ETSI TS 102 497 V1.2.1 (2018-12)

Digital Enhanced Cordless Telecommunications (DECT); DECT in the 1 920 MHz to 1 930 MHz Unlicensed Personal Communications Services (UPCS) frequency band; Specific requirements

Reference
RTS/DECT-00334

Keywords
data, DECT, interworking, multimedia, profile,
radio, voice

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Sous-Préfecture de Grasse (06) N° 7803/88

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Digital Enhanced Cordless Telecommunications (DECT).

The present document is based on DECT Common Interface (CI) specification ETSI EN 300 175, parts 1 [1] to 8 [8], to enable DECT terminals to interwork in the public and private environment.

In addition, for the purpose of interoperability and wherever it is found appropriate, the present document takes into consideration requirements specified in various DECT profiles; reference to relevant profiles is provided whenever appropriate.

General attachment requirements are based on ETSI EN 301 406 [9].

Further details on the DECT system may be found in ETSI TR 101 178 [i.1].

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Introduction

Since its introduction in the early 90s the DECT technology has enjoyed world-wide acceptance with most of the countries accepting in full the original DECT requirements specified in the extensive DECT standards set developed and published by ETSI (www.etsi.org). Some regions, due to specific local requirements, have used the DECT standard and modified it to comply with those specific requirements.

In September 2004 the United States (US) Federal Communications Commission (FCC), in FCC 04-219 [11], Sixth Report and Order, Third Memorandum Opinion and Order, and Fifth Memorandum Opinion and Order, introduced modifications to the requirements applicable to the 1 920 MHz to 1 930 MHz Unlicensed Personal Communications Services (UPCS) frequency band. The modification enhanced the existing rules for isochronous UPCS operations in the 1 920 MHz to 1 930 MHz band in order to provide additional flexibility, thereby permitting the deployment of additional unlicensed devices in the band operating on a wider variety of technologies aimed at providing "a wide array of mobile and ancillary fixed communication services to individuals and businesses".

The present document provides the necessary requirements to allow DECT terminals deployment in the US 1 920 MHz to 1 930 MHz UPCS frequency band in accordance to the new rules. Clause 4 provides the basic DECT protocol reference model and indicates the affected functionality areas. Clause 5 specifies the relevant requirements. Annex A provides information on market acceptance and product availability of DECT.

1 Scope

The present document specifies that set of technical requirements for Digital Enhanced Cordless Telecommunications (DECT) Fixed Part (FP) and DECT Portable Part (PP) necessary for the support and provision to the user of various multimedia services in the 1 920 MHz to 1 930 MHz Unlicensed Personal Communication Service (UPCS) frequency band in accordance with the modifications introduced by the United States (US) Federal Communications Commission (FCC) FCC 04-219, Sixth Report and Order, Third Memorandum Opinion and Order, and Fifth Memorandum Opinion and Order [11].

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at https://docbox.etsi.org/Reference/.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] ETSI EN 300 175-1: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview".

[2] ETSI EN 300 175-2: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical Layer (PHL)".

[3] ETSI EN 300 175-3: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer".

[4] ETSI EN 300 175-4: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer".

[5] ETSI EN 300 175-5: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer".

[6] ETSI EN 300 175-6: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing".

[7] ETSI EN 300 175-7: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".

[8] ETSI EN 300 175-8: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech and audio coding and transmission".

[9] ETSI EN 301 406: "Digital Enhanced Cordless Telecommunications (DECT); Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".

[10] Void.

[11] FCC 04-219: "Sixth Report and Order, Third Memorandum Opinion and Order, and Fifth Memorandum Opinion and Order".

[12] 47CFR15, FCC Part 15: "Radio Frequency Devices".

[13] ANSI C63.17:2013: "American National Standard for Methods of Measurement of the Electromagnetic and Operational Compatibility of Unlicensed Personal Communications Services (UPCS) Devices".

[14] ANSI C63.4: "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz".

[15] ANSI/IEEE C95.1™: "Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz".

[16] Recommendation ITU-R M.1457: "Detailed specifications of the radio interfaces of International Mobile Telecommunications-2000 (IMT-2000)".

[17] FCC 02-151: "Federal Communications Commission, Second Report and Order, Amendment of Part 15 of the Commission's Rules Regarding Spread Spectrum Devices".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI TR 101 178: "Digital Enhanced Cordless Telecommunications (DECT); A High Level Guide to the DECT Standardization".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI EN 300 175-1 [1] apply.

3.2 Symbols

For the purposes of the present document, the following symbols apply:

P_{NTP} Maximum transmit power per simultaneously active transceiver

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

3GPP	3rd Generation Partnership Project
AC	Alternating Current
ANSI	American National Standards Institute
CI	Common Interface
DECT	Digital Enhanced Cordless Telecommunications
DLC	Data Link Control protocol layer
DPRS	DECT Packet Radio Service
EN	European Norm
ETSI	European Telecommunications Standards Institute
FCC	Federal Communications Commission
F-MMS	Fixed line-Multimedia Messaging Service

FP	Fixed Part
FT	Fixed Termination
GAP	Generic Access Profile
GSM	Global System for Mobile communications
IP	Internet Protocol
ISED	Innovation, Science and Economic Development
ISM	Industrial Scientific Medical
LIC	Least Interfered Channel
LRMS	Low Rate Messaging Service
MAC	Medium Access Control protocol layer
MMS	Multimedia Messaging Service
ODAP	Open Data Access Profile
PCS	Personal Communications Services
PP	Portable Part
ppm	parts per million
RF	Radio Frequency
RSSI	Radio Signal Strength Indicator
SMS	Short Message Service
TCB	Telecommunications Certification Body
TR	Technical Report
TS	Technical Specification
UMTS	Universal Mobile Telecommunications System
UPCS	Unlicensed Personal Communications Services
US	United States
WMTS	Wireless Medical Telemetry Service

4 DECT protocol reference model

Figure 1 shows which of the layers of the DECT protocol stack are affected by the UPCS rules. The layers 2b and above are not affected at all.

The layer 2a (Media Access Control layer) needs only some minor additions.

The layer 1 (Physical layer) is almost identical with standard DECT. For UPCS, the carrier frequencies used are within the band 1 920 MHz to 1 930 MHz and are broadcast by the base station. The maximum allowed transmit power is slightly lower than in standard DECT, but can also be broadcast by the base station, as specified in ETSI EN 300 175-3 [3] ((V1.9.1) or later).

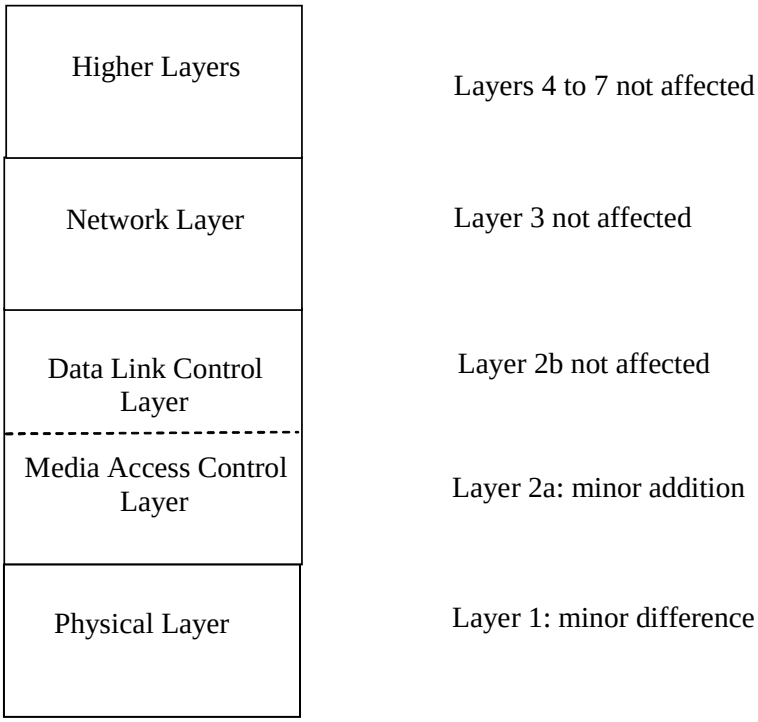

Figure 1: DECT protocol stack

5 DECT UPCS 1 920 MHz to 1 930 MHz FCC requirements

5.0 General

This clause provides a reference and/or explicitly specifies requirements to DECT terminals/systems implementations to satisfy the specific UPCS 1 920 MHz to 1 930 MHz FCC requirements [12].

NOTE: Test and Certification Procedures for UPCS equipment.

For FCC approval there are two main steps:

- Testing at laboratory accredited to test to ANSI C63.17 [13] and is listed by the FCC as an approved laboratory for UPCS testing; and
- Certification by a TCB (Telecommunication Certification Body).

After testing at an accredited laboratory, the test report and other documents are reviewed by a TCB. Once a determination is made by the TCB that a device meets the FCC rules, an FCC grant is issued by the TCB. For more information on the FCC process or recent interpretations of its rules see: https://www.fcc.gov/engineering-technology/laboratory-division/general/equipment-authorization.

The requirements specified below, are only those which have to be changed or added in relation to European DECT requirements [9], in order to comply with the FCC requirements [12] and its interpretation as given by the related test document ANSI C63.17 [13].

The following parameters are, or may be, affected:

- The frequency band.
- RF frequency stability.

- Peak transmit power.
- Antenna gain.
- Antenna connector.
- Receiver bandwidth.
- Definition of channels in the channel selection list (including which slots to monitor and "quiet" and "busy" channel levels).
- Maximum time between updates of the channel list.
- Maximum time for dummy bearer and duplex bearer without new channel measurement.
- Reaction time of RSSI detector.

For each parameter references are given to the relevant ETSI EN 300 175-3 [3], ETSI EN 301 406 [9], FCC [12] and ANSI C63.17 [13] (test) documents.

5.1 Carrier frequencies

DECT equipment for the UPCS band 1 920 MHz to 1 930 MHz shall operate on any or all of the 5 carriers 1 921,536 MHz, 1 923,264 MHz, 1 924,992 MHz, 1 926,720 MHz and 1 928,448 MHz. See ETSI EN 300 175-2 [2], clause F.2.

5.2 Antenna connector

FCC references: Part 15 [12], section 15.317.

It is required that if the external antenna is detachable, the connector shall not be of standard type. This requirement does not apply if the transmitter equipment has to be professionally installed.

5.3 RF frequency stability

ETSI reference: ETSI EN 301 406 [9], clause 4.5.1 referring to ETSI EN 300 175-2 [2], clause 4.1.2.

FCC references: Part 15 [12], section 15.323(f).

ANSI references: ANSI C63.17 [13], clause 6.2.1.

ETSI EN 301 406 [9], requires ±25 ppm and the FCC requires ±10 ppm at extreme temperatures as defined by the manufacturer, see ANSI C63.17 [13], clause 6.2.1. The equipment shall fulfil the FCC requirements.

5.4 Peak transmit power

ETSI references: ETSI EN 301 406 [9], clause 4.5.4.

FCC references: Part 15 [12], sections 15.303(c), 15.319(c) and 15.319(e).

ANSI references: ANSI C63.17 [13], clauses 4.3.1, 6.1.2 and 6.1.3.

P_{NTP} shall be $100 \times B^{½}$ mW, where the B is the bandwidth in MHz. This bandwidth is defined in Part 15.303(c). B for DECT could be varied from 1,5 MHz to 2,5 MHz depending on modulation index setting.

Thus P_{NTP} becomes minimum 21 dBm and maximum 22 dBm, depending on selected setting of the bandwidth parameter.

Furthermore, the above level of P_{NTP} shall be reduced by the amount in decibels that the maximum directional gain of the antenna exceeds 3 dBi.

5.5 Disable transmitter in case of failure

FCC references: Part 15 [12], section 15.319(f).

ANSI references: ANSI C63.17 [13], clause 4.11.

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude transmission of control and signalling information or use of repetitive codes used by certain digital technologies to complete frame or burst intervals. A declaration with explanation of how the requirements of this clause are met is required.

5.6 Maximum transmit period - general

FCC references: Part 15 [12], section 15.323(c)(3).

ANSI references: ANSI C63.17 [13], clauses 8.2.2.

Occupation of the same combined time and spectrum windows by a device or group of cooperating devices continuously over a period of time longer than 8 hours is not permitted without repeating the access criteria.

A practical application of this requirement is to force an intra-cell handover, if the same access channel has been used for more than H hours, where H < 8 hours. There is no corresponding ETSI requirement.

5.7 Maximum transmit period for a dummy bearer

FCC references: Part 15 [12], section 15.323(c)(4).

ANSI references: ANSI C63.17 [13], clauses 8.1.1 and 8.1.2.

Channels used exclusively for control and signalling information may transmit continuously for 30 seconds without receiving an acknowledgment, at which time the access criteria shall be repeated. Standard DECT implementations repeat the access criteria every few seconds to check that the dummy bearer remains on a least interfered channel, so that the dummy can be well received within the whole cell, but there is no formal ETSI requirement on this. See ETSI EN 300 175-3 [3], clause 5.7.

5.8 Bandwidth of monitoring receiver

FCC references: Part 15 [12], section 15.323(c)(7).

ANSI references: ANSI C63.17 [13], clause 7.4.

There is no explicit ETSI bandwidth requirement for the monitoring receiver. It is however supposed that the communications receiver is also used as monitoring receiver. If this is the case, the FCC requirement is fulfilled. See ANSI C63.17 [13], clause 7.4.

5.9 Reaction time of RSSI detector of monitoring receiver

ETSI references: ETSI EN 300 175-2 [2], clause 8.3.

FCC references: Part 15 [12], section 15.323(c)(7).

ANSI references: ANSI C63.17 [13], clause 7.5.

The reaction time of the signal strength detector is not an ETSI EN 300 175-2 [2], mandatory requirement, but in ETSI EN 300 175-2 [2], clause 8.3 a time constant between 10 microseconds and 40 microseconds is recommended, which is similar to the FCC/ANSI requirement, which however is not defined as a time constant. If the margin when testing the upper "busy" threshold was very small, a time constant below 20 microseconds may be required.

5.10 Updating channel list

ETSI references: ETSI EN 301 406 [9], clause 4.5.10.1 referring to ETSI EN 300 175-3 [3], clauses 11.4.2 b and 11.4.3 a.

FCC references: Part 15 [12], section 15.323(c)(5).

The channel list shall be updated every 10 s (30 s in ETSI EN 300 175-3 [3]).

5.11 Field strength measurements for duplex connections

ETSI references: ETSI EN 301 406 [9], clause 4.5.10.1 referring to ETSI EN 300 175-3 [3], clause 11.4.1.

FCC references: Part 15 [12], section 15.323(c)(10).

ANSI references: ANSI C63.17 [13], clause 8.2.3.

For a duplex bearer both the transmit slot and the receive slot shall be monitored and the highest of the two RSSI values is the relevant RSSI value for the duplex bearer. ETSI EN 301 406 [9] only requires receive slot monitoring for selection by PP.

5.12 Least Interfered Channel (LIC) confirmation

ETSI references: ETSI EN 301 406 [9], clause 4.5.10.1 referring to ETSI EN 300 175-3 [3], clauses 11.4.2 d and h and 11.4.3 g.

FCC references: Part 15 [12], section 15.323(c)(5).

ANSI references: ANSI C63.17 [13], clauses 7.3.4.

When confirming the RSSI of a LIC from the channel list just before transmitting, the RSSI shall be no higher than the previously detected value. The RSSI resolution requirement is however 6 dB as in ETSI EN 300 175-3 [3]. This is in ETSI EN 300 175-3 [3], clauses 11.4.2 (d) and 11.4.3 (g) interpreted so that in a channel list with band limits < 6 dB, the channel is accepted also if the new RSSI measurement falls in the band just above the original band. We regard this interpretation valid also for the FCC. However ETSI EN 300 175-3 [3], clause 11.4.2.(h) at handover a value falling in up to two bands above the original band is accepted. This cannot be accepted by the FCC rule.

5.13 Conducted limits (AC mains connection)

FCC references: Part 15 [12], section 15.315.

ANSI reference: ANSI C63.4 [14].

An unlicensed PCS device that is designed to be connected to the public utility (AC) power line shall meet the limits specified in [12], section 15.207.

5.14 RF exposure requirements

ETSI references: ETSI EN 300 175-2 [2], annex A.

FCC references: Part 15 [12], section 15.319(i).

ANSI reference: ANSI/IEEE C95.1 [15].

US requirements are in practice about a factor two more restrictive than European requirements. The DECT power is however so small that the US tests will also be passed. In many cases the combination of RF power and transmission duty factor results in DECT devices falling below the testing threshold and being exempt from testing for RF exposure. The US and Canadian testing exemption limits are different and shall be checked separately. The most recent guidance from the FCC and ISED should be consulted regarding the test exemption threshold and RF exposure requirements.

Annex A (informative): Market acceptance and product availability of DECT

A.1 Countries with spectrum for DECT applications

DECT is a world-wide standard.

DECT is also an ITU IMT-2000 [16] family member, called IMT-FT, the only member that provides for uncoordinated installations on an unlicensed spectrum.

DECT has for many years already spectrum allocated within the IMT-2000 bands available in more than 110 countries (information from DECT Forum).

DECT carriers are specified in ETSI EN 300 175-2 [2], annex F for the whole frequency range 1 880 MHz to 1 980 MHz and 2 010 MHz to 2 025 MHz.

The most common protected spectrum allocation is 1 880 MHz to 1 900 MHz, but outside Europe spectrum is also available in 1 900 MHz to 1 920 MHz and in 1 910 MHz to 1 930 MHz (several countries in Latin America).

For applications and spectrum for the North American market see clause A.3.

A.2 DECT in the USA

A.2.1 The UPCS band

Since September 2004 standard DECT (with some minor modifications, see clause 5) can be applied in the US UPCS band 1 920 MHz to 1 930 MHz [11].

The UPCS band 1 920 MHz to 1 930 MHz provides a protected spectrum. The 20 MHz spectrum designated for DECT in Europe and many other countries require that equipment using this spectrum have to comply to the DECT dynamic channel selection procedures, power levels etc. Such a spectrum is here called a protected DECT spectrum. It provides for maintained high spectrum efficiency and maintained high quality radio links (e.g. speech and video) in an environment of a multitude of uncoordinated system installations. For the UPCS band there are also basic channel access rules, etc., [12], which define (a family of) technologies that coexist well in an environment of uncoordinated system installation. The basic access rules are compatible with DECT access rules. Therefore, from a DECT perspective, the UPCS band is also a protected spectrum. However, since a broader range of system parameters are accepted for the UPCS band, than for a "pure" DECT band, spectrum efficiency becomes somewhat lower for the UPCS band.

A.2.2 The ISM bands

Standard DECT can, since May 2002, also be applied in the US within the ISM bands 902 MHz to 928 MHz, 2 400 MHz to 2 483,5 MHz and 5 725 MHz to 5 850 MHz [17] and ETSI EN 300 175-2 [2].

The ISM bands are however unprotected. Opposite to a protected DECT spectrum, or the protected UPCS spectrum, having rules for uncoordinated compatible technology (DECT) installations, the ISM bands allow for uncoordinated usage of a variety of incompatible communication devices and also industrial, scientific and medical devices. Therefore maintenance of high quality of service will not be guaranteed when other types of ISM devices (non-DECT devices) are used in the same local area. This applies especially to voice and video services, but is less critical for best effort packet data services, where non-time-critical retransmissions are applied.

A.2.3 The WMTS bands

Wireless Medical Telemetry Service (WMTS) operates in the 608 MHz to 614 MHz, 1 395 MHz to 1 400 MHz, and 1 427 MHz to 1 432 MHz bands. These bands are unprotected and there are no definitions of channels or required technologies. Uncoordinated technologies, such as DECT, could be used in these bands. The maximum allowed transmitted power corresponds to 22 dBm. The usage is restricted to Medical Telemetry Services, and video or voice services are not allowed. There are additionally some location restrictions on the usages of the bands. The rules for using these bands are defined in 47 CFR Part 95, Subpart H.

Annex B (informative): FCC DECT ULE Interpretation

In September of 2013 an interpretation was sought and obtained from the FCC related to qualification of ULE devices. The following text describes the salient aspects of the inquiry and FCC response:

Inquiry:

"Our question is very specific to sensors operating under the DECT ULE protocol that normally hibernate until an event activates them, at which time they deliver a short burst of data, less than 1 second total transmission time. The question is whether, under these circumstances, the master unit, commonly called the fixed part in DECT systems, can be considered the initiating device in a communication session with a DECT ULE sensor coming out of hibernation? In terms of the service rules for the UPCS band, how should 47 CFR 15.323 be understood when applied to a DECT ULE (Ultra Low Energy) sensor waking up from hibernation. The rule, specifically 47CFR15.323(c)(10) states:

An initiating device may attempt to establish a duplex connection by monitoring both its intended transmit and receive time and spectrum windows. If both the intended transmit and receive time and spectrum windows meet the access criteria, then the initiating device can initiate a transmission in the intended transmit time and spectrum window. If the power detected by the responding device can be decoded as a duplex connection signal from the initiating device, then the responding device may immediately begin transmitting on the receive time and spectrum window monitored by the initiating device.

In DECT ULE operation a master unit, typically the base unit, also called the fixed part, which is on AC power and less sensitive to energy consumption, monitors the band and transmits a beacon signal that includes available channels for communications. If an event brings a sensor out of hibernation, it receives the next beacon signal and uses the channel information in sending its data to the master unit. After its transmission is acknowledged, it returns to hibernation.

We would interpret that the master unit is functioning as the initiating unit, for the purposes of 47 CFR 15.323(c)(10), because it is monitoring the spectrum and providing channel data to its sensors, also called the portable part. Is this the correct understanding of this rule?".

FCC Response on 08/11/2013:

"The base station can be considered the initiating device if it has a beacon transmission with monitored and clear, time and spectrum window info that is decoded by the sensor and when decoded the sensor transmits immediately only on this time and spectrum window per 15.323C(10). This is conditioned that the system complies with all other UPCS rules, requirements and tests."

NOTE: Additional correspondence, pertaining to clarification of the original inquiry, also took place prior to receiving the final FCC response. This has not been reproduced in the above extract.

Annex C (informative): Bibliography

- ETSI TR 101 310: "Digital Enhanced Cordless Telecommunications (DECT); Traffic capacity and spectrum requirements for multi-system and multi-service DECT applications co-existing in a common frequency band".
- ETSI ETR 246: "Digital Enhanced Cordless Telecommunications (DECT); Application of DECT Wireless Relay Stations (WRS)".
- ETSI TR 102 010: "Digital Enhanced Cordless Telecommunications (DECT); DECT access to IP networks".
- ETSI TR 102 185: "Digital Enhanced Cordless Telecommunications (DECT); Data Services Profile (DSP); Profile overview".
- ETSI TR 101 370: "Digital Enhanced Cordless Telecommunications (DECT); Implementing DECT Fixed Wireless Access (FWA) in an arbitrary spectrum allocation".
- ETSI ETR 341: "Digital Enhanced Cordless Telecommunications (DECT); Global System for Mobile communications (GSM); DECT/GSM Interworking Profile (IWP); Profile overview".
- ETSI TR 101 176: "Digital Enhanced Cordless Telecommunications (DECT); Global System for Mobile communications (GSM); DECT/GSM advanced integration of DECT/GSM dual-mode terminal equipment".
- IEEE 802.11b: "Working Group for Wireless Area Networks (WLANs)".
- ETSI EN 301 489-6: "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 6: Specific conditions for Digital Enhanced Cordless Telecommunications (DECT) equipment".
- ETSI EN 300 444: "Digital Enhanced Cordless Telecommunications (DECT); Generic Access Profile (GAP)".
- ETSI EN 301 649: "Digital Enhanced Cordless Telecommunications (DECT); DECT Packet Radio Service (DPRS)".
- ETSI TS 102 342: "Digital Enhanced Cordless Telecommunications (DECT); Cordless Multimedia Communication System; Open Data Access Profile (ODAP)".
- ETSI EN 300 757: "Digital Enhanced Cordless Telecommunications (DECT); Low Rate Messaging Service (LRMS) including Short Messaging Service (SMS)".
- ETSI TS 102 379: "Digital Enhanced Cordless Telecommunications (DECT); Fixed network Multimedia Message Service (F-MMS) Interworking Profile".
- ETSI EN 300 700: "Digital Enhanced Cordless Telecommunications (DECT); Wireless Relay Station (WRS)".
- ETSI TS 102 265: "Digital Enhanced Cordless Telecommunications (DECT); DECT Access to IP networks".
- ETSI EN 300 466: "Digital Enhanced Cordless Telecommunications (DECT); Global System for Mobile communications (GSM); DECT/GSM Interworking Profile (IWP); General description of service requirements; Functional capabilities and information flows".
- ETSI EN 301 242: "Digital Enhanced Cordless Telecommunications (DECT); Global System for Mobile communications (GSM); DECT/GSM integration based on dual-mode terminals".
- ETSI TS 101 863-1: "Digital Enhanced Cordless Telecommunications (DECT); DECT/UMTS Interworking Profile (IWP); Part 1: General description and overview".
- ETSI EN 300 765-1: "Digital Enhanced Cordless Telecommunications (DECT); Radio in the Local Loop (RLL) Access Profile (RAP); Part 1: Basic telephony services".
- ETSI EN 300 765-2: "Digital Enhanced Cordless Telecommunications (DECT); Radio in the Local Loop (RLL) Access Profile (RAP); Part 2: Advanced telephony services".

- ETSI TS 102 527-1: "Digital Enhanced Cordless Telecommunications (DECT); New Generation DECT; Part 1: Wideband speech".
- ETSI TS 102 527-2: "Digital Enhanced Cordless Telecommunications (DECT); New Generation DECT; Part 2: Support of transparent IP packet data".
- ETSI TS 102 527-3: "Digital Enhanced Cordless Telecommunications (DECT); New Generation DECT; Part 3: Extended wideband speech services".
- ETSI TS 102 527-4: "Digital Enhanced Cordless Telecommunications (DECT); New Generation DECT; Part 4: Light Data Services; Software Update Over The Air (SUOTA), content downloading and HTTP based applications".
- ETSI TS 102 939-1: "Digital Enhanced Cordless Telecommunications (DECT); Ultra Low Energy (ULE); Machine to Machine Communications; Part 1: Home Automation Network (phase 1)".
- ETSI TS 102 939-2: "Digital Enhanced Cordless Telecommunications (DECT); Ultra Low Energy (ULE); Machine to Machine Communications; Part 2: Home Automation Network (phase 2)".
- ETSI EN 300 176-1: "Digital Enhanced Cordless Telecommunications (DECT); Test specification; Part 1: Radio".

History

Document history		
V1.1.1	October 2005	Publication
V1.2.1	December 2018	Publication