



TTI-P-G166/98-30

Accredited Bluetooth™ Test Facility (BQTF)

Test report no.: 2-2984-01-02/02
FCC Part 15.209
YIA-7
FCC ID: J2LYIA-7

CETECOM – ICT Services GmbH
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1 General information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in 1.5. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. 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 CETECOM ICT Services GmbH.

1.2 Testing laboratory

CETECOM ICT Services GmbH

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66117 Saarbrücken

Germany

Telephone : + 49 681 598 - 0

Telefax : + 49 681 598 - 9075

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Internet : www.cetecom-ict.de

Accredited testing laboratory

DAR-registration number : TTI-P-G-166/98-30

[Accredited Bluetooth™ Test Facility \(BQTF\)](#)

[BLUETOOTH is a trademark owned by Bluetooth SIG, Inc. and licensed to CETECOM](#)

1.3 Details of applicant

Name : FUJI XEROX CO., LTD
Street : 2274, Hongo, Ebina-shi
City : Kanagawa 243-0494
Country : Japan
Telephone : +81-46-238-3111
Telefax : +81-46-238-5796
Contact : Mr. Tsuneo Obara
Telephone: +81-46-238-3111

1.4 Application details

Date of receipt of application : 2002-08-02
Date of receipt of test item : 2002-08-19
Date of test : 2002-08-20/22

1.5 Test item

Type of equipment : **Toner cartridge identification**
Type designation : **YIA-7**
Manufacturer : applicant
Street :
City :
Country :
Serial number : See photo
FCC ID : J2LYIA-7
Additional information :
Frequency : **124,9842 kHz**
Type of modulation : **2K00F1D**
Number of channels : 1
Antenna : Loop antenna
Power supply : 115V AC
Type of equipment : Passiv Transponder Reader built in an Printer
Temperature range : $\pm 0^{\circ}\text{C}$ - $+55^{\circ}\text{C}$
Output power : 10dB μ V/m in 300m / 3.1623 in 300m or 30 nW ERP

1.6 Test standards

FCC Part 15.209

2 Technical test

2.1 Summary of test results

The radiated measurements were performed vertical and horizontal over the whole frequency range. We start at 1 m high with vertical receiving antenna and rotate the dish continuously. During rotation we use the antenna lift system to vary the high from 1 to 4 m. So we find maximum radiation output. At this points we do manual re-measurements. After this we do the same measurements in horizontal position of the receiving antenna. This (horizontal and vertical) is made for all the three planes of the test sample. We use the maximum received results.

The detector function and selection of bandwidth are according ANSI C63.2-1996 item 8.2.1 and ANSI C63.4-1992 Item 4.2.

Antennas are conform with ANSI C63.2-1996 item 15.

9 kHz - 30 MHz: Quasi Peak measurement, 9kHz Bandwidth, passive loop antenna.

30 MHz - 200 MHz: Quasi Peak measurement, 120KHz Bandwidth, biconical antenna

200MHz - 1GHz: Quasi Peak measurement, 120KHz Bandwidth, log periodic antenna

1GHz: Average, RBW 1MHz, VBW 10 MHz, waveguide horn

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

Final verdict : PASS

Technical responsibility for area of testing :

2002-08-22**Date****RSC 8414 Ames H.****Section****Name****Signature**

2002-08-22**Date****RSC 8411 Berg M.****Section****Name****Signature**

2.2 Test report

TEST REPORT

Test report no: 2-2984-01-02/02

LIST OF MEASUREMENTS.

The list of measured parameters is given below.

Clause		Page number
	Transmitter parameters	
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Equipment under test : YIA-7

Ambient temperature : 26°C

Relative humidity : 47%

MAXIMUM PEAK OUTPUT POWER (RADIATED)

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (µV/m)		
Frequency (MHz)		124,9842 kHz		
T _{nom} (26)°C	V _{nom} (115)V	3.1623µV/m (10 dBµV/m)		
Maximum deviation from output power under extreme test conditions (dBc)		not applicable		
Measurement uncertainty		±3dB		

RBW/VBW : 0,2kHz

Limit for 124,9842 kHz is 19.20 µV/m in 300m measurement distance

Limits

SUBCLAUSE § 15.209

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

Equipment under test : YIA-7

Ambient temperature : 26°C

Relative humidity : 47%

SPURIOUS RADIATION

§ 15.209

Radiated RF Power on

Data File : /22984_05.DOC

20 Aug 1902 15:28:30

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS			POL	SITE		CORR FACTOR dB	COMMENTS
			ABS	dLIM	MODE		HGT	AZM		
				dB			cm	deg		
1	69.8	29.5	16.5	-13.0	PK	V	97	360	N/T	
2	89.7	33.0	22.5	-10.5	PK	V	97	360	N/T	
3	99.9	33.0	22.8	-10.2	PK	V	97	360	N/T	
4	109.9	33.0	25.6	-7.4	PK	V	97	360	N/T	
5	141.5	33.0	20.6	-12.4	PK	V	97	360	N/T	
6	166.3	33.0	20.7	-12.3	PK	V	97	360	N/T	
7	178.6	33.0	20.7	-12.3	PK	V	97	360	N/T	
8	188.5	33.0	20.4	-12.6	PK	V	97	360	N/T	
9	198.5	33.0	21.5	-11.5	PK	V	97	360	N/T	
10	199.6	33.0	23.6	-9.4	PK	V	97	360	N/T	
11	200.0	33.0	23.9	-9.1	PK	V	100	360	N/T	
12	232.6	35.5	25.8	-9.7	PK	V	100	360	N/T	
13	249.8	35.5	26.6	-8.9	PK	V	100	360	N/T	
14	289.0	35.5	28.2	-7.3	PK	V	100	360	N/T	
15	300.019	35.5	27.5	-8.0	QP	V	106	150	15.6	
16	333.0	35.5	27.6	-7.9	PK	V	100	360	N/T	
17	359.1	35.5	27.8	-7.7	PK	V	100	360	N/T	
18	365.7	35.5	29.7	-5.8	PK	V	100	360	N/T	
19	389.3	35.5	28.5	-7.0	PK	V	100	360	N/T	
20	433.345	35.5	30.2	-5.3	QP	V	102	171	19.	
21	466.0	35.5	29.1	-6.4	PK	V	100	360	N/T	
22	499.5	35.5	28.9	-6.6	PK	V	100	360	N/T	

N/T in CORR FACTOR column denotes a non-traceable signal.

$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz

$f \geq 1 \text{ GHz}$: RBW/VBW: 1 MHz

Measurement distance see table

Limits

SUBCLAUSE § 15.209

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

Equipment under test : YIA-7

Ambient temperature : 26°C

Relative humidity : 47%

SPURIOUS RADIATION

§ 15.209

Radiated : Standby

Data File : /22984_10.DOC

20 Aug 1902 16:25:56

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS			POL	SITE		CORR FACTOR dB	COMMENTS
			ABS	dLIM	MODE		HGT	AZM		
				dB			cm	deg		
1	70.0	29.5	16.0	-13.5	PK	V	99	0	N/T	
2	89.9	33.0	22.2	-10.8	PK	V	99	0	N/T	
3	99.9	33.0	22.6	-10.4	PK	V	99	0	N/T	
4	109.7	33.0	25.5	-7.5	PK	V	99	0	N/T	
5	141.5	33.0	20.7	-12.3	PK	V	99	0	N/T	
6	166.5	33.0	19.9	-13.1	PK	V	99	0	N/T	
7	179.6	33.0	20.4	-12.6	PK	V	99	0	N/T	
8	188.5	33.0	20.0	-13.0	PK	V	99	0	N/T	
9	198.3	33.0	21.6	-11.4	PK	V	99	0	N/T	
10	199.6	33.0	23.9	-9.1	PK	V	99	0	N/T	
11	200.0	33.0	23.9	-9.1	PK	V	97	0	N/T	
12	232.6	35.5	25.6	-9.9	PK	V	97	0	N/T	
13	249.8	35.5	27.1	-8.4	PK	V	97	0	N/T	
14	289.8	35.5	29.9	-5.6	PK	V	97	0	N/T	
15	299.991	35.5	27.1	-8.4	QP	V	102	181	15.6	
16	333.0	35.5	27.9	-7.6	PK	V	97	0	N/T	
17	365.7	35.5	29.3	-6.2	PK	V	97	0	N/T	
18	389.3	35.5	29.4	-6.1	PK	V	97	0	N/T	
19	433.346	35.5	30.1	-5.4	QP	V	107	169	19.	
20	466.0	35.5	29.4	-6.1	PK	V	97	0	N/T	
21	499.5	35.5	29.3	-6.2	PK	V	97	0	N/T	

N/T in CORR FACTOR column denotes a non-traceable signal.

$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz

$f \geq 1 \text{ GHz}$: RBW/VBW: 1 MHz

Measurement distance see table

Limits

SUBCLAUSE § 15.209

Frequency (MHz)	Field strength ($\mu\text{V/m}$)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

Equipment under test : YIA-7

Ambient temperature : 26°C

Relative humidity : 47%

Plots of the measurements

FCC Rule 47

Part 15 Magnetics

EUT:

Manufacturer: Xerox

Operating Condition: RF on

Test site: Cetecom ICT Services

Operator: Pink

Spezifikationen:

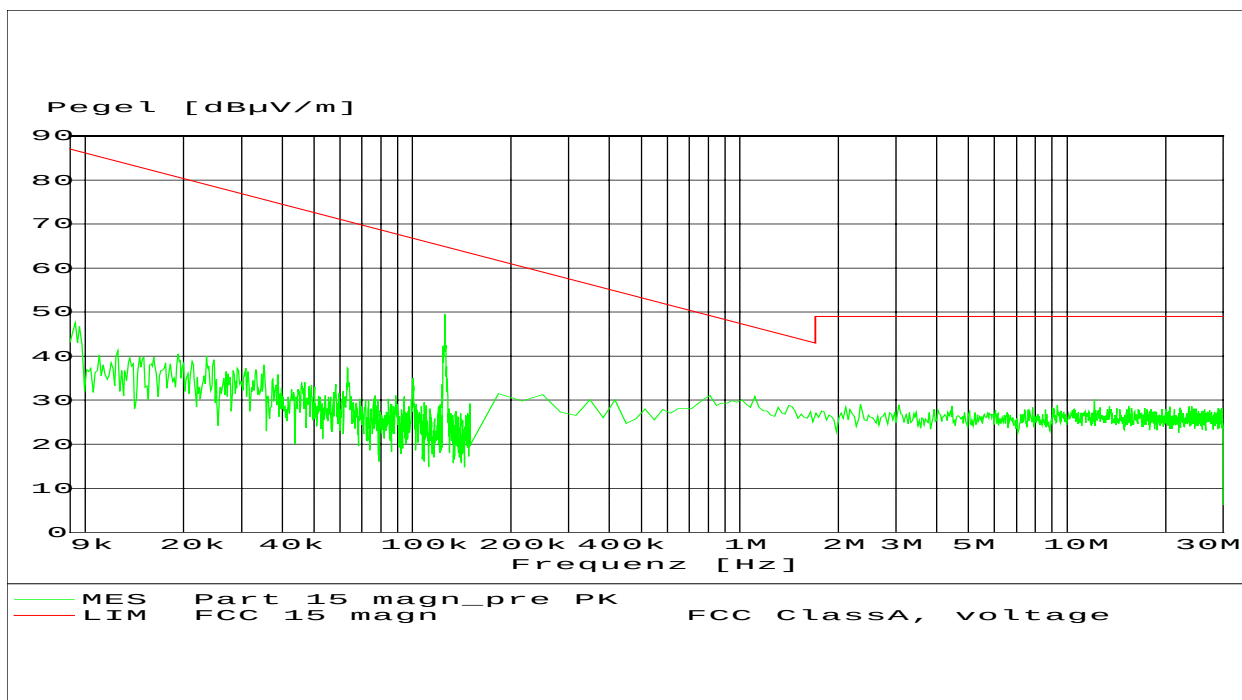
Power Supply: 115 V DC V AC

Start of Test: 21.08.02 / 15:34:15

SCANTABELLE: "FCC 15 magn"

Kurzbeschreibung: Voltage Mains 1.60

Start-Frequenz	Stop-Frequenz	Schrittweite	Detektor	Meßzeit	ZF-Bandbr.	Transducer
9.0 kHz	1 50.0 kHz	100.0 Hz	MaxPeak	100.0 ms	0.2 kHz	HFH2-Z2 (dBµV/m)
150.0 kHz	30.0 MHz	10.0 kHz	MaxPeak	100.0 ms	10 kHz	HFH2-Z2 (dBµV/m)



Measurement distance 3m

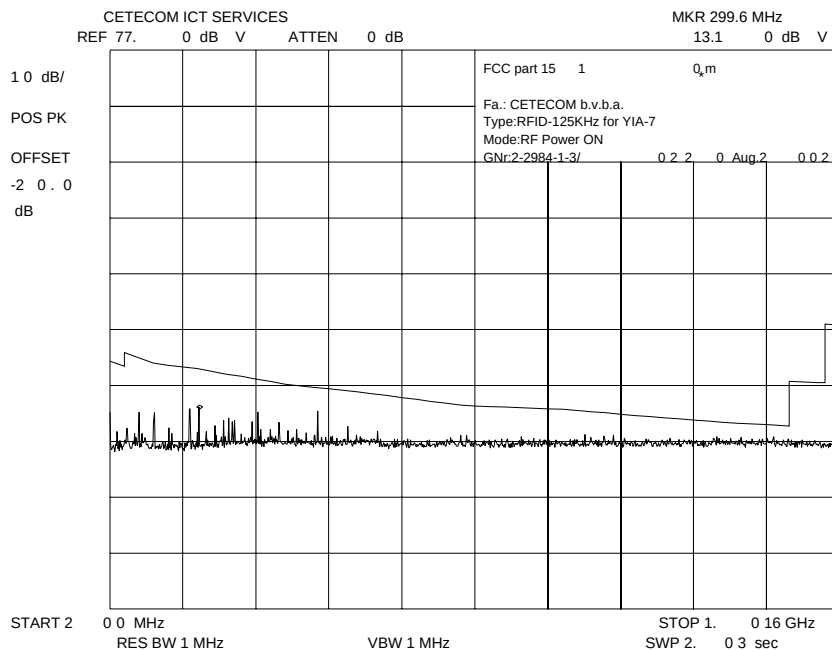
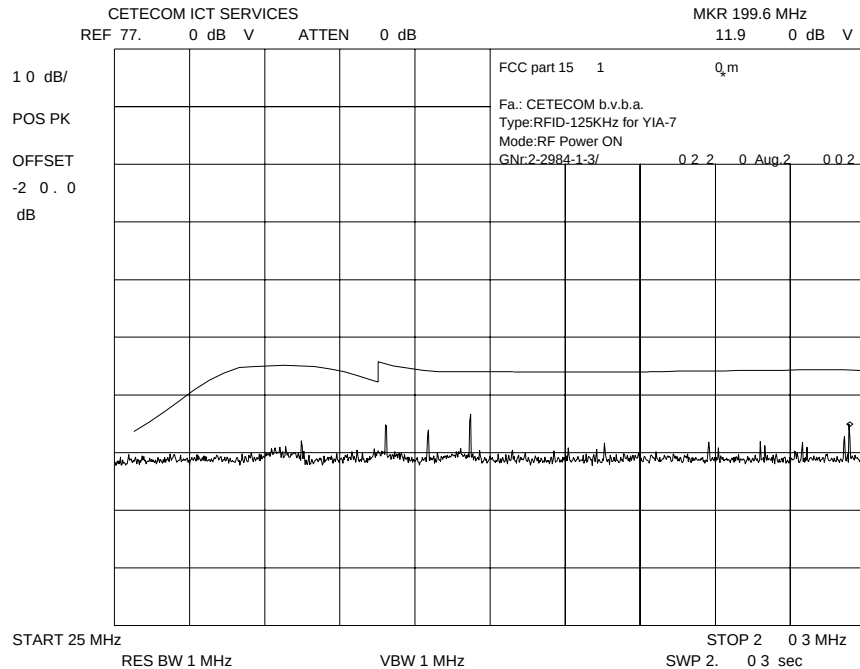
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 - 24

Plots of the measurements

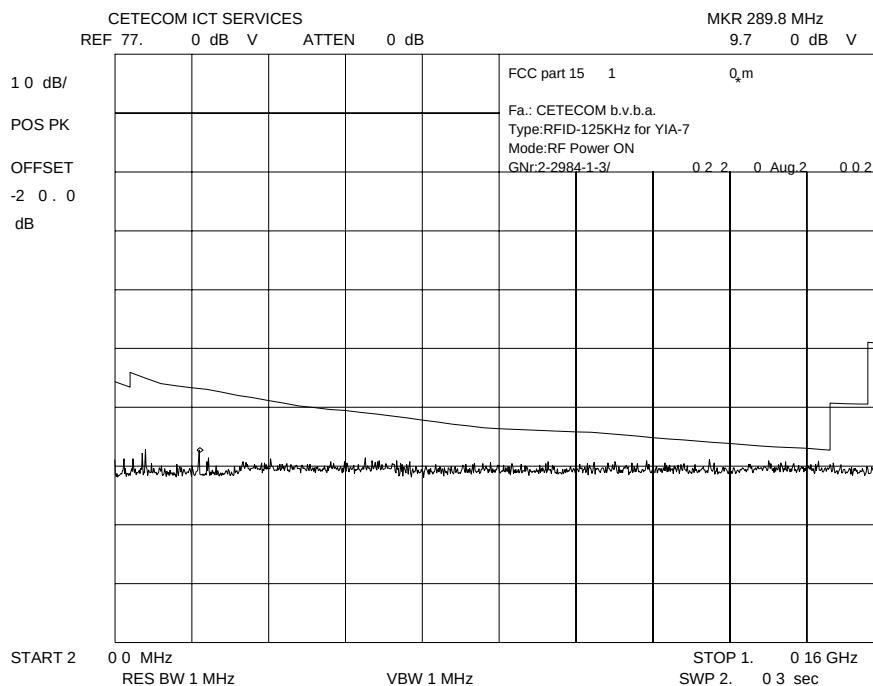
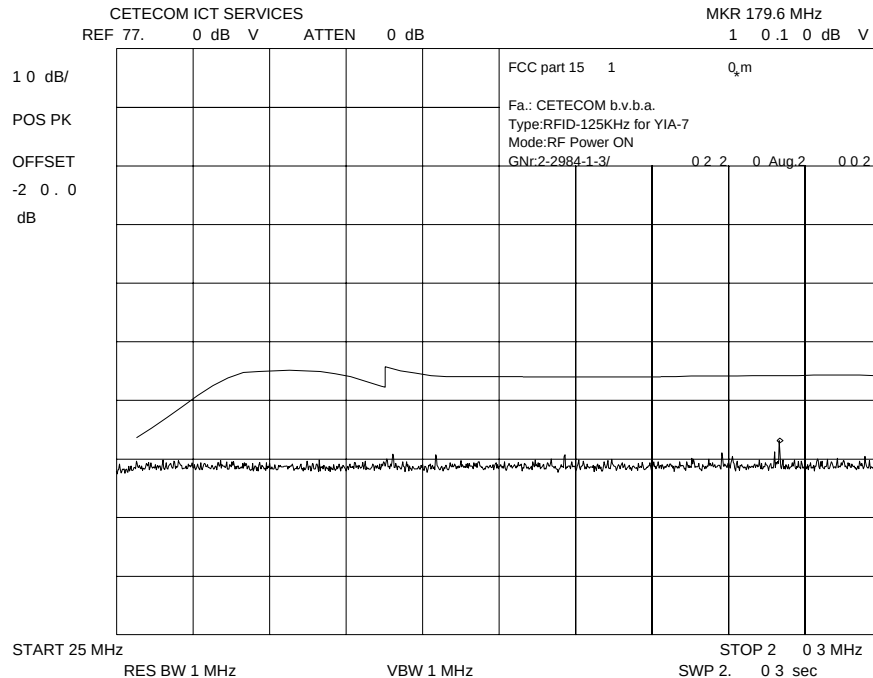
RF power on 25 – 1000 MHz vertical



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

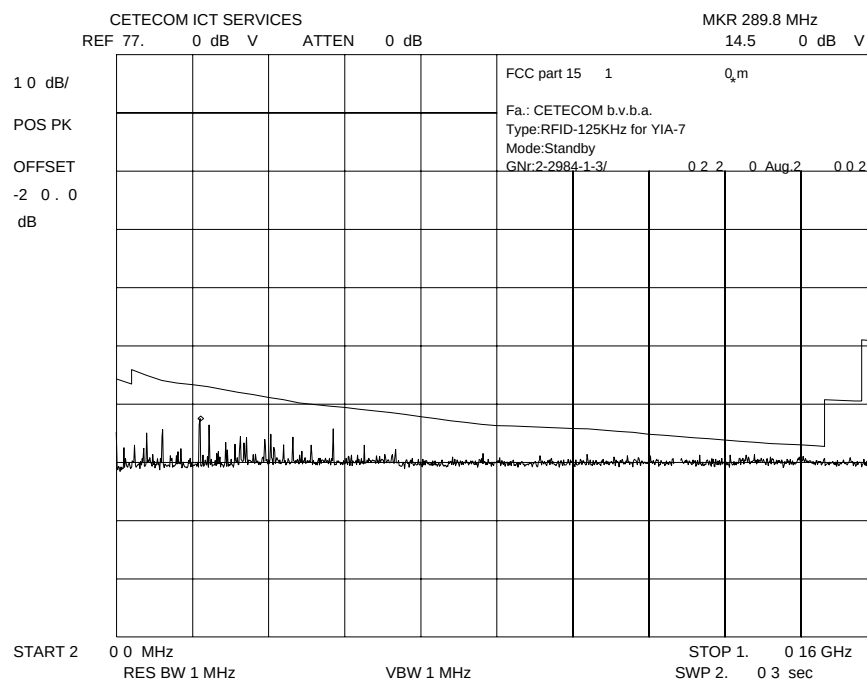
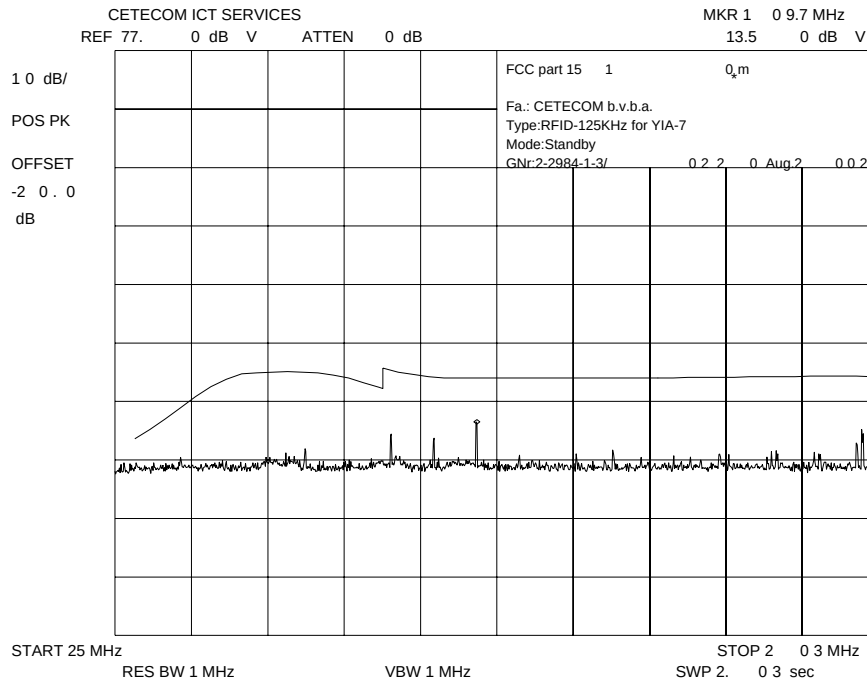
Plots of the measurements

RF power on 25 – 1000 MHz horizontal



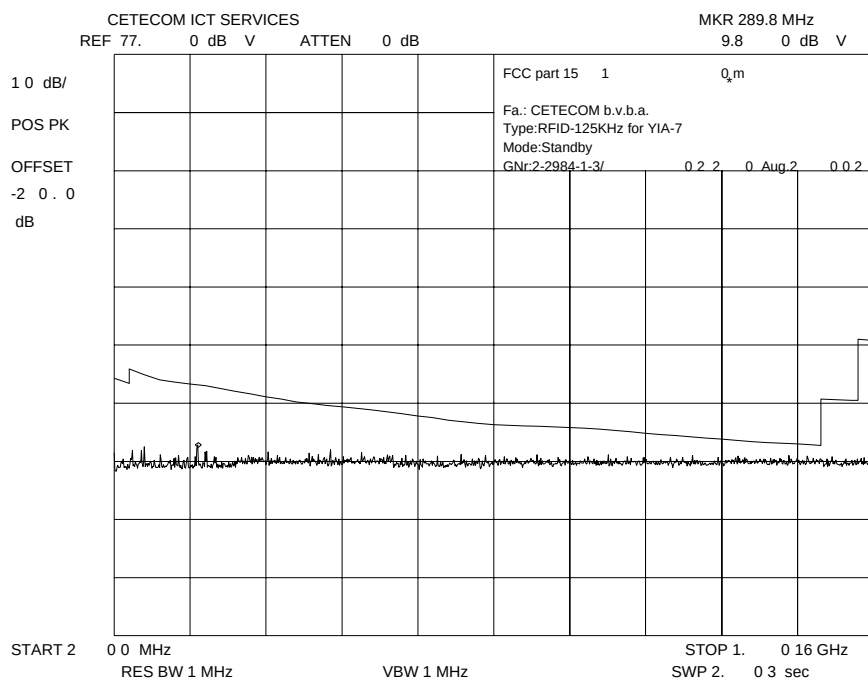
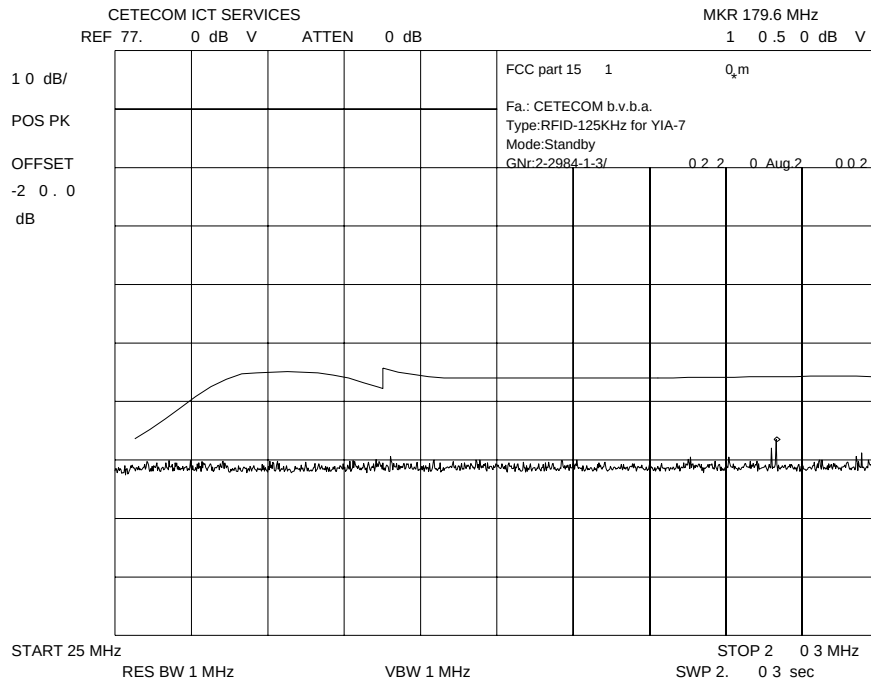
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

Plots of the measurements Standby 25 – 1000 MHz vertical



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

Plots of the measurements Standby 25 – 1000 MHz horizontal



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

Conducted emissions

§ 15.107/207

EUT:

Applicant: Xerox

Operating condition: RF on

Test Site: CETECOM ICT Services GmbH Saarbrücken, Room 006

Operator: Pink

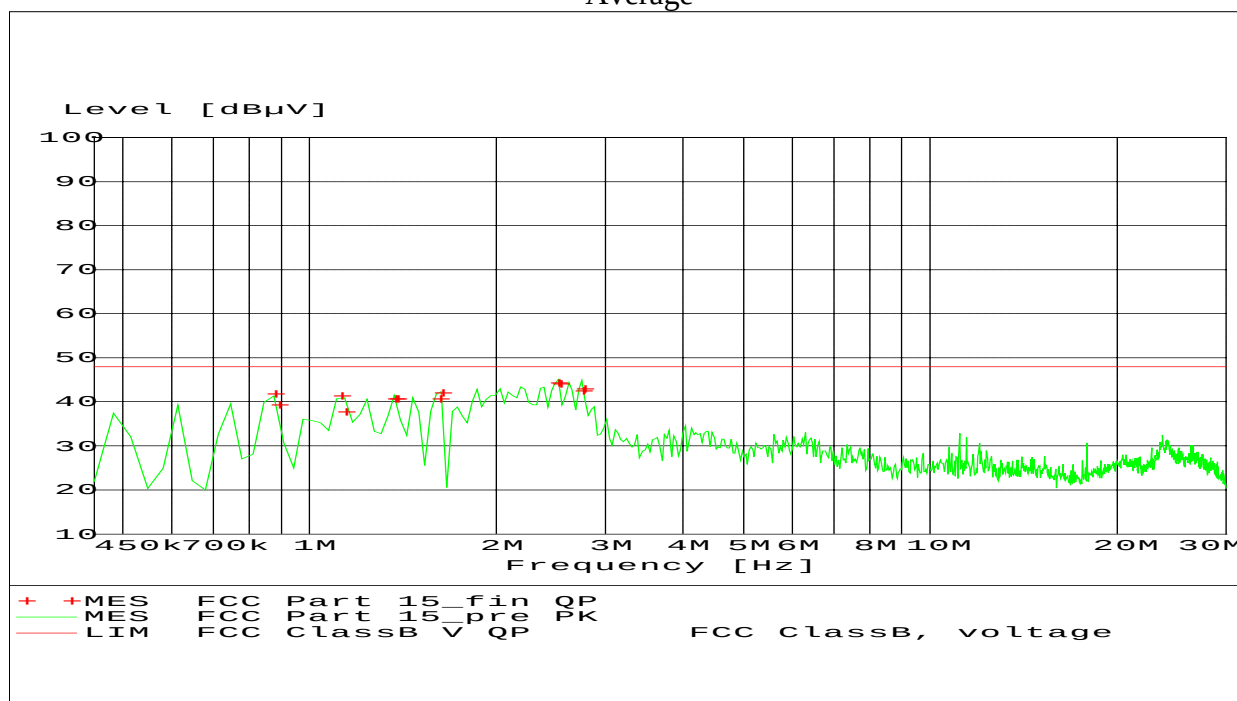
Power Supply: 115V

Start of Test: 21.08.02 / 12:18:28

SCANTABELLE: "FCC Part 15 AC"

Kurzbeschreibung: Voltage Mains 1.60

Start-Frequenz	Stop-Frequenz	Schrittweite	Detektor	Meßzeit	ZF-Bandbr.	Transducer
450.0 kHz	30.0 MHz	6.0 kHz	MaxPeak	100.0 ms	10 kHz	ESH3-Z5 L1 2209
Average						



MEßERGEBNIS: "FCC Part 15_fin QP"

21.08.02 12:23

Frequenz MHz	Pegel dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.876000	41.60	10.4	48	6.4	N	GND
0.888000	39.10	10.4	48	8.8	N	GND
1.122000	41.20	10.5	48	6.8	N	GND
1.140000	37.70	10.5	48	10.3	N	GND
1.368000	40.40	10.5	48	7.6	N	GND
1.380000	40.50	10.5	48	7.5	N	GND
1.614000	40.60	10.3	48	7.3	N	FLO
1.632000	41.80	10.3	48	6.1	N	FLO
2.508000	44.20	10.3	48	3.8	L1	GND
2.526000	43.90	10.3	48	4.0	L1	GND
2.748000	42.20	10.4	48	5.8	L1	GND
2.760000	42.90	10.4	48	5.1	L1	GND

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

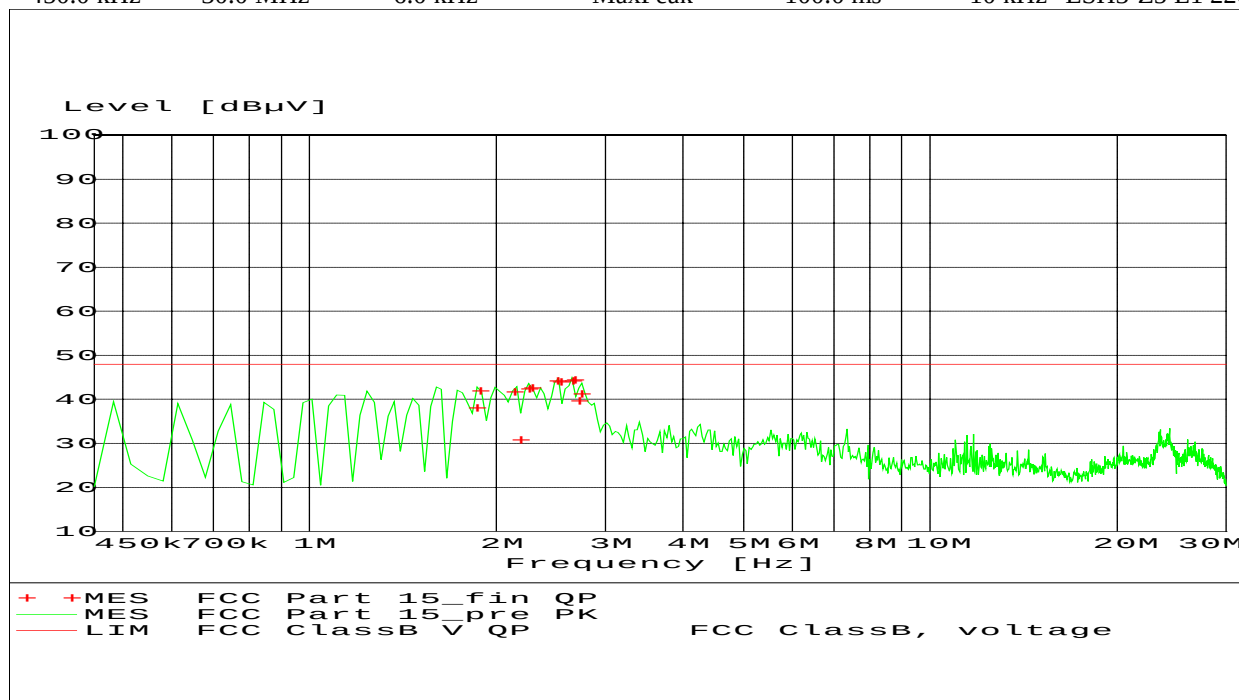
(for reference numbers see test equipment listing)

Applicant: Xerox
 Operating condition: RF off
 Test Site: CETECOM ICT Services GmbH Saarbrücken, Room 006
 Operator: Pink
 Power Supply: 115V/60Hz
 Start of Test: 21.08.02 / 12:00:47

SCANTABELLE: "FCC Part 15 AC"

Kurzbeschreibung: Voltage Mains 1.60

Start-Frequenz	Stop-Frequenz	Schrittweite	Detektor	Meßzeit	ZF-Bandbr.	Transducer
450.0 kHz	30.0 MHz	6.0 kHz	MaxPeak	100.0 ms	10 kHz	ESH3-Z5 L1 2209



MEßERGEBNIS: "FCC Part 15_fin QP"

21.08.02 12:04

Frequenz MHz	Pegel dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
1.848000	37.80	10.3	48	10.1	L1	FLO
1.872000	41.80	10.4	48	6.2	L1	FLO
2.130000	41.60	10.4	48	6.3	N	GND
2.172000	30.50	10.4	48	17.5	N	GND
2.244000	42.10	10.4	48	5.9	L1	FLO
2.268000	42.50	10.4	48	5.5	L1	FLO
2.496000	44.10	10.3	48	3.9	N	GND
2.526000	43.80	10.3	48	4.1	N	GND
2.640000	44.10	10.3	48	3.8	N	GND
2.658000	44.20	10.4	48	3.8	N	GND
2.706000	39.50	10.4	48	8.5	L1	GND
2.730000	41.10	10.4	48	6.9	L1	GND

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

No	Instrument/Ancillary	Type	Manufacturer	Serial No.
01	Spectrum Analyzer	8566 A	Hewlett-Packard	1925A00257
02	Analyzer Display	8566 A	Hewlett-Packard	1925A00860
03	Oscilloscope	7633	Tektronix	230054
04	Radio Analyzer	CMTA 54	Rohde & Schwarz	894 043/010
05	System Power Supply	6038 A	Hewlett-Packard	2848A07027
06	Signal Generator	8111 A	Hewlett-Packard	2215G00867
07	Signal Generator	8662 A	Hewlett-Packard	2224A01012
08	Funktionsgenerator	AFGU	Rohde & Schwarz	862 480/032
09	Regeltrenntrafo	MPL	Erfi	91350
10	Netznachbildung	NNLA 8120	Schwarzbeck	8120331
11	Relais-Matrix	PSU	Rohde & Schwarz	893 285/020
12	Power-Meter	436 A	Hewlett-Packard	2101A12378
13	Power-Sensor	8484 A	Hewlett-Packard	2237A10156
14	Power-Sensor	8482 A	Hewlett-Packard	2237A00616
15	Modulationsmeter	9008	Racal-Dana	2647
16	Frequenzzähler	5340 A	Hewlett-Packard	1532A03899
17	Absorber Schirmkabine	---	MWB	87400/002
18	Spectrum Analyzer	85660 B	Hewlett-Packard	2747A05306
19	Analyzer Display	85662 A	Hewlett-Packard	2816A16541
20	Quasi Peak Adapter	85650 A	Hewlett-Packard	2811A01131
21	RF-Preselector	85685 A	Hewlett-Packard	2833A00768
22	Biconical Antenne	3104	Emco	3758
23	Log. Per. Antenne	3146	Emco	2130
24	Double Ridge Horn	3115	Emco	3088
25	EMI-Testreceiver	ESAI	Rohde & Schwarz	863 180/013
26	EMI-Analyzer-Display	ESAI-D	Rohde & Schwarz	862 771/008
27	Biconical Antenne	HK 116	Rohde & Schwarz	888 945/013
28	Log. Per. Antenne	HL 223	Rohde & Schwarz	825 584/002
29	Relais-Switch-Unit	RSU	Rohde & Schwarz	375 339/002
30	Highpass	HM985955	FSY Microwave	001
31	Amplifier	P42-GA29	Tron-Tech	B 23602
32	Absorber Schirmkabine		Frankonia	
33	Steuerrechner	PSM 7	Rohde & Schwarz	834 621/004
34	EMI Test Receiver	ESMI	Rohde & Schwarz	827 063/010
35	EMI Test Receiver	Display	Rohde & Schwarz	829 808/010

TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

No	Instrument/Ancillary	Type	Manufacturer	Serial No.
36	Controler	HD 100	Deisel	100/322/93
37	Relais Matrix	PSN	Rohde & Schwarz	829 065/003
38	Control Unit	GB 016 A2	Rohde & Schwarz	344 122/008
39	Relais Switch Unit	RSU	Rohde & Schwarz	316 790/001
40	Power Supply	6032A	Hewlett Packard	2846A04063
41	Spektrum Monitor	EZM	Rohde & Schwarz	883 720/006
42	Meßempfänger	ESH 3	Rohde & Schwarz	890 174/002
43	Meßempfänger	ESVP	Rohde & Schwarz	891 752/005
44	Biconi Ant. 20-300MHz	HK 116	Rohde & Schwarz	833 162/011
45	Logger Ant. 0.3-1 GHz	HL 223	Rohde & Schwarz	832 914/010
46	Amplifier 0.1-4 GHz	AFS4	Miteq Inc.	206461
47	Logger Ant. 1-18 GHz	HL 024 A2	Rohde & Schwarz	342 662/002
48	Polarisationsnetzwerk	HL 024 Z1	Rohde & Schwarz	341 570/002
49	Double Ridge G Horn Antenne 1-26.5 GHz	3115	EMCO	9107-3696
50	Microw. Sys. Amplifier 0.5- 26.5 GHz	8317A	Hewlett Packard	3123A00105
51	Spectrum Analyzer	8562A	Hewlett Packard	2809AO2682
52	Steuerrechner	PSM 7	Rohde & Schwarz	883 086/026
53	DC V-Netzwerk	ESH3-Z6	Rohde & Schwarz	861 406/005
54	DC V-Netzwerk	ESH3-Z6	Rohde & Schwarz	893 689/012
55	AC 2 Phasen V-Netzwerk	ESH3-Z5	Rohde & Schwarz	861 189/014
56	AC 2 Phasen V-Netzwerk	ESH3-Z5	Rohde & Schwarz	894 981/019
57	AC-3 Phasen V-Netzwerk	ESH2-Z5	Rohde & Schwarz	882 394/007
58	Stromversorgung	6032A	Rohde & Schwarz	2933A05441
59	HF-Test Empfänger	ESVP.52	Rohde & Schwarz	881 487/021
60	Spectrum Monitor	EZM	Rohde & Schwarz	883 086/026
61	HF-Test Empfänger	ESH3	Rohde & Schwarz	881 515/002
62	Relais Matrix	PSU	Rohde & Schwarz	882 943/029
63	Relais Matrix	PSU	Rohde & Schwarz	828 628/007
64	Spectrum Analyzer	FSIQ 26	Rohde & Schwarz	119.6001.27
65	Spectrum Analyzer	HP 8565E	Hewlett Packard	3473A00773