

**ELECTRONIC TECHNOLOGY SYSTEMS
DR. GENZ GMBH**

TEST - REPORT

FCC RULES PART 15 / SUBPART B

Test report no.:

G0M20211-7350-E-18

FCC



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1 General Information

1.1 Notes

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.

The tests were carried out and passed in accordance with the standards:

FCC part 15 : August 2002

The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.

Furthermore, there is no guarantee that a test sample which has Passed all the relevant tests conforms to a specification (only telecommunication products).

Neither is there any guarantee that such a test sample will interwork with other genuinely open systems.

The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that its performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.6.

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Important Notes:

Proper labeling is required for each device. Devices shall be labeled in accordance with labeling requirements pursuant to section 15.19 and section 2.1074 of the FCC rules.

Devices subject to a Declaration of Conformity shall be uniquely identified by the responsible party.

This identification shall not be of a format which could be confused with the FCC Identifier required on certified, notified type accepted or type approved equipment.

The responsible party shall maintain adequate identification records to facilitate positive identification for each device.

The user manual or instruction manual shall included also a warning statement that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Reference Section 15.21

Furthermore an information to the user regarding to the interference potential of the device and about simple measures that can be taken to correct interference is required.

Reference Section 15.105

The responsible party must warrant that each unit of equipment marketed under a Declaration of Conformity is identical to the unit tested and found acceptable with the standards and that the records maintained by the responsible party continue to reflect the equipment being produced under the Declaration of Conformity within the variation that can be expected due to quantity production and testing on a statistical basis.



1.2 Tester

11.12.2002

Date	ETS-Lab.	Test Engineer	Signature
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Technical responsibility for area of testing:

11.12.2002

N. Kaspar

Date	ETS	Name	Signature
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Registration Number : G0M20211-7350-E-18

1.3 Testing laboratory

1.3.1 Location

ELECTRONIC TECHNOLOGY SYSTEMS DR. GENZ GMBH (ETS)

Storkower Strasse 38c

D- 15526 Reichenwalde

Germany

Telephone : + 49 33631 888 000

Telefax : + 49 33631 888 660

1.3.2 Details of accreditation status

ACCREDITED TESTING LABORATORY

DAR-REGISTRATION NUMBER: TTI-P-G 126/96

ACCREDITED COMPETENT BODY

DAR-REGISTRATION NUMBER: BPT-ZE-026/96

FCC filed test laboratory Reg. No. 96970

Bluetooth Qualification Test Facility /BQTF)

Accredited by Bluetooth Qualification Review Board

Industry Canada filed test laboratory Reg. No. IC 3470

A2LA Accredited Certification number 1983-01

1.3.3 Test location, where different from ETS

Name: ./.

Street: ./.

Town: ./.

Country: ./.

Telephone: ./.

Fax: ./.

Teletex: ./.

1.4 Details of applicant

Name : Biotronik GmbH & Co
Street : Woermannskehre 1
Town : 12359 Berlin
Country : Germany
Telephone : 030/68905147
Fax : 030/68905343
Teletex : ./.

Contact : Herr Wolfgang Buske
Telephone : 030/68905147

1.5 Application details

Date of receipt of application : 19.09.2002
Date of receipt of test item : 19.09.2002
Date of test : 19.09.2002

1.6 Test item

1.6.1 Description of test item

Type of product : Home Monitoring
Receiver and charger
Type identification : Telex 2
Serial number : without
Photos : Please find in Appendix.
Receiver : 403 MHz

1.6.2 Manufacturer (if different from applicant in point 1.4)

Name:
Street:
Town:
Country:

1.6.3 Frequency behavior

Highest clock Frequency	< 200 MHz
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1.7 Test standards

FCC part 15 : August 2002

2 Technical test

2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.



or

The deviations as specified in 2.4 were ascertained in the course of the tests performed.



2.2 Test environment

Temperature: 18 ... 25 °C

Relative humidity content 20 ... 75 %

Air pressure: 860 ... 1030 hPa

Details of power supply: 230 V AC (AC/DC adapter)

Other parameters:

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Additional information:

Please find enclosed measurement plots according to EN 55022. These test results for the receiver of Telex 2 – Monitoring system including a charger were used because the limits and implementation of these measurements are the same or similar to those for FCC Part 15 B.

Comparison of FCC part 15 B Limits Versus EN 55022 Limits

1. Conducted emission on AC power port.

The test procedure and the limits according to FCC Part 15.107 (2002) are the same as for EN 55022.

2. Radiated emissions

From 30 MHz to 1 GHz the test procedure is based on the Open Air Test site for both standards. The difference is the measurement distance which is 3m for FCC Part 15.109 and 10m for EN 55022. This difference we can eliminate by increasing the EN 55022 limits by 10 dB. The table below shows the relationship between both limits.

The frequency range from 216 to 230 MHz is the only one in which the FCC limit is lower (2 dB) than the transformed EN 55022 limit.

<i>Frequency MHz</i>	<i>EN 55022 dBμV/m</i>	<i>EN 55022 + 10 dB dBμV/m</i>	<i>FCC Part 15.209 dBμV/m</i>
30 – 230	30	40	
30 – 88			40
88 – 216			43.5
216-960			46
Above 960			54
230 – 1000	37	47	

2.3 Test equipment utilized

No.	Test equipment	Type	Manufacturer
ETS 0001	Test receiver	ESHS 10	Rohde & Schwarz
ETS 0002	Test receiver	ESVP	Rohde & Schwarz
ETS 0003	Test receiver	ESVS 10	Rohde & Schwarz
ETS 0004	Spectrum- and Network-Analyzer	FSMS 26	Rohde & Schwarz
ETS 0005	Test receiver	SMV 11	MEB
ETS 0006	Test receiver system	SME 12	MEB
ETS 0008	Antenna	Loop antenna	Siemens
ETS 0009	Antenna	ARA 2	MEB
ETS 0010	Antenna	Loop antenna	MEB
ETS 0011	Antenna	van Veen/ Frame	Rohde & Schwarz
ETS 0012	Antenna	HK 116	Rohde & Schwarz
ETS 0013	Antenna	HL 223	Rohde & Schwarz
ETS 0014	Antenna	HL 025	Rohde & Schwarz
ETS 0015	Antenna	HL 025	Rohde & Schwarz
ETS 0016	Precision antenna kit	VHAP	Schwarzbeck
ETS 0017	Precision antenna kit	UHAP	Schwarzbeck
ETS 0020	Antenna	DP 21	MEB
ETS 0021	Antenna	DP 3	MEB
ETS 0022	Antenna	SAS-200/ 521	A.H. Systeme+D65
ETS 0023	Antenna	DP 1	MEB
ETS 0024	Antenna mast	AF 2	MEB
ETS 0025	Antenna mast	AF 2	MEB
ETS 0026	Tripod		Heinrich Deisel
ETS 0027	Tripod		Heinrich Deisel
ETS 0028	Tripod	STA 2	C. Lorenz AG
ETS 0029	Tripod		Berlebach
ETS 0031	Turn table	DS 412	Heinrich Deisel
ETS 0032	Controller	HD 050	Heinrich Deisel
ETS 0033	RF generator	SMG	Rohde & Schwarz
ETS 0034	RF generator/ Amplifier	SMLR	Rohde & Schwarz
ETS 0035	RF generator/ Amplifier	SMLM	Rohde & Schwarz
ETS 0038	RF amplifier	150L	Amplifier Research
ETS 0039	Absorbing clamp	MDS 21	Rohde & Schwarz
ETS 0040	Artificial mains	ESH3-Z5	Rohde & Schwarz
ETS 0041	Artificial mains	ESH3-Z4	Rohde & Schwarz

No.	Test equipment	Type	Manufacturer
ETS 0042	Artificial mains	ESH3-Z6	Rohde & Schwarz
ETS 0044	Artificial mains	NNB 111	MEB
ETS 0045	Stripe line	IEC 801-3	ETS
ETS 0046	Power supply	LTS 006	RFT
ETS 0047	Power supply	TG 20/ 1	Statron
ETS 0048	Power supply	TG 20/ 1	Statron
ETS 0049	Power supply	T 102	TPW
ETS 0050	Power supply	T 101b	TPW
ETS 0051	Oscilloscope	TDS 640A	Tektronix
ETS 0052	Audio analyzer	UPA 4	Rohde & Schwarz
ETS 0053	ECAT Control center	CE 40	Keytek/ EMV
ETS 0054	EFT simulator	E 412	Keytek/ EMV
ETS 0055	Module network coupler	E 4551	Keytek/ EMV
ETS 0056	Blank plug-in		Keytek/ EMV
ETS 0057	Module SURGE with DC coupler	E 501	Keytek/ EMV
ETS 0058	Capacitive coupling clamp	E 502 B	Keytek/ EMV
ETS 0059	Kikusui amplifier	PCR 2000L	Keytek/ EMV
ETS 0060	Xitron power analyzer		Keytek/ EMV
ETS 0061	Power/ Arb (Harm., Ramp)		Keytek/ EMV
ETS 0062	Reference impedance		Keytek/ EMV
ETS 0063	Blank plug-in		Keytek/ EMV
ETS 0064	CDN IEC 1000-4-6		Keytek/ EMV
ETS 0065	ESD-generator minizap		Keytek/ EMV
ETS 0066	EM Injection Clamp		FCC/ EMV
ETS 0067	Calibration Fixture	IEC 801-2031 CF	FCC/ EMV
ETS 0068	CDN IEC 1000-4-6	CDN	FCC/ EMV
ETS 0069	EM Radiation Monitor	EMR-20	Wandel & Goltermann
ETS 0070	PC Transfer set EMR-20	EMR-20	Wandel & Goltermann
ETS 0071	Video camera system	KMB012	Kocom
ETS 0072	Interphone system	JS-1400	Jiuh Sheng
ETS 0073	Audio noise meter	GSM 2	MKD/ RFT
ETS 0074	RF millivoltmeter	QRV 2	MKD/ RFT
ETS 0075	NF generator	GF 22	Präcitronic
ETS 0076	Feeding bridge A	SBA 1000	ESP
ETS 0077	Audio/ Video Filter set	AV 55020	ETS
ETS 0078	LCR meter	SR 720	SRS
ETS 0079	Functional generator	MX-2020	Maxcom
ETS 0080	EMI Software	ES-K1	Rohde & Schwarz

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No.	Test equipment	Type	Manufacturer
ETS 0081	EMI Software	ES-K10	Rohde & Schwarz
ETS 0082	PC Novell network system	Novell	Esotronic
ETS 0083	Apple computer system	Performa 630	Macintosh
ETS 0084	Process controller	PSA 15	Rohde & Schwarz
ETS 0085	Shielded room	SR 1	Frankonia
ETS 0086	Anechoic chamber	AC 1	Frankonia
ETS 0087	Climatic cell	HC 4033	Heraeus
ETS 0088	Color TV pattern generator	PM 5518-TX VPS	Philips
ETS 0089	Radio communication tester	CMS 54	Rohde & Schwarz
ETS 0090	DECT type approval CTR06	TS 8930	Rohde & Schwarz
ETS 0091	RF signal generator	SME 03	Rohde & Schwarz
ETS 0092	DM-Coder	SME-B11	Rohde & Schwarz
ETS 0093	Pulse Modulator	SM-B8	Rohde & Schwarz
ETS 0095	DECT system controller	PSMD	Rohde & Schwarz
ETS 0096	DECT Signaling unit	PSMD-B11	Rohde & Schwarz
ETS 0097	Rack, 19", 36 HU	TS 89RA	Rohde & Schwarz
ETS 0098	System engineering and software	CS 893BE	Rohde & Schwarz
ETS 0099	Extension unit for basic version	TS 8930B	Rohde & Schwarz
ETS 0100	RF signal generator	SME-06	Rohde & Schwarz
ETS 0101	DM-Coder	SME-B11	Rohde & Schwarz
ETS 0102	Pulse modulator	SM-B8	Rohde & Schwarz
ETS 0103	Pulse generator	SM-B4	Rohde & Schwarz
ETS 0105	High power synthesizer/ sweeper	SMP 22 / 02	Rohde & Schwarz
ETS 0106	Frequency extension	SMP-B11	Rohde & Schwarz
ETS 0107	RF attenuator for SMP 22	SMP-B15	Rohde & Schwarz
ETS 0108	DECT protocol tester TBR 22	TS 1220	Rohde & Schwarz
ETS 0109	Process controller	PSM 2	Rohde & Schwarz
ETS 0110	Real time signaling unit	PSMD-B2	Rohde & Schwarz
ETS 0111	PCM Real-time audio interface for PSM	PSMD-B3	Rohde & Schwarz
ETS 0112	Synthesizer Module	PSMD-B4	Rohde & Schwarz
ETS 0113	Keyboard	PSA-Z2	Rohde & Schwarz
ETS 0114	RF step attenuator	RSG	Rohde & Schwarz
ETS 0115	Glide path		Rohde & Schwarz
ETS 0116	RF Millivoltmeter	URV 55	Rohde & Schwarz
ETS 0117	Insertion unit	URV-Z2	Rohde & Schwarz
ETS 0118	Mixer	MFC 1000	Avcom
ETS 0119	Mixer	MFC 2000	Avcom
ETS 0120	RF step attenuator	TRI-50-20	INCO

No.	Test equipment	Type	Manufacturer
ETS 0121	Oscilloscope	EO 147A	Serute
ETS 0122	Oscilloscope	5201	Dagatron
ETS 0123	RF step attenuator	RBU	Rohde & Schwarz
ETS 0124	Tripod	STA 2	Rohde & Schwarz
ETS 0126	Uninterruptible power supply	UPS - 1500	Sendon
ETS 0127	Uninterruptible power supply	UPS - 1000 LC	Sendon
ETS 0128	Uninterruptible power supply	UPS - 1000	Sendon
ETS 0129	Uninterruptible power supply	UPS - 500	Sendon
ETS 0130	Uninterruptible power supply	Power saver	Sendon
ETS 0131	Telephone connection box		Systel
ETS 0132	Frequency doubler	TR-0616	EMG
ETS 0133	Probe body	P6015	Tektronix
ETS 0134	Mains filter	MSF	Erika Fiedler
ETS 0135	Measuring switching point	AK 11	RFT
ETS 0136	Attenuator	33-6-34	Weinschel
ETS 0137	Multimeter	YX-360TRA	Mastech
ETS 0138	Multimeter	DT-9410	Diditec
ETS 0139	Multimeter	ST-9202	Standard
ETS 0140	High voltage generator	IP 6Wa	TPW
ETS 0141	Sliding bridge	J 573	RFT
ETS 0142	Impedance converter	TK 11	RFT
ETS 0143	Impedance converter	TK 12	RFT
ETS 0146	Active RF probe	ESH2-Z2	Rohde & Schwarz
ETS 0147	Probe	TK 103	MEB
ETS 0148	Test TV	21PT4301/00	Philips
ETS 0149	Power divider	ZAPD-21	MCL
ETS 0150	Switcher	HR07-720	Wisi
ETS 0151	Interference pulse generator	NSG 500C	Schaffner
ETS 0152	Simulator for Load-Dump-Impulse	NSG 506C (I)	Schaffner
ETS 0153	Simulator for Load-Dump-Impulse	NSG 506C (II)	Schaffner
ETS 0154	Signal generator	SMG	Rohde & Schwarz
ETS 0155	Signal generator	SMG	Rohde & Schwarz
ETS 0156	Adjacent channel power meter	NKS	Rohde & Schwarz
ETS 0157	TV and Sat-Signal generator	VTG 700	Grundig
ETS 0158	TV and Sat Signal generator	VTG 700	Grundig
ETS 0159	Programmable power supply	TOE 8815	Toellner
ETS 0160	Protective wire and isolation tester	PI 6001 D	SPS electronic
ETS 0161	Filter system / consumer electronic		Fiedler

No.	Test equipment	Type	Manufacturer
ETS 0162	Acoustic chamber	403-A	IAC
ETS 0163	Test head	BK 4602	Brüel & Kjær
ETS 0164	Simulator ear	BK 4185	Brüel & Kjær
ETS 0165	Simulator mouth	BK 4227	Brüel & Kjær
ETS 0166	Acoustic calibrator	BK 4231	Brüel & Kjær
ETS 0167	Communication Analysis System	CAS TE I	HEAD acoustics
ETS 0168	Acoustical test for DECT	CTR 10	HEAD acoustics
ETS 0169	Measurement - Front-end (analog)	MFE III	HEAD acoustics
ETS 0170	Measurement - Front-end (digital)	MFE IV	HEAD acoustics
ETS 0171	Electronic test cradle	TEH	HEAD acoustics
ETS 0172	Noise generator	HNG III.1	HEAD acoustics
ETS 0173	Speaker	Canton S Pluss	HEAD acoustics
ETS 0174	Measurement - Front-end line interface	MFE V	HEAD acoustics
ETS 0175	Software Line interface (analog)	COPTZV5	HEAD acoustics
ETS 0176	Acoustic volt meter	COP 4	HEAD acoustics
ETS 0177	Feeding bridge B	SBB 1000	ESP
ETS 0178	Open area test side	10m	ETS
ETS 0180	Artificial mains	NNB01/RFZ	RFZ
ETS 0181	Test pin for protective wire	PE 156-i	SPS electronic
ETS 0182	Power supply	MX-9300	Maxcom
ETS 0183	Frequency counter	MX-9300	Maxcom
ETS 0184	Function generator	MX-9300	Maxcom
ETS 0185	Digital multimeter	MX-9300	Maxcom
ETS 0186	Power supply	DF 1730	WJG
ETS 0187	Power supply		TPW/RFT
ETS 0189	Spectrum Analyzer	FSEB	Rohde & Schwarz
ETS 0190	Function generator	MX 2020	Maxcom
ETS 0191	Sweep function generator	7202	Dagatron
ETS 0192	Audio generator	7101	Dagatron
ETS 0193	Vibration table	N1-201-M	Sandbox
ETS 0194	Digital multimeter	PMM 208	Dagatron
ETS 0195	Thermo hygro recorder		Amarell
ETS 0196	Digital thermometer	AK-688	KD
ETS 0197	Digital thermometer		Prima
ETS 0198	Digital thermometer	ad 170th	ama-digit
ETS 0199	Digital thermometer	ad 31th	ama-digit
ETS 0200	Digital thermometer / hygro meter	ad 90h	ama-digit
ETS 0201	Digital thermometer / hygro meter	37950-10	Cole Parmer

No.	Test equipment	Type	Manufacturer
ETS 0202	Digital thermometer	ad 15th	ama-digit
ETS 0203	Digital thermometer	Type K	Amarell
ETS 0204	Digital thermometer	ad 20th	ama-digit
ETS 0205	High voltage test generator	HA 3300 D	SPS electronic
ETS 0206	High voltage test accessories	HVGZ 312	SPS electronic
ETS 0207	Socket-Outlet torque balance	F 37.13	PTL
ETS 0208	Unjointed Finger probe	P 10.05	PTL
ETS 0209	Flexible Finger probe	P 10.01	PTL
ETS 0210	Spring operated impact hammer	P 22.50	PTL
ETS 0211	Metallic ball	F 53.32	PTL
ETS 0212	Hazardous live probe	P 10.06	PTL
ETS 0213	Hazardous live probe	P 10.11	PTL
ETS 0214	Ball pressure test apparatus	T 10.02	PTL
ETS 0215	Glow Wire tester	T 03.14	PTL
ETS 0216	Force indicator 50N	P 10.31	PTL
ETS 0217	Millivoltmeter	URV 55	Rohde & Schwarz
ETS 0218	RF probe	URV5-Z7	Rohde & Schwarz
ETS 0219	Power sensor	NRV-Z2	Rohde & Schwarz
ETS 0220	Insertion unit	URV5-Z4	Rohde & Schwarz
ETS 0221	ISDN-S0-Analyzer	K1403	Siemens
ETS 0222	ISDN Protocol Analyzer	TE965	Tekelec Teleco.
ETS 0223	GSM/ PCN/ PCS-Simul.	TS8915B	Rohde & Schwarz
ETS 0224	GSM System Simulator	FTA	Rohde & Schwarz
ETS 0225	SIM Simulator		Orga
ETS 0226	SIM Editor		Orga
ETS 0227	Vibration table	TIRA vib	GenRad
ETS 0228	Climatic chamber	VT 4010	Vötsch
ETS 0229	Radio Commun. Tester	CMT 54	Rohde & Schwarz
ETS 0230	Radio Commun. Tester	CMD 65	Rohde & Schwarz
ETS 0231	Test receiver	ESVS 30	Rohde & Schwarz
ETS 0232	Radiation test source	VSQ 1	MEB
ETS 0233	Direction coupler	RK 100	MEB
ETS 0234	Power meter	NRVD	Rohde & Schwarz
ETS 0235	RF-network-analyzer	8752 C	Hewlett Packard
ETS 0236	RF-amplifier	100A100	Amplifier Research
ETS 0237	RF-amplifier	100W1000M1	Amplifier Research
ETS 0238	Field strong meter	FM 2000	Amplifier Research
ETS 0239	Isotr. field probe 40 GHz	FP 2080 Kit	Amplifier Research

No.	Test equipment	Type	Manufacturer
ETS 0240	Isotr. field probe 1 GHz	FP 2000 Kit	Amplifier Research
ETS 0241	Pulse Generator	4050	PicoSecond PL
ETS 0242	Harmonics analyzer	F 41B	Fluke
ETS 0243	AC-clamp 1000 A	80i 1000s	Fluke
ETS 0244	Burst generator	EFT 200	EM-Test
ETS 0245	Load dump generator	LD 200	EM-Test
ETS 0246	Voltage drop simulator	VDS 200	EM-Test
ETS 0247	Microsecond generator	MPG 200	EM-Test
ETS 0248	Switch unit	AN 200	EM-Test
ETS 0249	Coupling network	CNA 200	EM-Test
ETS 0250	Coupling clamp	ACC	EM-Test
ETS 0252	System controller	PSM 12	Rohde & Schwarz
ETS 0253	Spectrum analyzer	FSIQ	Rohde & Schwarz
ETS 0254	RF generator	SMIQ 03	Rohde & Schwarz
ETS 0255	RF generator	SMIQ 03	Rohde & Schwarz
ETS 0256	RF generator	SMP 03	Rohde & Schwarz
ETS 0257	Step attenuator	RSP	Rohde & Schwarz
ETS 0258	Rubidium standard	RSTU	EFRATOM Elek. GmbH
ETS 0259	Power meter	NRVD	Rohde & Schwarz
ETS 0260	Power sensor	NRVD-Z1	Rohde & Schwarz
ETS 0261	Power sensor	NRVD-Z1	Rohde & Schwarz
ETS 0262	Switching unit	SSCU	Rohde & Schwarz
ETS 0263	Signaling unit		Wird
ETS 0264	Spectrum analyzer	F 1048	HAMEG
ETS 0265	Loop antenna	HFRA 9150	Schwarzbeck
ETS 0267	RF signal generator	SMT 03	Rohde & Schwarz
ETS 0268	RF signal generator	SMP 02	Rohde & Schwarz
ETS 0270	RF signal generator	SMP 04	Rohde & Schwarz
ETS 0271	Test receiver	ESI 40	Rohde & Schwarz
ETS 0272	RF signal generator	SME 03	Rohde & Schwarz
ETS 0273	RF signal generator	SME 03	Rohde & Schwarz
ETS 0274	RF signal generator	SMY 01	Rohde & Schwarz
ETS 0275	Power sensor	NRV-Z51	Rohde & Schwarz
ETS 0276	Audio analyser	UPL	Rohde & Schwarz
ETS 0277	Power sensor	NRV-Z1	Rohde & Schwarz
ETS 0278	Power sensor	NRV-Z31	Rohde & Schwarz
ETS 0279	Step attenuator	RSP	Rohde & Schwarz
ETS 0280	Power meter	NRVD	Rohde & Schwarz

No.	Test equipment	Type	Manufacturer
ETS 0281	Spectrum analyzer	FSM	Rohde & Schwarz
ETS 0282	RF bridge	86207 A	Hewlett Packard
ETS 0283	RF bridge	86205 A	Hewlett Packard
ETS 0284	Field probe	11940 A	Hewlett Packard
ETS 0285	Field probe	11941 A	Hewlett Packard
ETS 0286	Limiter	11867 A	Hewlett Packard
ETS 0287	Test receiver	ESHS 10	Rohde & Schwarz
ETS 0288	Artificial mains	ESH2-Z5	Rohde & Schwarz
ETS 0289	Audio generator	TAG 101	Troneer
ETS 0290	Audio generator	TAG 101	Troneer
ETS 0291	Loop antenna	HFH2-Z2	Rohde & Schwarz
ETS 0292	RF generator	SMHU	Rohde & Schwarz
ETS 0293	Artificial mains	NNBM 8125	Schwarzbeck
ETS 0294	Biconical antenna	HK 116	Rohde & Schwarz
ETS 0295	LPD antenna	HL 223	Rohde & Schwarz
ETS 0296	Oscilloscope	TDS 520 A	Tektronix
ETS 0297	Power pulse generator	IGUF 2910	Schwarzbeck
ETS 0298	ICO tester	TS 1232	Rohde & Schwarz
ETS 0299	DECT protocol tester	TS 1220	Rohde & Schwarz
ETS 0300	RF amplifier	75 A 250	Amplifier Research
ETS 0301	Relay switch unit	RSU	Rohde & Schwarz
ETS 0302	Data line CDN	CM-I/O CD	Keytek
ETS 0303	Telecom line CDN	CM-TEL CD	Keytek
ETS 0304	Test receiver	ESHS 10	Rohde & Schwarz
ETS 0305	Test receiver	ESVS 10	Rohde & Schwarz
ETS 0306	Function generator	HP 33120A	Hewlett Packard
ETS 0307	Commu. Sign. Analyzer	CSA 803 A	Tektronix
ETS 0308	Spectrum analyzer	R 3361A	Advantest
ETS 0309	Anechoic chamber	AC 2	Frankonia
ETS 0310	Anechoic chamber	AC 3	Frankonia
ETS 0311	Anechoic chamber	AC 4	Frankonia
ETS 0312	Climatic chamber	VC 0033	Vötsch
ETS 0313	Power sensor	NRV-Z51	Rohde & Schwarz
ETS 0314	LPD antenna	HL 223	Rohde & Schwarz
ETS 0315	Biconical antenna	HK 116	Rohde & Schwarz
ETS 0316	Switcher	Hr 07-720	WISI
ETS 0317	Switcher	Hr 07-720	WISI
ETS 0318	Dial pulse/ DTMF tester	210	HE

No.	Test equipment	Type	Manufacturer
ETS 0319	Opto link	GPIB 140	NI
ETS 0320	Opto link	GPIB 140	NI
ETS 0321	RF Millivoltmeter	URV 55	Rohde & Schwarz
ETS 0322	Insertion unit	URV5-Z4	Rohde & Schwarz
ETS 0323	DECT portable part	Gigaset 1000	SIEMENS
ETS 0324	DECT fix part	Gigaset 1000	SIEMENS
ETS 0325	DECT portable part		Philipps
ETS 0326	DECT fix part		Philipps
ETS 0327	Blue Unit	V 2.0	Nokia
ETS 0328	BT Protocol tester	PTW 60	Rohde & Schwarz
ETS 0330	Spectrum analyzer	FSM	Rohde & Schwarz
ETS 0333	turn table	DE 350	Heinrich Deisel
ETS 0334	Controller	HD 100	Heinrich Deisel
ETS 0335	BT Development kit	CASIRA	CSR
ETS 0336	LPD Antenna	HL 223	Rohde & Schwarz
ETS 0337	Professional Power Amplifier	SE-1200	Wharfedale Pro
ETS 0338	Coupling network	KN002	ETS
ETS 0339	Isolating Transformer	KN003	ETS
ETS 0431	AC Mains Adapter	BS5733	Travel Emporium

2.4 Test results

☒ 1st test☐ test after modification☐ production test

Test Emission / Immunity			Done	Test passed	Test failed
Emission	Conducted Emission	FCC part 15.107	☒	☒	☐
Emission	Radiated Emission	FCC part 15.109	☒	☒	☐

2.4.1 Conducted Emission

2.4.1.1 Test Equipment

a) Artificial mains (ESH3-Z5)

For your reference please find it in our test equipment list at page 9 to 17 as number : **40.**

b) Artificial mains (ESH3-Z4)

For your reference please find it in our test equipment list at page 9 to 17 as number : **41.**

c) Generator SMG (R&S)

For your reference please find it in our test equipment list at page 9 to 17 as number : **33.**

d) Monitoring System

For your reference please find it in our test equipment list at page 9 to 17 as number : **71.**

e) Interphone System

For your reference please find it in our test equipment list at page 9 to 17 as number : **72.**

f) Anechoic Chamber

For your reference please find it in our test equipment list at page 9 to 17 as number : **86.**

g) Radio communication tester

For your reference please find it in our test equipment list at page 9 to 17 as number : **89.**

h) Artificial mains (ESH3-Z6)

For your reference please find it in our test equipment list at page 9 to 17 as number : **42.**

i) Artificial mains (NNB 11)

For your reference please find it in our test equipment list at page 9 to 17 as number : **43.**

j) Artificial mains (NNB 111)

For your reference please find it in our test equipment list at page 9 to 17 as number : **44.**

2.4.1.2 Test Procedures

- Test configuration

The test configuration is contained inside of a shielded chamber and corresponds to the standard CISPR 22 . The equipment under test is placed in the facility on a wooden table 0.8m high. The equipment under test is connected with the artificial mains network (AMN) in a distance of 0,8m and also 0,8m from other subassembly and metallic area. The measurement receiver are placed in a special room adjacent to the chamber. The observation of the equipment under test is realized by 3 video cameras and by a microphone.

- Test parameters and marginal conditions

The test are carried out with a nominal impedance by $50\Omega / 50\mu\text{H}$ of the AMN in a frequency range 150 kHz to 30 MHz. This measurement was transact first with instrumentation using an average and peak detector and a 10 kHz bandwidth. If the peak detector achieves a calculated level, the measurement is repeated by an instrumentation using a quasi-peak detector.

Further information please find in test report.

2.4.2 Spurious Emission

2.4.2.1 Test Equipment

- a) Antenna (HK116)
For your reference please find it in our test equipment list at page 9 to 17 as number : **12.**
- b) Antenna (HL223)
For your reference please find it in our test equipment list at page 9 to 17 as number : **13.**
- c) Generator SMG (R&S)
For your reference please find it in our test equipment list at page 9 to 17 as number : **33.**
- d) Monitoring System
For your reference please find it in our test equipment list at page 9 to 17 as number : **71.**
- e) Interphone System
For your reference please find it in our test equipment list at page 9 to 17 as number : **72.**
- f) Anechoic Chamber
For your reference please find it in our test equipment list at page 9 to 17 as number : **86.**
- g) Radio communication tester
For your reference please find it in our test equipment list at page 9 to 17 as number : **89.**
- h) ESHS-10
For your reference please find it in our test equipment list at page 9 to 17 as number : **1.**
- i) ESVS-10
For your reference please find it in our test equipment list at page 9 to 17 as number : **3.**

2.4.2.2 Test Procedures

- Test configuration

The test configuration corresponds to the standard CISPR 22. The equipment under test is placed on a non metallic table with 0,8m height. The power supply and the RF connection points are close to the equipment under test at the floor inside a connection box. The cables to this connection box are shielded and below the double floor. The receiving antenna is placed in a height at 1,0 to 4,0m, in a distance of 10m. The measurement receiver are placed in a special room. The observation of the equipment under test is realized by 3 video cameras and by a microphone.

- Test parameters and marginal conditions

The test are carried out with horizontal and vertical polarization of the antenna in a frequency range of 30 MHz to 5000 MHz . Further information please find in the test protocol.

2.5 Test protocols

Conducted Emission

Emission

Standard : FCC part 15.107

Reg.-no. : G0M20211-7350-E-16

Device : Telex 2

Date : 11.12.2002

Operator : _____

Class : B

Temperature : 21 °C
Pressure : 905 hPa
Rel. humidity: 35 %

Frequency Range	Limit dB μ V		Passed	Failed	Number of rechecks
	Quasi-peak	Average			
150 kHz – 500 kHz AC	66 to 56*	56 to 46*	☒	☐	0
500 kHz - 5 MHz AC	56	46	☒	☐	0
5 MHz – 30 MHz AC	60	50	☒	☐	0

*Decreases with logarithm of the frequency

Test is not required if the sample is using a battery

Comment: See attached diagrams.

Registration Number : G0M20211-7350-E-18

Radio Noise Field Strength

Emission

Standard : FCC part 15.109Reg.-no. : G0M20211-7350-E-18Device : TELEX 2Date : 19.09.2002Operator : _____Class : B

Temperature : 21 °C
 Pressure : 905 hPa
 Rel. humidity: 35 %

Frequency Range Polarization	Limit $\mu\text{V/m}$	Passed	Failed	Number of rechecks
30 MHz – 88 MHz	90	☒	☐	0
88 MHz - 216 MHz	150	☒	☐	0
216 MHz – 960 MHz	210	☒	☐	0
960 MHz – 5000 MHz	300	☒	☐	0

Comment: See attached diagrams.

Above 1 GHz no relevant disturbances

Registration Number : G0M20211-7350-E-18

3 Normative references

- /1/ FCC part 15 : August 2002
Radio Frequency Devises
- /2/ CISPR 22 : 1998
Limits and Methods of Measurement of Radio Interference Characteristics of Information
Technology Equipment

Appendix

A. Pictures





REGISTRATION NUMBER: G0M20211-7350-E-18



REGISTRATION NUMBER: G0M20211-7350-E-18



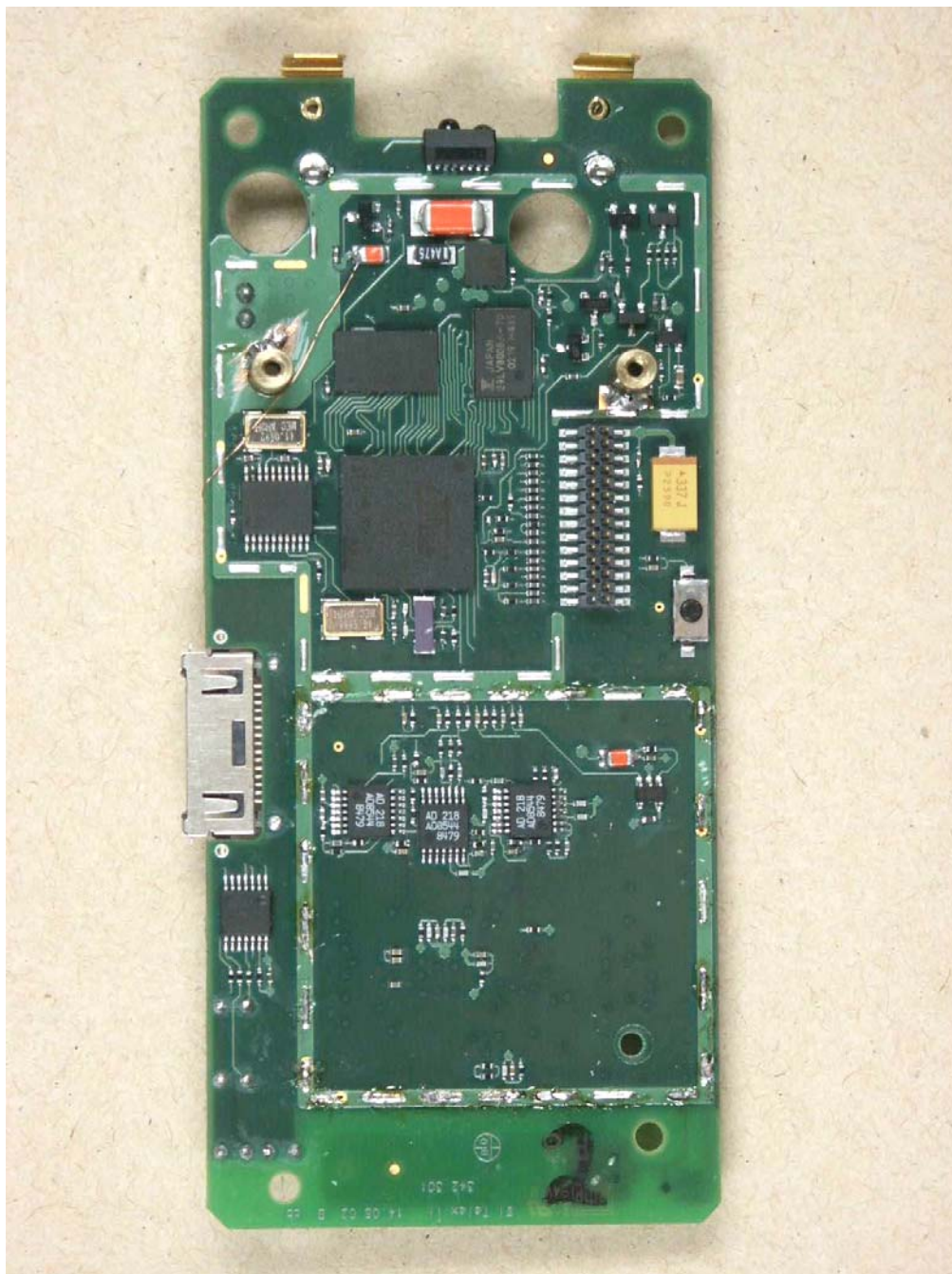
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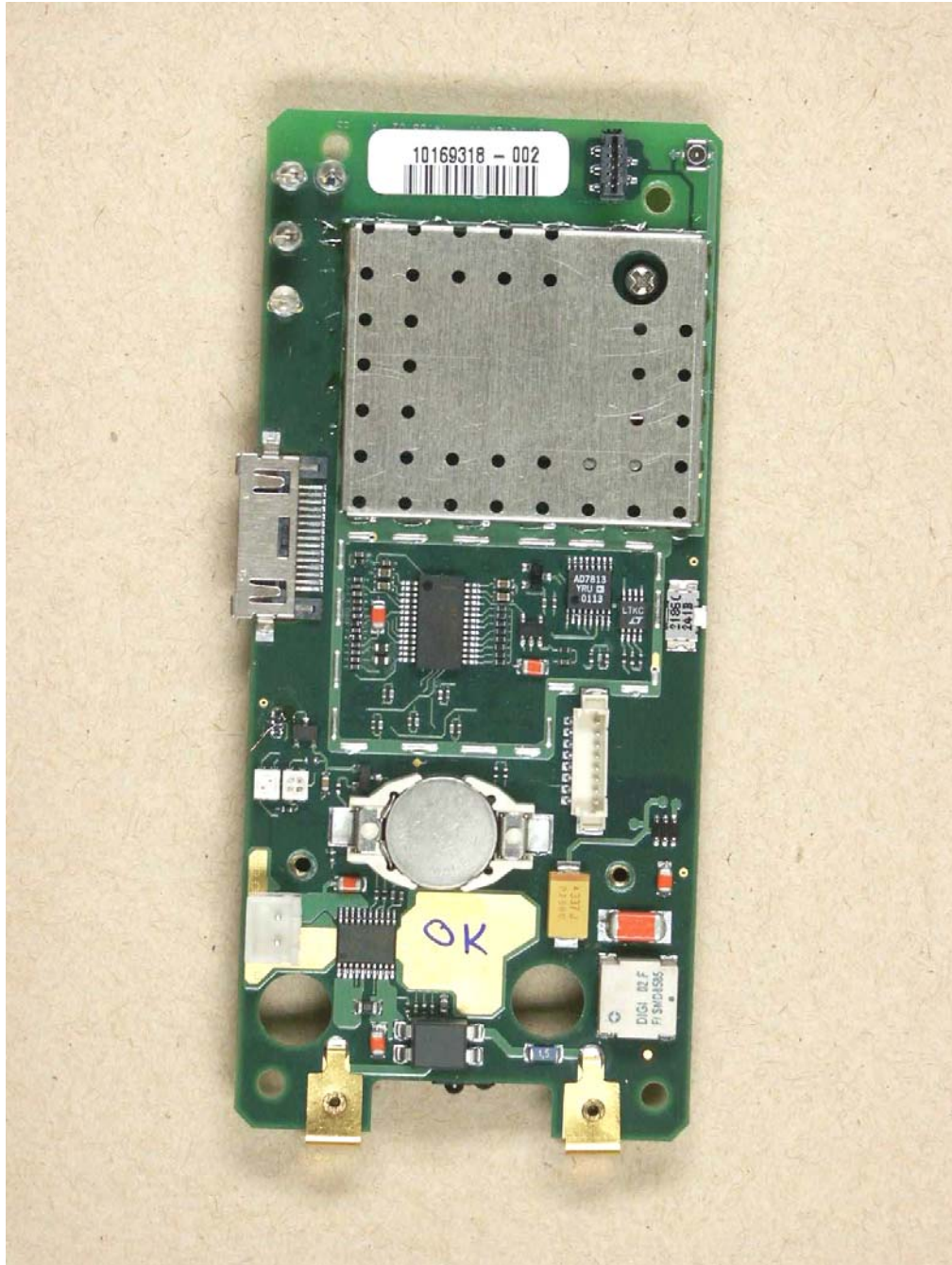
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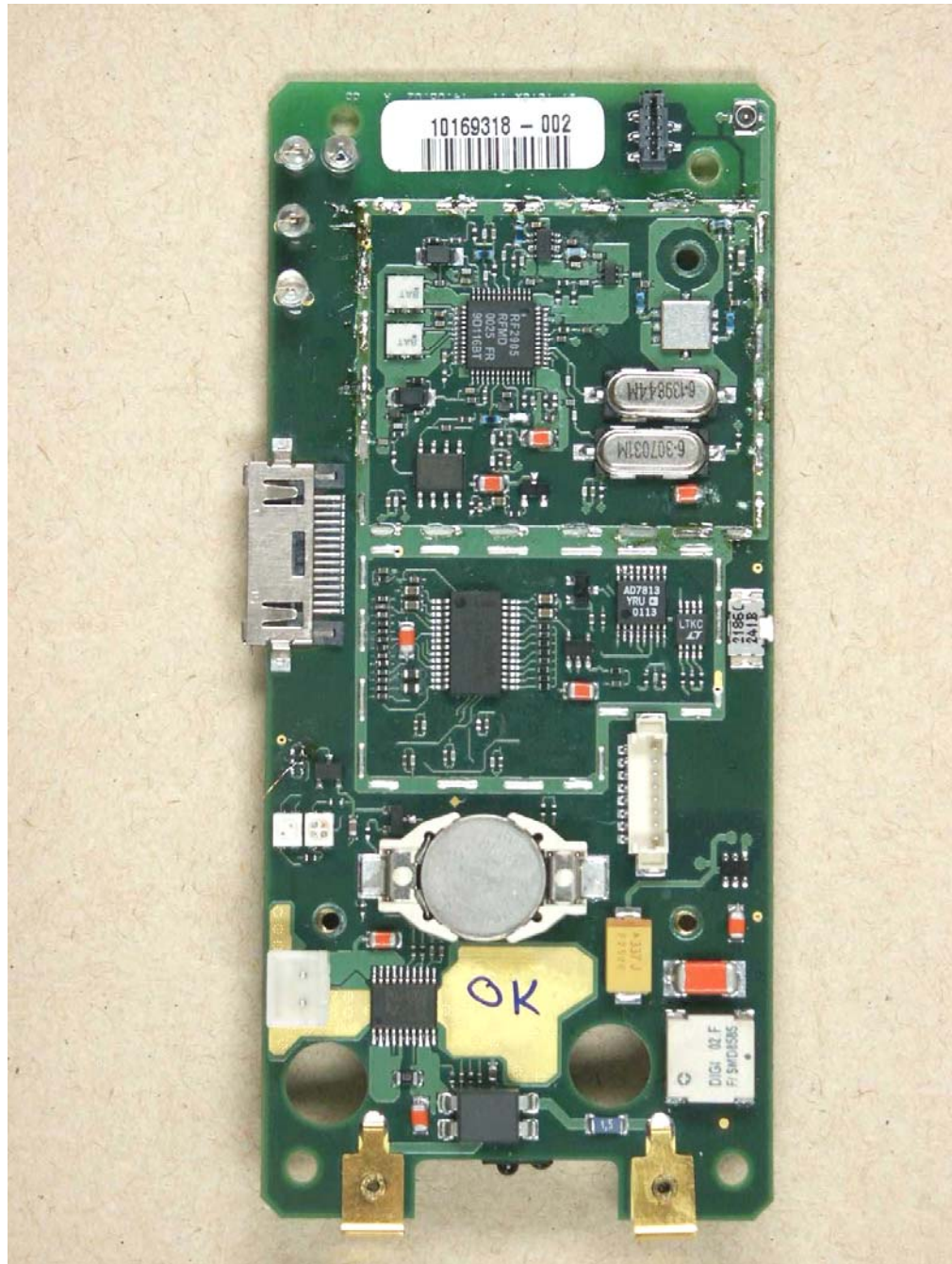
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REGISTRATION NUMBER: G0M20211-7350-E-18



REGISTRATION NUMBER: G0M20211-7350-E-18



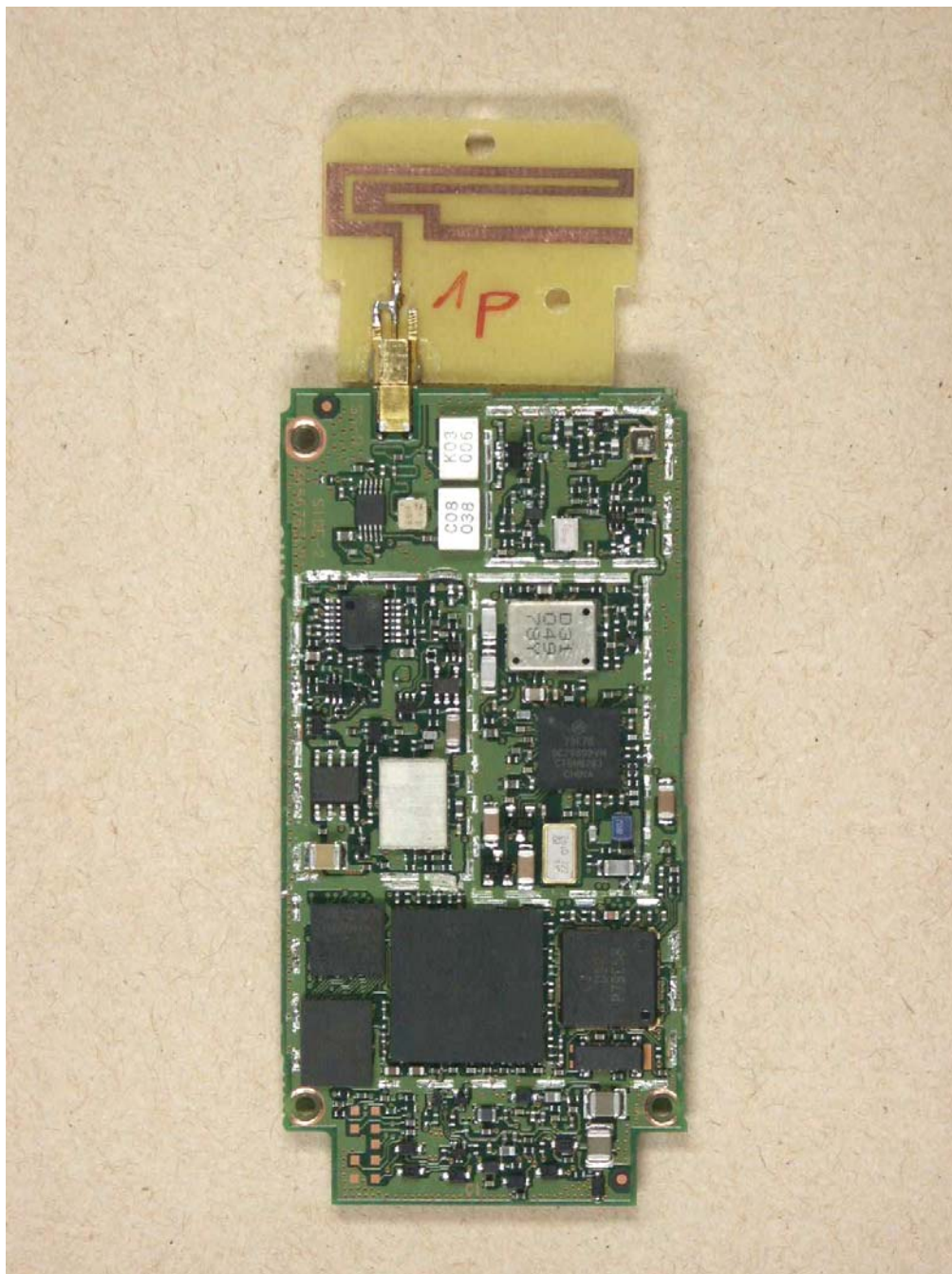
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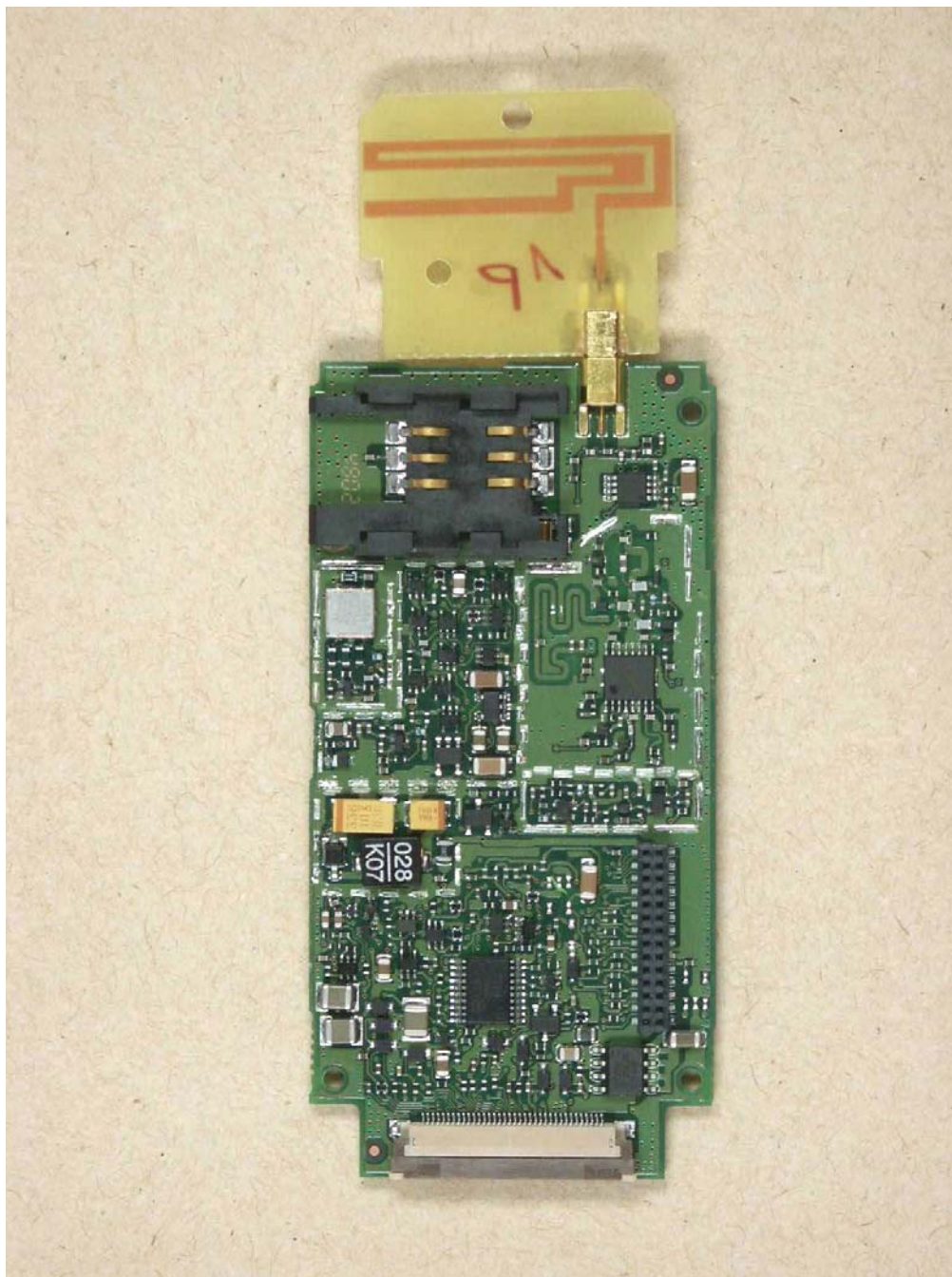
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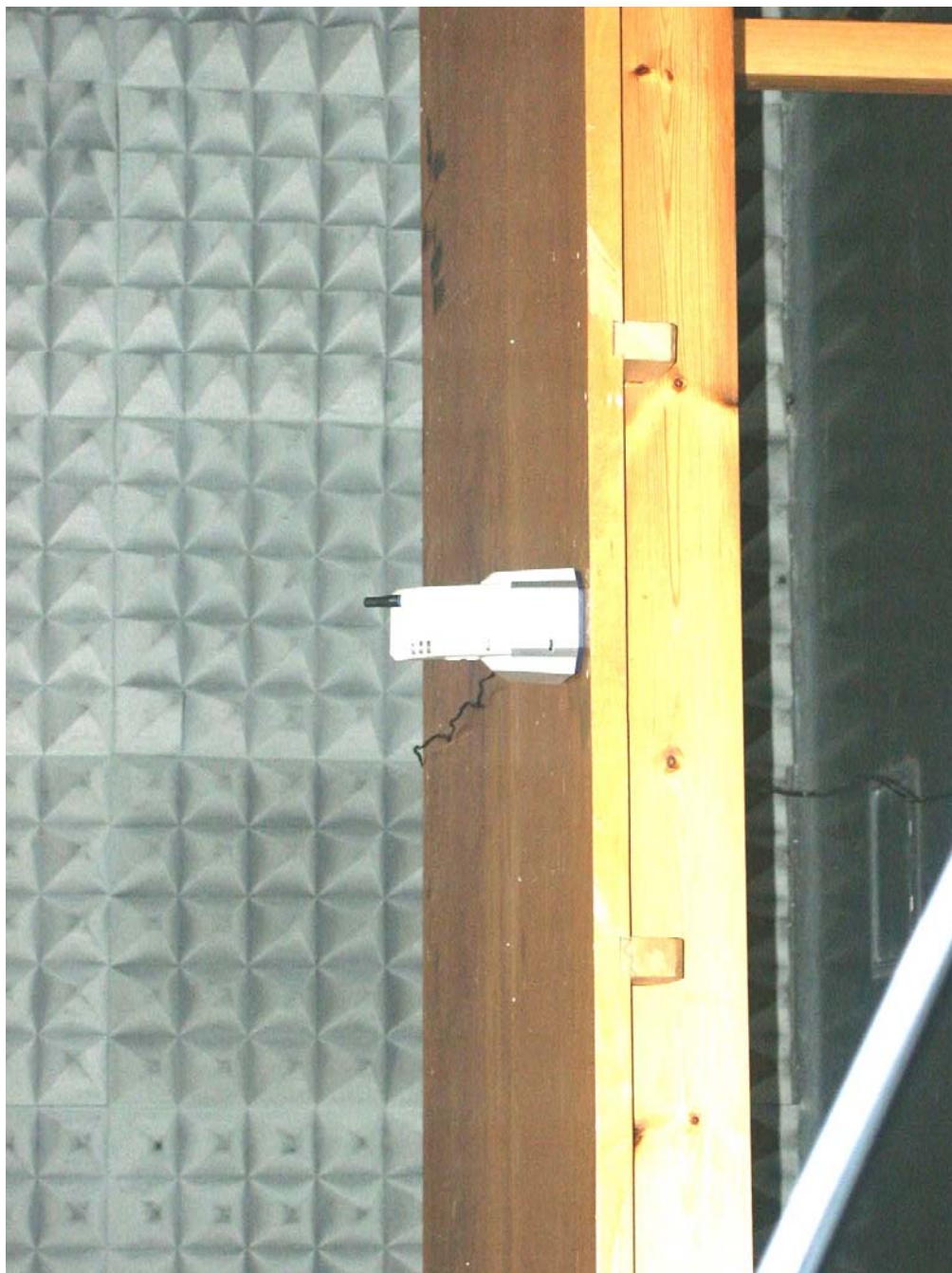
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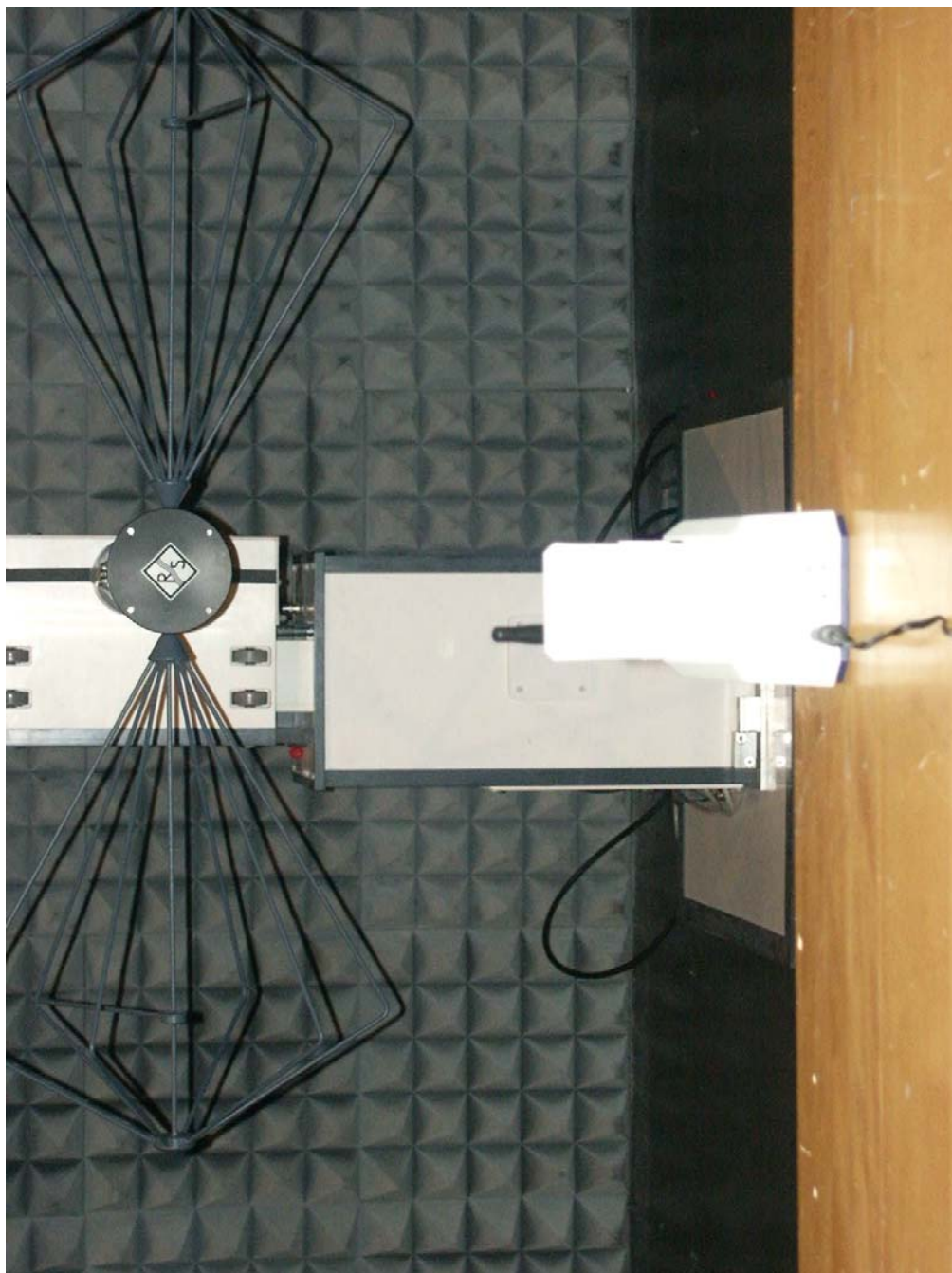
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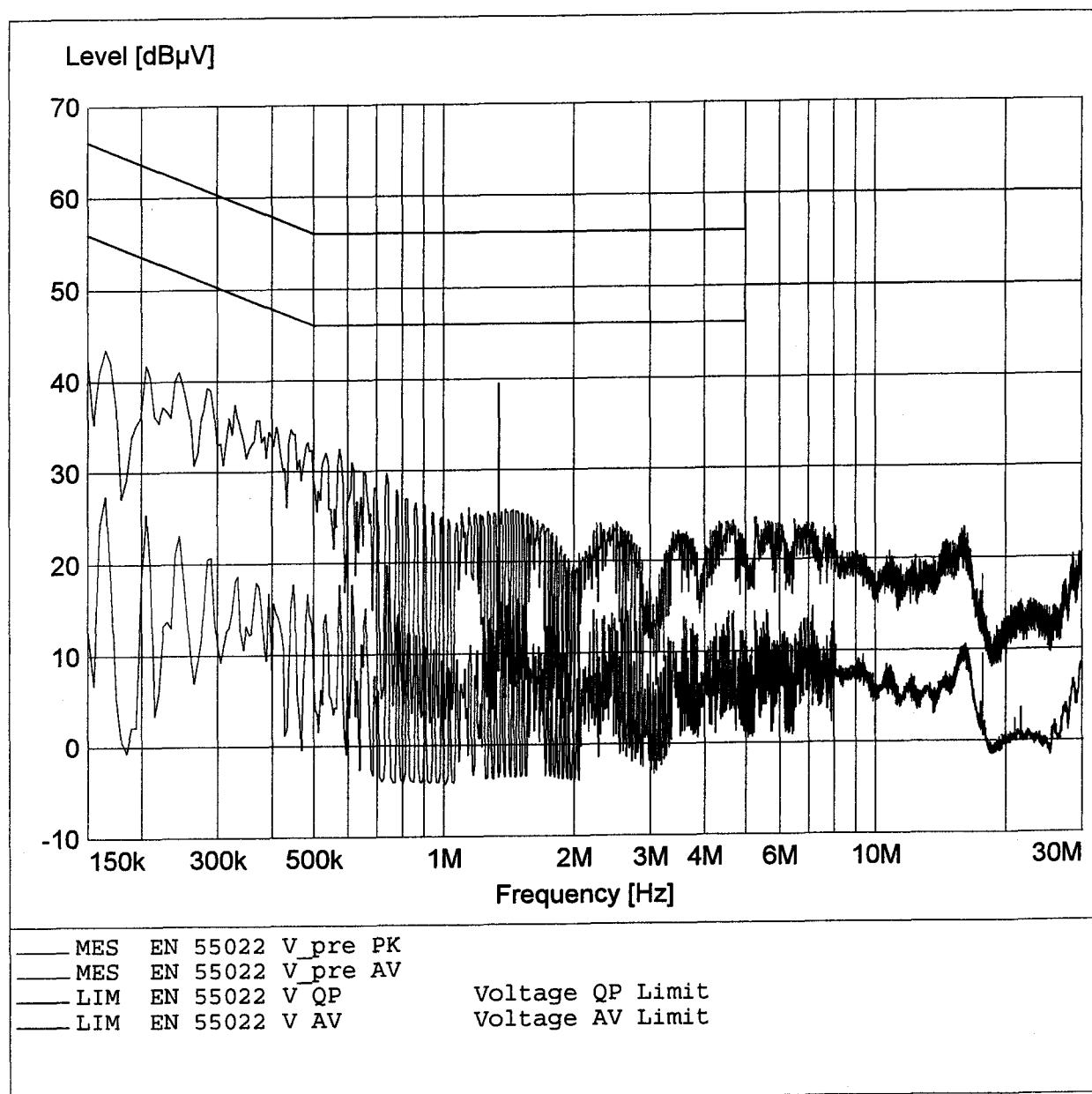
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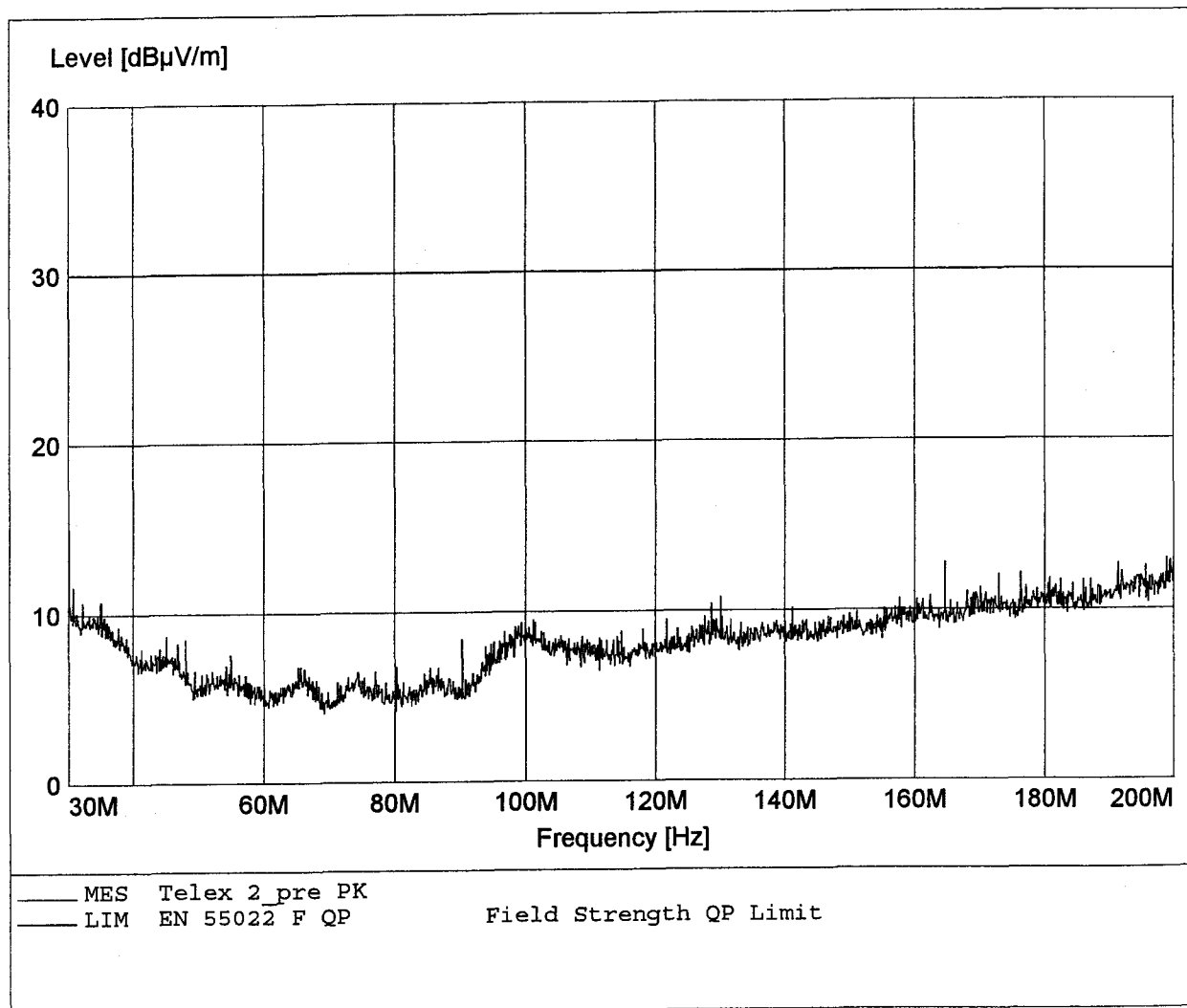
EMI voltage test in the ac-mains according to EN 55022

EUT: TELEX 2
Manufacturer: Biotronik GmbH
Operating Condition: Unom: 230VAC(AC/DC adaptor), Tnom: 23°C
Test Site: ETS
Operator: Mr. Pflug
Test Specification: V-Network: ESH3-Z5
Comment: model: TELEX 2 mode: charging



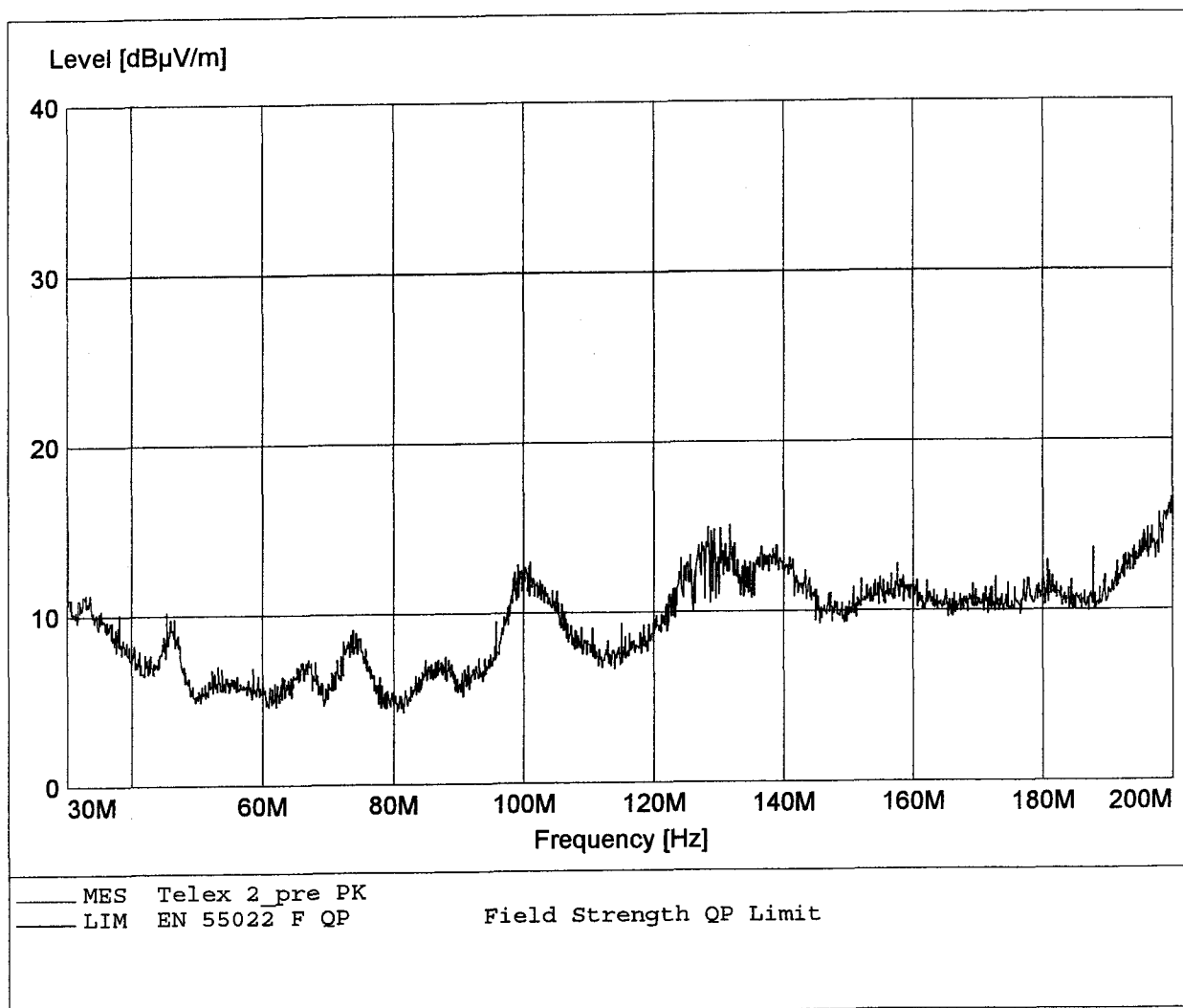
**Spurious emission under normal conditions
according to EN 55022**

EUT: Telex 2
Manufacturer: Biotronik GmbH
Operating Condition: Unom: 230 VAC adaptor Tnom: 23°C
Test Site: ETS
Operator: Mr. F.Schulz
Test Specification: Ant: HK 116, horizontal
Comment: model :Telex 2 mode: active



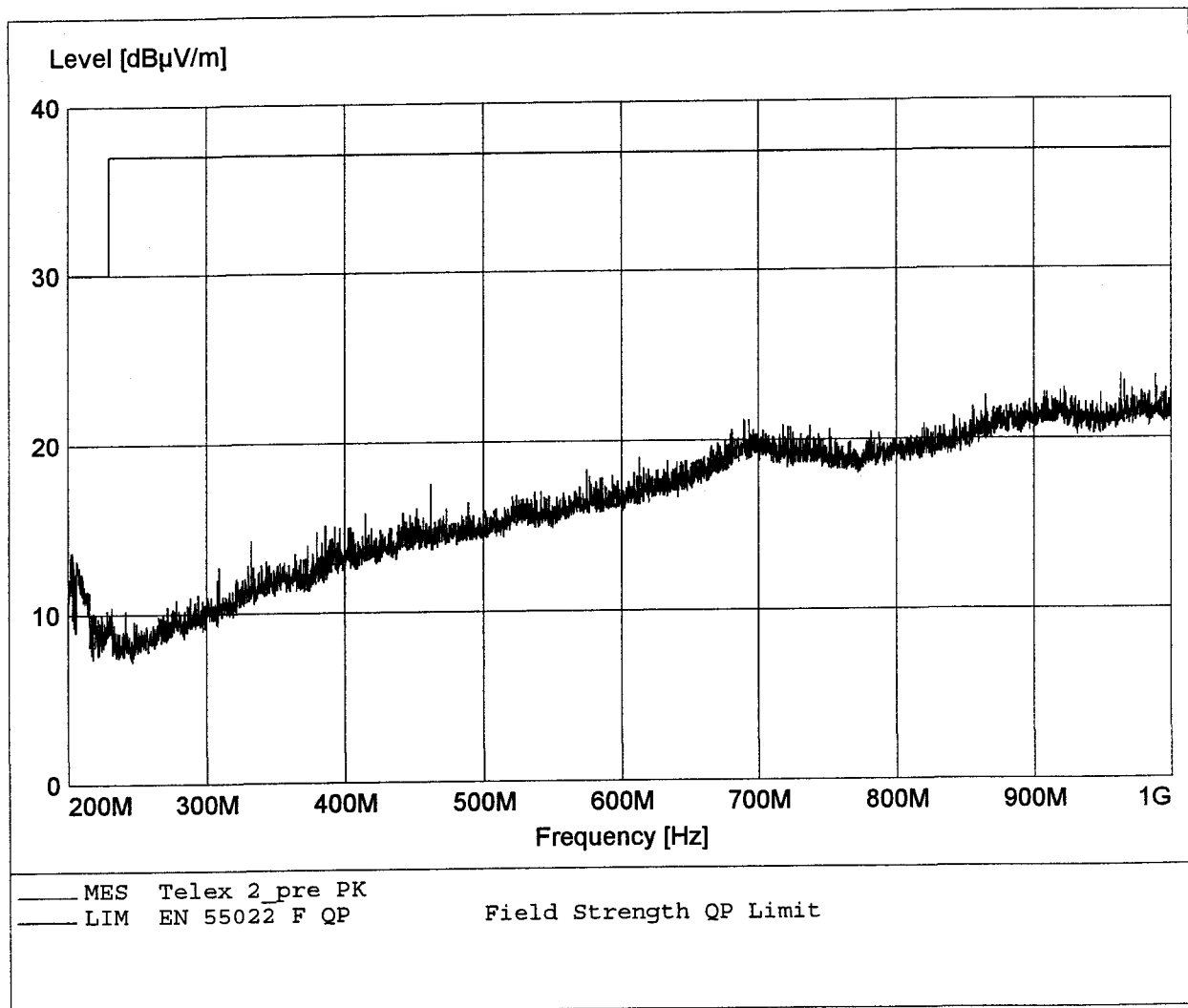
**Spurious emission under normal conditions
according to EN 55022**

EUT: Telex 2
Manufacturer: Biotronik GmbH
Operating Condition: Unom: 230 VAC adaptor Tnom: 23°C
Test Site: ETS
Operator: Mr. F.Schulz
Test Specification: Ant: HK 116,vertikal
Comment: model :Telex 2 mode: active



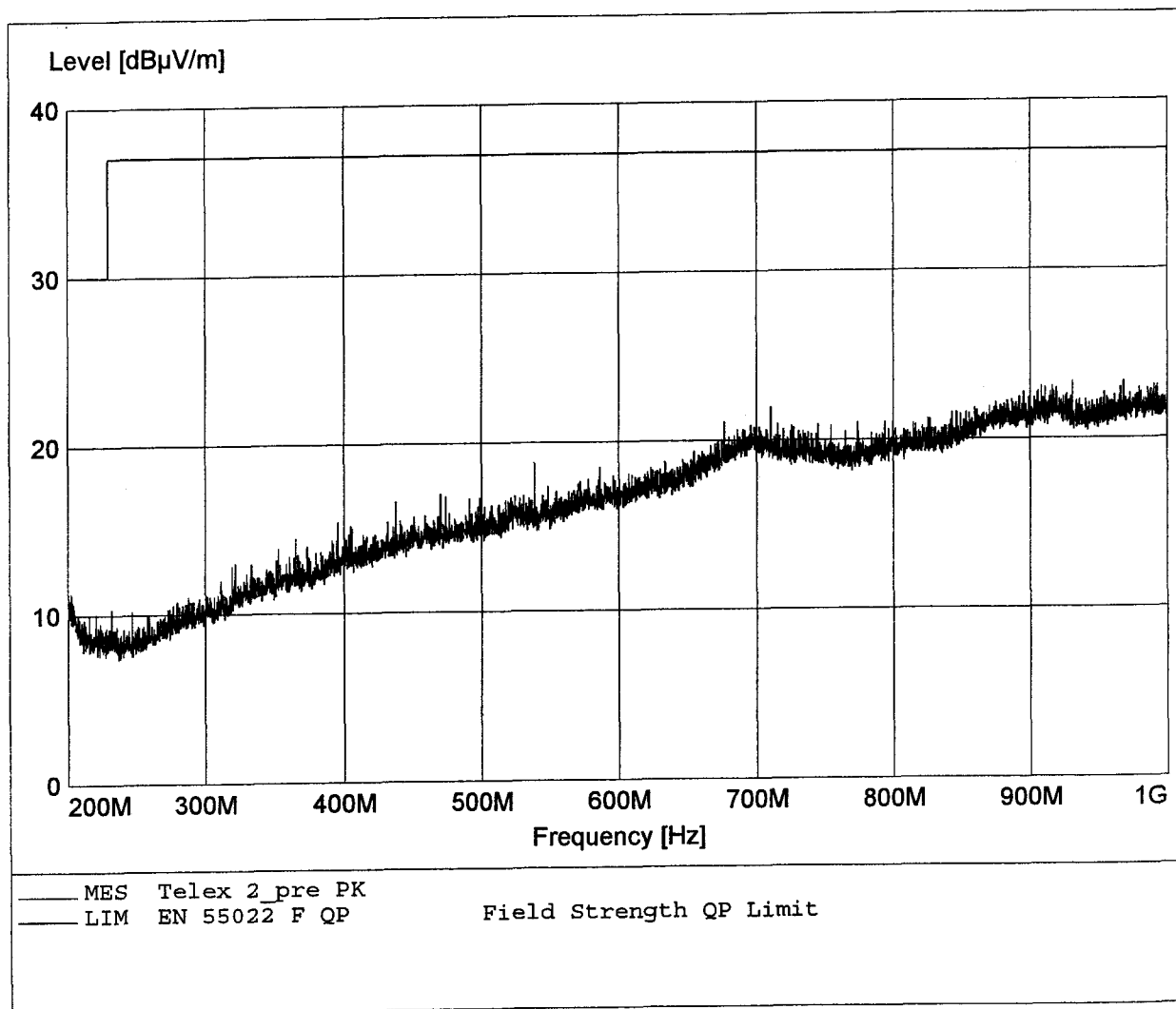
**Spurious emission under normal conditions
according to EN 55022**

EUT: Telex 2
Manufacturer: Biotronik GmbH
Operating Condition: Unom: 230 VAC adaptor Tnom: 23°C
Test Site: ETS
Operator: Mr. F.Schulz
Test Specification: Ant: HL 223,vertikal
Comment: model :Telex 2 mode: active



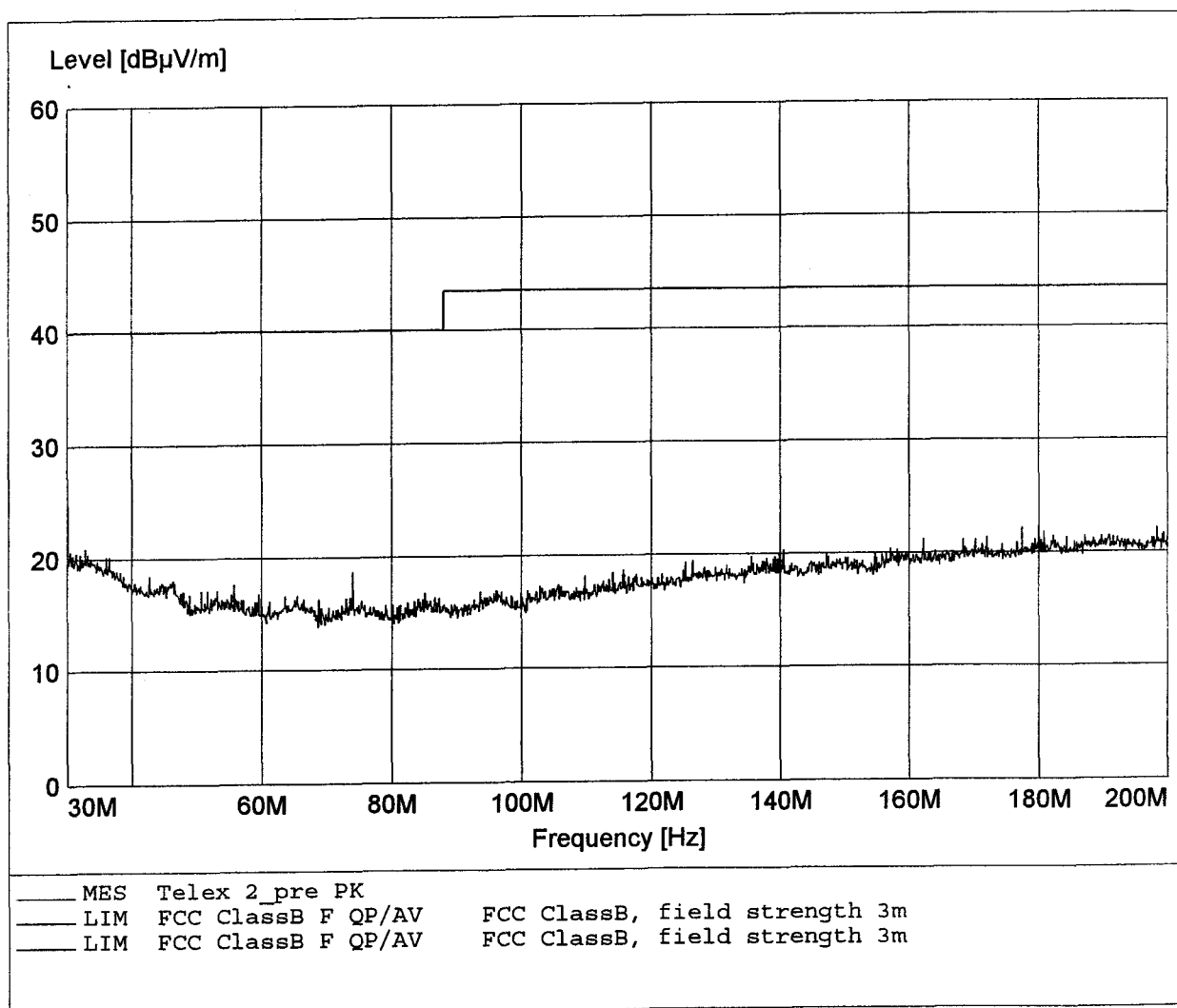
**Spurious emission under normal conditions
according to EN 55022**

EUT: Telex 2
Manufacturer: Biotronik GmbH
Operating Condition: Unom: 230 VAC adaptor Tnom: 23°C
Test Site: ETS
Operator: Mr. F.Schulz
Test Specification: Ant: HL 223, horizontal
Comment: model :Telex 2 mode: active



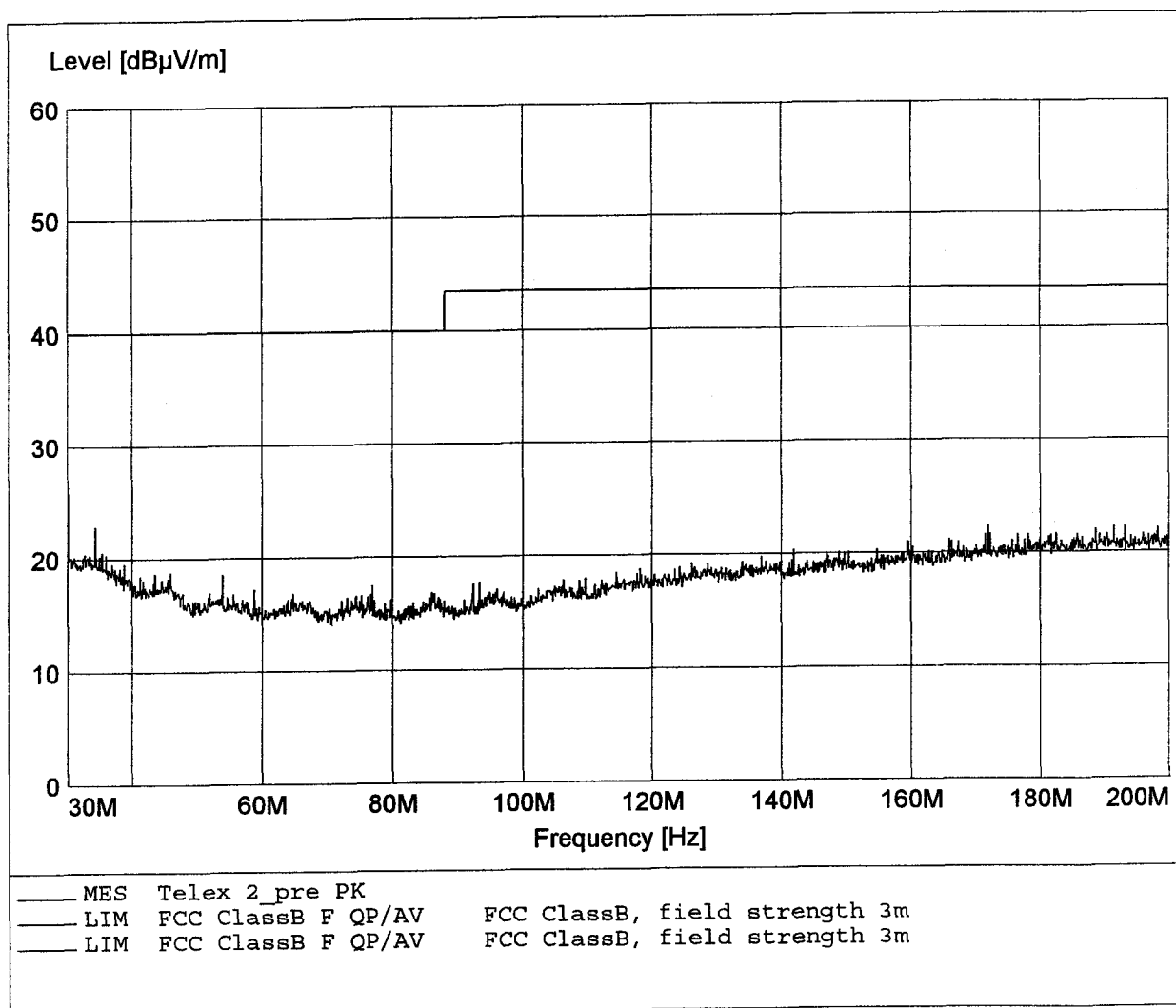
Field Strenght under normal conditions
FCC RULES PART 15,SUBPART B

EUT: Telex 2
Manufacturer: Biotronik GmbH
Operating Condition: Unom: Tnom: 23°C
Test Site: ETS
Operator: Mr. F.Schulz
Test Specification: according to subpart B
Comment: Ant: HK 116,vertikal mode:active
Start of Test: 18.11.02 / 14:50:34



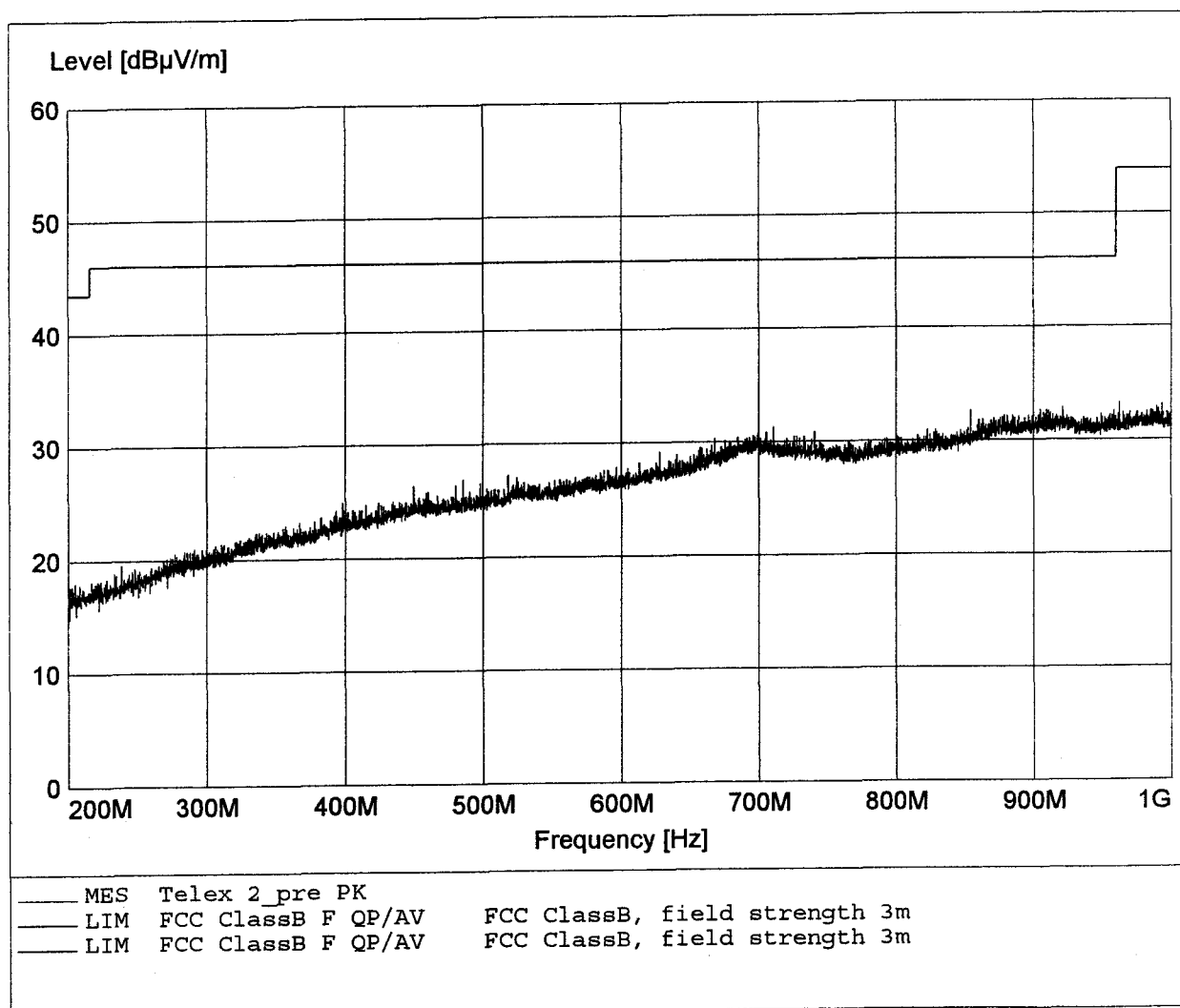
Field Strenght under normal conditions
FCC RULES PART 15,SUBPART B

EUT: Telex 2
 Manufacturer: Biotronik GmbH
 Operating Condition: Unom: Tnom: 23°C
 Test Site: ETS
 Operator: Mr. F.Schulz
 Test Specification: according to subpart B
 Comment: Ant: HK 116, horizontal mode: active
 Start of Test: 18.11.02 / 14:45:55



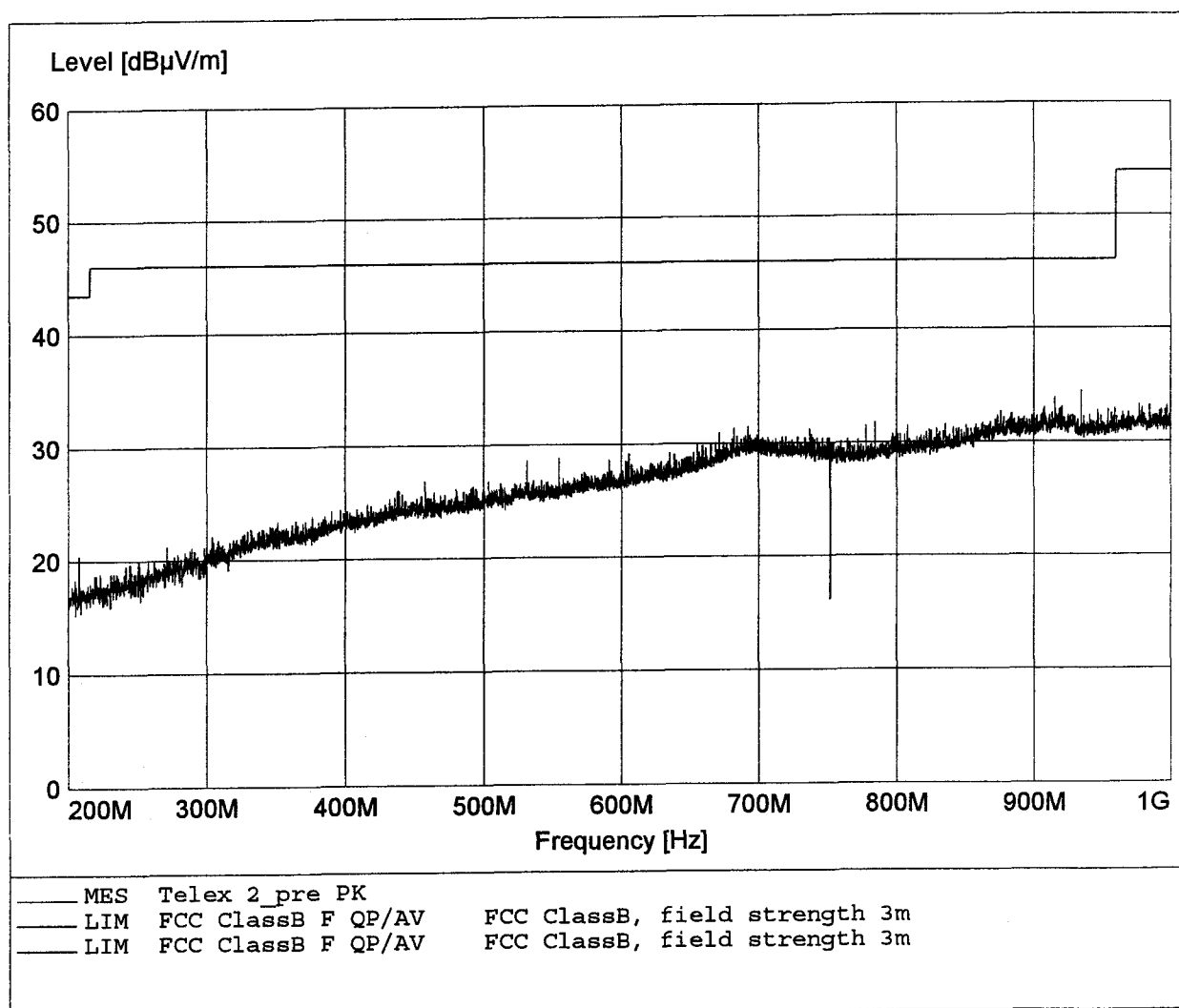
Field Strenght under normal conditions
FCC RULES PART 15,SUBPART B

EUT: Telex 2
 Manufacturer: Biotronik GmbH
 Operating Condition: Unom: Tnom: 23°C
 Test Site: ETS
 Operator: Mr. F.Schulz
 Test Specification: according to subpart B
 Comment: Ant: HL 223,vertikal mode:active
 Start of Test: 18.11.02 / 15:22:10



Field Strenght under normal conditions
FCC RULES PART 15,SUBPART B

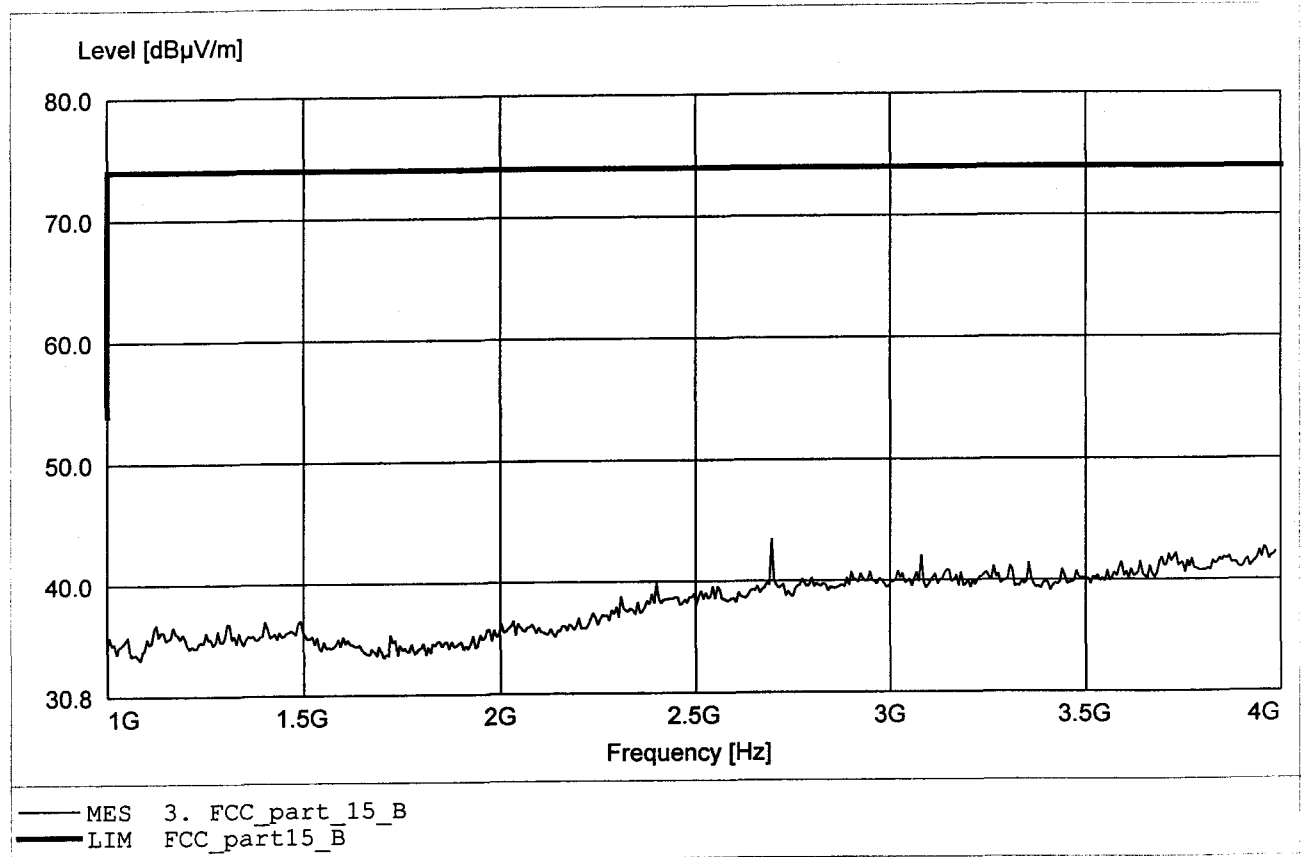
EUT: Telex 2
Manufacturer: Biotronik GmbH
Operating Condition: Unom: Tnom: 23°C
Test Site: ETS
Operator: Mr. F.Schulz
Test Specification: according to subpart B
Comment: Ant: HL 223,horizontal mode:active
Start of Test: 18.11.02 / 14:55:46



Field Strength under normal conditions
FCC RULES PART 15, SUBPART B

EUT / Model : Telex 2

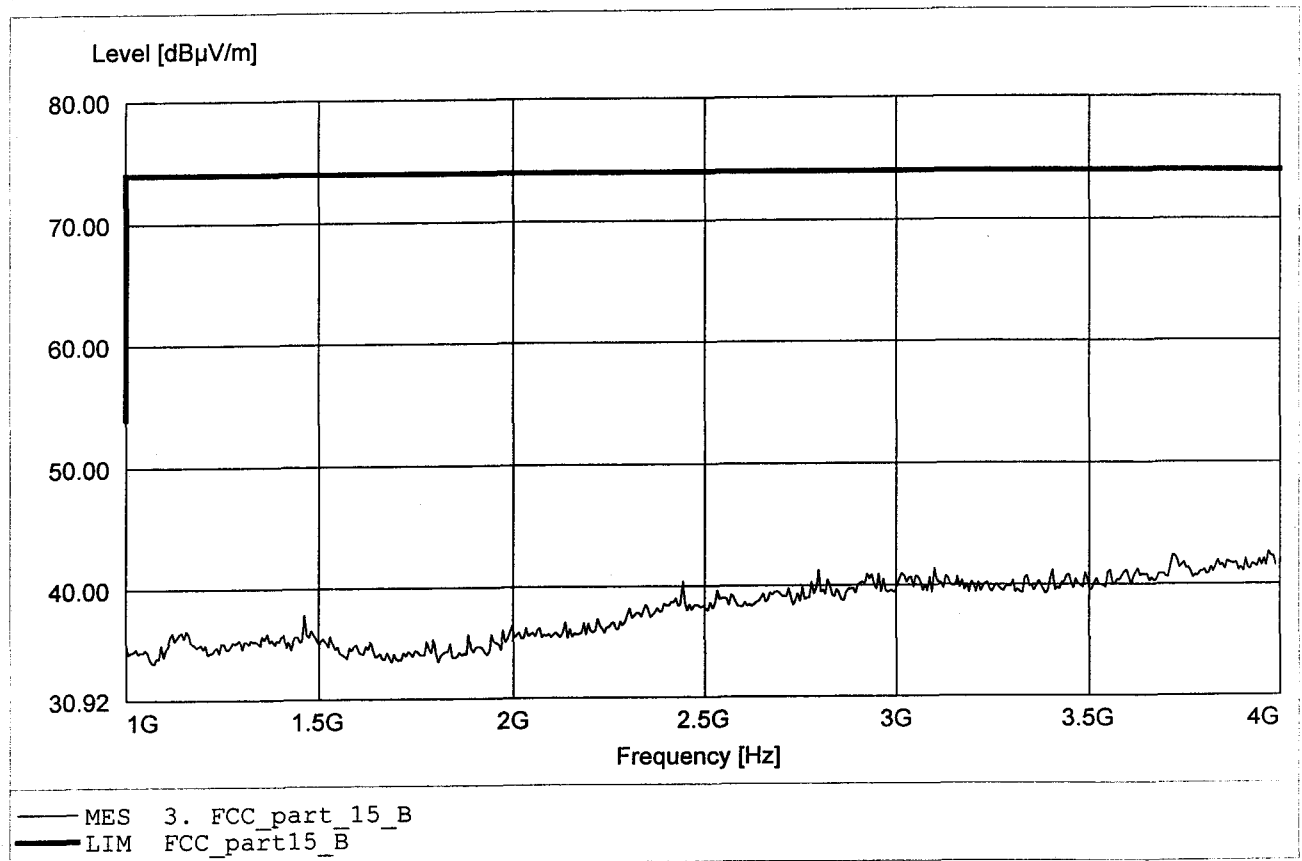
Approval Holder: Biotronik GmbH
Operating Condition: Tnom:23°C / Unom:
Test Site / Operator: ETS / Mr. F.Schulz
Test Specification: according to S15109, Limit 20 dB up peak detector
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.
Comment 2: Freq:2.695GHz Emax:43.45dBuV/m RBW: 1 MHz



Field Strength under normal conditions
FCC RULES PART 15, SUBPART B

EUT / Model : Telex 2

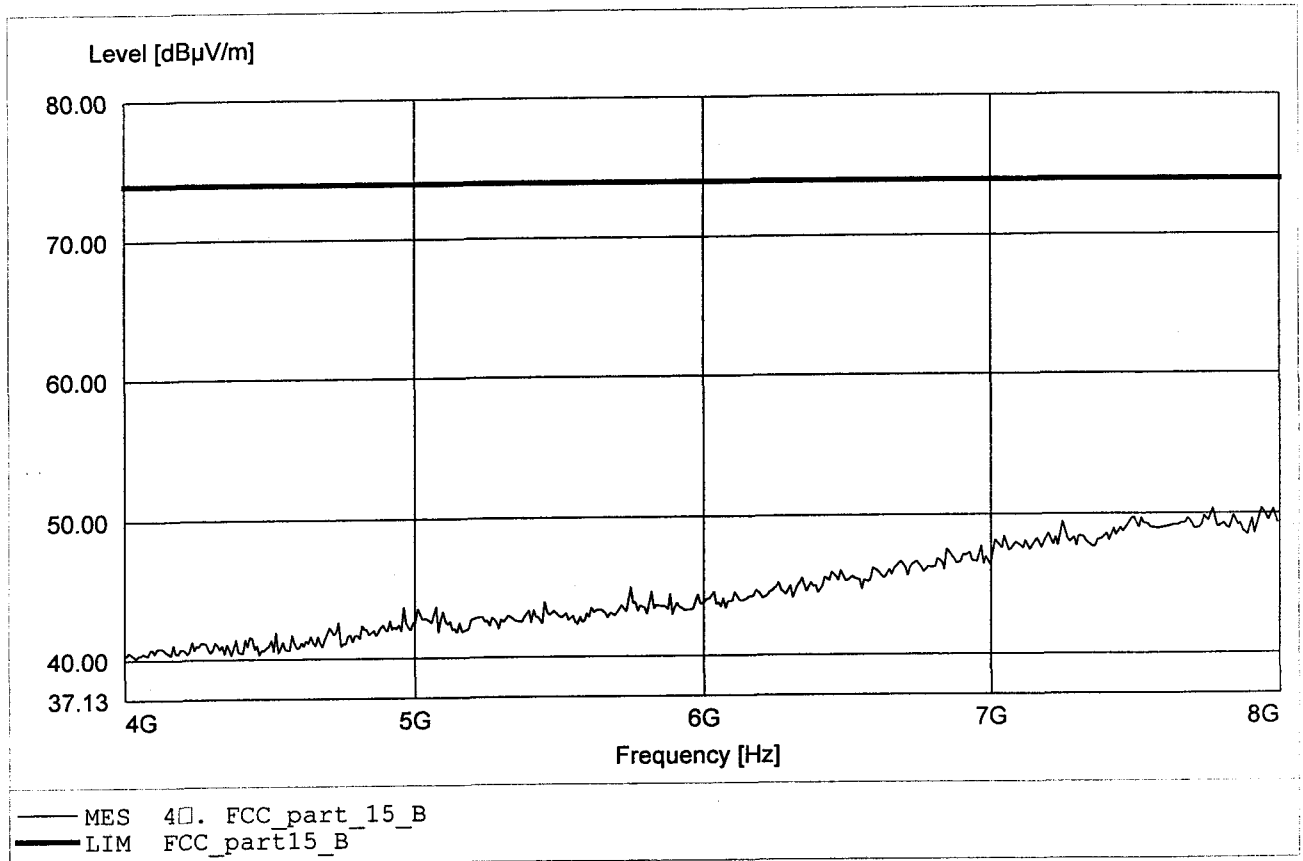
Approval Holder: Biotronik GmbH
Operating Condition: Tnom:23°C / Unom:
Test Site / Operator: ETS / Mr. F.Schulz
Test Specification: according to §15109, Limit 20 dB up peak detector
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.
Comment 2: Freq:3.970GHz Emax:42.68dBμV/m RBW: 1 MHz



Field Strength under normal conditions
FCC RULES PART 15, SUBPART B

EUT / Model : Telex 2

Approval Holder: Biotronik GmbH
Operating Condition: Tnom:23°C / Unom:
Test Site / Operator: ETS / Mr. F.Schulz
Test Specification: according to S15109, Limit 20 dB up peak detector
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.
Comment 2: Freq:7.936GHz Emax:50.38dBμV/m RBW: 1 MHz



Field Strength under normal conditions
FCC RULES PART 15, SUBPART B

EUT / Model : Telex 2

Approval Holder: Biotronik GmbH
Operating Condition: Tnom:23°C / Unom:
Test Site / Operator: ETS / Mr. F.Schulz
Test Specification: according to §15109, Limit 20 dB up peak detector
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.
Comment 2: Freq:7.960GHz Emax:50.72dBμV/m RBW: 1 MHz

