# INTERNATIONAL TELECOMMUNICATION UNION

*Radiocommunication Bureau*
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**Administrative Circular**
**CAR/327**

17 November 2011

### To Administrations of Member States of the ITU

**Subject**: **Radiocommunication Study Group 3 (Radiowave propagation)**

  – **Proposed approval of 2 draft new ITU-R Questions and 12 draft revised ITU-R Questions**

  – **Proposed suppression of 1 ITU-R Question**

At the meeting of Radiocommunication Study Group 3 held on 27 and 28 October 2011, 2 draft new ITU-R Questions and 12 draft revised ITU-R Questions were adopted and it was agreed to apply the procedure of Resolution ITU-R 1-5 (see § 3.4) for approval of Questions in the interval between Radiocommunication Assemblies. Furthermore, the Study Group proposed the suppression of 1 ITU-R Question in accordance with Resolution ITU-R 1-5 (§ 3.7).

Having regard to the provisions of § 3.4 of Resolution ITU-R 1-5, you are requested to inform the Secretariat (brsgd@itu.int) by 17 February 2012, whether your Administration approves or does not approve the proposals above.

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).

François Rancy
Director, Radiocommunication Bureau

**Annexes**: 15

– 2 draft new ITU-R Questions, 12 draft revised ITU-R Questions and proposed suppression of 1 ITU-R Question

## Annex 1

(Document 3/66(Rev.1))

## DRAFT NEW QUESTION ITU-R [NANO]/3

## The effect of nanostructure materials on propagation

The ITU Radiocommunication Assembly,

*considering*

a)      that the propagation of radiowaves is strongly influenced by interaction with buildings and other structures;

b)      that it is necessary to understand how the electrical properties of building materials affects propagation, particularly for urban, in-building and building-penetrating system;

c)      that materials with nanostructure properties are being developed for use in various applications, including buildings;

d)      that materials with nanostructure properties can have an exceptional effects when there is interaction with radiowaves;

e)      that these effects can show different scattering, absorption, reflection and diffraction behaviour compared to other materials;

f)      that nanostructure materials can be made to have specific special properties with respect to radiowave interaction,

*decides* that the following Questions should be studied

**1**      Which parameters of nanostructure materials best characterise their interaction with radiowaves?

**2**      What methods are most suitable to measure the electromagnetic properties of nanostructure materials?

**3**      Which mathematical models best describe the effects of nanostructure materials on propagation with respect to reflection, scattering, penetration and absorption?

**4**      Which methods are most suitable to measure the influence of nanostructure materials?

*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 2015.

Category: S2

# Annex 2

(Document 3/96(Rev.1))

## DRAFT NEW QUESTION ITU-R [XXX.X]/3

## Methods for the prediction of propagation path losses between an airborne platform and a satellite, ground terminal or another airborne platform

The ITU Radiocommunication Assembly,

*considering*

a)      that, in the design of airborne systems, there is a need for an accurate knowledge of the system performance due to radiowave propagation between an airborne platform and a satellite, ground terminal or another airborne platform;

b)      that the systems may operate beyond line of sight with very low or negative elevation angles;

c)      that the frequency bands used may be in the range from 30 MHz to 50 GHz or higher,

*noting*

a)      that existing terrestrial and earth space propagation prediction methods are not adequate for predicting the performance of these links;

b)      that the airborne platform may be located at any altitude between the surface of the Earth and the top of the stratosphere;

c)      that at low or negative elevation angles, tropospheric effects may be extreme and may not be adequately addressed by current methods,

d)      multipath and scattering due to interaction between the airborne antenna and the airborne platform is dependent on the specific antenna pattern and the airborne platform configuration and is not an atmospheric propagation phenomenon, however other atmospheric sources of multipath are important,

*decides* that the following Questions should be studied

**1**      What prediction methods can be used to predict the long-term average impairments (e.g. attenuation, scintillation, multipath) due to atmospheric effects and other multipath and refractive effects between an airborne platform and a satellite?

**2**      What prediction methods can be used to predict the long-term average impairments due to atmospheric effects and other multipath and refractive effects between an airborne platform and a terminal located on the surface of the Earth?

**3**      What prediction methods can be used to predict the long-term average impairments due to atmospheric effects between two airborne platforms?

**4**      What prediction methods can be used to predict the dynamic impairments as a function of time due to atmospheric effects and other multipath and refractive effects between an airborne platform and a satellite?

**5**      What prediction methods can be used to predict the dynamic impairments as a function of time due to atmospheric effects and other multipath and refractive effects between an airborne platform and terminal on the surface of the earth?

**6**      What prediction methods can be used to predict the dynamic impairments as a function of time due to atmospheric effects between two airborne platforms?

*further decides*

**1**      that the above studies should be completed by 2015.


Category: S2

**Annex 3**

(Document 3/68(Rev.1))

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

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

(1966-1970-1974-1978-1982-1990-1995-2000-2007)

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

h)      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 Questions 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?~~

**5̶4**       How do the climatology and natural variability (year-to-year, seasonal and diurnal variations, long-term variations) of ~~the rain process~~all atmospheric constituents affect attenuation and interference predictions~~, especially for tropical regions~~?

**6̶5**       What models best describe the relationship between atmospheric parameters and radiowave characteristics (amplitude, polarization, phase, angle of arrival, etc.)?

**7̶6**       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?

**8̶7**       What procedures can be used to evaluate data quality, accuracy, statistical stability and confidence levels?

**9̶8**       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 information about radioclimatological parameters should be given in worldwide digital maps with the highest possible accuracy and spatial resolution;

**3**       that the long-term time variability of radioclimatological parameters should be investigated;

**2̶4**       that the above studies should be completed by 201̶0̶6.

Category: S2

# Annex 4

(Document 3/59(Rev.1))

## DRAFT REVISION OF QUESTION ITU-R 203-4/3

**Propagation prediction methods for terrestrial broadcasting, fixed (broadband access) and mobile services using frequencies above 30 MHz**

(1990-1993-1995-2000-2002-2009)

The ITU Radiocommunication Assembly,

*considering*

a)      that there is a continuing need to improve and develop field strength prediction techniques for the planning or establishing of terrestrial broadcasting, fixed (broadband access) and mobile services using frequencies above 30 MHz;

b)      that for terrestrial broadcasting, fixed (broadband access) and mobile services, propagation studies involve consideration of point-to-area and multipoint-to-multipoint propagation paths;

c)      that present methods are based largely upon measurement data and there is a continuing need for measurements within this range of frequencies from all geographical regions, especially developing countries, to increase the accuracy of the prediction techniques;

d)      that the increasing use of frequencies above 10 GHz requires that prediction methods should be developed to meet these new requirements;

e)      that digital systems involving wideband transmission are being introduced to both broadcasting and mobile services;

f)      that reflected signals must be taken into account in the design of digital radio systems;

g)      that there are increasing demands for frequency sharing between these and other services,

*decides* that the following Questions should be studied

**1**      What field strength prediction methods can be used for terrestrial broadcasting, fixed (broadband access) and mobile services in the frequency range above 30 MHz?

**2**      How are the predicted field strengths, multipath and their temporal and spatial statistics influenced by:

–      frequency, bandwidth and polarization;

–      length and properties of the propagation path;

–      terrain features, including the possibility of long delayed reflections from off-great circle hillsides;

- ground cover, buildings and other man-made structures;
- atmospheric constituents;
- height and surrounding environment of the terminating antennas;
- directivity and diversity of the antennas;
- mobile reception;
- the general nature of the propagation path, e.g., paths over deserts, seas, coastal areas or mountains and, in particular, in areas subject to super-refractive conditions?

**3**     To what extent are propagation statistics correlated over different paths and frequencies?

**4**     What methods and parameters best describe the coverage reliability of these analogue and digital services and what information beyond field strength data is necessary for these purposes, e.g. the "intelligence" incorporated in a frequency agile system?

**5**     What methods and parameters best describe the propagation channel's impulse response?

*further decides*

**1**     that the available information should be prepared as ~~a new Recommendation~~revisions to Recommendation ITU-R P.1410;~~.~~

**2**     that the above studies should be completed by 2015.


Category: S1

# Annex 5

(Document 3/62(Rev.1))

## DRAFT REVISION OF QUESTION ITU-R 209/3

## Variability and risk parameters in system performance analysis

(1993)

The ITU Radiocommunication Assembly,

*considering*

a)      that for the proper planning of terrestrial and Earth-space links it is necessary to have appropriate parameters for the formulation of performance criteria of radiocommunication systems;

b)      that the "average annual worst month" has been defined as the long-term statistic relevant to performance criteria referring to "any month";

c)      that due to the stochastic nature of propagation effects in radiocommunication systems there is a need for information on variability of these effects, with respect to the long-term statistic, which may itself be subject to longer-term variability, for various periods of reference;

d)      that there is a need for an unambiguous formulation of variability parameters to allow proper cost and performance trade-offs to be made in the analysis of system reliability, availability and quality,

*decides* that the following Questions should be studied

**1**      What is the variation of propagation effects with respect to the long-term cumulative statistic for various periods of reference?

**2**      What are the periods of reference to be specified for the formulation of risk parameters associated with the variation of propagation statistics?

**3**      What are the parameters most suited to the formulation of confidence limits and risks associated with the specification and estimation of system performance?

**4**      What are the procedures for the calculation of the parameters defining statistical variation of propagation effects in radiocommunication systems?

*further decides*

**1**      that the above studies should be completed by 2015.

Category: S3

# Annex 6

(Document 3/91(Rev.1))

## DRAFT REVISION OF QUESTION ITU-R 213-2/3

## The short-term forecasting of operational parameters for trans-ionospheric radiocommunication and ~~aeronautical~~ radionavigation services

(1978-1990-1993-2000-2000-2009)

The ITU Radiocommunication Assembly,

*considering*

a)    that accurate, quantitative short-term ~~predictions~~ forecasting of space weather related ionospheric variations a few hours or days in advance would increase the reliability of radiocommunication and ~~aeronautical~~ radionavigation-satellite services including safety related applications;

b)    that, in addition to the widespread disturbances associated with major geophysical or ~~solar~~ space weather events (including ionospheric or geomagnetic storms) that affect the total electron content (TEC), the spatial and temporal gradients of TEC and the occurrence of ionospheric scintillations, there are other hour-to-hour and day-to-day ionospheric variations (which may be local in influence)~~,~~;

c)    that space weather data products addressing trans-ionospheric radiocommunications and radionavigation services exist,

*decides* that the following Questions should be studied

1    What are the needs and techniques for the short-term forecasting~~prediction (up to a few hours in advance)~~ of operational parameters for trans-ionospheric radiocommunications and radionavi~~a~~gation services?

2    How useful are the established techniques of ground based and space-based space weather monitoring for short-term forecasting ~~prediction~~ of trans-ionospheric propagation conditions?

3    What is the status of standardization of space weather data products for trans-ionospheric radiocommunications and radionavigation services?

*further decides*

~~1      that appropriate information shall be included in a Recommendation or a Handbook;~~

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 201~~3~~5.

Category: S3

# Annex 7

(Document 3/83(Rev.1))

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

## Radio noise

(1978-1982-1990-1993-2000-2007)

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 Questions 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; and how should measurements be made?

2      Where the radio noise has an impulsive characteristic, what are the appropriate parameters to describe the noise and how does the impulsive noise vary with frequency, location, season, etc.?

*further decides*

1      that appropriate information concerning radio noise resulting from studies within the ITU-R shall be contained in Recommendations and/or Reports;

2      that the above studies should be completed by 201Ø5.

Category: SꞋ3

**Annex 8**

(Document 3/84(Rev.1))

DRAFT REVISION OF QUESTION ITU-R 218-4/3

**Ionospheric influences on ~~space~~satellite systems**

(1990-1992-1995-1997-2007-2009)

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 Questions should be studied

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

–      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;

–      absorption and scattering~~attenuation~~ effects?

**2**      What propagation prediction methods can be derived to assist in coordination and sharing among concerned services?

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

**4**      What are the methods to simulate realistic time-series for system simulation including rapidly varying propagation effects?

*further decides*

**1**      that the available information should be prepared as new Recommendations, or as revisions to existing Recommendations;

~~**2**      that Recommendation ITU-R P.531 will be revised before 2010.~~

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

**3̶2**      that the above studies should be completed by 201~~2~~5.

Category: S2

# Annex 9

(Document 3/85(Rev.1))

# DRAFT REVISION OF QUESTION ITU-R 221-1/3

# Propagation by way of sporadic E and other ionization

(1990-2009)

The ITU Radiocommunication Assembly,

*considering*

a)      that the available information on terrestrial propagation by sporadic E and other ionization is insufficient to provide statistical data of the type needed by telecommunication engineers, especially at low and high latitudes;

b)      that ionospheric irregularities including meteor ionization in the E region and the F region can affect the performance of radio systems;

c)      that suitable methods for estimating sky-wave field strength and signal dispersion are required by:

–      administrations, in connection with the establishment and operation of radio systems;

–      the Radiocommunication Bureau, for further refinement of its technical standards contained within the Rules of Procedure;

–      the Radiocommunication Sector, in connection with future Radiocommunication Conferences,

*decides* that the following Questions should be studied

**1**      What are the characteristics of sporadic-E ($E_s$) ionization and how do these affect oblique incidence propagation in the HF and VHF bands?

**2**      What are the mechanisms for VHF and UHF propagation by the ionosphere and how can the statistics of the propagation characteristics be predicted?

*further decides*

**1**      that the available information should be prepared as new Recommendations, or as revisions to existing Recommendations;

**2**      that the above studies should be completed by 201~~3~~5.

~~NOTE 1 – See Recommendations ITU-R P.534 and ITU-R P.843.~~

Category: S3

# Annex 10

(Document 3/87(Rev.1))

## DRAFT REVISION OF QUESTION ITU-R 222-2/3

## Measurements and data banks of ionospheric characteristics and <u>radio</u> noise

(1990-1993-2000-2000-2009)

The ITU Radiocommunication Assembly,

*considering*

a)      that measurements of signal characteristics and of the ionosphere as a propagation medium are essential for the further improvement of methods of radiowave propagation prediction;

b)      that various organisations and agencies maintain databanks of measurements of ionospheric characteristics;

c)      that measurements of signal characteristics, useful for the evaluation of prediction procedures, etc., may not be consistently collected in databanks elsewhere,

*decides* that the following Questions should be studied

**1**      What characteristics of the ionosphere, of signal propagation through or via the ionosphere and of <u>radio</u> noise are appropriate for inclusion in databanks maintained and developed by ITU-R Study Group 3?

**2**      What data collection, analysis, standardization, compilation and dissemination procedures are best suited for ITU-R purposes?

*further decides*

**1**      that Radiocommunication Study Group 3 should develop and maintain databanks of measurements of ionospheric propagation, of ionospheric characteristics and of <u>radio</u> noise identified in answering this Question;

**2**      that the above studies should be completed by 201~~2~~5.

Category: S2

# Annex 11

(Document 3/90(Rev.1))

## DRAFT REVISION OF QUESTION ITU-R 225-5/3

## The prediction of propagation factors affecting systems at LF and MF including the use of digital modulation techniques

(1995-1997-2000-2007)

The ITU Radiocommunication Assembly,

*considering*

a)      that Recommendation ITU-R P.368 presents ground-wave propagation curves for frequencies between 10 kHz and 30 MHz and that Recommendation ITU-R P.684 and Recommendation ITU-R P.1147 describe procedures for predicting sky-wave propagation at frequencies below about 150 kHz and at frequencies between about 150 and 1 700 kHz, respectively;

b)      that most of these and other available prediction methods are intended primarily for narrow-band or analogue systems;

c)      that under certain conditions, ground-wave and sky-wave signals of the same source may be comparable in amplitude;

d)      that there is an increasing use of digital modulation techniques, including those that use fast signalling speeds or which require good phase or frequency stability;

e)      that Recommendation ITU-R P.1321 summarizes some results of studies on propagation factors affecting systems using digital techniques at LF and MF;

f)      that, for digital systems, information will be required of the signal level and its variation as well as of time and frequency spreads within the channel,

*decides* that the following Questions should be studied

**1**      What improvements may be made to the methods of predicting the sky-wave field strength and circuit performance at frequencies below about 1.7 MHz?

**2**      Are there significant variations in ground-wave field strength with location or with time?

**3**      How does the coexistence of ground-wave and sky-wave signals affect digital systems at LF and MF?

**4**      What are the amplitude and phase characteristics of time and frequency spreads (multipath and Doppler) of the LF/MF sky-wave signals?

**5**      What are the appropriate parameters for these signal characteristics for incorporation into a measurement data bank?

**6**      How do the sky-wave parameters vary with time, frequency, path length and other factors?

**7**      What are the appropriate methods for predicting these parameters and to what extent should different prediction models be used, dependent on the modulation methods employed for the signal?

*further decides*

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

**2**      that the above studies should be completed by 2010~~0~~5.

Category: S~~2~~3

# Annex 12

(Document 3/86(Rev.1))

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

## Ionospheric and tropospheric characteristics along satellite-to-satellite paths

(1997-2000-2000-2007)

The ITU Radiocommunication Assembly,

*considering*

a)      that techniques exist for monitoring tropospheric and ionospheric characteristics by means of low orbiting satellites observing GNSSPS 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 Questions 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 does space weather affect satellite-to-satellite radio paths?

**23**      How are intersatellite links affected by the ionosphere and troposphere?

**34**      How can the ionospheric and tropospheric effects be separated in the results of measurements on such paths?

*further decides*

**1**      that the results of these studies material in answer to *decides* 1 should be developed as a new Recommendation by 20105.

Category: S2

# Annex 13

(Document 3/88(Rev.1))

## DRAFT REVISION OF QUESTION ITU-R 229-1/3

## Prediction of sky-wave propagation conditions, signal intensity, circuit performance and reliability at frequencies between about 1.6 and 30 MHz, in particular for systems using digital modulation techniques

(2002-2009)

The ITU Radiocommunication Assembly,

*considering*

a)      that accurate, quantitative predictions of ionospheric propagation are important for planning optimum spectrum utilization;

b)      that the methods for prediction of basic and operational MUFs and ray paths (see Recommendation ITU-R P.1240) are required for predicting HF sky-wave propagation characteristics and merit further improvement;

c)      that a method for predicting HF sky-wave propagation characteristics is given in Recommendation ITU-R P.533, and that this now includes procedures for digital systems in the Equatorial region;

d)      that Recommendation ITU-R P.842 provides a method for the computation of reliability and compatibility of HF radio systems;

e)      that radio system performance is influenced by variations of the amplitude and dispersion of the wanted signals, and of the background noise and interference, and this influence varies with the type of emission, particularly between analogue and digital;

f)      that the available prediction methods are intended primarily for use for narrow-band or analogue systems;

g)      that many HF systems use digital modulation techniques, including those which utilize fast signalling speeds or which require phase or frequency stability;

h)      that a method needs to be developed for other parts of the world, particularly at high latitudes, to estimate the performance of digital broadcasting,

*decides* that the following Questions should be studied

**1**      What improvement may be made to the methods given in Recommendation ITU-R P.1240 for the long-term prediction of basic and operational MUFs and ray paths, and their variability, from predicted ionospheric characteristics?

**2**      What improvements may be made to the method for the long-term estimation of sky-wave propagation conditions, signal intensity, circuit performance and reliability using predicted ionospheric characteristics?

**3**      What are the characteristics of time delay spread, frequency spread (multipath and Doppler shifts) and frequency correlation of HF sky-wave signals, including fading characteristics?

**4**      What values of a time-delay and frequency power profiles are characteristic of the ionosphere at different locations and times, and how may the prediction of these characteristics be included within a comprehensive method?

*further decides*

**1**      that the available information should be prepared as new Recommendations, or as revisions to existing Recommendations;

**2**      that the methods described in the Recommendations should be available as a software package for use within the Radiocommunication Bureau and by those concerned with the planning and operation of HF systems and networks;

**3**      that the above studies should be completed by 2011~~1~~5.


Category: S~~1~~2

# Annex 14

(Document 3/89(Rev.1))

## DRAFT REVISION OF QUESTION ITU-R 230-1/3*

## Prediction methods and models applicable to power line telecommunications systems

(2005-2009)

The ITU Radiocommunication Assembly,

*considering*

a)      that power line telecommunications systems (PLT) and other wired telecommunication systems may use base-band frequencies up to 2080 MHz, and that a wide variety of PLT architectures and components will be present, even in one administrative jurisdiction;

b)      that radio-frequency energy will be radiated by a number of mechanisms and in several modes, particularly from unbalanced, variable impedance and poorly terminated lines,

*decides* that the following Questions should be studied

**1**      What are the mechanisms that cause radio-frequency radiation from PLT systems and how can they be modelled? What are the salient features of the topology (ground plane location, spatial distribution, etc.) that are most important for accurate estimation of emissions?

**2**      What techniques are most appropriate in aggregating the total radiated energy in space from such a system or multitude of systems?

**3**      Which signal level propagation models are most appropriate in the determination of interference?

**4**      What advice may be given to enable practical measurement of radiating fields at short distances (within the near field)?

*further decides*

**1**      that appropriate information shall be included in a Recommendation or a Handbook;

**2**      that the above studies should be completed by 20125.

Category: S2

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*   This Question should be brought to the attention of Radiocommunication Study Group 1 (Working Party 1A).

# Annex 15

# Question proposed for suppression

| Question ITU-R | Title | Category | Date of last approval |
|---|---|---|---|
| 227-1/3 | HF channel simulation | S3 | 2002 |

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