total traffic. Value added services, such as the short message service and location information service, have also been attracting a steadily rising number of new users.

These self-explanatory figures show the operational status of PHS public service to be improving and expanding in Japan. PHS service is being installed or evaluated in over 25 countries, and PHS is thriving as it heads toward acceptance as a worldwide standard.

Figure 4



PHS Data Service Expansion

PHS Data Transmission Service Expands

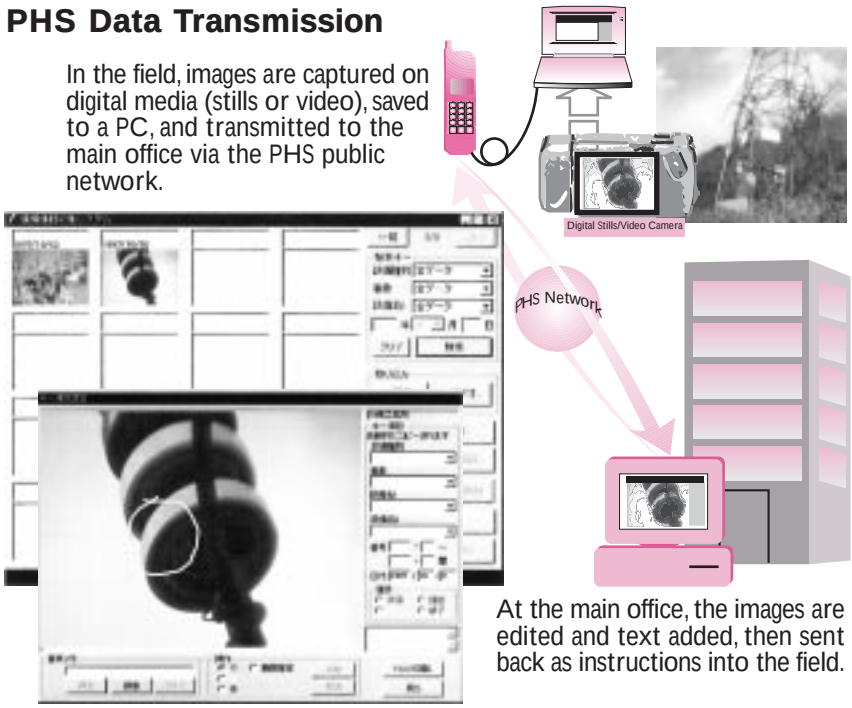
In the year since the three Japanese PHS operators launched 32-kbit/s PHS data transmission service on April 1, 1997, the number of users has been rising, and a variety of products compatible with the service, including PHS terminals, data cards, handheld personal computers, have been introduced. And the service has been put to a wide variety of uses.

Data transmission service grew more than 10-fold in its first six months, and approximately 20-fold by the end of 1997. This rate of increase is expected to continue. At present, PHS data communications traffic accounts for nearly 10 % of all PHS communications. Average PHS data communications call duration is several times longer than for voice communications. Nearly 20 % of all PHS data communications lasts more than 10 minutes, and a small percentage lasts more than 30 minutes. PHS subscribers use the data transmission service mainly to download e-mail messages and access the Internet for long periods of time. PHS operators offer discount rates for data communications to attract new customers.

With many office networks under construction,

PHS Data Transmission

In the field, images are captured on digital media (stills or video), saved to a PC, and transmitted to the main office via the PHS public network.



At the main office, the images are edited and text added, then sent back as instructions into the field.

SHARP Paldio 321s

Kyocera DS-100

Mitsubishi TL-DC 100

companies have begun to introduce PHS as an indoor cordless telephone system. As adoption of PHS enables easy, flexible office layout changes that fits with corporate structural change, more companies are expected to introduce PHS. PHS data transmission is used in a variety of business situations. For instance, sales personnel can check inventory data and shipment schedules by accessing corporate Intranets using PHS terminals while outdoors, and report on business meetings to their superiors. PHS data transmission service has also improved business efficiency outdoors. Maintenance personnel can send pictures of sites back to headquarters using PHS terminals and instantaneously receive instructions by return. The use of this high-speed PHS data communications service will continue to expand as companies look for more efficient solutions.

Specialized terminals for PHS data transmission have also been put onto the market, and a wide variety of applications for the terminals have been developed. Applications include one for automatic inventory checking of vending machines, one for recording employee working hours, and another for checking electricity, gas and water meters. PHS data communications service will come to be increasingly used not only in the mobile communications market, but also in telemetering and telediagnostic systems.

PHS Subscribers in Japan

The total number of PHS subscribers in Japan was 6.83 million as of March 31, 1998

New Data Service

PHS Widens Mobile Data Gap

Recent revisions to RCR STD-28 version 3 have made possible 64 kbit/s data transmission using PHS terminals. This transmission method uses two wireless channels at a speed of 32 kbit/s each. The revisions enable high-speed wireless access from PHS terminals to ISDN networks, and this feature is expected to expand the wired data transmission environment into wireless.

This 64 kbit/s data transmission service enables unrestricted digital information between ISDN networks and PHS networks as well as between PHS terminals.

Figure 1 shows system configuration of 64 kbit/s PHS data transmission service.

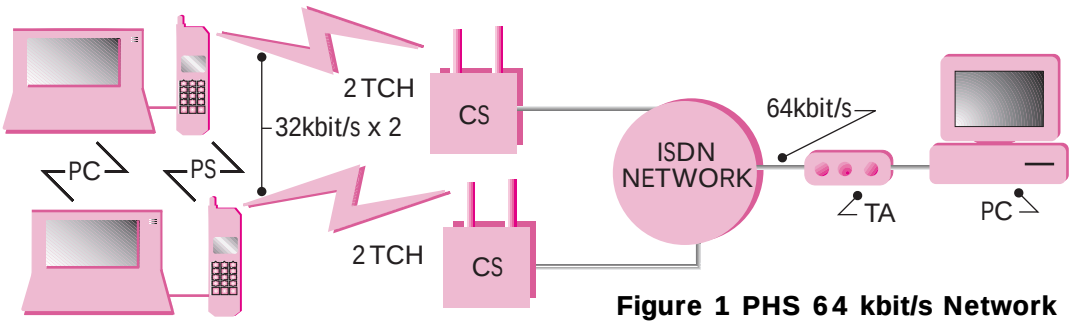


Figure 1 PHS 64 kbit/s Network

One 32 kbit/s transmission channel (TCH 1) is allocated to a cell station (CS) and then another 32 kbit/s channel (TCH 2) is allocated after the addition is requested using TCH 1. Channel switching within one CS is done by TCH 1 and TCH 2 independently. Neither TCH, with the switching procedures, affects the other. On the contrary, channel switching across two CSs is simultaneous across TCH 1 and TCH 2. Signals for requests or indications to switch TCH are handled by message in accordance with Radio Frequency Transmission Management (RT) on Layer 3. TCH 2 on Layer 3 offers only RT function.

Figure 2 shows the protocol layer configuration in the communications phase.

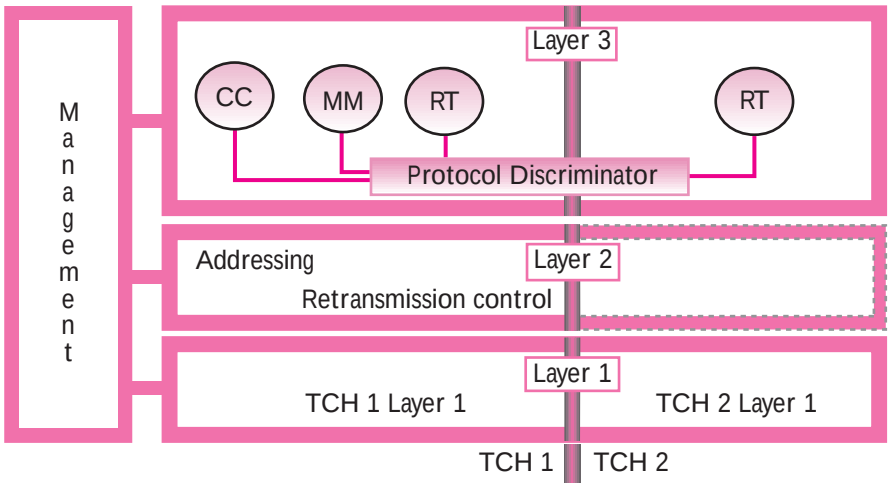
Some new technical standards will be also added to the PHS Internet Access Forum Standard (PIAFS) to nearly double the current effective transmission speed of 29.2 kbit/s to 58.4 kbit/s.

Products using the new standards are eagerly awaited.

Table 1 Bit mapping

	Bit position							
	1	2	3	4	5	6	7	8
64 kbit/s	b1	b2	b3	b4	b5	b6	b7	b8
32 kbit/s x 2	b11	b12	b13	b14	b21	b22	b23	b24
	TCH 1				TCH 2			

Figure 2. Protocol layer



In mapping two 32 kbit/s radio communications channels into one ISDN B channel (64 kbit/s), the same procedures as stipulated in ITU T I.460 are followed.

CC: Call Control
MM: Mobility Management
RT: Radio Frequency Transmission Management

New PHS Services

PHS Short Message Service

One after another, PHS operators have launched services that display messages on PHS terminals. Known as the "Short Message Service," the service is used primarily by young customers.

There are two types of service: Realtime Transmission Service and Storage Service.

Realtime Short Message Service enables direct communications between PHS terminals. Users can exchange messages in realtime and check for incoming messages. However, messages will not be received by PHS terminals that are turned off, or out of service areas.

Storage service, however, assures message delivery. Messages are stored at the message center even when receiving terminals are off or out of service areas. Users are notified about their mail, and can then download the messages onto their PHS terminals.

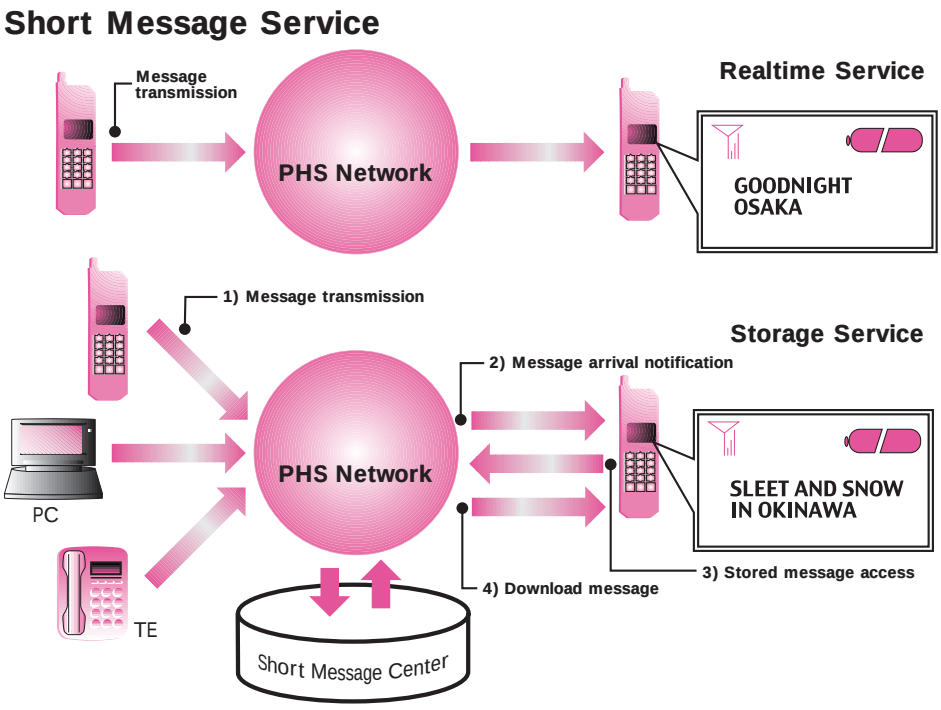
Both services are very popular as they enable easy communications with PHS terminals. The percentage of Short Message calls in all PHS calls has been increasing rapidly. For instance, one PHS operator handles more than 1 million Short Message calls a day, accounting for 15% of all its PHS calls.

The success of the Short Message Service may be attributed to a trend among some of the eight million pager subscribers, who seem to be switching over to PHS. The Short Message Service, which enables realtime communications, will expand the current message communications market.

To encourage this trend, PHS operators have been upgrading the service. A variety of functions have been added to the Short Message Service since the autumn of 1997, including one for sending messages directly from the Internet to PHS terminals, one for sending a single message to multiple receivers, and one for notifying the arrival of e-mail messages. Not only characters but also symbols and signals can be sent with the service. A news service is also under consideration.

PHS operators and manufacturers all consider the Short Message Service one of the most important value added services for promoting further penetration of PHS. And they have built Short Message Service functions into almost all PHS terminals to further encourage use of the service.

However, the service cannot be used between PHS terminals provided by different PHS operators, because the Short Message Service technologies have been independently developed by operators and manufacturers. To ensure compatibility between PHS terminals in the near future, PHS MoU Group is considering formulation of technical standards for the Short Message Service.



Technical Standards

Revision TO RCR STD-28

Technical standards for the PHS air interface are stipulated under RCR STD-28 by the Association of Radio Industries and Businesses (ARIB). Taking PHS trends into consideration, the following three standards have been added to RCR STD-28.

1. Standards for 64 kbit/s data transmission

Public PHS 32 kbit/s data transmission service began in Japan in April 1997. Since then, the number of PHS subscribers as well as the number of calls using the data transmission service have been steadily rising, with data transmission accounting for approximately 10 % of all PHS communications call duration.

Technical standards for 64 kbit/s data transmission have been created to meet demand for higher-speed data transmission services. These standards will increase usage of PHS data transmission service, which is already known for its excellent reliability and high-speed.

2. Standards for private PHS functions

Standards for private PHS functions have been long-awaited. In response to this, technical standards have been set for the following functions available within a cell station: holding, call transfer, call waiting, conference call (up to three parties), system holding (See Note.), indication of the main or extension line, and remote control from personal stations (PS) including activation of the answering machine.

The standards also designated timer setting conditions as well as telephone ID numbers for direct communications between PHS PS. If PHS PS are manufactured in conformity with the standards, direct communications is possible between extensions from different vendors.

(Note) “System holding” is a method designed to use radio frequencies efficiently. When a PS is on hold, the radio communications channel to the PS is closed and when the PS releases the holding, it takes a new radio channel.

3. Standards for expanded PHS frequency bands

The 3-MHz frequency bandwidth has been added to public PHS services, as reported in the February 1998 issue of PHS MoU News (No. 14). Technical standards have been established for this additional allocation of frequencies to PHS.

The revised “RCR STD-28 v-3, rev-1” is scheduled for release in June 1998.

PHS Organization

Organization of WLL Expert Group

The Asia-Pacific Telecommunity (APT) reached an agreement to establish the Asia-Pacific Telecommunications Standardization Program (ASTAP) at its 21st Management Committee meeting in November 1997. The first ASTAP General Meeting was convened in Bangkok, Thailand, from February 12 to 13, 1998. At the meeting, 14 standardization topics were chosen, including Wireless Local Loop (WLL). Establishment of the WLL Expert Group was also agreed upon.

Cooperation between the WLL Expert Group and the PHS MoU Group is expected to further promote PHS standardization activities.

The WLL Expert Group is to be charged with the following study themes:

1. Study on needs for WLL in the Asia-Pacific region (in cooperation with PHS MoU Group, etc.)
2. Contribution to ITU-R SG8/9 JRG

Note: Study Questions in ITU-R SG8/9 JRG

a) Suitable frequency bands and channel arrangement for WLL

b) Quality objectives and operating conditions

c) Frequency sharing with other services (e.g., with mobile communications)

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(As of April 1, 1998)

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