ELECTRONIC TECHNOLOGY SYSTEMS
DR. GENZ GMBH

TEST - REPORT

FCC RULES PARTS 22H and 24E
IC RADIO STANDARDS RSS 132 and RSS 133

FCC ID: QIXMAMBO56
IC: 5383A-MAMBO56

Model Name: Mambo56

Test report no.: G0M20603-0284-P-2224

Certificate 1983-01

ELECTRONIC TECHNOLOGY SYSTEMS DR. GENZ GMBH
STORKOWER STRASSE 38C, PHONE +49-33631-888 00
D-15526REICHENWALDE B. BERLIN FAX +49-33631-888 660

TABLE OF CONTENTS

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 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.
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 is 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 1.5.
The test report may only be reproduced or published in full.
Reproduction or publication of extracts from the report requires the prior written approval of the ELECTRONIC TECHNOLOGY SYSTEMS DR. GENZ GMBH.

Tester:

23.06.2006		K. Damm	
Date	ETS-Lab.	Name	Signature

Technical responsibility for area of testing:

23.06.2006		N. Kaspar	
Date	ETS	Name	Signature

1.2 Testing laboratory

1.2.1 Location

ELECTRONIC TECHNOLOGY SYSTEM DR. GENZ GMBH (ETS)
Storkower Straße 38c
D-15526 Reichenwalde b. Berlin
Germany
Telephone : +49 33631 888 00
Telefax : +49 33631 888 66

1.2.2 Details of accreditation status

ACCREDITED TESTING LABORATORY
DAR-REGISTRATION NUMBER: DAT-P-201/96

ACCREDITED COMPETENT BODY
DAR-REGISTRATION NUMBER: BPT-ZE-026/96

FCC FILED TEST LABORATORY:
REG. NO. 96970

INDUSTRY CANADA FILED TEST LABORATORY
REG. NO. IC 3470

A2LA ACCREDITED
CERTIFICATE NUMBER: 1983-01

BLUETOOTH QUALIFICATION TEST FACILITY (BQTF)
ACCREDITED BY: BLUETOOTH QUALIFICATION REVIEW BOARD (BQRF)

1.3 Details of approval holder

Name	: Falcom Wireless Communications GmbH
Street	: Gewerbering 6
Town	: 98704 Langewiesen
Country	: Germany
Telephone	: +49(0)3677 8042-0
Fax	: +49(0)3677 8042-215
Contact	: Herr Ralf Leipoldt
E-Mail	: +49(0)3677 8042-0

1.4 Application details

Date of receipt of application : 03.03.2006
Date of receipt of test item : 03.03.2006
Date of test : 27.04.2006

1.5 Test item

Description of test item : GSM/GPRS/GPS/Bluetooth-Personal-Tracker

Type identification : Mambo56

Serial number : without

Photos : See annex A.

Technical data

Frequency range Tx - GSM 850 : 824.2 - 848.80 MHz
Frequency range Tx - PCS : 1850.2 - 1909.8 MHz
Frequency range Rx - GSM 850 : 869.2 - 893.8 MHz
Frequency range Rx - PCS : 1930.2 - 1989.8 MHz
Antenna Type : internal antenna
Antenna Gain : 1 dBi
Power supply : 3,7 V DC
Operating mode : duplex
Type of modulation : GMSK (GSM modulation)
Emission : GXW

Manufacturer:
(if applicable)

Name :
Street :
Town :
Country :

1.6 Test standards

Technical standard :	FCC Parts: 22H, 24E, 2, 15 IC Standards: RSS 132, RSS 133
Additional information:	Because of using the GSM 850 as an alternative technology in 850 MHz band, not all test cases of FCC Part 22 are required. This device contains 1800 MHz not operational in U.S. Territories. This filing is only applicable for 850/1900 MHz operations.

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 2.5 were ascertained in the course of the tests performed. ☐

2.2 Test environment

Temperature	: 25 ° C
Relative humidity content	: 20 ... 75 %
Air pressure	: 86 ... 103 kPa

2.3 Test equipment utilized

No.	Test equipment	Type	Manufacturer
ETS 0002	Test receiver	ESVP	Rohde & Schwarz
ETS 0003	Diode power sensor	NRV-Z2	Rohde & Schwarz
ETS 0004	Spectrum and network analyzer	FSMS 26	Rohde & Schwarz
ETS 0007	Horn antenna	AT 4004	ar
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 0018	Horn antenna	BBHA 9120 D	Schwarzbeck
ETS 0019	Horn antenna	BBHA 9120 D	Schwarzbeck
ETS 0026	Tripod		Heinrich Deisel
ETS 0027	Tripod		Heinrich Deisel
ETS 0028	Tripod	STA 2	C. Lorenz AG
ETS 0029	Tripod		Berlebach
ETS 0030	Antenna	HK 116	Rohde & Schwarz
ETS 0031	Turn table	DS 412	Heinrich Deisel
ETS 0032	Controller	HD 050	Heinrich Deisel
ETS 0034	RF generator/ Amplifier	SMLR	Rohde & Schwarz
ETS 0035	RF generator/ Amplifier	SMLM	Rohde & Schwarz
ETS 0036	Zirc. Antenna	3102	EMCO
ETS 0037	Zirc. Antenna	3102L	EMCO
ETS 0038	RF amplifier	150L	Amplifier Research
ETS 0039	Absorbing clamp	MDS 21	Rohde & Schwarz
ETS 0040	Artificial mains Network	ESH3-Z5	Rohde & Schwarz
ETS 0041	Artificial mains	ESH3-Z4	Rohde & Schwarz
ETS 0042	Artificial mains	ESH3-Z6	Rohde & Schwarz
ETS 0043	Directional coupler	1850	KRYTAR
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	Attenuator	776B-10	Narda
ETS 0071	Video camera system	KMB012	Kocom
ETS 0072	Interphone system	JS-1400	Jiuh Sheng
ETS 0073	Audio noise meter	GSM 2	MKD/ RFT

No.	Test equipment	Type	Manufacturer
ETS 0074	RF Millivoltmeter	QRV 2	MKD/ RFT
ETS 0075	NF generator	GF 22	Präcitronic
ETS 0079	Functional generator	MX-2020	Maxcom
ETS 0080	EMI Software	ES-K1	Rohde & Schwarz
ETS 0081	EMI Software	ES-K10	Rohde & Schwarz
ETS 0085	Shielded room	SR 1	Frankonia
ETS 0086	Anechoic chamber	AC 1	Frankonia
ETS 0087	Climatic cell	HC 4033	Heraeus
ETS 0089	Radio communication tester	CMS 54	Rohde & Schwarz
ETS 0091	RF signal generator	SME 03	Rohde & Schwarz
ETS 0093	Attenuator	57-20-33	Weinschel
ETS 0094	Power sensor	NRV-Z55	Rohde & Schwarz
ETS 0100	RF signal generator	SME-06	Rohde & Schwarz
ETS 0102	CDN	M3-801/6	MEB
ETS 0105	High power synthesizer/ sweeper	SMP 22 / 02	Rohde & Schwarz
ETS 0106	Antenna	VAMP 9443	Schwarzbeck Meßelektronik
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
ETS 0121	Oscilloscope	EO 147A	Serute
ETS 0122	Oscilloscope	5201	Dagatron
ETS 0123	RF step attenuator	RBU	Rohde & Schwarz
ETS 0132	Frequency doubler	TR-0616	EMG
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 0146	Active RF probe	ESH2-Z2	Rohde & Schwarz
ETS 0147	Probe	TK 103	MEB
ETS 0148	RF Current Probe	F-65	FCC
ETS 0149	Power divider	ZAPD-21	MCL
ETS 0150	Switcher	HR07-720	Wisi
ETS 0155	Signal generator	SMG	Rohde & Schwarz
ETS 0156	Adjacent channel power meter	NKS	Rohde & Schwarz
ETS 0159	Programmable power supply	TOE 8815	Toellner
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 0169	Measurement - Front-end (analogue)	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	MFE V	HEAD acoustics

No.	Test equipment	Type	Manufacturer
	interface		
ETS 0175	Software line interface (analogue)	COPTZV5	HEAD acoustics
ETS 0176	Acoustic volt meter	COP 4	HEAD acoustics
ETS 0178	Open area test side	10m	ETS
ETS 0179	Open area test side	3m	ETS
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 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
ETS 0202	Digital thermometer	ad 15th	ama-digit
ETS 0204	Digital thermometer	ad 20th	ama-digit
ETS 0218	RF probe	URV5-Z7	Rohde & Schwarz
ETS 0219	Power sensor	NRV-Z2	Rohde & Schwarz
ETS0224A	Millivoltmeter	URV5	Rohde & Schwarz
ETS0224B	Diode Power Sensor	NRV-Z1	Rohde & Schwarz
ETS0224C	Programmable high resolution time counter	PM6654G	Philips
ETS0224D	RF Step Attenuator	RSP	Rohde & Schwarz
ETS 0228	Climatic chamber	VT 4010	Vötsch
ETS 0229	Radio communication tester	CMT 54	Rohde & Schwarz
ETS 0230	Radio communication tester	CMD 65	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 0243	AC-clamp 1000 A	80i 1000s	Fluke
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	DATUM GmbH

No.	Test equipment	Type	Manufacturer
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 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 0269	RF bridge 50 Ohm	86205 A	Aglient
ETS 0270	RF signal generator	SMP 04	Rohde & Schwarz
ETS 0271	Spectrum analyzer	FSEK30	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 analyzer	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
ETS 0281	Spectrum analyzer	FSM	Rohde & Schwarz
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 0301	Relay switch unit	RSU	Rohde & Schwarz
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 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 0319	Opto link	GPIB 140	NI
ETS 0320	Opto link	GPIB 140	NI
ETS 0322	Insertion unit	URV5-Z4	Rohde & Schwarz
ETS 0333	Turn table	DE 350	Heinrich Deisel
ETS 0334	Controller	HD 100	Heinrich Deisel
ETS 0336	LPD Antenna	HL 223	Rohde & Schwarz
ETS 0337	Professional Power Amplifier	SE-1200	Wharfedale Pro

No.	Test equipment	Type	Manufacturer
ETS 0340	Thermometer		Proficell
ETS 0341	Thermometer		Proficell
ETS 0342	Thermometer		Proficell
ETS 0343	Thermometer		Proficell
ETS 0344	Thermometer		Proficell
ETS 0345	Thermometer		Proficell
ETS 0346	Thermometer		Proficell
ETS 0347	Current Probe	EZ-17	Rohde & Schwarz
ETS 0348	RF Millivoltmeter	URV 55	Rohde & Schwarz
ETS 0349	Temperature / humidity logger	OPUS10 THI	LUFFT
ETS 0350	Horn Antenna	BBHA 9120-C	Schwarzbeck
ETS 0351	RF amplifier	DWT-1857	Microwave
ETS 0354	RF amplifier	DBS-0408N423	Microwave
ETS 0355	high pass	H03G12G3	Microwave
ETS 0356	high pass	H03G12G3	Microwave
ETS 0357	high pass	H08G18G3	Microwave
ETS 0358	RF amplifier	AFD3-010040-15-ln	MITEQ
ETS 0359	RF amplifier	M/N AM-1331	MITEQ
ETS 0360	RF amplifier	DBS-0408N423	Microwave
ETS 0361	RF amplifier	DBS 1826N515	Microwave
ETS 0362	high pass	H03G12G3	Microwave
ETS 0363	high pass	H08G18G3	Microwave
ETS 0364	high pass	H08G18G3	Microwave
ETS 0365	Notch filter 2.4 GHz	WRCT2.40/248	Wain Wright
ETS 0366	high pass	H08G18G3	Microwave
ETS 0367	high pass	H03G12G3	Microwave
ETS 0368	Notch filter 0.5-1 GHz	BN86883	Schomandl
ETS 0369	Notch filter 210-500 MHz	BN86882	Schomandl
ETS 0370	Notch filter 15-90 MHz	BN86880	Schomandl
ETS 0371	Notch filter 85-250 MHz	BN86881	Schomandl
ETS 0372	Direction coupler	RK 100	MEB
ETS 0373	Direction coupler	DC3001	EMV
ETS 0374	Power Supply	NGSM32	Rohde & Schwarz
ETS 0375	Vector Signal Generator	SMIQ03B	Rohde & Schwarz
ETS 0376	Signal Generator	SMP22	Rohde & Schwarz
ETS 0382	Vector Signal Generator	SMIQ03B	Rohde & Schwarz
ETS 0383	Spectrum Analyzer	FSU26	Rohde & Schwarz
ETS 0386	Power meter	NRVD	Rohde & Schwarz
ETS 0387	Power sensor	NRV-Z1	Rohde & Schwarz
ETS 0388	Power sensor	NRV-Z1	Rohde & Schwarz
ETS 0391	Rubidium Frequency Standard	DATUM 8040	DATUM GmbH
ETS 0392	RF Distribution	DATUM 6502	DATUM GmbH
ETS 0393	Insertion unit	URV5-Z4	Rohde & Schwarz
ETS 0403	RF Current Probe	F-140	Rohde & Schwarz
ETS 0406	Signal Generator	SML02	Rohde & Schwarz
ETS 0409	Stripline	DC220	Schwarzbeck
ETS 0410	BAN	1	ETS
ETS 0418	High pass filter 4-8GHz		Microwave
ETS 0419	High pass filter 8-18 GHz		Microwave

No.	Test equipment	Type	Manufacturer
ETS 0420	Amplifier 0.1-1 GHz	M/N AM-1331	MITEC
ETS 0421	Amplifier 1-4 GHz	AFD3-010040-15-LN	MITEC
ETS 0422	Amplifier 4-8 GHz	DBS-0408N423	Narda
ETS 0423	Amplifier 8-18 GHz	DWT-18057	Narda
ETS 0424	Amplifier 18-26.5 GHz	DBS-1826N515	Narda
ETS 0427	Power sensor	NRV-Z6	Rohde & Schwarz
ETS 0429	Current probe test Jig	SW14 7LY	Chase
ETS 0430	RF signal generator	SML02	R&S
ETS 0435	HP-Filter	H1G04G01	Microwave
ETS 0436	HP-Filter	H1G04G01	Microwave
ETS 0437	HP-Filter	H0G408G1	Microwave
ETS 0438	HP-Filter	H0G408G1	Microwave
ETS 0439	Amplifier	DBS-1826N515	Narda-DBS-Microwave
ETS 0440	Amplifier	AM-1331	MITEQ
ETS 0445	RF attenuator 6dB	50FH-006-300	JFK
ETS 0446	RF attenuator 30dB	50FH-030-300	JFK
ETS 0448	RF power amplifier	AR 60S1G3	AR Amplifier Research
ETS 0466	Directional coupler	HP 87300B	
ETS 0470	Amplifier	AM-1300-1103	MITEQ
ETS 0472	Antenna	BTA-H	Frankonia
ETS 0474	EMI test receiver	ESCS30	Rohde & Schwarz
ETS 0475	Amplifier	AFS4-00101800-U	MITEQ
ETS 0476	Test receiver	ESCS 30	Rohde & Schwarz
ETS 0477	GPS system (active GPS antenna)	4490	HOPF
ETS 0478	Crystal filter	MQF 127.50-2400/F	Vectron International
ETS 0480	Validation dipole	DB 3	EMCO
ETS 0481	40 GHz standard gain horn with amplifier	22240-25 CBL26402075	Flann Microwave
ETS 0482	40 GHz high gain antenna	AT4560	Amplifier research
ETS 0483	Amplifier	AFD3010040-15-LN	MITEQ
ETS 0485	Radio Communication Tester	CMU 200	Rohde & Schwarz

2.4 General test procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-2003 5.2 using a 50 µH LISN (if necessary). Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-2003 6.4 using a spectrum analyzer. The resolution bandwidth of the spectrum analyzer was 100 kHz for measurements below 1 GHz and RBW 1 MHz was used above 1 GHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

FORMULA OF CONVERSION FACTORS for Field strength: The Field Strength at 3 m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBµV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB.

Example:

Freq. (MHz)	METER READING + ACF + CABLE LOSS (to the receiver) = FS
33	20 dBµV + 10.36 dB + 6 dB = 36.36 dBµV/m @3m

ANSI STANDARD C63.4-2003 6.2.1 MEASUREMENT PROCEDURES: The UUT was placed on a table 80 cm high and with dimensions of 1m by 1.5 m (non metallic table). The UUT was placed in the center of the table. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to at least 10^{th} harmonic of the fundamental.

Peak readings were taken in three (3) orthogonal planes and the highest readings.
Measurements were made by ETS Dr. Genz GmbH at the registered open field test site located at Storkower Str. 38c, 15526 Reichenwalde, Germany.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1 m to 4 m. The antenna was placed in both the horizontal and vertical planes.

ANTENNA & GROUND:
This unit uses external antennas.

2.5 Test results

☒ 1st test ☐ test after modification ☐ production test

SECT.	TEST CASE	FCC 47 CFR PART	IC RSS-	Required	Test passed	Test failed
3	*TRANSMITTER PARAMETERS*					
3.1	RF power output conducted	2.1046 22.913(a) 24.232(c)	Gen §4.6 132 §4.4 133 §4.3	☒	☒	☐
3.2	RF power output radiated (ERP, EIRP)	22.913(a) 24.232(c)	132 §4.4 133 §4.3	☒	☒	☐
3.3	Occupied bandwidth	2.1049	Gen §4.4.1	☒	☒	☐
3.3	Emission bandwidth	22.917(b) 24.238(b)	-	☒	☒	☐
3.4	Frequency stability	2.1055 22.355 24.235	Gen §4.5 132 §4.3 133 §4.2	☒	☒	☐
3.5	Spurious emission conducted (antenna terminal)	2.1051 22.917 24.238	Gen §4.7 132 §4.5 133 §4.4	☒	☒	☐
3.6	Spurious emission radiated	2.1053 22.917 24.238	Gen §4.7 132 §4.5 133 §4.4	☒	☒	☐
3.7	Block edge compliance	22.917(b) 24.238(b)	132 §4.5.1.1 133 §4.4	☒	☒	☐
3.8	AC power line conducted emissions	15.207	-	☐	☐	☐
4	*RECEIVER PARAMETERS*					
4.1	Radiated emissions	2.1053 15.109	Gen 4.8 132 §4.6 133 §4.5	☒	☒	☐

3 Transmitter parameters

3.1 RF power output, conducted,

Reference

	Cellular telephone 850 MHz	PCS 1900 MHz
FCC	CFR part 22.913(a), 2.1046	CFR part 24.232(c), 2.1046
IC	RSS-132 Issue 2, §4.4 RSS-Gen Issue 1, §4.6	RSS-133 Issue 3, §4.3 RSS-Gen Issue 1, §4.6

Method of measurement

The transmitter output was connected to a calibrated coaxial attenuator, the other end of which was connected to a spectrum analyzer. Transmitter output was read off the spectrum analyzer in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the spectrum analyzer reading.
An HP power meter was also used to measure the RF power.
Tests were performed at three frequencies (low, middle, and high channels) and on all power levels, which can be set-up on the transmitters.

Limits

	Cellular telephone 850 MHz	PCS 1900 MHz
FCC	38,5 dBm (7 Watts), ERP	33 dBm (2 Watts), EIRP
IC	38 dBm (6.3 Watts), ERP	33 dBm (2 Watts), EIRP

Test results

	Frequency channel	Peak output power	AVG output power
Cellular telephone 850 MHz	128	32.40 dBm	--
	188	32.41 dBm	--
	251	32.73 dBm	--
PCS 1900 MHz	512	30.05 dBm	--
	661	29.69 dBm	--
	810	29.46 dBm	--

See attached diagrams

Test equipment:
ETS 0413, ETS 0416, ETS 0484

3.2 RF power output, radiated,

Reference

	Cellular telephone 850 MHz	PCS 1900 MHz
FCC	CFR part 22.913(a)	CFR part 24.232(c)
IC	RSS-132 Issue 2, §4.4	RSS-133 Issue 3, §4.3

Method of measurement

The EUT was positioned on a non-conductive turntable, 0.8m above the ground plane on an open test site. The radiated emission at the fundamental frequency was measured at 3m distance with a test antenna and spectrum analyzer.

Worst case emission was recorded with the rotation of the turntable and the raising and lowering of the test antenna.

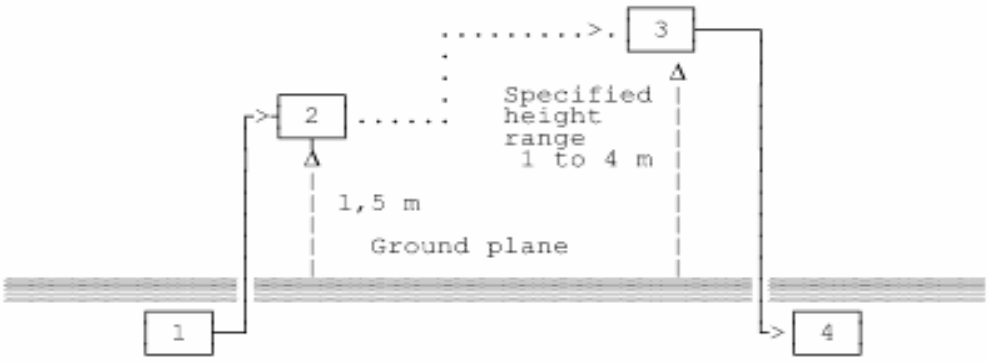
ERP in frequency band 824.2 - 848.8 MHz, and EIRP in frequency band 1850.2 - 1909.8 MHz were measured using a substitution method. The EUT was replaced by half-wave dipole (824.2 - 848.8 MHz) or horn antenna (1850.2 - 1909.8 MHz) connected to a signal generator.

Substitution RF power measurement at ETS Dr Genz GmbH

General:

The applied substitution method follows ANSI/TIA/EIA-603, ANSI/TIA/EIA-102.CAAA or the appropriate ETSI rules respectively.

The actual signal generated by the EUT can be determined by means of a substitution measurement in which a known signal source replaces the device to be measured.



1) Signal generator;
2) Substitution antenna;
3) Test antenna;
4) Spectrum analyzer or selective voltmeter.

The substitution antenna replaces the transmitter antenna at the same position and in vertical polarization. The frequency of the signal generator shall be adjusted to the measurement frequency. The test antenna shall be raised or lowered, if necessary, to ensure that the maximum signal is still received. The input signal to the substitution antenna shall be adjusted in level until an equal or a known related level to that detected from the transmitter is obtained in the measurement receiver.
If a fully anechoic chamber is used as test site in order to provide free space conditions there is no need to change the height of the antenna.
The measurement will be repeated in horizontal position.

Calibration:
In order to make this kind of measurement more effective and to avoid subjective measurement faults ETS has installed automatic computer controlled measurement procedures.
With the above described substitution method a test site is calibrated over the full frequency range which is used in suitable frequency steps. For a certain power level on the substitution antenna the received power over the whole frequency range is documented. All necessary antenna gains, cable losses, filter losses and amplifications of preamplifiers are taken in consideration. The summary of this calibration measurement performs a transducer factor that is related to the considered test site and a certain measurement distance. Differences of the radiated power levels of different test samples are determined by internal attenuation of the measurement receiver. The proper function of such test site will be maintained by short term plausibility checks and periodical re-calibration.

Testing:
The test sample is put on the table at the defined position and the measurement receiver receives and documents the radiated power. On test sites with ground plane the measurement antenna will be lowered and raised to maximum values at significant frequencies.
For peak power measurements the sample is turned by the turntable over 360 degree in order to find the direction with the maximum radiation or to document the max reading with the MAXHOLD function during the rotation.

Limits

	Cellular telephone 850 MHz	**PCS 1900 MHz**
FCC	38,5 dBm (7 Watts), ERP	33 dBm (2 Watts), EIRP
IC	38 dBm (6.3 Watts), ERP	33 dBm (2 Watts), EIRP

Test Results

	Frequency channel	Radiated power ERP	Radiated power EIRP
Cellular telephone 850 MHz	128	27.21 dBm	--
	188	28.37 dBm	--
	251	27.89 dBm	--
PCS 1900 MHz	512	--	20.57 dBm
	661	--	18.50 dBm
	810	--	17.72 dBm

See attached diagrams

Test equipment:
ETS 0014, ETS 0281, ETS 0295, ETS 0310, ETS 0416, ETS 0484

3.3 Occupied bandwidth, emission bandwidth

Reference

	Cellular telephone 850 MHz	PCS 1900 MHz
FCC	CFR part 22.917(b), 2.1049	CFR part 24.238(b), 2.1049
IC	RSS-Gen Issue 1, §4.4.1	RSS-Gen Issue 1, §4.4.1

Method of measurement

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power.
The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The RF output of the transceiver was connected to the input of the spectrum analyzer through sufficient attenuation.
Occupied Bandwidth was measured with a occupied bandwidth function of the analyzer.
To find the Emission Bandwidth (-26 dB) the delta markers were set –26 dB below transmitter power.

Test results

	Frequency channel	Occupied bandwidth	Emission bandwidth
Cellular telephone 850 MHz	128	250.501 kHz	316.633 kHz
	188	248.497 kHz	316.633 kHz
	251	248.497 kHz	318.637 kHz
PCS 1900 MHz	512	248.497 kHz	316.633 kHz
	661	248.497 kHz	316.633 kHz
	810	248.497 kHz	314.629 kHz

See attached diagrams

Test equipment:
ETS 0413, ETS 0416, ETS 0484

3.4 Frequency stability

Reference

	Cellular telephone 850 MHz	PCS 1900 MHz
FCC	CFR part 22.355, 2.1055	CFR part 24.235, 2.1055
IC	RSS-132 Issue 2, §4.3 RSS-Gen Issue 1, §4.5	RSS-133 Issue 3, §4.2 RSS-Gen Issue 1, §4.5

Method of measurement

The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable, exited the chamber through an opening made for that purpose.
After the temperature stabilized the frequency output was recorded from the counter.

Limits

	Cellular telephone 850 MHz	PCS 1900 MHz
FCC	± 2.5 ppm	Must stay within the authorized frequency block
IC	± 2.5 ppm	± 2.5 ppm

Test results

Frequency stability vs. temperature

	ϑ / ° C	Frequency error (Hz)	Frequency error (ppm)
Cellular telephone 850 MHz	50,00	27	0,01436
	40,00	27	0,01436
	30,00	28	0,01489
	20,00	-17	-0,01436
	10,00	-28	-0,01489
	0,00	-31	-0,01649
	-10,00	-29	-0,01543
	-20,00	-27	-0,01436
	-30,00	-30	-0,01596

	ϑ / ° C	Frequency error (Hz)	Frequency error (ppm)
PCS 1900 MHz	50,00	36	0,04305
	40,00	36	0,04305
	30,00	37	0,04425
	20,00	34	0,04066
	10,00	32	0,03827
	0,00	33	0,03946
	-10,00	31	0,03707
	-20,00	32	0,03827
	-30,00	27	0,03229

Frequency stability vs. voltage

	U_B / V	Frequency error (Hz)	Frequency error (ppm)
Cellular telephone 850 MHz	3,70	34	0,04066
	3,50	37	0,04425
	3,30	36	0,04305

	U_B / V	Frequency error (Hz)	Frequency error (ppm)
PCS 1900 MHz	3,70	-27	-0,01436
	3,50	-29	-0,01543

Test equipment:
ETS 0251, ETS 0416, ETS 0484

3.5 Spurious emission conducted (antenna terminal)

Reference

	Cellular Telephone 850 MHz	PCS 1900 MHz
FCC	CFR part 22.917, 2.1051	CFR part 24.238, 2.1051
IC	RSS-132 Issue 2, §4.5 RSS-Gen Issue 1, §4.7	RSS-133 Issue 3, §4.4 RSS-Gen Issue 1, §4.7

Method of measurement

The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission. The magnitude of spurious emission which are attenuated more than 20 dB below the permissible value need not be specified. Tests are performed for lowest, middle and highest transmitter block frequency.

Limits

	Cellular telephone 850 MHz	PCS 1900 MHz
FCC	Pc – (43 + 10 log (P) dB)	Pc – (43 + 10 log (P) dB)
IC	Pc – (43 + 10 log (P) dB)	Pc – (43 + 10 log (P) dB)

Test results

	Harmonic	TCX 128 [MHz]	Level [dBm]	TCX 188 [MHz]	Level [dBm]	TCX 251 [MHz]	Level [dBm
Cellular telephone 850 MHz	1	--	--	--	--	--	--
	2	--	--	--	--	--	--
	3	--	--	--	--	--	--
	4	--	--	--	--	--	--
	5	--	--	--	--	--	--
	6	--	--	--	--	--	--
	7	--	--	--	--	--	--
	8	--	--	--	--	--	--
	9	--	--	--	--	--	--
	10	--	--	--	--	--	--

	Harmonic	TCX 512 [MHz]	Level [dBm]	TCX 661 [MHz]	Level [dBm]	TCX 810 [MHz]	Level [dBm
PCS 1900 MHz	1	--	--	--	--	--	--
	2	--	--	--	--	--	--
	3	--	--	--	--	--	--
	4	--	--	--	--	--	--
	5	--	--	--	--	--	--
	6	--	--	--	--	--	--
	7	--	--	--	--	--	--
	8	--	--	--	--	--	--
	9	--	--	--	--	--	--
	10	--	--	--	--	--	--

See attached diagrams

Test equipment:

ETS 0375, ETS 0376, ETS 0377, ETS 0378, ETS 0379, ETS 0380, ETS 0382, ETS 0383, ETS 0384, ETS 0385, ETS 0386, ETS 0390, ETS 0394, ETS 0473

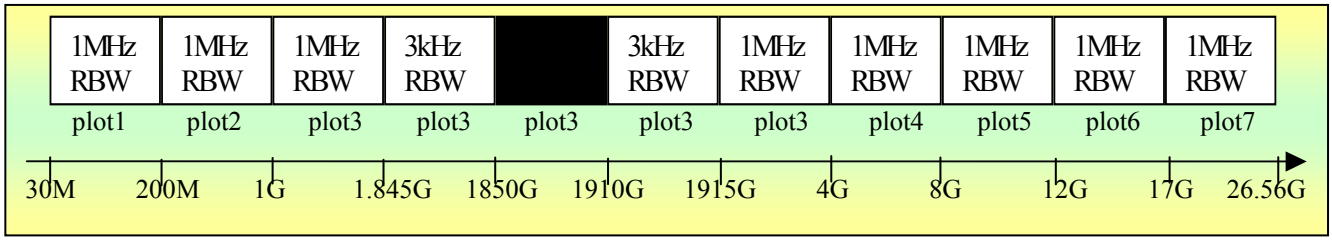
3.6 Spurious emission radiated

Reference

	Cellular telephone 850 MHz	PCS 1900 MHz
FCC	CFR part 22.917, 2.1053	CFR part 24.238, 2.1053
IC	RSS-132 Issue 2, §4.5 RSS-Gen Issue 1, §4.7	RSS-133 Issue 3, §4.4 RSS-Gen Issue 1, §4.7

Method of measurement

The EUT was positioned on a non-conductive turntable, 0.8m above the ground plane.
The radiated emission at the fundamental frequency was measured at 3 m distance with a test antenna and spectrum analyzer.



Worst case emission was recorded with the rotation of the turntable and the raising and lowering of the test antenna.

ERP was measured using a substitution method. The EUT was replaced by horn antenna connected to a signal generator.

The frequency range up to tenth harmonic was investigated.

The tests of spurious radiated emission have been carried out with the EKS-Software from Rohde & Schwarz.

The analyzer gives automatic the measurements of spectral plots to the EKS software.

In the 1st 1 MHz band outside the band edge nearest the channel of interest a 3 kHz res. BW is used. The measurements from 30 MHz to 1845 GHz and 1915 GHz to 26.56 GHz were performed with a measurement bandwidth of 1 MHz.

Calculation of test results:

Such factors like antenna correction, cable loss, external attenuation etc. are already included in the provided measurement results. This is done by using validated test software and calibrated test system according the accreditation requirements.

The peak and average spurious emission plots was measured with the average limits.
In the Table being listed the critical peak and average value an exhibit the compliance with the above calculated Limits.

Limits

	Cellular telephone 850 MHz	PCS 1900 MHz
FCC	Pc – (43 + 10 log (P) dB)	Pc – (43 + 10 log (P) dB)
IC	Pc – (43 + 10 log (P) dB)	Pc – (43 + 10 log (P) dB)

Test results

	Frequency channel	Frequency marker indication [MHz]	Worst case emission level [dBm]	Compliance limit [dBm]	Results
Cellular telephone 850 MHz	128	46,693	-30,43	-13	-17,43
		54,870	-35,29	-13	-22,29
		823,990	-25,21	-13	-12,21
		823,990	-20,48	-13	-7,48
		3.904,000	-29,39	-13	-16,39
		1.649,000	-27,12	-13	-14,12
		7.527,000	-42,51	-13	-29,51
		8.000,000	-39,92	-13	-26,92
		11.992,000	-37,43	-13	-24,43
		10.709,000	-35,33	-13	-22,33

See attached diagrams

	Frequency channel	Frequency marker indication [MHz]	Worst case emission level [dBm]	Compliance limit [dBm]	Results
Cellular telephone 850 MHz	188	47,034	-30,87	-13	-17,87
		53,848	-35,17	-13	-22,17
		875,944	-40,24	-13	-27,24
		868,337	-27,94	-13	-14,94
		1.673,000	-27,69	-13	-14,69
		1.673,000	-18,75	-13	-5,75
		7.992,000	-43,05	-13	-30,05
		8.000,000	-39,77	-13	-26,77
		11.992,000	-37,44	-13	-24,44
		10.782,000	-35,19	-13	-22,19

	Frequency channel	Frequency marker indication [MHz]	Worst case emission level [dBm]	Compliance limit [dBm]	Results
Cellular telephone 850 MHz	251	46,353	-30,65	-13	-17,87
		54,529	-34,96	-13	-21,96
		849,020	-26,07	-13	-13,07
		849,020	-21,86	-13	-8,86
		1.697,000	-28,91	-13	-15,91
		1.697,000	-22,38	-13	-9,38
		7.527,000	-42,86	-13	-29,86
		8.000,000	-39,39	-13	-26,39
		10.782,000	-38,01	-13	-25,01
		10.685,000	-34,84	-13	-21,84

See attached diagrams

	Frequency channel	Frequency marker indication [MHz]	Worst case emission level [dBm]	Compliance limit [dBm]	Results
PCS 1900 MHz	512	60,321	-59,72	-13	-46,72
		31,703	-59,81	-13	-46,81
		272,144	-41,89	-13	-28,89
		272,144	-44,19	-13	-31,19
		3.967,000	-29,68	-13	-16,68
		1,85	-27,49	-13	-14,49
		5.547,000	-37,53	-13	-24,53
		5.547,000	-38,44	-13	-25,44
		10.196,000	-37,88	-13	-24,88
		10.709,000	-37,36	-13	-24,36
		17.916,000	-27,56	-13	-14,56
		17.808,000	-27,99	-13	-14,99
		18.511,000	-32,35	-13	-19,35
		18.903,000	-32,51	-13	-19,51

	Frequency channel	Frequency marker indication [MHz]	Worst case emission level [dBm]	Compliance limit [dBm]	Results
PCS 1900 MHz	661	61,683	-56,25	-13	-43,25
		60,661	-57,92	-13	-44,92
		273,747	-41,18	-13	-28,18
		216,032	-43,82	-13	-30,82
		1.944,000	-29,21	-13	-16,21
		3.933,000	-29,23	-13	-16,23
		5.643,000	-40,17	-13	-27,17
		5.643,000	-39,35	-13	-26,35
		10,758	-38,15	-13	-25,15
		10,83	-37,38	-13	-24,38
		17.892,000	-28,04	-13	-15,04
		17,88	-27,64	-13	-14,64
		18.426,000	-32,25	-13	-19,25
		18.443,000	-32,55	-13	-19,55

See attached diagrams

	Frequency channel	Frequency marker indication [MHz]	Worst case emission level [dBm]	Compliance limit [dBm]	Results
PCS 1900 MHz	810	60,661	-55,18	-13	-42,18
		58,958	-57,32	-13	-44,32
		272,144	-41,29	-13	-28,29
		224,048	-44,19	-13	-31,19
		1.944,000	-27,66	-13	-14,66
		1,91	-26,51	-13	-13,51
		5.731,000	-38,55	-13	-25,55
		7.976,000	-41,19	-13	-28,19
		11.118,000	-37,26	-13	-24,26
		10.741,000	-36,9	-13	-23,9
		17.904,000	-27,52	-13	-14,52
		17.868,000	-27,28	-13	-14,28
		18.903,000	-32,78	-13	-19,78
		18.477,000	-32,85	-13	-19,85

See attached diagrams

Test equipment:
ETS 0014, ETS 0294, ETS 0295, ETS 0310, ETS 0416, ETS 0484

3.7 Block edge compliance

Reference

	Cellular telephone 850 MHz	PCS 1900 MHz
FCC	CFR part 22.917(b)	CFR part 24.238(b)
IC	RSS-132 Issue 2, §4.5.1.1	RSS-133 Issue 3, §4.4

Method of measurement

In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter my be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth.

Limits

	Cellular telephone 850 MHz	PCS 1900 MHz
FCC	Pc – (43 + 10 log (P) dB)	Pc – (43 + 10 log (P) dB)
IC	Pc – (43 + 10 log (P) dB)	Pc – (43 + 10 log (P) dB)

Test results

	Frequency channel	RBW kHz	Worst case emission level dBm
Cellular telephone 850 MHz	128	3 kHz	32.41
	251	3 kHz	32.77
PCS 1900 MHz	512	3 kHz	30.06
	810	3 kHz	29.70

See attached diagrams

Test equipment:
ETS 0413, ETS 0416, ETS 0484

3.8 AC power line conducted emissions

Reference

	Cellular telephone 850 MHz	PCS 1900 MHz
FCC	CFR part 15.207	CFR part 15.207
IC	Not applicable	Not applicable

Method of measurement

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits. Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

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.

Limits

	Cellular telephone 850 MHz	PCS 1900 MHz	
FCC	Frequency of emission [MHz]	Conducted limit field strength [dBµV] Quasi Peak	Average
	0.15 – 0.5	66 to 56	56 - 46
	0.5 – 5	56	46
	5 – 30	60	50
IC	Not applicable		

Test results

	Frequency marker indication [MHz]	Detector	Worst case emission level [dBm]	Compliance limit [dBm]	Result [dBm]
Cellular telephone 850 MHz	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--

	Frequency marker indication [MHz]	Detector	Worst case emission level [dBm]	Compliance limit [dBm]	Result [dBm]
PCS 1900 MHz	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--

Comment: Not tested.

Test equipment:
ETS 0059, ETS 0085, ETS 0288, ETS 0476

4 Receiver parameters

4.1 Radiated emissions

Reference

	Cellular telephone 850 MHz	PCS 1900 MHz
FCC	CFR part 15.109, 2.1053	CFR part 15.109, 2.1053
IC	RSS-132 Issue 2, 4.6 RSS-Gen Issue 1, §4.8	RSS-133 Issue 3, §4.5 RSS-Gen Issue 1, §4.8

Method of measurement

The receiver shall be operated in the normal receive mode near the mid-point of the band(s) over which the receiver is designed to operate.

The measurement method is the radiated emission measurement. The measurement starts at 30 MHz and ends at least 3 times the highest tunable local oscillator frequency (6 GHz).

Limits

	Cellular telephone 850 MHz	PCS 1900 MHz
FCC	Spurious frequency [MHz] 30 – 88 88 – 216 216 – 960 above 960	Field strength microvolt/m at 3 meters 100 150 200 500
IC	Not applicable	

Test Results

	Frequency marker indication [MHz]	Antenna polarization	Worst case emission level [dBm]	Compliance limit [dBm]	Results [dBm]
Cellular telephone 850 MHz	190.802	Vertical	29.85	150	-120.15
	190.461	Horizontal	30.80	150	-119.20
	876.553	Vertical	28.77	200	-171.23
	979.158	Horizontal	11.10	500	-488.90
	[GHz]				
	3.844	Vertical	224.91	500	-275.09
	3.946	Horizontal	234.15	500	-265.85
	7.455	Vertical	183.45	500	316.55
	7.303	Horizontal	182.35	500	-317.65
	11.912	Vertical	161.25	500	-338.75
	11.888	Horizontal	149.80	500	-350.20
	14.275	Vertical	269.77	500	-230.23
	15.066	Horizontal	236.87	500	-263.13

	Frequency marker indication [MHz]	Antenna polarization	Worst case emission level [µV/m]	Compliance limit [µV/m]	Results [µV/m]
PCS 1900 MHz	119.940	Vertical	33.24	150	-116.76
	189.780	Horizontal	31.74	150	-118.26
	395.591	Vertical	27.06	200	-172.94
	615.230	Horizontal	25.00	200	-175
	[GHz]				
	3.868	Vertical	50.30	500	-449.70
	3.952	Horizontal	50.58	500	-449.42
	7.992	Vertical	47.65	500	-452.35
	7.800	Horizontal	47.40	500	-452.60
	11.984	Vertical	46.46	500	-453.54
	11.944	Horizontal	46.76	500	-453.24
	14.224	Vertical	50.72	500	-449.28
	14.265	Horizontal	50.61	500	-449.39

See attached diagrams

Test equipment:
ETS 0014, ETS 0294, ETS 0295, ETS 0310, ETS 0416, ETS 0484

Appendix

A Pictures
B RF power output conducted
C RF power output radiated
D Occupied bandwidth, emission bandwidth
E Frequency stability
F Spurious emission conducted (antenna terminal)
G Spurious emission radiated
H Block edge compliance
I AC power line conducted emissions
J Receiver radiated emissions