INTERNATIONAL TELECOMMUNICATION UNION

Radiocommunication Bureau
(Direct Fax N°. +41 22 730 57 85)

Administrative Circular
CAR/227

2 November 2006

To Administrations of Member States of the ITU

Subject: **Radiocommunication Study Group 3**

– **Proposed approval of 6 draft revised Questions**

At the meeting of Radiocommunication Study Group 3 held on 9 and 10 October 2006, 6 draft revised Questions were adopted and it was agreed to apply the procedure of Resolution ITU-R 1-4 (see § 3) for approval of Questions in the interval between Radiocommunication Assemblies.

Having regard to the provisions of § 3.4 of Resolution ITU-R 1-4, you are requested to inform the Secretariat (brsgd@itu.int) by 2 February 2007, whether your Administration approves or does not approve these Questions.

After the above-mentioned deadline, the results of this consultation will be notified in an Administrative Circular. If the Questions are approved, they will have the same status as Questions approved at a Radiocommunication Assembly and will become official texts attributed to Radiocommunication Study Group 3 (see: http://www.itu.int/pub/R-QUE-SG03/en).

Valery Timofeev
Director, Radiocommunication Bureau

Annexes: 6

– 6 draft revised ITU-R Questions

Distribution:
– Administrations of Member States of the ITU
– Radiocommunication Sector Members participating in the work of Radiocommunication Study Group 3
– ITU-R Associates participating in the work of Radiocommunication Study Group 3

Annex 1

Source: Document 3/52

DRAFT REVISION OF QUESTION ITU-R 214-1/3

Radio noise

(1978-1982-1990-1993-2000-2000)

The ITU Radiocommunication Assembly,

considering

a) that radio noise of natural or man-made origin often determines the practical limit of performance for radio systems and thus is an important factor in planning efficient use of the spectrum;

b) that much has been learned about the origin, statistical characteristics, and general intensities of both natural and man-made noise, but that additional information is needed, particularly for parts of the world not previously studied, for the planning of telecommunications systems;

c) that for system design, determination of system performance and spectrum utilization factors, it is essential to determine the noise parameters appropriate in considering various modulation methods, including, as a minimum, the noise parameters described in Recommendation ITU-R P.372,

decides that the following Question should be studied

1 What are the intensities and the values of other parameters of natural and man-made noise from local and distant sources, in both indoor and outdoor locations; what are the temporal and geographical variations, the directions of arrival, and the relationship to changes in geophysical phenomena, such as solar activity; ~~of natural and man-made noise from local and distant sources,~~ and how should measurements be made?

further decides

1 that appropriate information concerning radio noise resulting from studies within the ITU-R shall be contained in a single Recommendation;

2 that the above studies should be completed by 2010.

Category: S2

Annex 2

Source: Document 3/53

DRAFT REVISION OF QUESTION ITU-R 202-1/3

Methods for predicting propagation over the surface of the Earth

(1990-2000)

The ITU Radiocommunication Assembly,

considering

a) that the presence of obstacles on the propagation path may modify, to a large extent, the mean value of the transmission loss, as well as the fading amplitude and characteristics;

b) that, with increase in frequency, the influence of the detailed roughness of the surface of the Earth as well as that of vegetation and natural or man-made structures on or above the surface of the Earth becomes more significant;

c) that propagation over high mountain ridges is sometimes of great practical importance;

d) that diffraction and site shielding are of practical significance in interference studies;

e) that the increase in performance and storage capacity of computers, permits the development of detailed digital terrain and clutter data bases;

f) that information on ground conductivity is often available in digital form~~,~~;

g) that seasonal variation of ground-wave propagation has been observed,

decides that the following Question should be studied

1 What is the influence of terrain irregularities, vegetation and buildings, ~~and~~ the existence of conducting structures and seasonal variability, both for locations within the service area around a transmitter and for the evaluation of interference at much greater distances, on the transmission loss, polarization, group delay and angle of arrival?

2 What is the additional transmission loss in urban areas?

3 What is the screening provided by obstacles near a terminal, taking into account the propagation mechanisms over the path?

4 What are the conditions under which obstacle gain occurs and the short-term and long-term variations of transmission loss under these conditions?

5 What are suitable methods and formats for describing the detailed roughness of the surface of the Earth including topographic features and man-made structures?

6 How can terrain data bases, together with other detailed information on terrain features, vegetation and buildings be applied in the prediction of attenuation, time delay, scatter and diffraction?

7 How can quantitative relationships and statistically-based prediction methods be developed which treat reflection, diffraction and scatter from terrain features and buildings, as well as the influence of vegetation?

8 How can information on ground conductivity be made available digitally as matrix or vector information?

further decides

1 that the above studies should be completed by 2010.

Category: S2

Annex 3

Source: Document 3/68

DRAFT REVISION OF QUESTION ITU-R 218-2/3

Ionospheric influences on space systems

(1990-1992-1995-1997)

The ITU Radiocommunication Assembly,

considering

a) that, in the case of some high-performance space systems involving satellites, ionospheric effects should be considered up to the highest frequencies in use;

b) that various satellite systems, including mobile- and navigational-satellite services, are employing non-geostationary-satellite networks,

decides that the following Question should be studied

1 How can trans-ionospheric propagation models be improved, especially to account for ionospheric changes in the short-term, and at high and low latitudes, in regard to:~~What methods exist for predicting:~~

– scintillation effects on phase, angle of arrival, amplitude and polarization;

– Doppler and dispersion effects;

– refraction affecting in particular the direction of arrival and also the phase and group delays;

– Faraday effect, particularly with regard to polarization discrimination;

– attenuation effects?

2 What propagation prediction methods can be derived to assist in ~~the~~ coordination and sharing among concerned services~~determination of the relevant coordination area~~?

3 What propagation prediction method can be derived to assist in the determination of performance characteristics of satellite services employing non-geostationary-satellite networks?

further decides

1 that Recommendation ITU-R P.531 will be revised before 2010~~5~~.

NOTE 1 – Priority will be given to studies relating to § 1.

Category: S2

Annex 4

Source: Document 3/69

DRAFT REVISION OF QUESTION ITU-R 226-2/3

Ionospheric and tropospheric characteristics along satellite-to-satellite paths

(1997-2000-2000)

The ITU Radiocommunication Assembly,

considering

a) that techniques exist for monitoring tropospheric and ionospheric characteristics by means of low orbiting satellites observing GPS satellites near the Earth's limb;

b) that ionospheric effects along these paths may dominate over tropospheric effects in some situations and, for extrapolation to other scenarios, separation of these two components is necessary;

c) that intersatellite links and compatibility may be affected by the ionosphere and the troposphere,

decides that the following Question should be studied

1 How does the ionospheric content along satellite-to-satellite radio paths vary with slant path, location, height, time and solar activity?

2 How are intersatellite links affected by the ionosphere and troposphere?

3 How can the ionospheric and tropospheric effects be separated in the results of measurements on such ~~circuits~~paths?

further decides

1 that material in answer to *decides* 1 should be developed as a new Recommendation by 2010.

Category: S2

Annex 5

Source: Document 3/76

DRAFT REVISION OF QUESTION ITU-R 201-2/3

Radiometeorological data required for the planning of terrestrial and space communication systems and space research application

(1966-1970-1974-1978-1982-1990-1995-2000)

The ITU Radiocommunication Assembly,

considering

a) that the characteristics of the tropospheric radio channel depend on a variety of meteorological parameters;

b) that statistical predictions of radiopropagation effects are urgently required for planning and design of radiocommunication and remote sensing systems;

c) that, for the development of such predictions, knowledge of all atmospheric parameters affecting channel characteristics, their natural variability and their mutual dependence is needed;

d) that the quality of measured and suitably analysed radiometeorological data is one of the determinants of the ultimate reliability of propagation prediction methods that are based on meteorological parameters;

e) that an accurate knowledge of the clear-sky level on a satellite-to-ground link is important in developing the margin required to enable a telecommunications service to operate satisfactorily under adverse propagation conditions;

f) that the clear-sky level on a satellite-to-ground link can fluctuate significantly both diurnally and seasonally due to solar heating and atmospheric effects;

g)~~e)~~ that interest exists in extending the range of frequencies used for telecommunication and remote sensing purposes;

h)~~f)~~ that propagation conditions should be known as well as possible during the process of bringing into service (BIS) of radio-relay equipment,

decides that the following Question should be studied

1 What are the distributions of tropospheric refractivity, its gradients and their variability, both in space and time?

2 What are the distributions of atmospheric constituents and particles, such as water vapour and other gases, clouds, fog, rain, hail, aerosols, sand, etc., both in space and time?

3 What is the magnitude of the variations in clear-sky level on a satellite-to-ground link that can occur on a diurnal and seasonal basis?

4 What model best describes the diurnal and seasonal variations in the clear-sky level on a satellite-to-ground link?

5~~3~~ How do the climatology and natural variability of the rain process affect attenuation and interference predictions, especially for tropical regions?

6~~4~~ What models best describe the relationship between atmospheric parameters and radiowave characteristics (amplitude, polarization, phase, angle of arrival, etc.)?

7~~5~~ What methods based on meteorological information can be used in the statistical prediction of signal behaviour, especially for percentages of time from 0.1 to 10%, taking into account the composite effect of various atmospheric parameters?

8~~6~~ What procedures can be used to evaluate data quality, accuracy, statistical stability and confidence levels?

9~~7~~ What method can be used to forecast propagation conditions during consecutive periods of 24 hours during any season anywhere in the world?

NOTE 1 – Priority will be given to studies relating to § 3, 4, 5, 7 and 9.

further decides

1 that the results of the above studies should be included in one or more Recommendations and/or Reports;

2 that the above studies should be completed by 2010.

Category: S2

Annex 6

Source: Document 3/80

DRAFT REVISION OF QUESTION ITU-R 211-3/3

Propagation data and propagation models for the design of short-range wireless communication and access systems and wireless local area networks (WLAN) in the frequency range 300 MHz to 100 GHz

(1993-2000-2002-2005)

The ITU Radiocommunication Assembly,

considering

a) that many new short-range personal communication systems are being developed which will operate indoors as well as outdoors;

b) that future mobile systems (e.g. beyond IMT-2000) will provide personal communications, indoors (office or residential) as well as outdoors;

c) that there is a high demand for wireless local area networks (WLANs) and wireless private business exchanges (WPBXs), as demonstrated by existing products and intense research activities;

d) that it is desirable to establish WLAN standards which are compatible with both wireless and wired telecommunications;

e) that short-range systems using very low power have many advantages for providing services in the mobile and personal environment;

f) that ultra-wideband (UWB) is a rapidly emerging wireless technology ~~and it differs substantially from conventional radio-frequency technologies~~and may have impact on radiocommunication services;

g) that knowledge of the propagation characteristics within buildings and the interference arising from multiple users in the same area is critical to the efficient design of systems;

h) that while multipath propagation may cause impairments, it may also be used to advantage in a mobile or indoor environment;

j) that frequencies proposed for the systems described in § a), b) and c) range from about 300 MHz to 100 GHz;

k) that there are only limited propagation measurements available in some of the frequency bands being considered for short-range systems;

l) that information regarding indoor and indoor-to-outdoor propagation may also be of interest to other services,

decides that the following Question should be studied

1 What propagation models should be used for the design of short-range systems operating indoors, outdoors, and indoor-to-outdoors (operating range less than 1 km) including wireless communication and access systems~~,~~ and WLANs ~~and UWB applications operating indoors, outdoors, and indoor-to-outdoors~~?

2 What propagation models should be used for assessing impact of UWB devices on other recognized radiocommunication services?

~~2~~3 What propagation characteristics of a channel are most appropriate to describe its quality for different services, such as:

– voice communications;

– facsimile services;

– data transfer services (both high bit rate and low bit rate);

– paging and messaging services;

– video services?

~~3~~4 What are the characteristics of the impulse response of the channel?

~~4~~5 What effect does the choice of polarization have on the propagation characteristics?

~~5~~6 What effect does the performance of the base station and terminal antennas (e.g. directivity, beam-steering) have on the propagation characteristics?

~~6~~7 What are the effects of various diversity schemes?

~~7~~8 What are the effects of the siting of the transmitter and receiver?

~~8~~9 In the indoor environment, what is the effect of different building and furnishing materials as regards shadowing, diffraction, and reflection?

~~9~~10 In the outdoor environment, what is the effect of building structures and vegetation as regards shadowing, diffraction, and reflection?

~~10~~11 What effect does the movement of persons and objects within the room, possibly including the movement of one or both ends of the radio link, have on the propagation characteristics?

~~11~~12 What variables are necessary in the model to account for different types of buildings (e.g. open-plan, single-storey, multi-storey) in which one or both of the terminals are situated?

~~12~~13 How may building entry loss be characterized for system design, and what is its effect on indoor-to-outdoor transmission?

~~13~~14 What factors can be used for frequency scaling, and over what ranges are they appropriate?

~~14~~15 What are the best ways of presenting the required data?

~~15~~16 How may propagation channels using multiple transmitters and multiple receivers be characterised for system design?

further decides

1 that the results of the above studies should be included in one ore more Recommendations and/or Reports;

2 that the above studies should be completed by 2009.

Category: S1