

**montena**

montena emc sa

Test laboratory accredited according to ISO 17025 by the Swiss Accreditation Service SAS
 Laboratoire d'essai accrédité selon ISO 17025 par le Service d'accréditation suisse SAS
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Registration number
 Numéro d'accréditation
 Akkreditierungsnummer

STS 024

Schweizerischer Prüfstellendienst
 Service suisse d'essai
 Swiss testing service



Report: Rapport: Bericht:	Electromagnetic compatibility		Report no: Rapport no: Bericht Nr:	15'796
Product name: Nom du produit: Produktname	EasyLink+		Mandate no: Mandat no: Auftrag Nr:	20098691
Serial no: No de série: Seriennummer:	17 (for radiated tests) 18 (for conducted tests)	Model number: Numéro de modèle: Modellnummer:	V2	
Customer: Client: Kunde:	Phonak Communications SA Länggasse 17 CH-3280 Murten	Date of test: Date de l'essai: Prüfdatum:	March 31 to April 27 and July 15, 2009	

Standards / Normes / Normen		Result Résultat Ergebnis
CFR 47, Part 2	(General rules and regulations : §§ 2.201, 2.202, 2.1046, 2.1047, 2.1049, 2.1053, 2.1055)	Pass
CFR 47, Part 95	(LPRS transmitters : §§ 95.629 (d)(2), 95.635 (c)(1), 95.639 (e))	Pass

Test performed by
 Essai effectué par :
 Prüfer

Mr Erich Staub

Test report prepared by
 Rapport d'essai préparé par :
 Berichterstatler

Mr Erich Staub

Test report controlled and approved by
 Rapport d'essai contrôlé et approuvé par :
 Prüfbericht kontrolliert und genehmigt durch

Mr André Trabold

Rossens, July 22, 2009

(Issue Date / Date d'édition / Ausstelldatum)

V2009Feb25

Main language / Langue principale / Hauptsprache : english / français / deutsch

The present document results from tests on a specimen and does not prejudice to the conformity of all the manufactured products. - Le présent document résulte d'essais sur un spécimen. Il ne préjuge pas de la conformité de l'ensemble des produits fabriqués à l'objet essayé. - Dieser Bericht beinhaltet die Prüfergebnisse eines Mustergerätes. Es kann daraus nicht auf die Übereinstimmung der Seriegeräte mit dem Mustergerät geschlossen werden.

q:\mandats\2009\20098691_phonak_easylink+rap_phonak communications ag_15796_easylink_fcc.doc

montena emc sa
 route de Montena 75
 CH-1728 Rossens
 Switzerland
 phone +41 26 411 93 33
 fax +41 26 411 93 30
 www.montena-emc.com
 office.emc@montena.com

montena emc ag
 Technopark Blumenegg
 Blumeneggstrasse 50
 CH-9403 Goldach
 Switzerland
 phone +41 71 278 41 92
 fax +41 71 278 41 93

montena emc ag
 EMV-Labor Turgi
 Postfach 48
 CH-5300 Turgi
 Switzerland
 phone +41 56 299 36 36
 fax +41 56 299 25 08

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1. Summary of test results / Résumé des résultats d'essais / Zusammenfassung der Prüfergebnisse

✓ Pass / Réussi / Bestanden

✗ Fail / Echoué / Nicht bestanden

Ø Not applicable to this product / Pas applicable à ce produit / Nicht anwendbar für dieses Produkt

— Not tested / Pas testé / Nicht geprüft

■ No requirements / Pas d'exigence / Keine Anforderung

§	Test Type / Type d'essai / Art der Prüfung	Result / Résultat / Ergebnis
6	Emission / Emission / Störaussendung	
6.1	Designation of emission Désignation d'émission Bezeichnung der Emission FCC 47 §2.201 FCC 47 §2.202	✓
6.2	RF power output Puissance RF HF Leistung FCC 47 §2.1046 FCC 47 §95.639 (e)	✓
6.3	Modulation characteristics Caractéristiques de la modulation Modulationscharakteristiken FCC 47 §2.1047	✓
6.4	Occupied bandwidth Bande passante Bandbreite FCC 47 §2.1049 FCC 47 §95.635 (c)(1)	✓
6.5	Field strength of spurious radiation Champ émis Feldstärke der Nebenaussendung FCC 47 §2.1053 FCC 47 §95.635 (c)(1)	✓
6.6	Frequency stability Stabilité de fréquence Frequenzstabilität FCC 47 §2.1055 FCC 47 §95.629 (d)(2)	✓

2. Applied standards / Normes appliquées / Verwendete Normen

47 CFR Part 2	Code of Federal Regulations - Telecommunication, FCC Part 2 – Frequency allocations and radio treaty matters; General rules and regulations
47 CFR Part 95	Code of Federal Regulations - Telecommunication, FCC Part 95 - Personal Radio Services

3. Client / Client / Kunde

Client name and address Nom et adresse du client Name und Adresse des Kunden	Phonak Communications SA Länggasse 17 CH-3280 Murten
Contact Person / Responsable / Kontaktperson	Mrs Neviana Nikoloski
Telephone / Téléphone / Telefon	+41 26 672 96 72
Fax / Télécopieur / Telefax	+41 26 672 96 77
E-mail / Courrier électronique / E-mail	info@phonak-communications.com
Mandate no / No. de mandat / Auftragsnr.	20098691

4. Equipment under test / Equipement à l'essai / Prüfling

4.1 Identification / Identification / Identifikation

Manufacturer name and address Nom et adresse du fabricant Name und Adresse des Herstellers	Phonak Communications SA Länggasse 17 CH-3280 Murten
Production country / Pays de fabrication / Ursprungsland	Switzerland
Brand name / nom de marque / Verkaufsmarke	Phonak
Product name / Nom du produit / Produktname	EasyLink+
Product description / Description du produit / Produktbeschreibung	FM transmitter with built-in microphone and an one button user interface for people with hearing losses. Audio signals are captured with the microphone or connected directly to the audio input of the adaptor and transmitted via FM and the neck loop antenna to the hearing aids. The FM channels can be changed with a pen-push button.
Model number / Numéro de modèle / Modellnummer	V2
Serial no / No. de série / Seriennummer	17 (for radiated tests) 18 (for conducted tests)
Software version / Version du logiciel / Softwareversion	0.3.0
Highest frequency / Fréquence la plus élevée / Höchste Frequenz	Carrier between 214 MHz to 219.975 MHz
Supply / Alimentation / Speisung	U = 3.7 VDC internal Lithium-Ion battery
Technical documentation Documentation technique Technische Dokumentation	None. The equipment is completely identified by its serial no. according to ISO 9001.

4.2 Pictures of the EUT / Photos de l'EST / Fotos des Prüflings



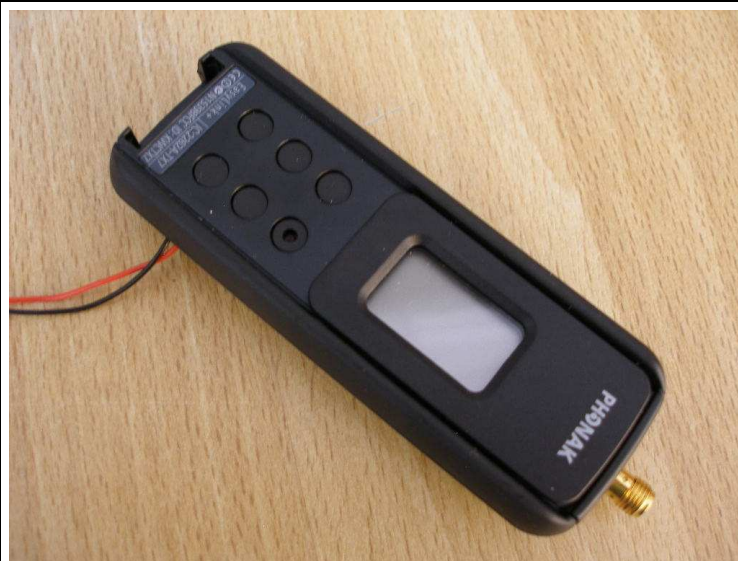
EasyLink+ with adaptor and external AC/DC adaptor



EasyLink+ for radiated measurements



*EasyLink+ for radiated measurements:
markings*



EasyLink+ for conducted measurements



EasyLink+ for conducted measurements: markings



Adaptor



Power supply



4.3 Classification / Classification / Klassierung

None

4.4 Ports / Accès / Anschlüsse

Port / Accès / Anschluss	Cable / Câble / Kabel			Remark / Remarque / Bemerkung
	Max. length / Longueur max. / Max. Länge	Type / Type / Typ	Screen / Blindage / Schirm	
Neck loop antenna	1 m	1 wire	none	Integral part of equipment under test
External AC/DC adaptor	1.85 m	1 wires	none	Connected to EasyLink+ via the adaptor
External audio	2 m	3 wires	none	Connected to EasyLink+ via the adaptor

4.5 Modifications / Modifications / Angebrachte Änderungen

None

5. Test conditions / Conditions d'essai / Testbedingungen**5.1 Climatic conditions, location and date / conditions climatiques, lieu et date / klimatische Bedingungen, Ort und Datum**

Location / Lieu / Ort:	Date / Date / Datum:	Temp. / Temp. / Temp.:	Pressure / Pression / Druck [QFF]:	Rel. humidity / Humidité rel. / Rel. Luftfeuchtigkeit:
montena emc sa CH-1728 Rossens	March 31 to April 3, 2009	20 - 23 °C	1015 – 1022 hPa	31 - 35 %
	April 14 to 27, 2009	20 - 25 °C	1003 – 1020 hPa	30 - 36 %
	July 15, 2009	25 °C	1020 hPa	60 %

5.2 Test facility and methodology / Lieu d'essai et méthodologie / Prüfort und Methodik

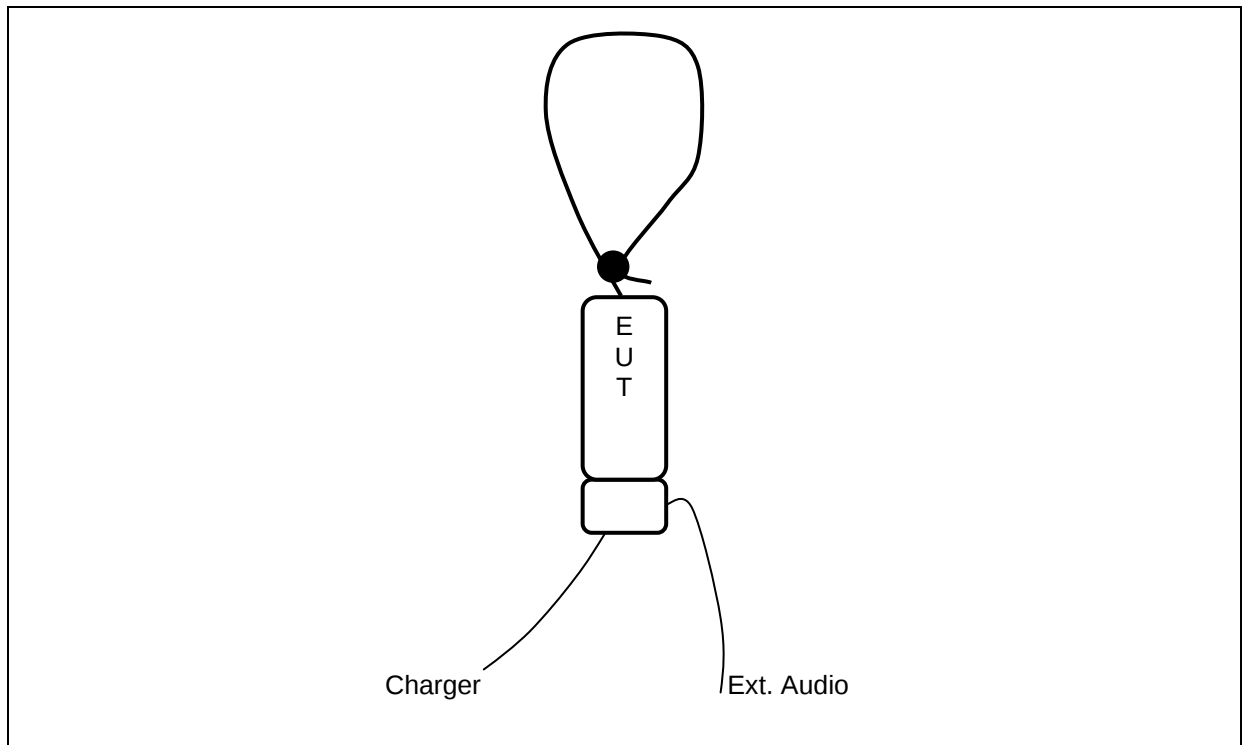
The alternate test site (ferrite chamber) is accepted by FCC (Reg. No. 0009508433). Conducted and radiated measurements are performed according to the ANSI C63.4 (2003) procedure.
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5.3 Attendant persons / Personnes présentes / Anwesende Personen**Test Engineer(s) / Ingénieur(s) d'essai / Prüfsingenieur(e) :**

Mr Erich Staub

Other(s) / Autre(s) / Andere :

Name / Nom / Name	Company / Société / Firma
Mr Martin Brügger	Phonak Communications SA

5.4 Test configuration / Configuration d'essai / Prüfkonfiguration**5.5 Operating conditions / Conditions de fonctionnement / Betriebszustand**

Continuously transmitting on one of the following frequencies: 214 MHz, 216.0125 MHz, 219.975 MHz

5.6 Auxiliary equipment / Matériel auxiliaire / Zusatzgeräte

The following pieces of equipment are used for the monitoring of the EUT or are necessary for the EUT but they are not tested with the EUT / Les équipements suivants servent à la surveillance de l'EST ou sont indispensables au fonctionnement de celui-ci mais ne font pas partie de l'essai / Folgende Geräte werden für die Überwachung des Prüflings gebraucht oder sind notwendig für die korrekte Funktion. Sie gehören jedoch nicht zum Prüfling.

None

6. 47 CFR Parts 2 and 95

6.1 Designiation of emission

Standard:	United States: 47 CFR "Code of Federal Regulations" – Telecommunication ☒ FCC Part 2, Subpart C: Emission: §2.201 and §2.202		
Introduction:	A system of designating emission, modulation and transmission characteristics shall be employed. (a) Emissions are designated according to their classification and their necessary bandwidth. (b) A minimum of three symbols are used to describe the basic characteristics of radio waves. (c) Four symbols are used to describe the necessary bandwidth.		
Necessary bandwidth:	For a given class of emission, the minimum value of the occupied bandwidth sufficient to ensure the transmission of information at the rate and with the quality required for the system employed, under specified conditions. $B_n = 2M + 2D$ $B_n = 24 \text{ kHz}$ $B_n = \text{necessary bandwidth}$ $M = \text{maximum modulation frequency (audio)} = 6 \text{ kHz}$ $D = \text{Peak frequency deviation} = 5.8 \text{ kHz}$		
Basic characteristics:	F3E	F : frequency modulation 3 : a single channel containing analogue information E : telephony (including sound broadcasting)	
Designation of emission:	24K0F3E		

6.2 RF power output

Standard: United States: 47 CFR "Code of Federal Regulations" – Telecommunication

☒ FCC Part 2, Subpart J: Certification: §2.1046☒ FCC Part 95, Subpart E: Technical regulations: §95.639(e)

Limit for LPRS = 100 mW = 20 dBm

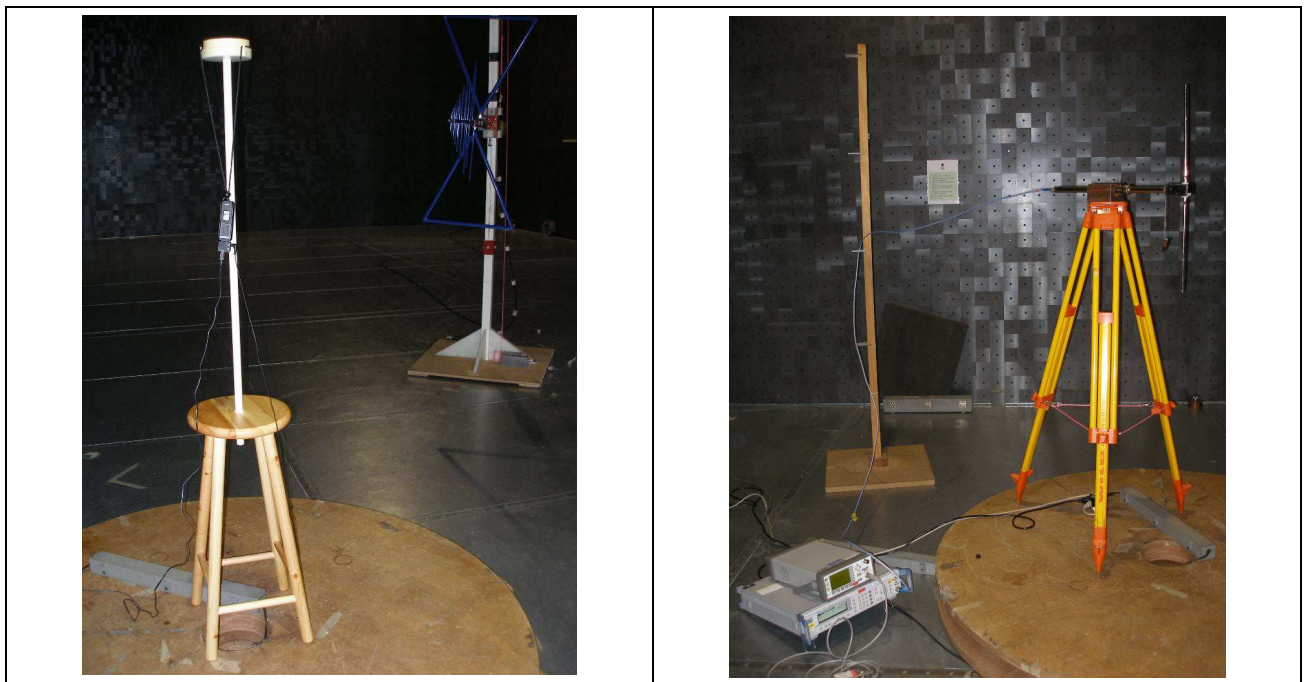
Distance: ☐ 30 m ☐ 10 m ☒ 3 m ☐Test site: ☐ anechoic chamber (foam) ☐ shielded room
☒ anechoic chamber (ferrites) ☐ laboratory
☐ open test site ☐

Position of EUT: 1.5 m (height of the equipment under test above floor)

Meas. uncertainty: ± 6 dB (30 - 300 MHz)

Test method: The antenna is moved from 1 to 4 m in height. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value of all the disturbances appearing while the apparatus is under test. The device under test has a specific type of antenna and, therefore, the effective radiated power (ERP) is measured instead of the output power. The ERP is defined as the equivalent radiated power of a dipole.

Test set-up:



Remarks: ---

Test equipment:

Spectrum analyser	☐ 88-14	☐ 94-24	☐ 02-06	☒ 03-45	☐ 05-39	☐ 07-53
Antenna (bilog)	☒ 94-03	☐ 05-38	☐			
HF-wattmeter	☐ 95-97	☐ 01-15	☐ 01-17	☒ 03-07	☐ 04-96	☐ 05-20
Thermocouple detector	☐ 92-03	☐ 05-74	☐ 05-88	☒ 07-03	☐	
Substitution antenna	☒ 89-01	☐ 00-52	☐			
Frequency generator	☐ 88-23	☐ 00-42	☐ 03-39	☐ 04-03	☐ 04-89	☒ 05-78
Cables	☐ 06-00	☒ 06-01	☐			

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Results of the testClient: *Phonak Communications SA*Apparatus: *EasyLink+*Operating mode:

- modulated*

Cables connected to the EUT:

- Charger*
- Ext. audio*

Remarks: *---*

f [MHz]	Measurement with EUT		Power at substitution		Meas. with P	Parameters of substitution ant.		Result			Remarks
	E	preamp	P	factor		gain	att. Cable	corr.	P ERP	P ERP	
	[dBuV/m]	[dB]	[dBm]	[dB]	[dBuV/m]	[dB]	[dB]	[dB]	[dBm]	[W]	
214.0000	-13.0	0.0	-0.06	0	-32.3	-10	0	22.24	9.24	8.39 mW	---
216.0125	-12.8	0.0	-0.06	0	-32	-10	0	21.94	9.14	8.20 mW	---
219.9750	-12.6	0.0	-0.07	0	-31.4	-10	0	21.33	8.73	7.46 mW	---

Date of test: *April 3, 2009*
Operator: *Erich Staub*

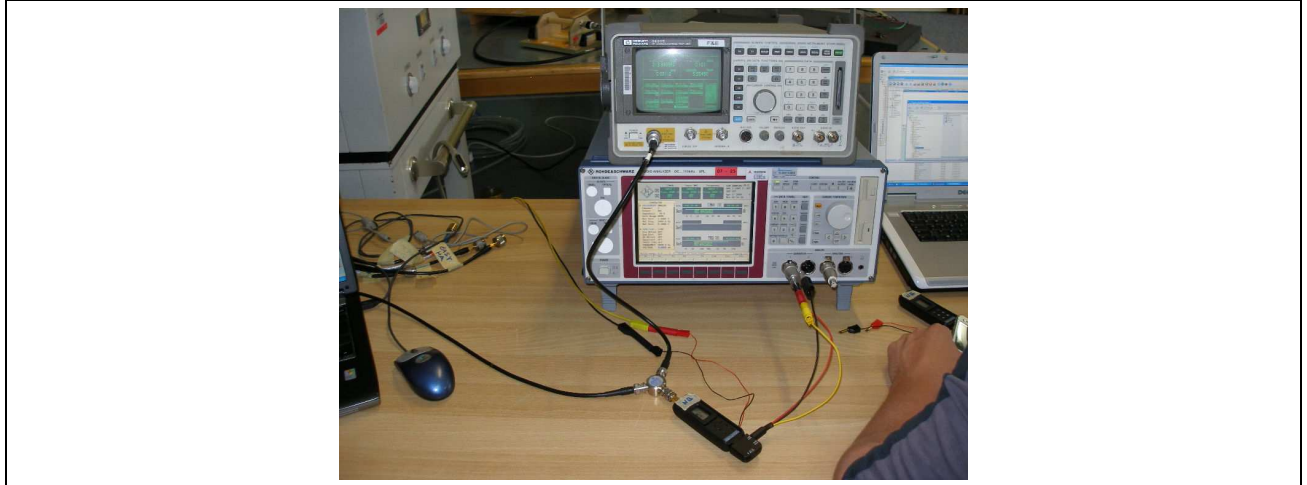
6.3 Modulation characteristics

Standard: United States: 47 CFR "Code of Federal Regulations" - Telecommunication
☒ FCC Part 2, Subpart J: Certification: §2.1047

Test site: ☐ anechoic chamber (foam) ☐ open test site
☐ anechoic chamber (ferrite) ☒ laboratory

Test method: Measurement of the frequency at the antenna connector or a test fixture.

Test set-up:



Remarks: ---

Test equipment:

RF communication test set	☐ 88-23	☐ 94-06	☐ 00-42	☐ 03-39	☒ HP8920B (Phonak)
Générateur LF	☒ 07-25 (UPL)				
Oscilloscope numérique	☐ 90-14	☐ 93-85	☐ 93-86	☐ 01-20	☐ 04-06 ☐ 04-50
	☐ 05-22	☐ 05-28			
Power divider	☒ 6 dB				
Power supply	☒ 04-31				

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Results of the test

Client: Phonak Communications SA

Apparatus: EasyLink+

Remarks:

- Audio signal injected on both channels (right and left) simultaneously
- Audio detector = Peak +-Max

Frequency response of audio circuit:

An audio signal at 1 kHz is adjusted for a 100 % rated FM deviation (= 16 mV rms). While maintaining the same amplitude, the frequency is varied. The FM deviation is measured and recorded at several frequencies in order to determine the frequency response.

Audio [kHz]	Dev. [kHz]	Audio [kHz]	Dev. [kHz]	Audio [kHz]	Dev. [kHz]	Audio [kHz]	Dev. [kHz]
0.1	3.9	0.9	4.1	4.0	3.9	8.0	0.1
0.2	4.2	1.0	4.1	4.5	3.8	9.0	0.1
0.3	4.2	1.2	4.1	5.0	3.8	-	-
0.4	4.2	1.5	4.1	5.5	3.8	-	-
0.5	4.2	2.0	4.1	6.0	0.4	-	-
0.6	4.3	2.5	4.0	6.5	0.1	-	-
0.7	4.1	3.0	4.0	7.0	0.1	-	-
0.8	4.1	3.5	3.9	7.5	0.1	-	-

Limit [kHz]	Remarks:	Pass	
		Yes	No
±75	---	☒	☐

Modulation limiting of audio input:

An audio signal at different frequencies is adjusted for a 100 % rated FM deviation (= 16 mV rms). While maintaining the same frequency, the audio level is varied. The FM deviation is measured and recorded at different audio levels in order to determine the modulation limiting.

Audio signal level [mV rms]	FM Deviation [kHz]			
	200 Hz	1000 Hz	3500 Hz	8000 Hz
4	1.3	1.4	1.3	0.1
5	1.6	1.7	1.6	0.1
10	3.2	3.3	3.2	0.1
20	4.3	4.2	4.0	0.1
50	4.4	4.3	4.1	0.1
100	4.5	4.4	4.1	0.1

Limit [kHz]	Remarks:	Pass	
		Yes	No
±75	---	☒	☐

Date of test: April 27, 2009
Operator: Erich Staub

6.4 Occupied bandwidth

Standard: United States: 47 CFR "Code of Federal Regulations" – Telecommunication
☒ FCC Part 2, Subpart J: Certification: §2.1049
☒ FCC Part 95, Subpart E: Technical regulations: §95.635(c)(1)

Test site: ☐ anechoic chamber (foam) ☐ shielded room
☐ anechoic chamber (ferrites) ☒ laboratory
☐ open test site ☐

Test precision: ± 1.5 dB

Test requirements: Emissions for transmitters operating on standard band channels (25 kHz) shall be attenuated below the unmodulated carrier in accordance with the following:

- Emissions 12.5 kHz to 22.5 kHz away from the channel center frequency: at least 30 dB
- Emissions more than 22.5 kHz away from the channel center frequency: at least $43 + 10 \log$ (carrier power in watts) dB

Test method: The audio signal input was set to 16 mV rms (= FM deviation max). For different input frequencies the fundamental frequency was plotted.

Test set-up:



Remarks: *For power levels below 50 mW the formula given above for frequencies more than 22.5 kHz away from the center frequency is smaller than 30 dB (value for frequencies between 12.5 kHz to 22.5 kHz away from the center frequency). Therefore 30 dB is applied for all frequencies more that 12.5 kHz away from the center frequency.*

Test equipment:

Spectrum analyser	☐ 88-14	☐ 90-26	☐ 94-24	☒ 02-06	☐ 03-45	☐ 03-57
RF communication test set	☒ HP8920B (Phonak)					
Oscilloscope numérique	☐ 90-14	☐ 93-85	☐ 93-86	☐ 01-20	☐ 04-06	☐ 04-50
	☐ 05-22	☐ 05-28				
Signal generator	☒ 07-25 (UPL)					
Power supply	☒ 04-31					
Power divider	☒ 6 dB					

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Measurement Type : Power Interference
 Port : Temporary antenna connector
 Clamp position :

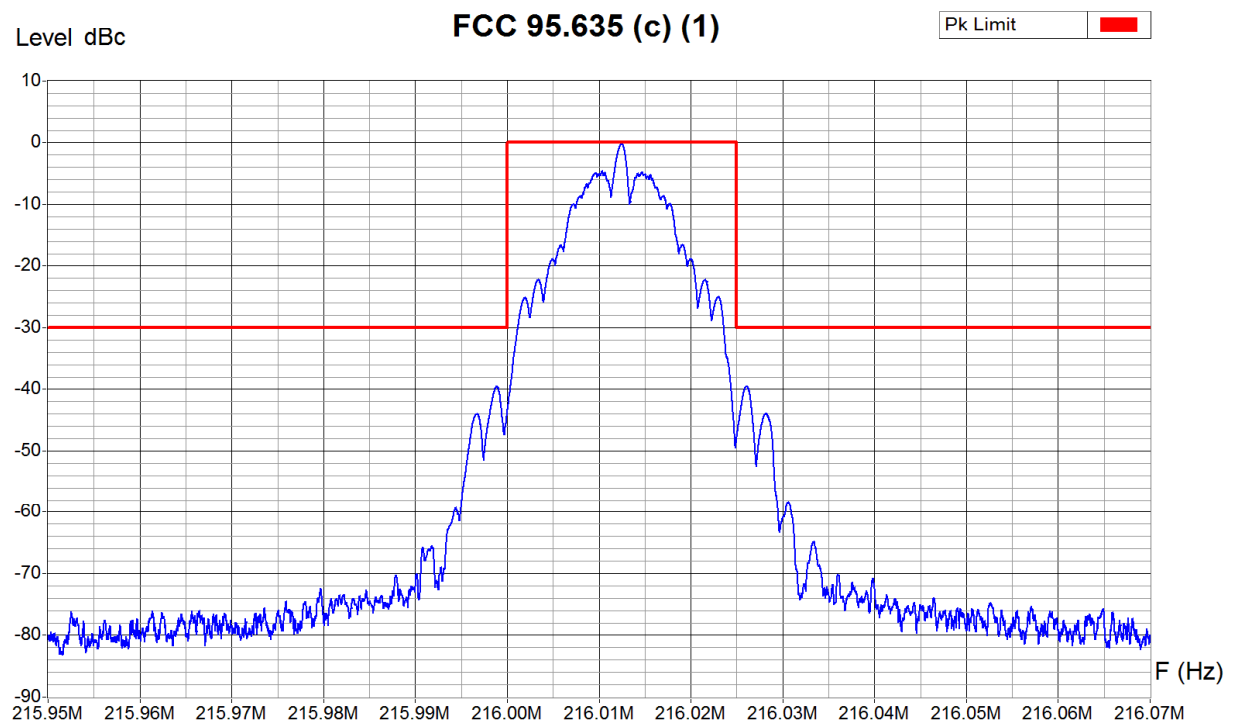


Equipment Under Test : EasyLink+

Set-Up :

Operating Conditions : Tx = 216.0125 MHz; Audio level on channels in parallel = 16mV rms

Remarks : Audio frequency sweep 1kHz - 8kHz; Spacing = log; nb points = 100;



Zone	215.95 MHz -
Video Bandwidth	1 KHz
Resol Bandwidth	1 KHz

Operator: E. Staub
 Date/Time: 27.04.2009 10:39
 Filename:
 20098691_FCC95_FCC95_BW_0
 00.png/.txt

6.5 Field strength of spurious radiation**6.5.1 Spurious emissions (radiated – 30 MHz to 1000 MHz)**

Standard: United States: 47 CFR "Code of Federal Regulations" – Telecommunication
☒ FCC Part 2, Subpart J: Certification: §2.1053
☒ FCC Part 2: §2.1047 (Frequency range: up to tenth harmonic or 40 GHz)
☒ FCC Part 95, Subpart E: Technical regulations: §95.635(c)(1)

Distance: ☐ 30 m ☐ 10 m ☒ 3 m ☐

Test site: ☐ anechoic chamber (foam) ☐ shielded room
☒ anechoic chamber (ferrites) ☐ laboratory
☐ open test site ☐

Position of EUT: 1.5 m, antenna stretched vertically (height of the equipment under test above floor)

Meas. uncertainty: ± 4.6 dB (30 - 300 MHz) / ± 3.7 dB (300 - 1000 MHz)

Test method: The antenna is moved from 1 to 4 m in height. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value of all the disturbances appearing while the apparatus is under test.

Test set-up:



Remarks: Except the carrier frequencies, the emissions are < -30 dBc.

Test equipment:

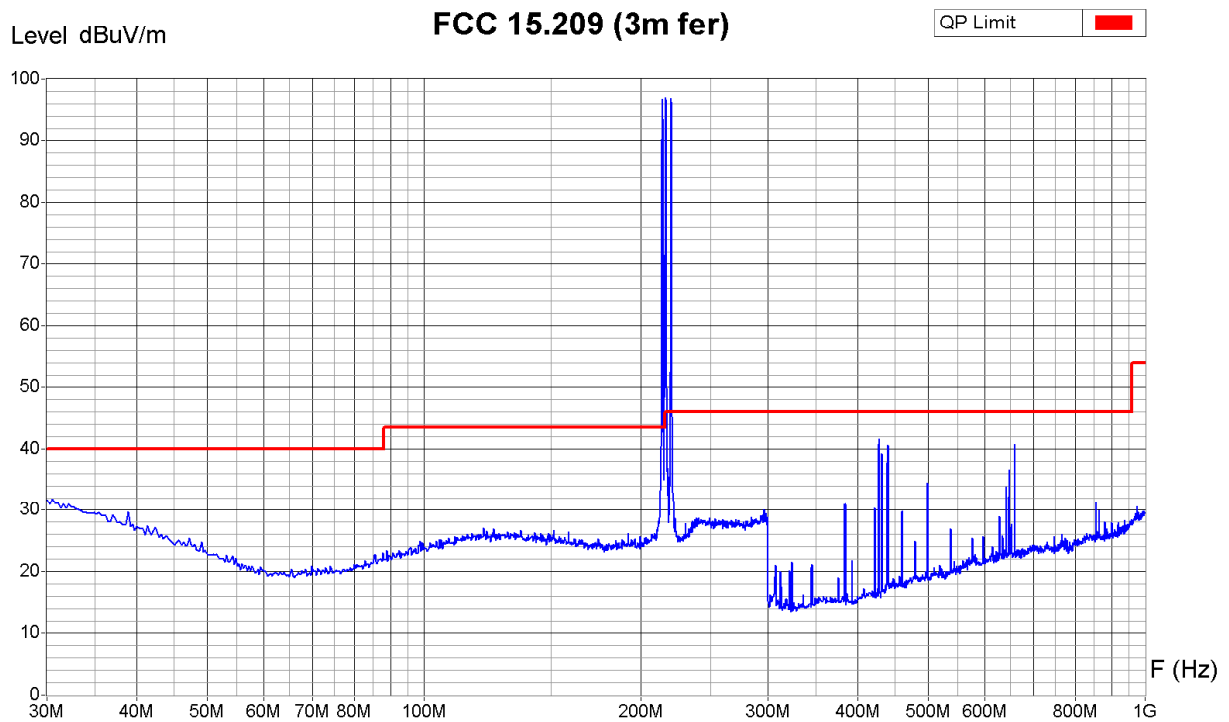
Spectrum analyser	☐ 88-14	☐ 94-24	☐ 02-06	☒ 03-45	☐ 05-39	☐ 07-53
Receiver	☐ 85-04	☐ 90-43	☐ 94-35	☐ 04-29		
Preamplifier	☐ 90-01	☐ 95-86	☐ 05-56	☒ 05-59	☐ 05-62	☐ 05-87
Antenna (bilog)	☒ 94-03	☐ 05-38	☐			
Cables	☐ 06-00	☒ 06-01	☐			

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 1 - 4m



Equipment Under Test : EasyLink+
Set-Up : cables: ext. audio, charger
Operating Conditions : f = 214 MHz, 216.0125 MHz and 219.975 MHz; modulated
Remarks : With phonak high-pass filter for f > 300 MHz



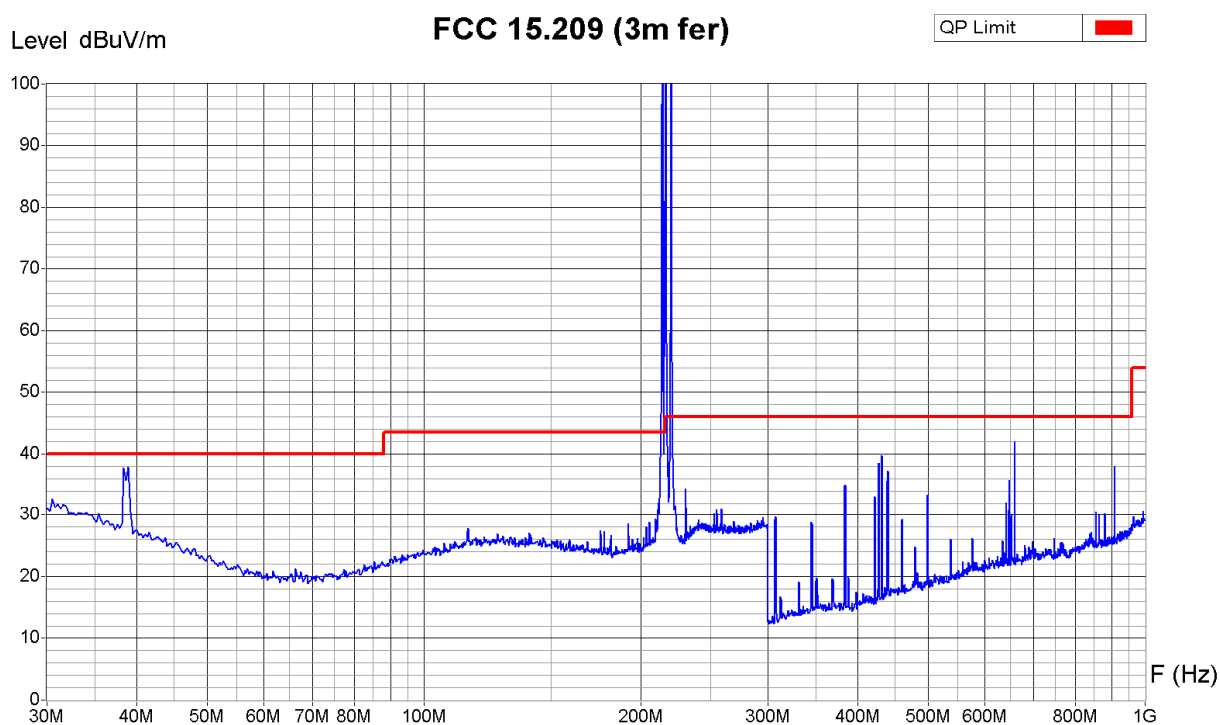
Zone	30 MHz - 300 MHz	300 MHz - 1 GHz
Video Bandwidth	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 14.04.09 13:47
Filename:
20098691_FCC15-209_er
Tx_000h.png/.txt

Measurement Type : Radiated Field
 Polarisation : Vertical
 Table Angle : 0 - 360°
 Antenna Height : 1 - 4m



Equipment Under Test : EasyLink+
 Set-Up : cables: ext. audio, charger
 Operating Conditions : f = 214 MHz, 216.0125 MHz and 219.975 MHz; modulated
 Remarks : With phonak high-pass filter for f > 300 MHz



Zone	30 MHz - 300 MHz	300 MHz - 1 GHz
Video Bandwidth	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz

Operator: E. Staub
 Date/Time: 14.04.09 13:38
 Filename:
 20098691_FCC15-209_er
 Tx_000v.png/.txt

6.5.2 Spurious emissions (radiated – 1 GHz to 2.6 GHz)

Standard: United States: 47 CFR "Code of Federal Regulations" – Telecommunication
☒ FCC Part 2, Subpart J: Certification: §2.1053
☒ FCC Part 2: §2.1047 (Frequency range: up to tenth harmonic or 40 GHz)
☒ FCC Part 95, Subpart E: Technical regulations: §95.635(c)(1)

Distance: ☐ 30 m ☐ 10 m ☐ 3 m ☒ 1 m

Test site: ☒ anechoic chamber (foam) ☐ shielded room
☐ anechoic chamber (ferrites) ☐

Position of EUT: 1.5 m (height of the equipment under test above floor)

Meas. uncertainty: ± 4.7 dB

Test method: The antenna is placed at the same height as the EUT successively with horizontal and vertical polarisations. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value of all the disturbances appearing while the apparatus is under test.

Test set-up:



Test equipment:

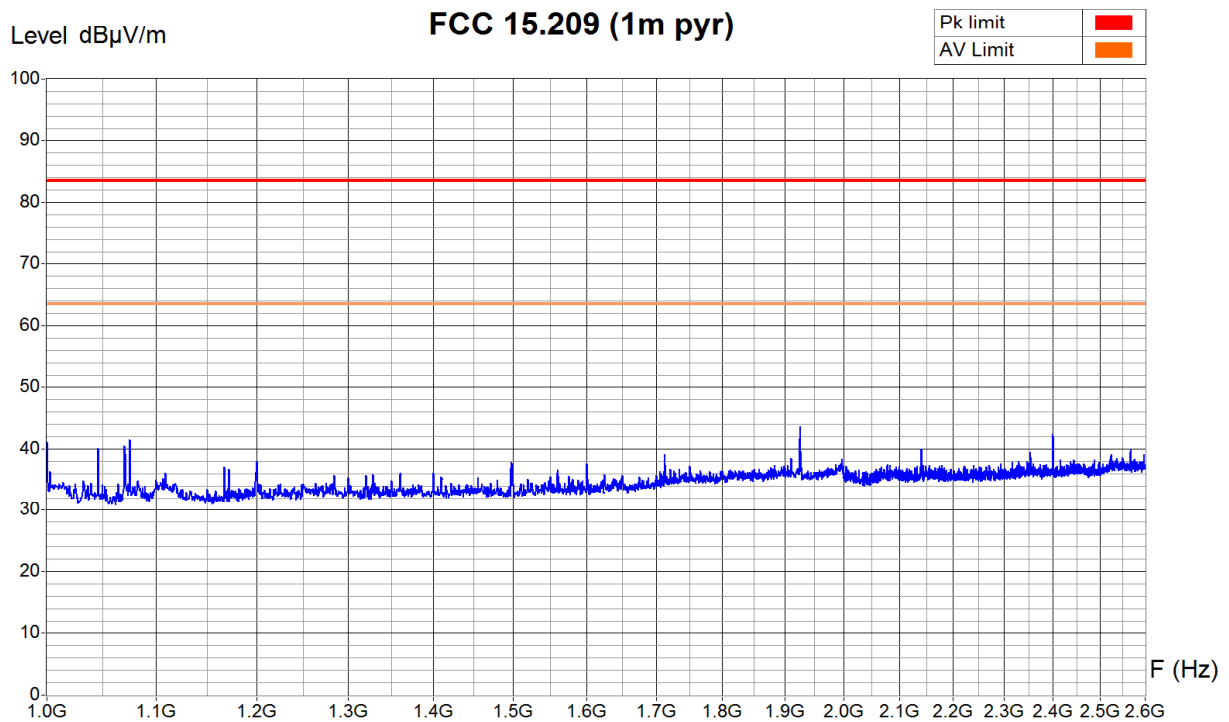
Spectrum analyser	☐ 88-14	☐ 94-24	☐ 02-06	☐ 03-45	☐ 05-39	☒ 07-53
Preamplifier	☐ 92-39	☐ 95-86	☐ 97-08	☐ 05-56	☒ 05-87	
Antenna (horn)	☒ 90-24	☐ 98-10	☐ 98-12	☐ 07-31	☐	
Cables	☒ Succoflex 1m (67688/4) + 0.5m (7833/4)					

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 1.5m



Equipment Under Test : EasyLink+
 Set-Up : cables: ext. audio, USB
 Operating Conditions : f = 214.0MHz; modulated
 Remarks :



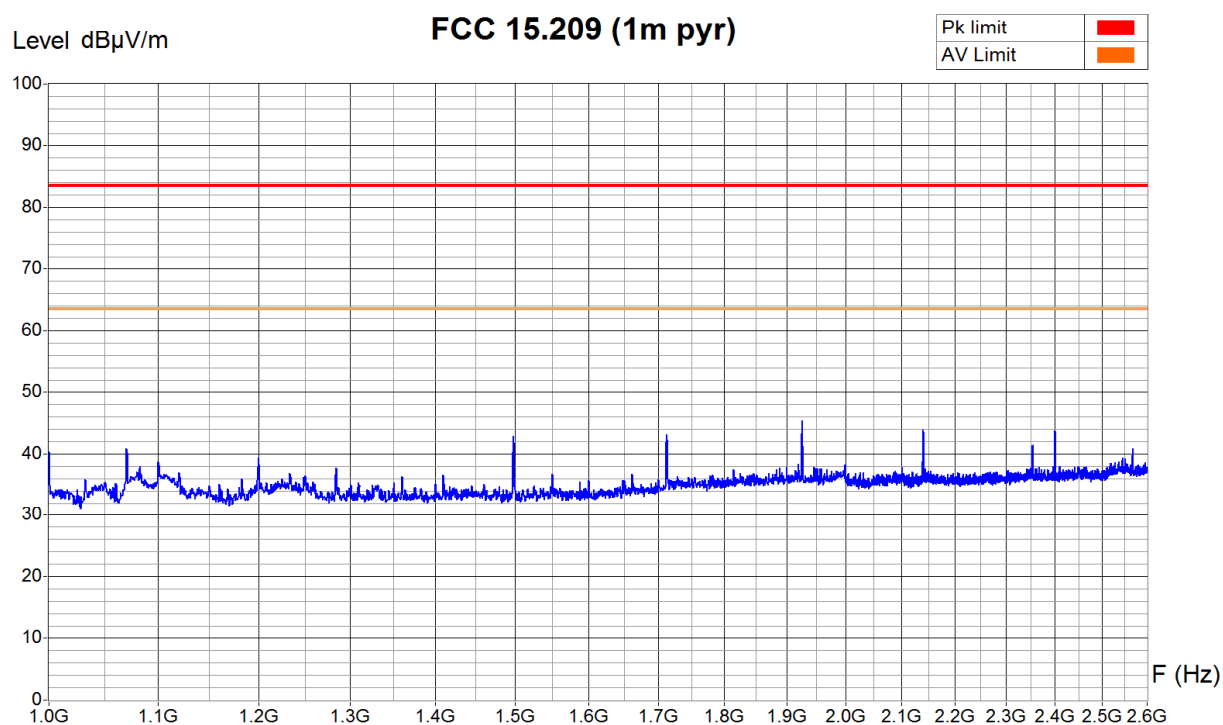
Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz
Video Bandwidth	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz

Operator: E. Staub
 Date/Time: 31.03.2009 13:58
 Filename:
 20098691_FCC95_er
 Tx_000h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 1.5m



Equipment Under Test : EasyLink+
Set-Up : cables: ext. audio, USB
Operating Conditions : f = 214.0MHz; modulated
Remarks :

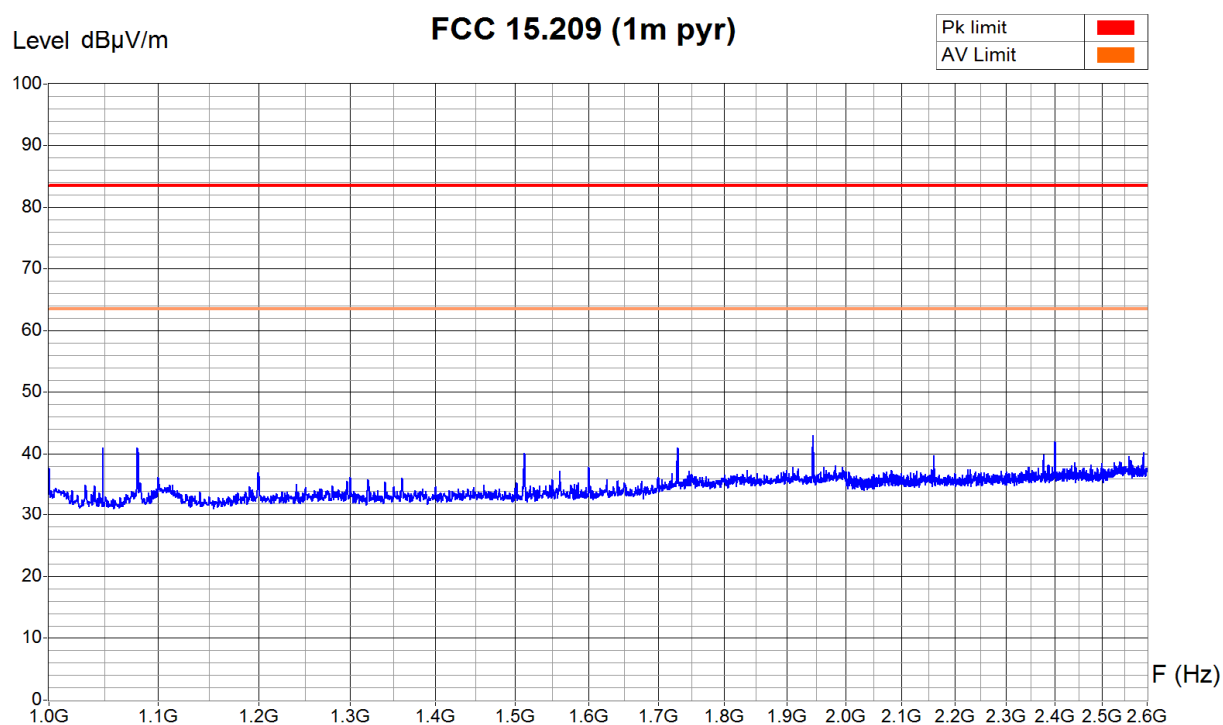


Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz
Video Bandwidth	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz

Operator: E. Staub
Date/Time: 31.03.2009 13:54
Filename:
20098691_FCC95_er
Tx_000v.png/.txt

Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 1.5m

 Equipment Under Test : EasyLink+
 Set-Up : cables: ext. audio, USB
 Operating Conditions : f = 216.0125MHz; modulated
 Remarks :



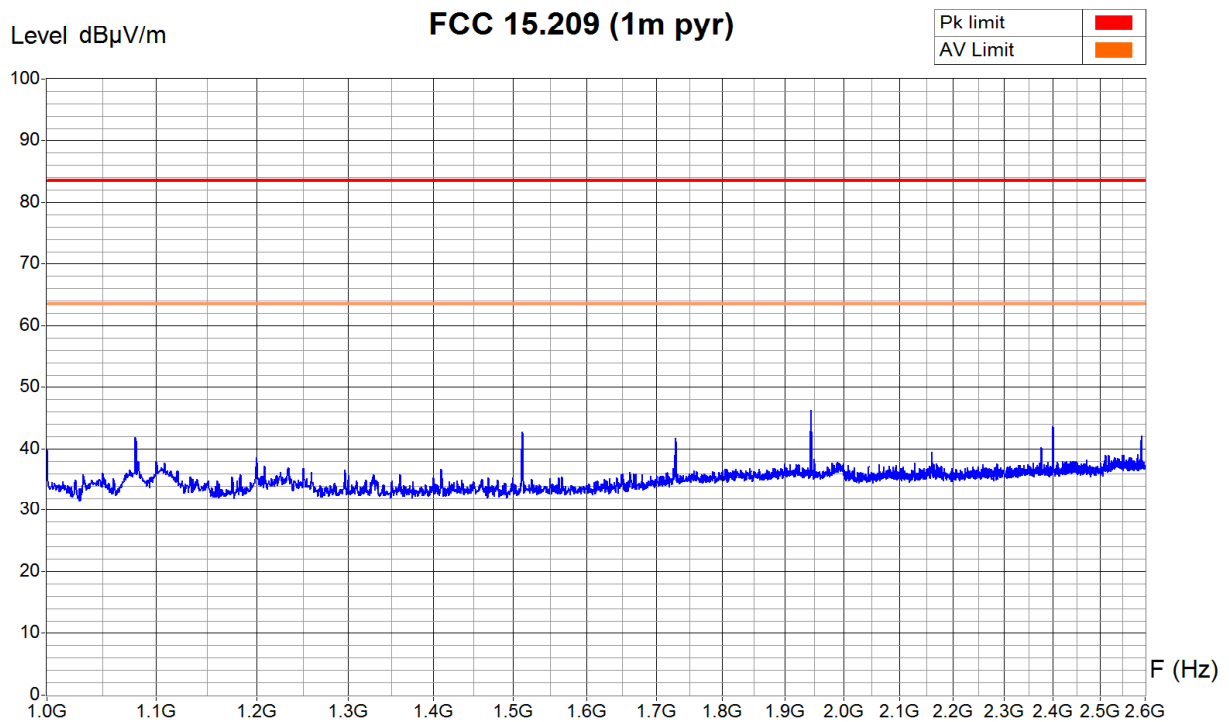
Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz
Video Bandwidth	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz

Operator: E. Staub
 Date/Time: 31.03.2009 14:03
 Filename:
 20098691_FCC95_er
 Tx_001h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 1.5m



Equipment Under Test : EasyLink+
Set-Up : cables: ext. audio, USB
Operating Conditions : f = 216.0125MHz; modulated
Remarks :



Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz
Video Bandwidth	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz

Operator: E. Staub
Date/Time: 31.03.2009 14:08
Filename:
20098691_FCC95_er
Tx_001v.png/.txt

Measurement Type : Radiated Field

Polarisation : Horizontal

Table Angle : 0 - 360°

Antenna Height : 1.5m

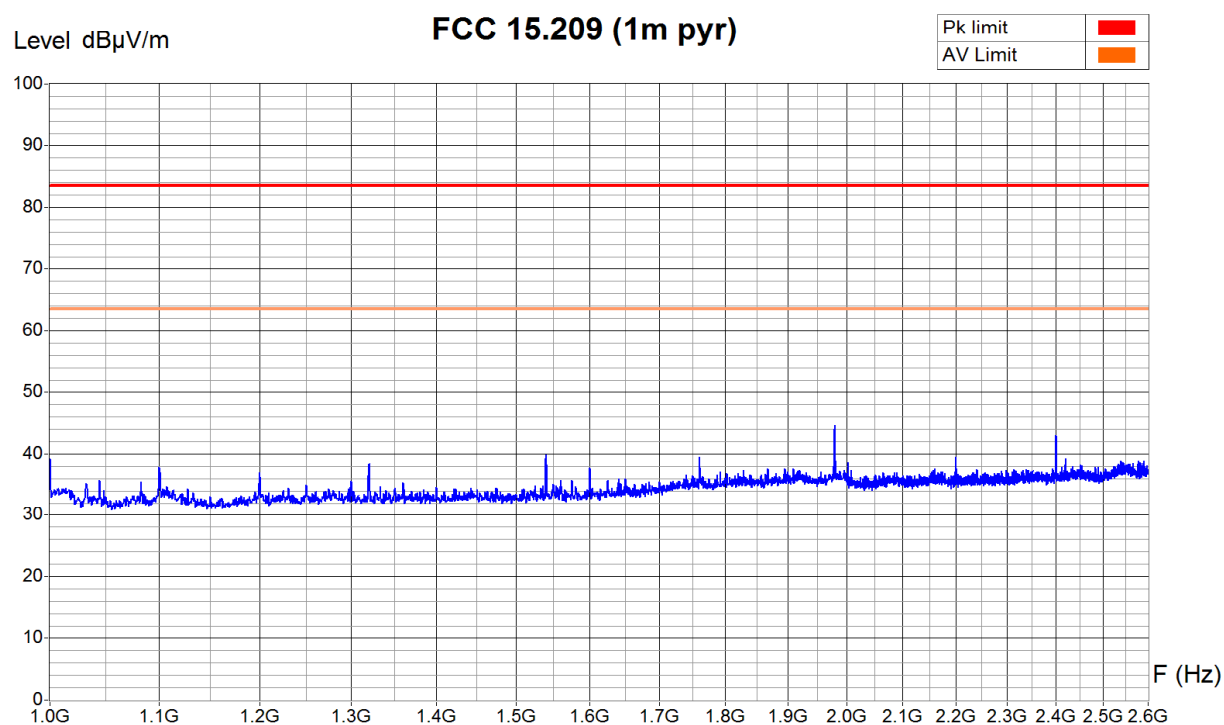


Equipment Under Test : EasyLink+

Set-Up : cables: ext. audio, USB

Operating Conditions : f = 219.975MHz; modulated

Remarks :



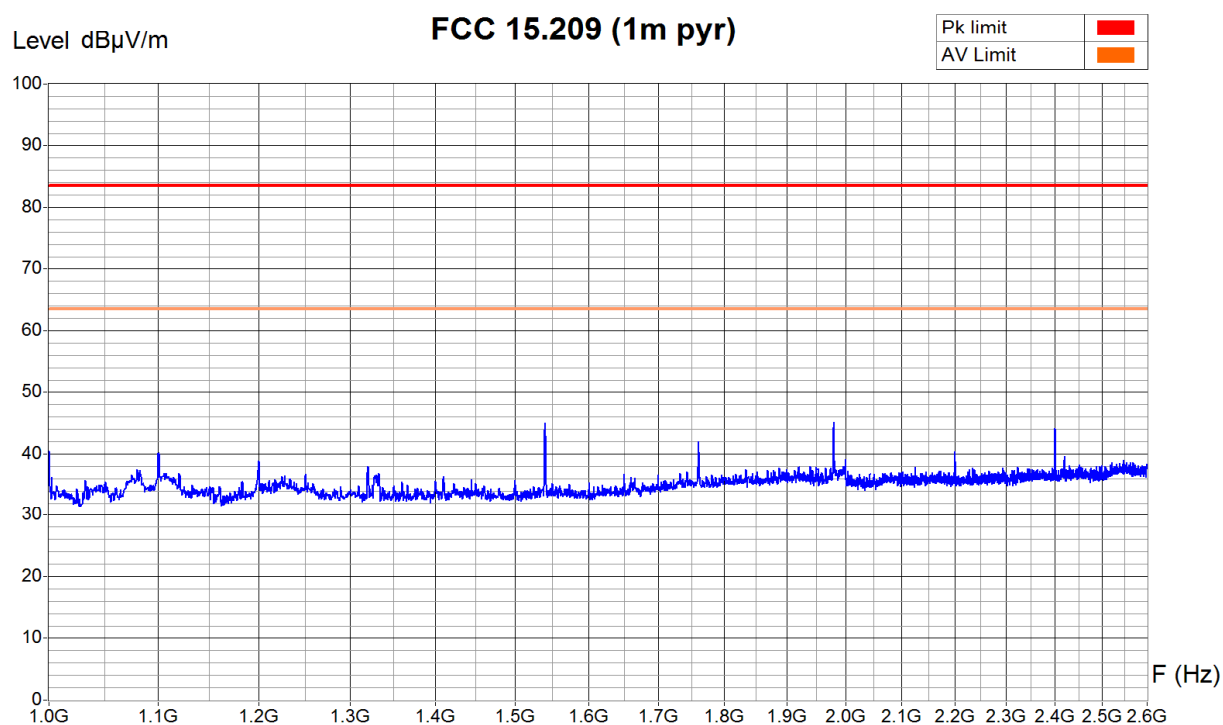
Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz
Video Bandwidth	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz

Operator: E. Staub
Date/Time: 31.03.2009 14:16
Filename:
20098691_FCC95_er
Tx_002h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 1.5m



Equipment Under Test : EasyLink+
Set-Up : cables: ext. audio, USB
Operating Conditions : f = 219.975MHz; modulated
Remarks :



Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz
Video Bandwidth	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz

Operator: E. Staub
Date/Time: 31.03.2009 14:12
Filename:
20098691_FCC95_er
Tx_002v.png/.txt

6.6 Frequency and power level stability

Standard: United States: 47 CFR "Code of Federal Regulations" – Telecommunication

☒ FCC Part 2, Subpart J: Certification: §2.1055☒ FCC Part 95, Subpart E: Technical regulations: §95.629(d)(2)☒ FCC Part 95, Subpart E: Technical regulations: §95.639(e)

Limit for LPRS = 100 mW = 20 dBm

Test site: ☐ anechoic chamber (foam) ☐ shielded room☐ anechoic chamber (ferrites) ☒ laboratory☐ open test site ☐

Test method: Measurement of the frequency and the power level at the antenna connector or at the test fixture.

Test set-up:



Remarks: ---

Test equipment:

Spectrum analyser	☐ 88-14	☐ 94-24	☒ 02-06	☐ 03-45	☐ 05-39	☐ 07-53
Multimeter	☐ 89-07	☐ 90-15	☐ 92-25	☐ 94-51	☐ 02-03	☐ 03-22
	☐ 04-47	☐ 04-104	☐ 04-105	☒ 09-12		
Temperature chamber	☒ 06-66					
Temperature probe	☐ 91-11	☐ 03-05	☒ 08-17			
Attenuator	☒ 05-81					
Variable transformer	☐ 75-04	☐				
Power supply	☐ 99-04	☒ 04-31				
Cables	☒ RG 223 2m					

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Results of the testClient: *Phonak Communications SA*Apparatus: *EasyLink+*Operating mode: *Normal operation without audio input signal*Cables connected to the EUT:

- *DC supply*
- *Temporary antenna cable*

Remarks:

- *Measured on temporary antenna connector*
- *RBW = VBW = 300Hz; Span = 1 kHz; ST = 84 ms; RefLev = 10 dBm; Detector = Peak; Trace mode = Peak hold; Nb points = 8001; Scale = 2 dB/div*
- *Temperature chamber switched off during measurement to avoid acoustic coupling to microphones*

Variation of the temperature (measured at nominal supply voltage)

Requirement:

 $\Delta f < 50$ ppm and $P < 100$ mW (20 dBm) with temperature varied from -30° to $+50^{\circ}$ in steps of 10 degrees.

Reference value:

Temp [°C]	Frequency [MHz]	Error [ppm]	Limit [ppm]	P [dBm]	P ERP [dbm]	Limit [dBm]	Remarks
24.2	216.012469	---	---	8.08	9.14	20	See §6.2

Temp [°C]	Frequency [MHz]	Error [ppm]	Limit [ppm]	P [dBm]	P ERP [dbm]	Limit [dBm]	Remarks	Pass	
								Yes	No
-30	216.012332	0.6	50	7.68	8.74	20	---	☒	☐
-20	216.012463	0.0	50	8.01	9.06	20	---	☒	☐
-10	216.012446	0.1	50	7.88	8.94	20	---	☒	☐
0	216.012451	0.1	50	7.91	8.97	20	---	☒	☐
10	216.012465	0.0	50	7.96	9.01	20	---	☒	☐
30	216.012458	0.1	50	8.10	9.16	20	---	☒	☐
40	216.012460	0.0	50	8.10	9.16	20	---	☒	☐
50	216.012452	0.1	50	8.08	9.13	20	---	☒	☐

Variation of the supply voltage (measured at ambient temperature)

Requirement:

 $\Delta f < 50$ ppm and $P < 100$ mW (20 dBm) with supply voltage varied from 85% to 115%

Reference value:

Volt [%]	Volt [V]	Frequency [MHz]	Error [ppm]	Limit [ppm]	P [dBm]	P ERP [dbm]	Limit [dBm]	Remarks
100	3.7	216.012469	---	---	8.08	9.14	20	See §6.2

Volt [%]	Volt [V]	Frequency [MHz]	Error [ppm]	Limit [ppm]	P [dBm]	P ERP [dbm]	Limit [dBm]	Remarks	Pass	
									Yes	No
85	3.145	216.012473	0.0	50	8.05	9.11	20	---	☒	☐
115	4.255	216.012467	0.0	50	8.10	9.16	20	---	☒	☐

Date of test: *July 15, 2009*
Operator: *Erich Staub*

7. Prospectus of the product / Prospectus du produit / Produktprospekt

Product-Information

EasyLink™



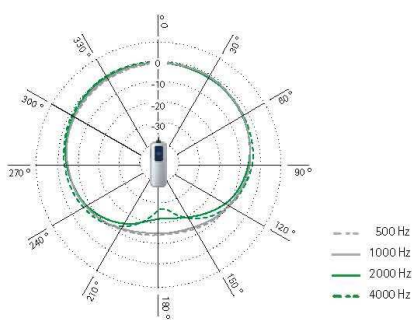
The EasyLink FM transmitter is very easy to operate and delivers high sound quality. One push of the button and the finely tuned internal microphones in EasyLink pick up sound at the source and deliver it directly to the iLinks or to any other Phonak FM receivers at the customers' ears.

EasyLink is the ideal transmitter for adults who prefer ease of use and for teens using FM at home.

Technical Data



EasyLink Zoom



PHONAK
hearing systems

Product-Information

EasyLink™

Technical Data

General	
Dimensions:	
L x W x H: 105 x 35 x 18mm (4.1 x 1.4 x 0.7 inches) (without interface)	
Weight:	
65 g	
Operating temperature range:	
-10°C to +60°C	
HF characteristics	
Frequency range:	
169.4 – 181.9 MHz (Band H) 214.0 – 220.0 MHz (Band N)	
Frequency switching:	
Integrated digital frequency synthesizer, max. 40 programmable channels	
Frequency stability:	
Better than ± 1 kHz	
Modulation:	
FM (narrow band), maximum frequency deviation $\Delta f_{dev} < 5$ kHz	
Antenna:	
• Fixed lavalier cord antenna for operating range up to 30 m (100 feet)	
Signal-to-noise ratio: (microphone setting: Omni)	
> 45 dB at $\Delta f_{dev} < 4$ kHz and $f_{mod} = 1$ kHz	
Audio characteristics	
Audio frequency range:	
100 – 7000 Hz	
Microphone sensitivity: (microphone setting: Omni)	
97 dB SPL at $f_{mod} = 1$ kHz for $\Delta f_{dev} = 4$ kHz (100% modulation)	
70 dB SPL at $f_{mod} = 1$ kHz for $\Delta f_{dev} = 4$ kHz (100% modulation)	
Distortion: (microphone setting: Omni)	
THD $< 0.2\%$ according to IEC 118-7 at 70 dB SPL with $f_{mod} = 1$ kHz for $\Delta f_{dev} = 4$ kHz	

Technical Data

Power supply	
Battery: Lithium ion 3.7V DC	
Capacity: 330 mAh	
Operating time:	
10 hours max.	
Charging unit:	
Type: DC stabilized Plug connector: Internal diameter 1.1 mm, external diameter 3 mm, inner pole positive Secondary voltage: 7.5 V DC Current: 650 mA	
Important notice: It is recommended to use only the original Phonak charging unit, the Phonak car charger or the solar charger.	
Fast-charge:	
80% charged within an hour Fully charged in two hours The battery cannot be over-charged	
⚠ The adapter may become warm during charging.	
Automatic hearing instrument program switching/frequency synchronization	
At switch-on, the EasyLink automatically sets Phonak hearing instruments with remote control compatibility to the FM + hearing instrument microphone active (FM+M) program. After that EasyLink synchronizes the FM receivers. At switch-off, EasyLink switches the hearing instruments to program 1 (programmable).	
Frequency: 40.96 kHz	
Operating range: < 50 cm	
Standards	Europe USA
Wireless microphones	EN 300.422 FCC Part 15 Subpart C
Eletromagn. compatibility	EN 301.489 FCC Part 15 Subpart C
Short-range wireless transmission systems	EN 300.328 FCC Part 15 Subpart C
Safety regulations	EN 60950

PHONAK
hearing systems