



EMI TEST REPORT

Test Report No. : 24CE0080-HO

Applicant : Sharp Corporation,
Communication Systems Group.

Type of Equipment : Quad-band GSM Mobile phone

Model No. : GX30

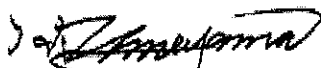
Test standard : FCC Part 15 Subpart C
Section 15.207, Section 15.247

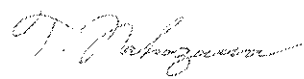
FCC ID : APYHO00033

Test Result : Complied

1. This test report shall not be reproduced in full or partial, without the written approval of UL Apex Co., Ltd.
2. The results in this report apply only to the sample tested.
3. This equipment is in compliance with above regulation. We hereby certify that the data contain a true representation of the EMC profile.
4. The test results in this report are traceable to the national or international standards.
5. This test report does not constitute an endorsement by NIST/NVLAP or U.S. Government.

Date of test : November 18 and 19, 2003

Tested by : 
Hiroka Umeyama
EMC Service


Takashi Nakazawa
EMC Service

Approved by : 
Hironobu Shimoji
Group Leader of EMC Service

UL Apex Co., Ltd.

Head Office EMC Lab.

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CONTENTS	PAGE
SECTION 1: Client information	3
SECTION 2: Equipment under test (E.U.T.)	3
SECTION 3: Test specification, procedures & results	4
SECTION 3: Test specification, procedures & results	5
SECTION 4: Operation of E.U.T. during testing.....	7
SECTION 5: Conducted Emission, Section 15.207	9
SECTION 6: Carrier Frequency Separation, Section 15.247(a)(1)	9
SECTION 7: 20dB Bandwidth, Section 15.247(a)(1)	9
SECTION 8: Number of Hopping Frequency, Section 15.247(a)(1)(iii)	9
SECTION 9: Dwell time, Section 15.247(a)(1)(iii).....	10
SECTION 10: Maximum Peak Output Power, Section 15.247(b)(1)	10
SECTION 11: Band Edge Compliance, Section 15.247(c).....	10
SECTION 12: Spurious Emission , Section 15.247(c)	11
APPENDIX 1: Photographs of test setup	12
Conducted Emission.....	12
Spurious Emission (Radiated)	13
Worst Case Position (X-axis:Horizontal / Z-axis:Vertical)	14
APPENDIX 2: Test instruments	15
APPENDIX 3: Data of EMI test	16
Conducted Emission.....	16
Carrier Frequency Separation	21
20dB Bandwidth	23
Number of Hopping Frequency	25
Dwell time.....	27
Maximum Peak Output Power	30
Band Edge compliance	31
Spurious Emission(Radiated)	33
Spurious Emission(Conducted)	42

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SECTION 1: Client information

Company Name : Sharp Corporation, Communication Systems Group.
Address : 2-13-1 Iida Hachihonmatsu HigashiHiroshima-City, Hiroshima,
739-0192-Japan.
Telephone Number : +81-0824-20-1817
Facsimile Number : +81-0824-20-1654
Contact Person : Masatsugu Daijuh

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Quad-band GSM Mobile phone
Model No. : GX30
Serial No. : ES2-216(Conducted emission)/ES2-205(Spurious emission:Radiated)
/ES2-228(Except for Conducted and Spurious emission:Radiated)
Country of Manufacture : Japan
Receipt Date of Sample : November 17, 2003
Condition of EUT : Engineering prototype

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2.2 Product Description

Sharp Corporation, Communication Systems Group. Model No: GX30 is the Quad-band GSM Mobile phone.
The system is mainly used as a Bluetooth Headset and Car – Kit..
The clock frequency of EUT is 26MHz

Equipment Type	:	Transceiver
Frequency band	:	2400-2483.5MHz
Frequency operation	:	2402-2480MHz
Type of modulation	:	FHSS/GFSK
Bandwidth & Channel spacing	:	1MHz & 79channel
Antenna Type	:	Chip Antenna
Antenna Gain	:	0dBi
Antenna connector Type	:	MM8430-2600RB3
Power Supply	:	DC3.0V AC 120V 60Hz (AC Adapter)
Temperature of operation	:	-10 deg. C. -+55 deg. C.

FCC 15.31 (e)

This EUT provides stable voltage(DC3.0V) constantly to RF Module regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

Since Quad-band GSM Mobile phone uses a transmitting antenna that is an integral part of the equipment, it is impossible for end users to replace the antenna without use of a special tool. Therefore, the equipment complies with the requirement of 15.203.

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part15 Subpart C

Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.247 Operation within the bands 902-928MHz,
2400-2483.5MHz, and 5725-5850MHz

3.2 Procedures and results

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	Conducted emission	ANSI C63.4:2001	Section 15.207	-	N/A	3.3dB 0.2055MHz, L1	Complied
2	Carrier Frequency Separation	ANSI C63.4:2001	Section15.247(a)(1)	Conducted	N/A	-	Complied
3	20dB Bandwidth	ANSI C63.4:2001	Section15.247(a)(1)	Conducted	N/A	-	Complied
4	Number of Hopping Frequency	ANSI C63.4:2001	Section15.247(a)(1)(iii)	Conducted	N/A	-	Complied
5	Dwell time	ANSI C63.4:2001	Section15.247(a)(1)(iii)	Conducted	N/A	-	Complied
6	Maximum Peak Output Power	ANSI C63.4:2001	Section15.247(b)(1)	Conducted	N/A	-	Complied
7	Band Edge Compliance	ANSI C63.4:2001	Section15.247(c)	Conducted	N/A	-	Complied
8	Spurious Emission	ANSI C63.4:2001	Section15.247(c)	Conducted/ Radiated	N/A	6.2dB 17360.0MHz Horizontal	Complied

Note: UL Apex's EMI Work Procedures No.QPM05.

*These tests were also referred to FCC Public Notice DA 00-705 "Guidance on Measurement for Frequency Hopping Spread Spectrum Systems".

*These tests were performed without any deviations from test procedure except for additions or exclusions.

3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	RSS210(issue 5) + Amendment	RSS210(issue 5) + Amendment	Conducted	N/A	N/A	N/A

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3.4 Confirmation

UL Apex Co., Ltd. hereby confirms that E.U.T., in the configuration tested, complies with the specifications FCC Part 15 Subpart C Section 15.207 and 15.247.

3.5 Uncertainty

Conducted Emission

The measurement uncertainty (with a 95% confidence level) for this test is $\pm 1.3\text{dB}$.

The data listed in this test report has enough margin.

Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is $\pm 4.5\text{dB}(3\text{m})$.

The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is $\pm 5.2\text{dB}(3\text{m})$.

The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is $\pm 6.6\text{dB}$.

The data listed in this test report has enough margin.

Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test is $\pm 3.0\text{dB}$.

The data listed in this test report has enough margin.

3.6 Test Location

UL Apex Co., Ltd. Yokowa EMC Lab. No.2 shielded room

108 Yokowa-cho, Ise-shi, Mie-ken, 516-1106 JAPAN

Telephone : +81 596 39 1485

Facsimile : +81 596 39 0232

No.2 shielded room has been fully described in a report submitted to FCC office, and listed on August 29, 2003(Registration number: 90411).

UL Apex Co., Ltd. Head Office EMC Lab.

No.1 semi anechoic chamber.

No.3 measurement room

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No.1 semi anechoic chamber has been fully described in a report submitted to FCC office, and listed on February 01, 2002. (Registration number: No.1:313583 Industry Canada: No.1: IC4247)

*NVLAP Lab. code: 200572-0

3.7 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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SECTION 4: Operation of E.U.T. during testing

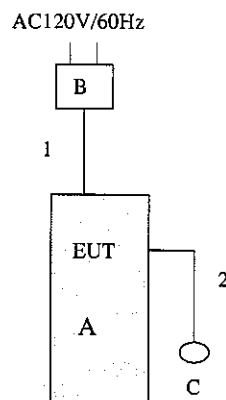
4.1 Operating Modes

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to typical use.

The sequence is used : Transmitting mode(Bluetooth)
 Low Channel :2402MHz
 Mid Channel :2441MHz
 High channel :2480MHz
 Inquiry

Justification: The system was configured in typical fashion (as a customer would normally use it) for testing.

4.2 Configuration and peripherals



* Cabling was taken into consideration and test data was taken under worst case conditions.

Test report No. : 24CE0080-HO
Page : 8 of 44
Issued date : November 21, 2003
FCC ID : APYHO00033

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID
A	Quad-band GSM Mobile phone	GX30	ES2-216(Conducted emission) ES2-205(Spurious emission: Radiated) ES2-228(Except for Conducted and Spurious emission: Radiated)	SHARP	APYHO00033
B	AC Charger	XN-1QC34	N/A	HOSHIDEN	N/A
C*	Earphone	N/A	N/A	SHARP	N/A

List of cables used

No.	Name	Length (m)	Shield	Backshell Material
1	DC Power Cable	1.5	N	Polyvinyl chloride
2*	Earphone Cable	1.2	N	Polyvinyl chloride

*Except for Conducted Emission test

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SECTION 5: Conducted Emission, Section 15.207

Test Procedure

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from LISN and excess AC cable was bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source. All unused 50ohm connectors of the LISN were resistively terminated in 50ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT on a reference ground plane 4.5 x 3.6 x 2.7m in a No.2 shielded room.

The EUT was connected to a Line Impedance Stabilization Network (LISN).

An overview sweep with peak detection has been performed.

The measurements have been performed with a CISPR quasi-peak detector (IF BW 9 kHz).

Measurement range: 0.15-30MHz

Test data : APPENDIX 3

Test result : Pass

SECTION 6: Carrier Frequency Separation, Section 15.247(a)(1)

Test Procedure

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3

Test result : Pass

SECTION 7: 20dB Bandwidth, Section 15.247(a)(1)

Test Procedure

The 20dB bandwidth was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3

Test result : Pass

SECTION 8: Number of Hopping Frequency, Section 15.247(a)(1)(iii)

Test Procedure

The Number of Hopping Frequency was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3

Test result : Pass

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SECTION 9: Dwell time, Section 15.247(a)(1)(iii)

Test Procedure

The Dwell time was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3
Test result : Pass

SECTION 10: Maximum Peak Output Power, Section 15.247(b)(1)

Test Procedure

The Maximum Peak Output Power was measured with a power meter connected to the antenna port.

Test data : APPENDIX 3
Test result : Pass

SECTION 11: Band Edge Compliance, Section 15.247(c)

Test Procedure

The Band Edge Compliance was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3
Test result : Pass

SECTION 12: Spurious Emission , Section 15.247(c)

[Conducted]

Test Procedure

The Spurious Emission (Conducted) was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3
Test result : Pass

[Radiated]

Test Procedure

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane.

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization.

The Radiated Electric Field Strength intensity has been measured in No.1 semi anechoic chamber (19.2x11.2x7.7m) with a ground plane at a distance of 3m.

The measuring antenna height was varied between 1 to 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization.

The result was also satisfied the general limits specified in section 15.209(a).

Test data : APPENDIX 3
Test result : Pass

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APPENDIX 1: Photographs of test setup

Conducted Emission

Front



Rear



Spurious Emission (Radiated)

Front



Rear



Worst Case Position (X-axis:Horizontal / Z-axis:Vertical)

X-axis



Y-axis



Z-axis



APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No.	Test Item	Calibration Date * Interval(month)
MAEC-01	Anechoic Chamber	TDK	Semi Anechoic Chamber 10m	3	2002/12/28 * 12
MBA-01	Biconical Antenna	Schwarzbeck	BBA9106	3	2003/10/15 * 12
MLA-01	Logperiodic Antenna	Schwarzbeck	USLP9143	3	2003/10/15 * 12
MTR-01	Test Receiver	Rohde & Schwarz	ES140	3	2003/11/12 * 12
MAT-06	Attenuator(6dB)	Weinschel Corp	2	3	2002/12/24 * 12
MCC-01	Coaxial Cable	Suhner/storm/Agilent/TSJ	-	3	2002/12/19 * 12
MPA-04	Pre Amplifier	Agilent	8447D	3	2003/03/13 * 12
MPA-01	Pre Amplifier	Agilent	8449B	3	2003/02/08 * 12
MCC-05	Microwave Cable	Storm	421-011	3	2003/01/14 * 12
MCC-06	Microwave Cable	Storm	421-011	3	2003/01/14 * 12
MBF-01	SHF Bandpass Filter	M-City	5GHz BPF	3	2003/04/24 * 12
MHA-05	Horn Antenna	Schwarzbeck	BBHA9120D	3	2003/01/11 * 12
MHA-02	Horn Antenna	EMCO	3160-09	3	2003/01/11 * 12
MRENT-06	Spectrum Analyzer	Advantest	R3273	4	2003/10/31 * 12
MCC-22	Microwave @ Cable	Storm	-	4	2004/04/29 * 12
MPM-04	Power Meter	Agilent	E4416A	2	2003/03/13 * 12
MPSE-04	Power sensor	Agilent	E9327A	2	2003/03/18 * 12
CC-2S	Yokowa No.2 shield coaxial(0.01MHz-1000MHz)	UL Apex	CC-24,CC-25,CC-26,CC-28,CC-29,SW-21,SW-22	1	2003/03/29 * 12
LS-02	LISN(AMN)	Rohde & Schwarz	ESH3-Z5	1	2003/10/31 * 12
SA-05	Spectrum Analyzer	Advantest	R3271	1	2002/12/24 * 12
TR-03	Test Receiver	Rohde & Schwarz	ESHS30	1	2003/05/15 * 12

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

Test Item:

- 1: Conducted emission
- 2: Maximum peak output power
- 3: Spurious emission Radiated
- 4: Except for Item 1,2 and 3

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APPENDIX 3: Data of EMI test

Conducted Emission 2402MHz

DATA OF CONDUCTION TEST

Applicant : Sharp Corporation
Kind of Equipment : Quad-band GSM Mobile Phone
Model No. : GX30
Serial No. : ES2-216
Power : AC120V/60Hz
Mode : Transmitting (Ch:2402MHz)
Remarks :
Date : 11/18/2003
Phase : Single Phase
Temperature : 22 °C
Humidity : 44 %
Regulation : FCC Part15C § 15.207 (0.15-30MHz)

Engineer : Takashi Nakazawa

No.	FREQ. [MHz]	READING (N)		READING (L1)		LISN FACTOR [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS		MARGIN	
		QP	AV	QP	AV				QP	AV	QP	AV	QP	AV
		[dBuV]		[dBuV]					[dBuV]		[dBuV]		[dB]	
1.	0.2055	59.2	47.9	59.8	48.7	0.1	0.2	0.0	60.1	49.0	63.4	53.4	3.3	4.4
2.	0.3085	49.3	38.5	48.6	38.0	0.1	0.2	0.0	49.6	38.8	60.0	50.0	10.4	11.2
3.	0.4105	41.8	33.0	39.6	30.6	0.1	0.2	0.0	42.1	33.3	57.6	47.6	15.5	14.3
4.	0.5142	36.2	30.0	33.8	25.2	0.1	0.2	0.0	36.5	30.3	56.0	46.0	19.5	15.7
5.	1.8510	31.3	28.7	36.7	32.4	0.1	0.3	0.0	37.1	32.8	56.0	46.0	18.9	13.2
6.	6.6743	38.4	31.2	39.1	31.6	0.3	0.6	0.0	40.0	32.5	60.0	50.0	20.0	17.5
7.	11.6085	38.1	34.2	37.5	33.0	0.5	0.8	0.0	39.4	35.5	60.0	50.0	20.6	14.5

CALCULATION: READING[dBμV] + LISN FACTOR[dB] + CABLE LOSS[dB] + ATTEN[dB].

All other spurious emissions were less than 20dB for the limit.

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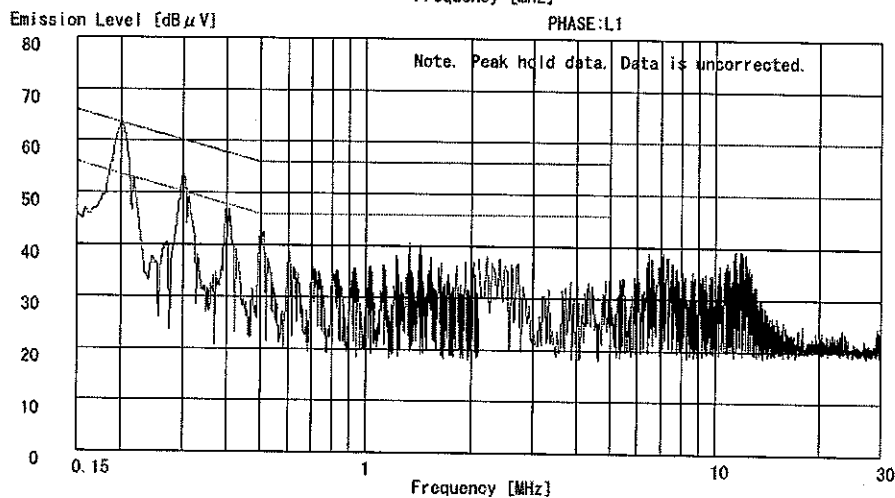
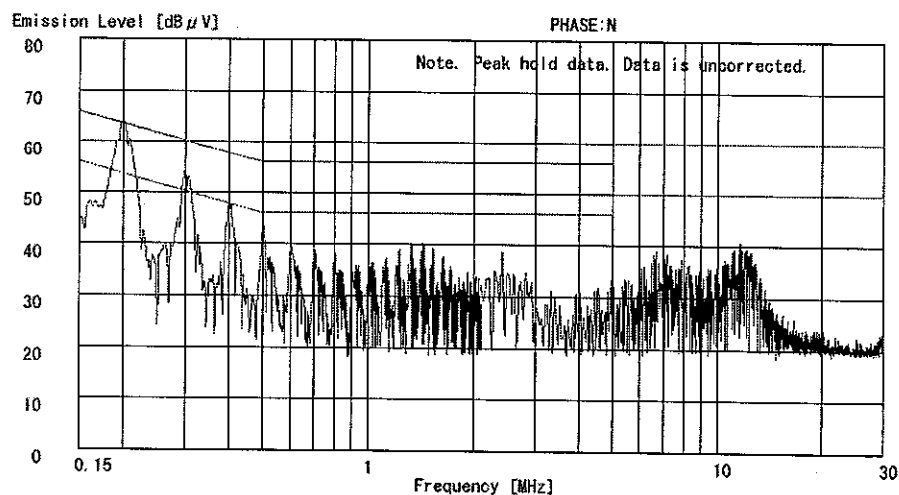
Facsimile : +81 596 24 8124

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DATA OF CONDUCTION TEST CHART

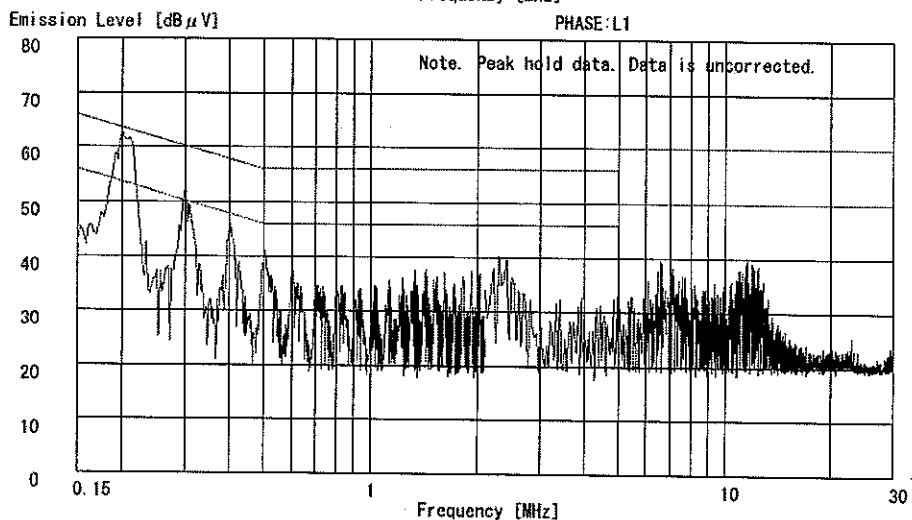
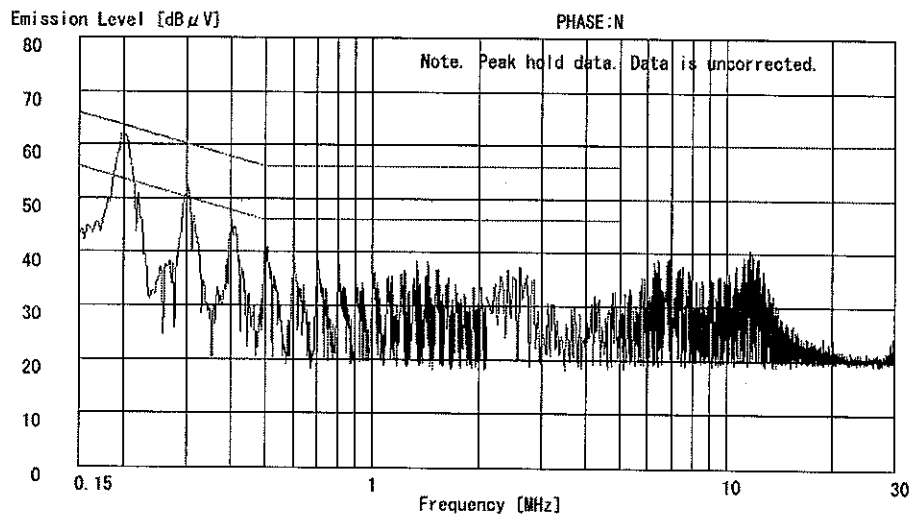
Applicant : Sharp Corporation
Kind of Equipment : Quad-band GSM Mobile Phone
Model No. : GX30
Serial No. : ES2-216
Power : AC120V/60Hz
Mode : Transmitting (Ch: 2402MHz)
Remarks :
Date : 11/18/2003
Phase : Single Phase
Temperature : 22 °C
Humidity : 44 %
Regulation 1 : FCC Part15C § 15.207 (0.15~30MHz)
Regulation 2 : None

Engineer : Takashi Nakazawa



Conducted Emission
2441MHz
DATA OF CONDUCTION TEST CHART

Applicant : Sharp Corporation
Kind of Equipment : Quad-band GSM Mobile Phone
Model No. : GX30
Serial No. : ES2-216
Power : AC120V/60Hz
Mode : Transmitting (Ch:2441MHz)
Remarks :
Date : 11/18/2003
Phase : Single Phase
Temperature : 22 °C
Humidity : 44 %
Regulation 1 : FCC Part15C § 15.207 (0.15-30MHz)
Regulation 2 : None
Engineer : Takashi Nakazawa

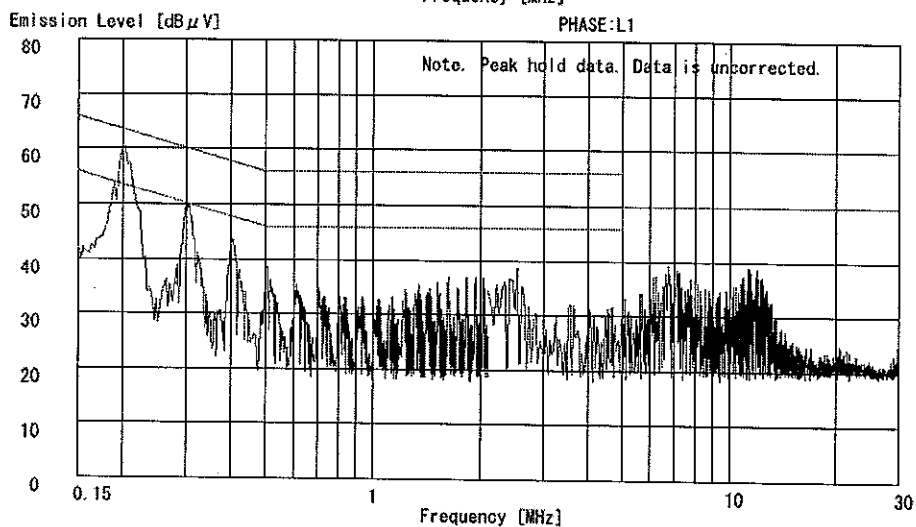
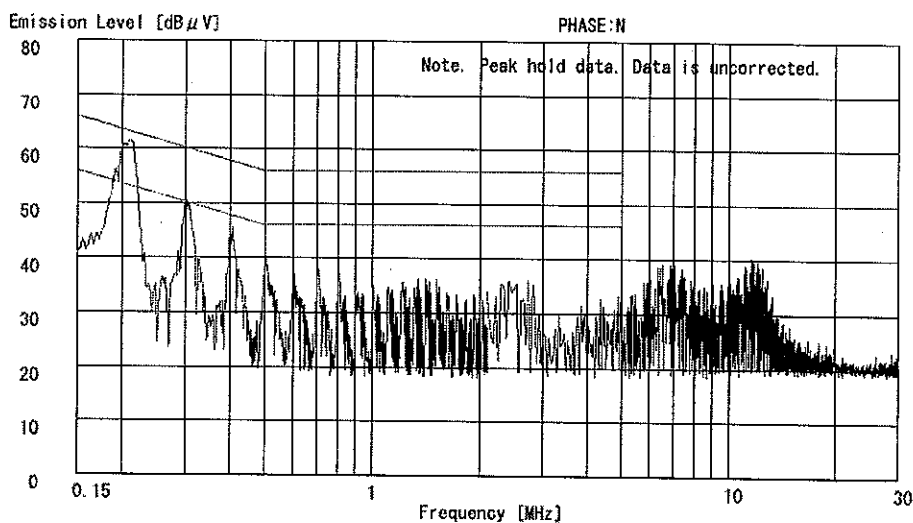


Conducted Emission
2480MHz

DATA OF CONDUCTION TEST CHART

Applicant : Sharp Corporation
Kind of Equipment : Quad-band GSM Mobile Phone
Model No. : GX30
Serial No. : ES2-216
Power : AC120V/60Hz
Mode : Transmitting (Ch:2480MHz)
Remarks :
Date : 11/18/2003
Phase : Single Phase
Temperature : 22 °C
Humidity : 44 %
Regulation 1 : FCC Part15C § 15.207 (0.15-30MHz)
Regulation 2 : None

Engineer : Takashi Nakazawa



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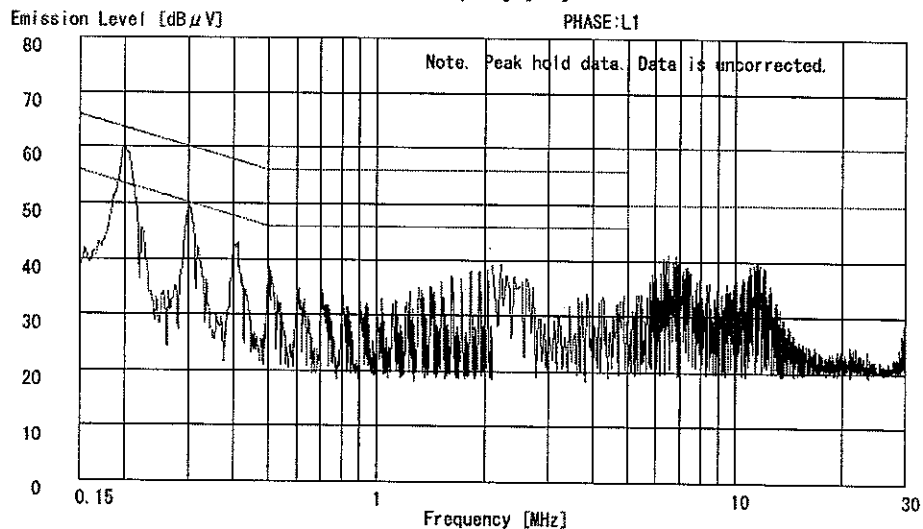
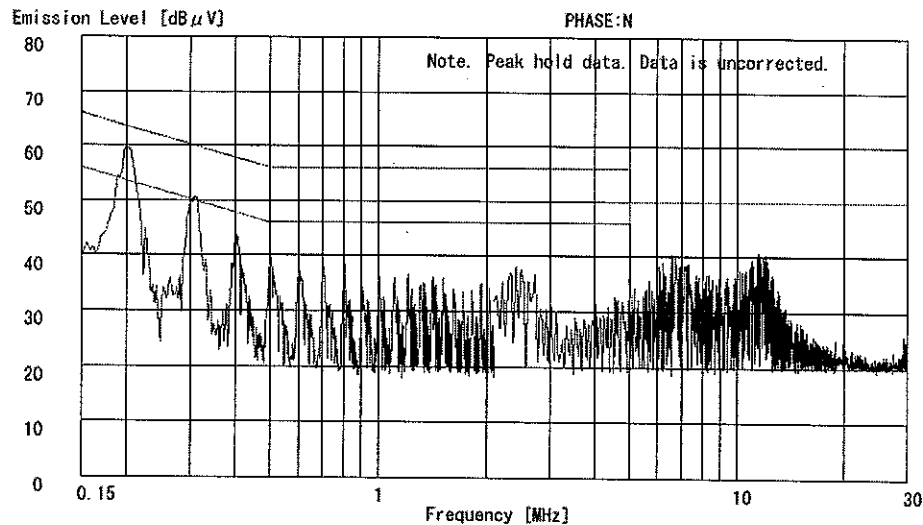
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Conducted Emission
Standby
DATA OF CONDUCTION TEST CHART

Applicant : Sharp Corporation
Kind of Equipment : Quad-band GSM Mobile Phone
Model No. : GX30
Serial No. : ES2-216
Power : AC120V/60Hz
Mode : Standby Mode
Remarks :
Date : 11/18/2003
Phase : Single Phase
Temperature : 22 °C
Humidity : 44 %
Regulation 1 : FCC Part15C § 15.207 (0.15-30MHz)
Regulation 2 : None

Engineer : Takashi Nakazawa



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Carrier Frequency Separation

DATA OF CARRIER FREQUENCY SEPARATION

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Head Office EMC Lab. No.3 Measurement Room

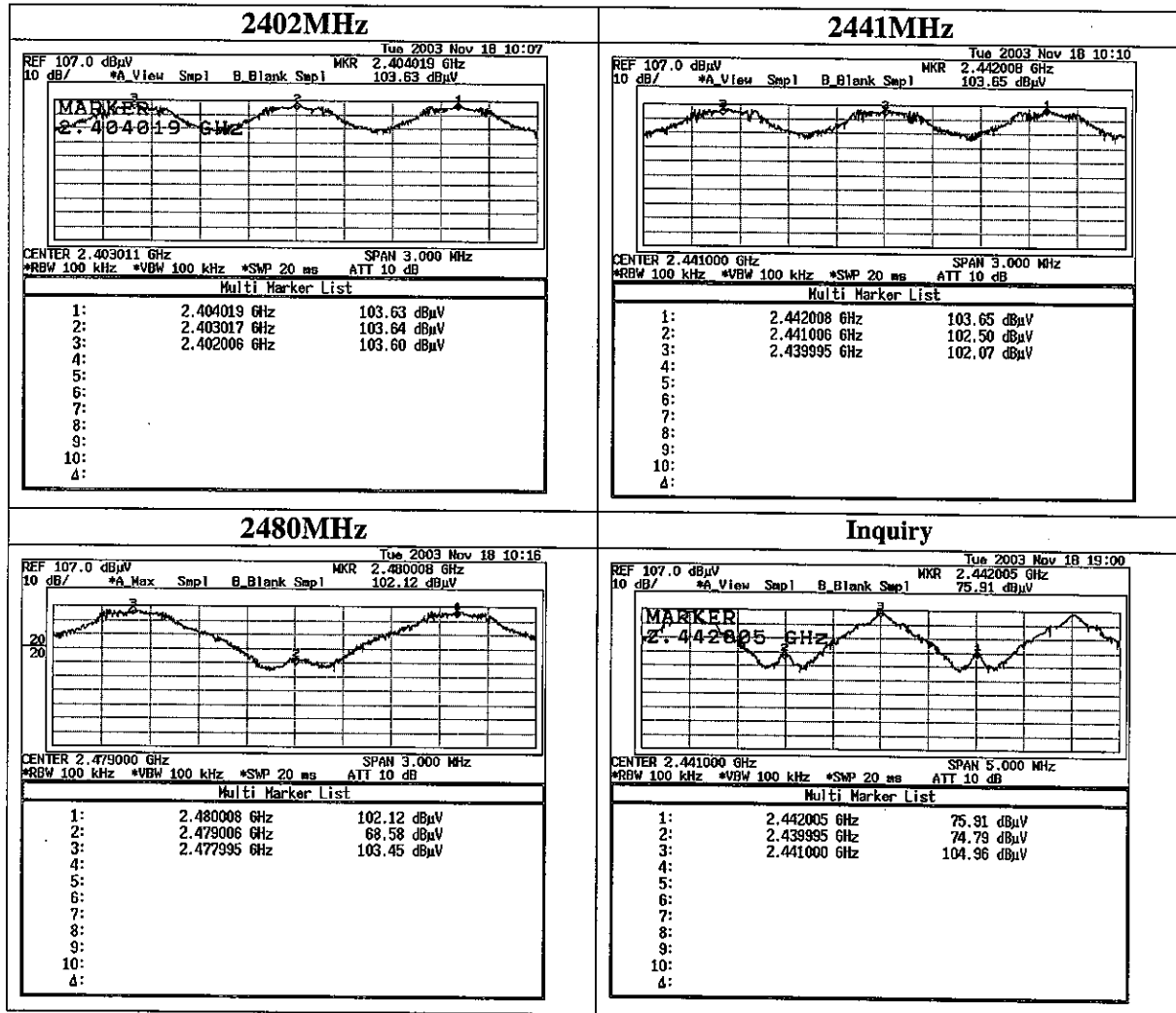
COMPANY	: Sharp Corporation	REGULATION	: Fcc Part15 Subpart C 15.247(a)(1)
EQUIPMENT	: Quad-band GSM Mobile Phone	TEST DISTANCE	: -
MODEL	: GX30	DATE	: 11/18/2003
S/ N	: ES2-228	TEMPERATURE	: 20deg.C
POWER	: DC3.9V	HUMIDITY	: 40%
MODE	: Tx(Hopping on)/Inquiry		

Engineer : Hiroka Umeyama

PK DETECT(S/A :span 3MHz, RBW 100kHz, VBW 100kHz, sweep time AUTO)

CH	FREQ [MHz]	Channel separation [MHz]	Limit
Low	2402.0	1.000	>20dB Bandwidth and 25[kHz]
Mid	2441.0	1.000	>20dB Bandwidth and 25[kHz]
High	2480.0	1.000	>20dB Bandwidth and 25[kHz]
Inquiry	2441.0	1.000	>20dB Bandwidth and 25[kHz]

Carrier Frequency Separation



20dB Bandwidth

DATA OF 20dB BANDWIDTH

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Measurement Room

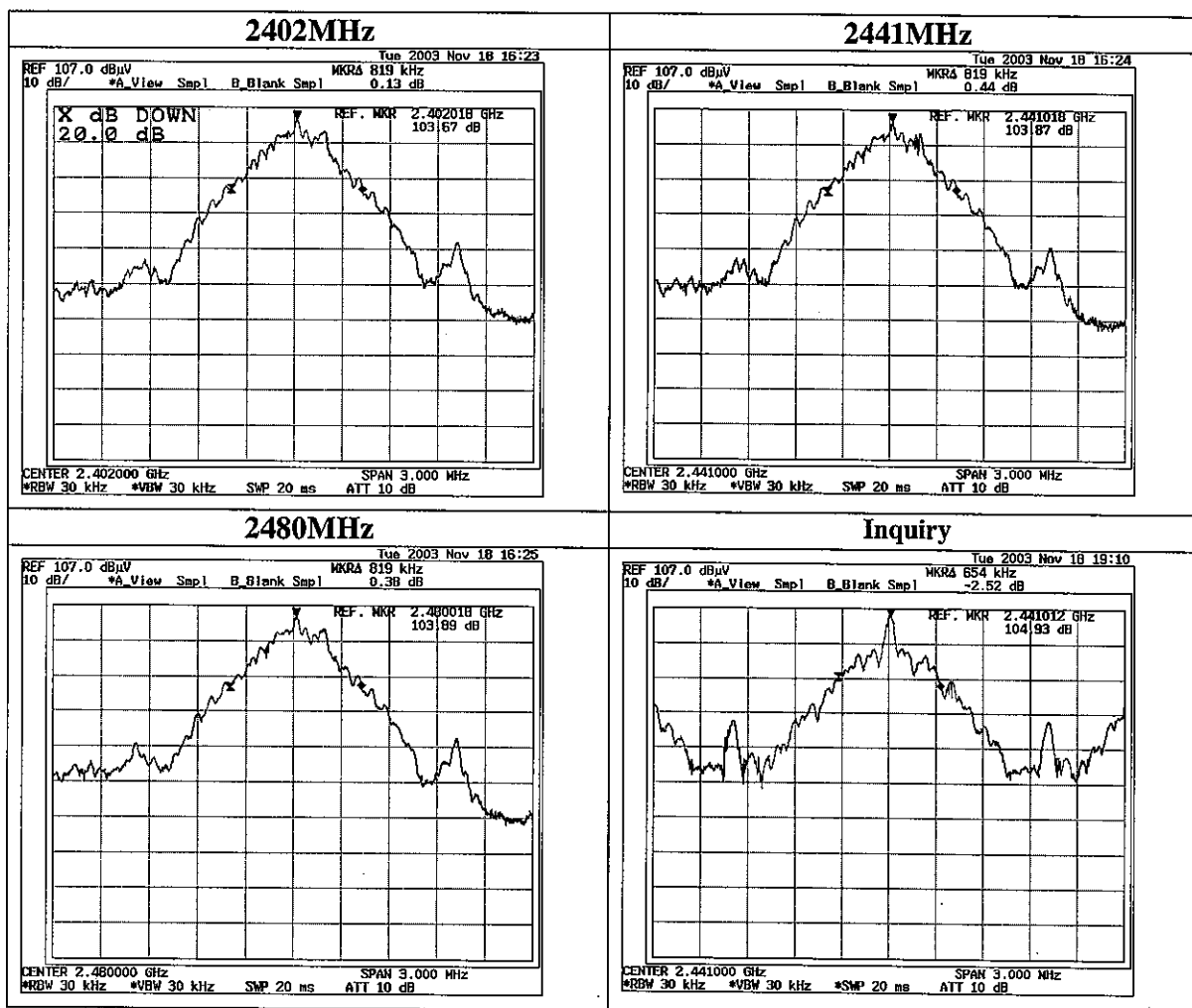
COMPANY	: Sharp Corporation	REGULATION	: Fcc Part15 Subpart C 15.247(a)(1)
EQUIPMENT	: Quad-band GSM Mobile Phone	TEST DISTANCE	: -
MODEL	: GX30	DATE	: 11/18/2003
S/ N	: ES2-228	TEMPERATURE	: 20deg.C
POWER	: DC3.9V	HUMIDITY	: 40%
MODE	: Tx (Hopping off) /Inquiry		

Engineer : Hiroka Umeyama

PK DETECT(S/A: span 3MHz, RBW 30kHz,VBW 30kHz, sweep time AUTO)

CH	FREQ	20dB Bandwidth	Limit
	[MHz]	[MHz]	[MHz]
Low	2402.0	0.819	1.0
Mid	2441.0	0.819	1.0
High	2480.0	0.819	1.0
Inquiry	2441.0	0.654	1.0

20dB Bandwidth



Number of Hopping Frequency

DATA OF NUMBER OF HOPPING FREQUENCY

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Measurement Room

COMPANY : Sharp Corporation REGULATION : Fcc Part15 Subpart C 15.247(a)(1)(iii)
EQUIPMENT : Quad-band GSM Mobile Phone TEST DISTANCE : -
MODEL : GX30 DATE : 11/18/2003
S/N : ES2-228 TEMPERATURE : 20deg.C
POWER : DC3.9V HUMIDITY : 40%
MODE : Tx (Hopping on) /Inquiry

Engineer : Hiroka Umeyama

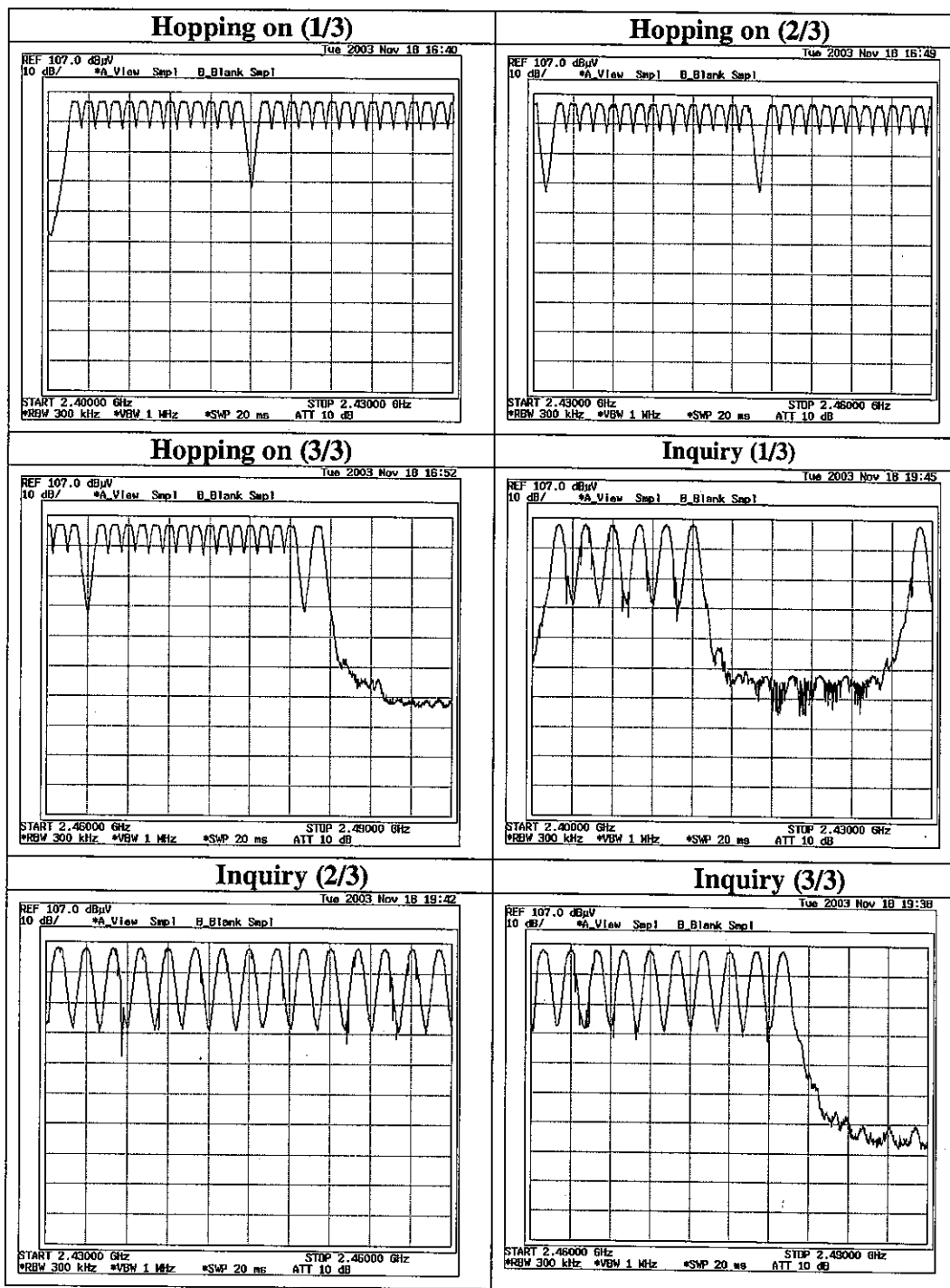
PK DETECT(S/A : RBW 300kHz , VBW 1MHz, sweep time AUTO)

Mode	Number of channels	Limit
	[time]	[time]
Tx(Hopping on)	74	≥ 15

PK DETECT(S/A : RBW 300kHz , VBW 1MHz, sweep time AUTO)

Mode	Number of channels	Limit
	[time]	[time]
Inquiry	32	≥ 15

Number of Hopping Frequency



Dwell time

DATA OF DWELL TIME

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Measurement Room

COMPANY	: Sharp Corporation	REGULATION	: Fcc Part15 Subpart C 15.247(a)(1)(iii)
EQUIPMENT	: Quad-band GSM Mobile Phone	TEST DISTANCE	: -
MODEL	: GX30	DATE	: 11/18/2003
S/N	: ES2-228	TEMPERATURE	: 20deg.C
POWER	: DC3.9V	HUMIDITY	: 40%
MODE	: Tx (Hopping off) /Inquiry		

Engineer : Hiroka Umeyama

PK DETECT(S/A :span ZERO, RBW 1MHz, VBW 3MHz, sweep time 1ms-10ms)

Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period	Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	51 times /5sec. x 31.6 = 322.32 times	0.435	140	400
DH3	17 times / 5sec. x 31.6 = 107.44 times	1.680	180	400
DH5	11 times / 5 sec. x 31.6 = 69.52 times	2.910	202	400
Inquiry	102 times / 1sec. x 12.8 = 1305.6 times	0.259	338	400

UL Apex Co., Ltd.

Head Office EMC Lab.

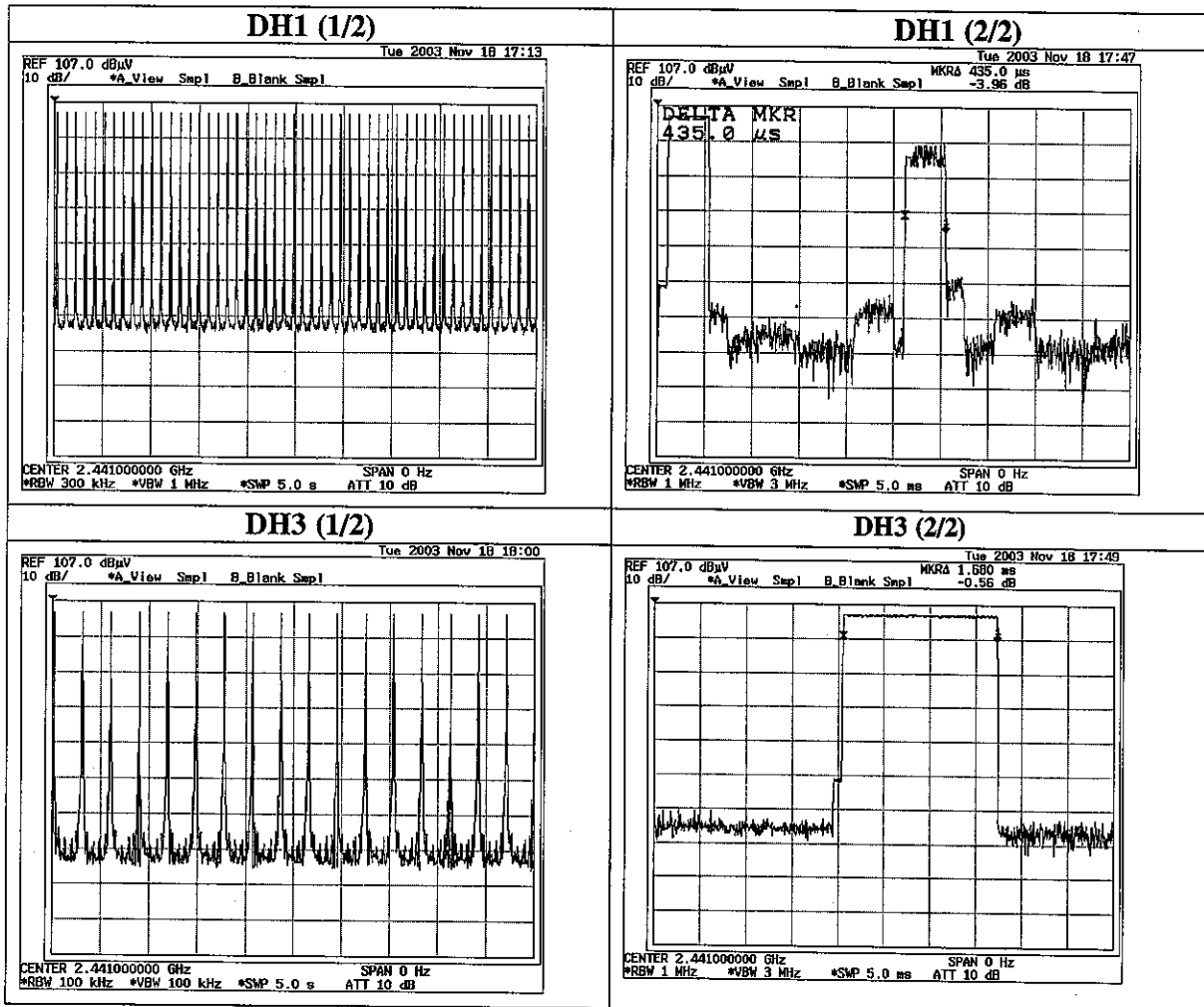
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

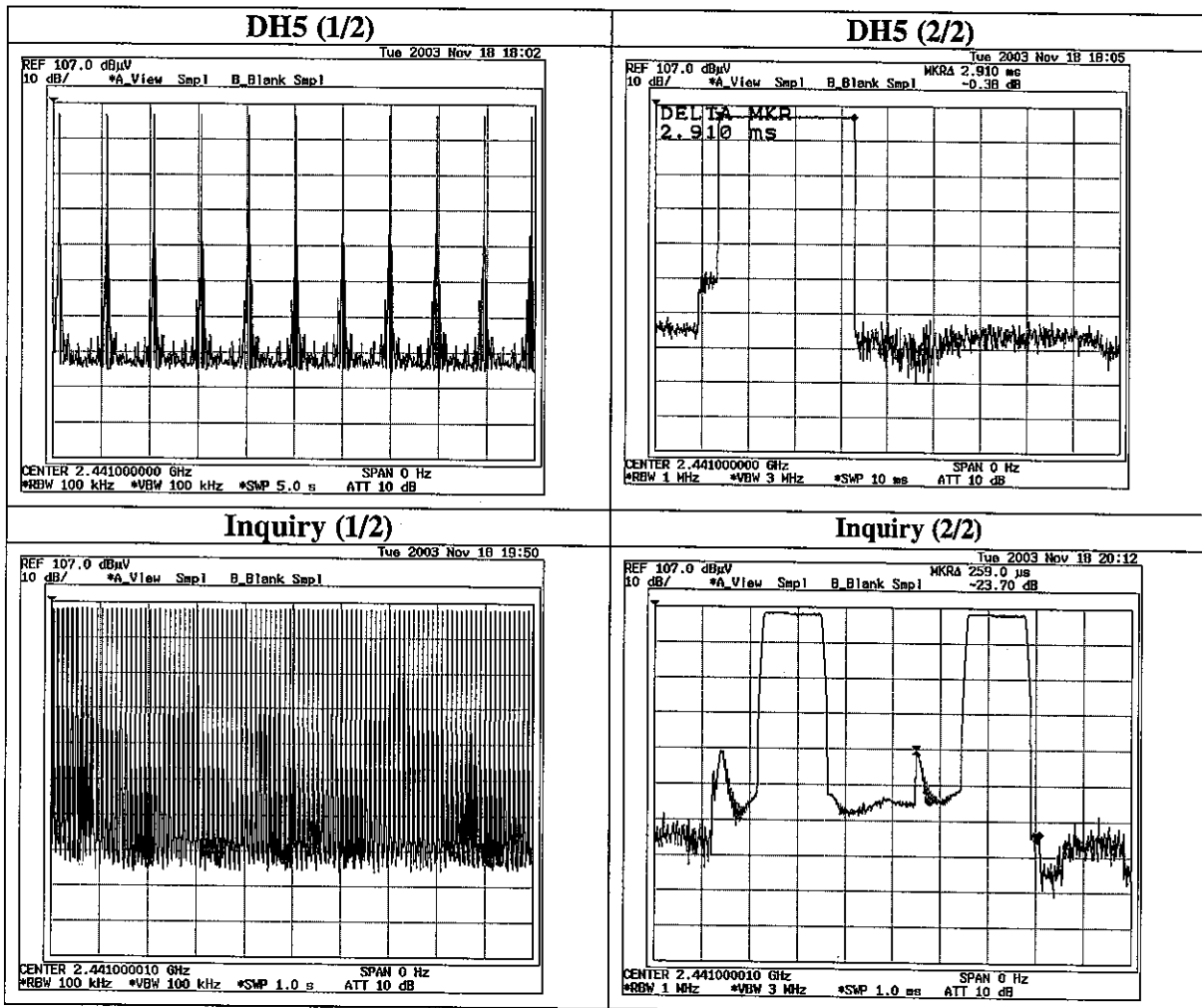
Facsimile : +81 596 24 8124

MF060b(10.04.03)

Dwell time



Dwell time



Maximum Peak Output Power

DATA OF PEAK OUTPUT POWER(CONDUCTED)

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Measurement Room

COMPANY : Sharp Corporation
EQUIPMENT : Quad-band GSM Mobile Phone
MODEL : GX30
S/N : ES2-228
POWER : DC3.9V
MODE : Tx (Hopping off) /Inquiry
REGULATION : Fcc Part15 Subpart C 15.247(b)(1)
TEST DISTANCE : -
DATE : 11/18/2003
TEMPERATURE : 20deg.C
HUMIDITY : 40%

Engineer : Hiroka Umeyama

CH	FREQ [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Result [dBm]	Limit [dBm]
Low	2402.0	-1.4	0.0	-1.4	30.0
Mid	2441.0	-1.2	0.0	-1.2	30.0
High	2480.0	-1.1	0.0	-1.1	30.0
Inquiry	2441.0	-3.2	0.0	-3.2	21.0

Sample Calculation:

Result = P/M Reading + Cable Loss + Attenuator

Band Edge compliance

RESTRICTED BAND EDGES(CONDUCTED)

UL Apex Co., Ltd.
Head Office EMC Lab. No.3 Measurement Room

COMPANY : Sharp Corporation	REGULATION : Fcc Part15 Subpart C 15.247(c)
EQUIPMENT : Quad-band GSM Mobile Phone	TEST DISTANCE : -
MODEL : GX30	DATE : 11/18/2003
S/N : ES2-228	TEMPERATURE : 20deg.C
POWER : DC3.9V	HUMIDITY : 40%
MODE : Tx (Hopping on/off)	

ENGINEER : Hiroka Umeyama

PK DETECT(S/A :Span 10MHz, RBW 100kHz/1MHz, VBW 100kHz/1MHz, sweep time AUTO)

[Hopping on] Conducted

Frequency [MHz]	Reading [dBuV]	Cable Loss [dB]	E [dBuV]	P [nW]	Difference of level [dB]	Field Strength [dBuV/m]	Limit
2390.0	40.8	0.7	41.5	0.28	-	31.9	<74[dBuV/m]
2400.0	57.7	0.8	58.5	-	46.04*	-	>20[dB]
2483.7	52.6	0.9	53.5	4.43	-	43.8	<74[dBuV/m]

* Reference : Reading (103.74[dBuV]) + Cable Loss (0.8[dB]) = E (104.54[dBuV]) at 2405.04MHz.

[Hopping off Tx (2402/2480MHz)] Conducted

Frequency [MHz]	Reading [dBuV]	Cable Loss [dB]	E [dBuV]	P [nW]	Difference of level [dB]	Field Strength [dBuV/m]	Limit
2390.0	38.3	0.7	39.0	0.16	-	29.4	<74[dBuV/m]
2400.0	58.7	0.8	59.5	-	45.02*	-	>20[dB]
2483.7	52.9	0.9	53.8	4.73	-	44.1	<74[dBuV/m]

* Reference : Reading (103.72[dBuV]) + Cable Loss (0.8[dB]) = E (104.52[dBuV]) at 2401.87MHz.

Sample Calculation:

Field Strength = $20 \log((\sqrt{30 \cdot P \cdot 10^{-9} \cdot G}) / d \cdot 10^6)$

E : Reading + Cable Loss

P : Converted to nW

d : Test distance(m) 3

G : Numeric Antenna Gain 1.64

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Head Office EMC Lab.

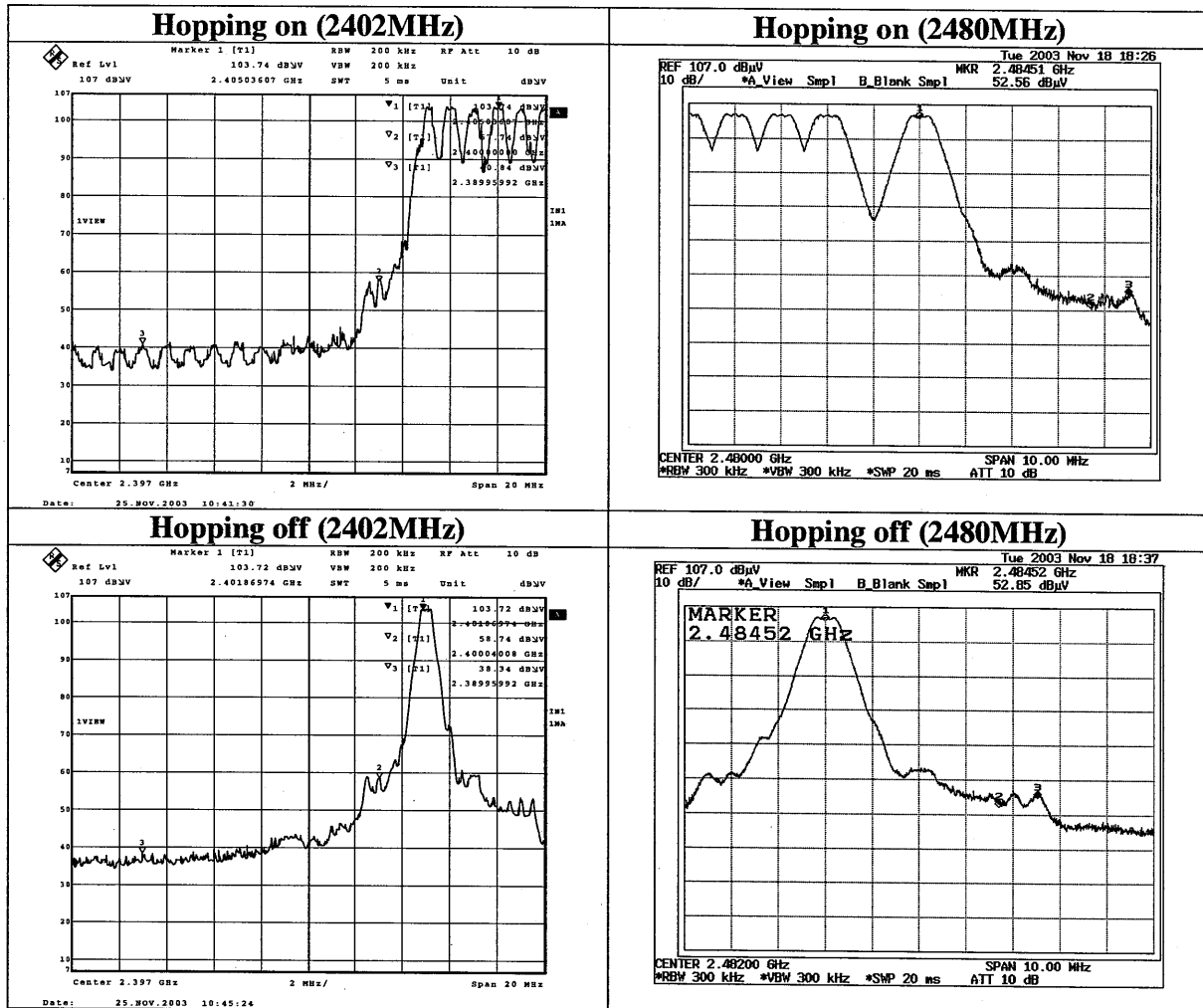
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Band Edge compliance



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Spurious Emission(Radiated)

DATA OF RADIATED EMISSION TEST

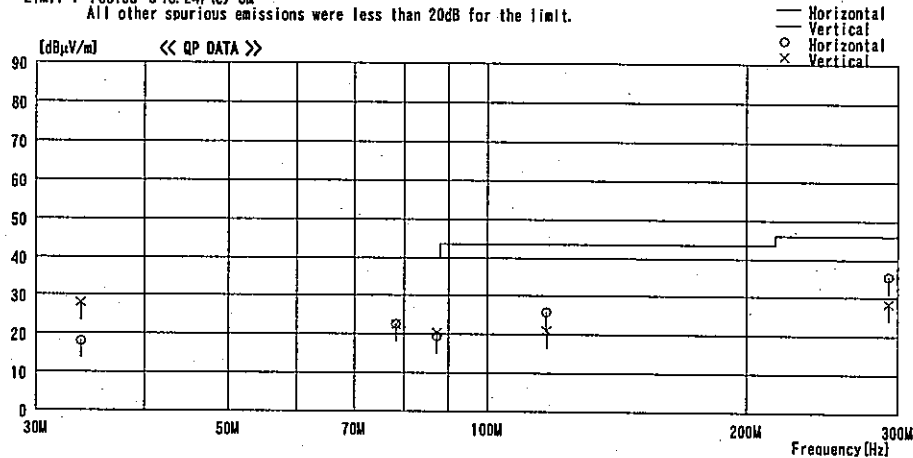
UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2003/11/17 16:26:29

Applicant : Sharp Corporation
Kind of EUT : Quad-band GSM Mobile phone
Model No. : GX30
Serial No. : ES2-205
Report No. : 24CE0080-HO
Power : AC120V/60Hz
Temp/C/Humi% : 26 / 30
Operator : Hiroka Uneyama

Mode / Remarks : Transmitting (Ch:2402MHz)

LIMIT : FCC15C §15.247(c) 3m

All other spurious emissions were less than 20dB for the limit.



No.	FREQ [MHz]	READING QP [dBμV]	ANT. FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEC]
----- Horizontal -----										
1	33.788	22.0	17.0	7.1	28.0	18.1	40.0	21.9	400	50
2	78.275	35.9	6.4	7.8	27.5	22.6	40.0	17.4	310	51
3	87.300	31.5	7.4	7.9	27.3	19.5	40.0	20.5	230	130
4	117.011	31.1	12.7	8.3	26.3	25.8	43.5	17.7	215	240
5	292.703	32.3	20.1	9.7	26.6	35.5	46.0	10.6	110	10
----- Vertical -----										
6	33.788	31.9	17.0	7.1	28.0	28.0	40.0	12.0	100	341
7	78.275	35.9	6.4	7.8	27.5	22.6	40.0	17.4	100	196
8	87.300	32.4	7.4	7.9	27.3	20.4	40.0	19.6	100	122
9	117.114	26.5	12.7	8.3	26.4	21.1	43.5	22.4	200	40
10	292.703	25.2	20.1	9.7	26.6	28.4	46.0	17.6	1180	354

CHART: WITHOUT FACTOR ANT TYPE: -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN
Page:

Test report No. : 24CE0080-HO
Page : 34 of 44
Issued date : November 21, 2003
FCC ID : APYHO00033

DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2003/11/17 16:01:20

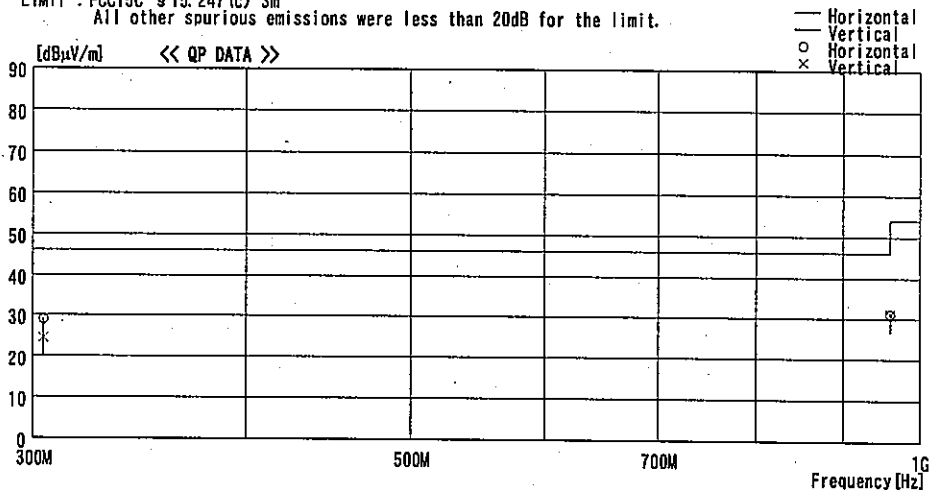
Applicant : Sharp Corporation
Kind of EUT : Quad-band GSM Mobile phone
Model No. : GX30
Serial No. : ES2-205

Report No. : 24CE0080-HO
Power : AC120V/60Hz
Temp/C/Humid% : 26 / 30
Operator : Hiroka Umeyama

Mode / Remarks: Transmittling (Ch:2402MHz)

LIMIT : FCC15C §15.247(c) 3m

All other spurious emissions were less than 20dB for the limit.



No.	FREQ [MHz]	READING QP [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
Horizontal										
1	304.280	31.5	14.4	9.8	26.7	29.0	46.0	17.0	100	220
2	960.000	23.9	22.4	13.1	28.4	31.0	46.0	15.0	100	0
Vertical										
3	304.280	26.9	14.4	9.8	26.7	24.4	46.0	21.6	100	200
4	960.000	23.9	22.4	13.1	28.4	31.0	46.0	15.0	100	0

CHART: WITHOUT FACTOR ANT TYPE: -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

Page:

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MF060b(10.04.03)

DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2003/11/17 18:03:25

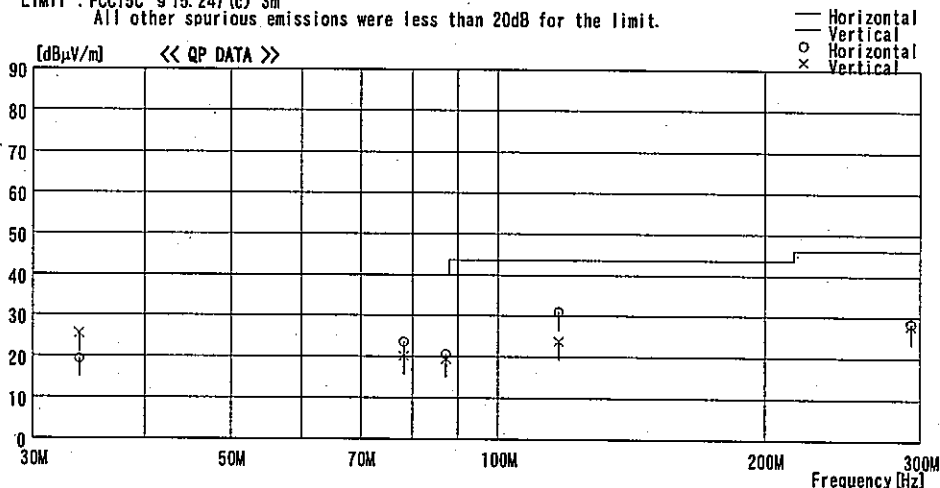
Applicant : Sharp Corporation
Kind of EUT : Quad-band GSM Mobile phone
Model No. : GX30
Serial No. : ES2-205

Report No. : 24CE0080-HO
Power : AC120V/60Hz
Temp/C/Humid% : 26 / 30
Operator : Hiroka Umeyama

Mode / Remarks: Transmitting (Ch:2441MHz)

LIMIT : FCC15C §15.247(c) 3m

All other spurious emissions were less than 20dB for the limit.



No.	FREQ [MHz]	READING QP [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	33.788	23.3	17.0	7.1	28.0	19.4	40.0	20.6	299	86
2	78.275	33.5	6.4	7.8	27.5	23.6	40.0	16.4	229	110
3	87.300	32.7	7.4	7.9	27.3	20.7	40.0	19.3	196	196
4	117.011	36.2	12.7	8.3	26.3	30.9	43.5	12.6	230	167
5	292.703	25.2	20.1	9.7	26.6	28.4	46.0	17.6	33	0
----- Vertical -----										
6	33.788	29.4	17.0	7.1	28.0	25.5	40.0	14.5	100	62
7	78.275	33.5	6.4	7.8	27.5	20.2	40.0	19.8	176	127
8	87.300	31.5	7.4	7.9	27.3	19.5	40.0	20.5	144	326
9	117.114	29.2	12.7	8.3	26.4	23.8	43.5	19.7	100	269
10	292.703	24.6	20.1	9.7	26.6	27.8	46.0	18.2	206	0

CHART: WITHOUT FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

Page:

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MF060b(10.04.03)

DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2003/11/17 20:36:17

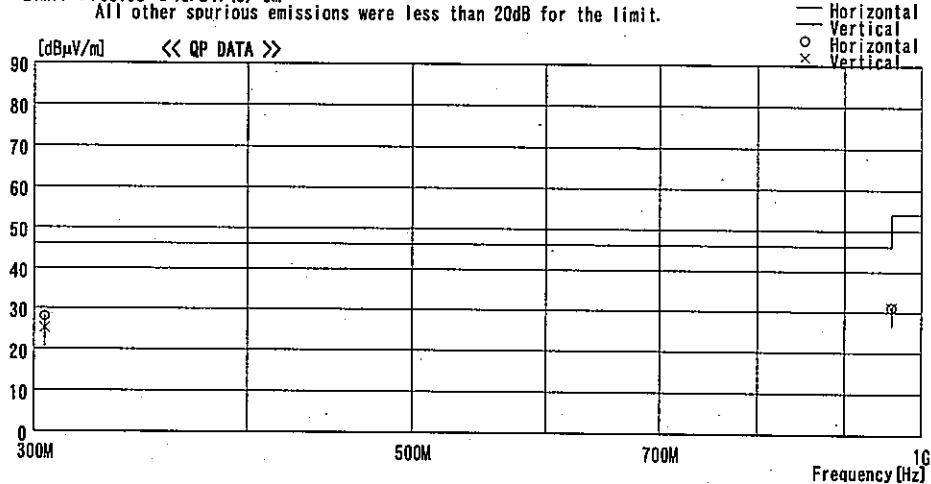
Applicant : Sharp Corporation
Kind of EUT : Quad-band GSM Mobile phone
Model No. : GX30
Serial No. : ES2-205

Report No. : 24CE0080-HO
Power : AC120V/60Hz
Temp/C/Humi% : 26 / 30
Operator : Hiroka Umeyama

Mode / Remarks: Transmitting (Ch:2441MHz)

LIMIT : FCC15C §15.247(c) 3m

All other spurious emissions were less than 20dB for the limit.



No.	FREQ [MHz]	READING QP [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
Horizontal										
1	304.280	30.5	14.4	9.8	26.7	28.0	46.0	18.0	100	224
2	960.000	23.9	22.4	13.1	28.4	31.0	46.0	15.0	100	0
Vertical										
3	304.280	27.6	14.4	9.8	26.7	25.1	46.0	20.9	100	200
4	960.000	24.0	22.4	13.1	28.4	31.1	46.0	14.9	100	0

CHART: WITHOUT FACTOR ANT TYPE: -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

Page:

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MF060b(10.04.03)

DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2003/11/17 18:59:12

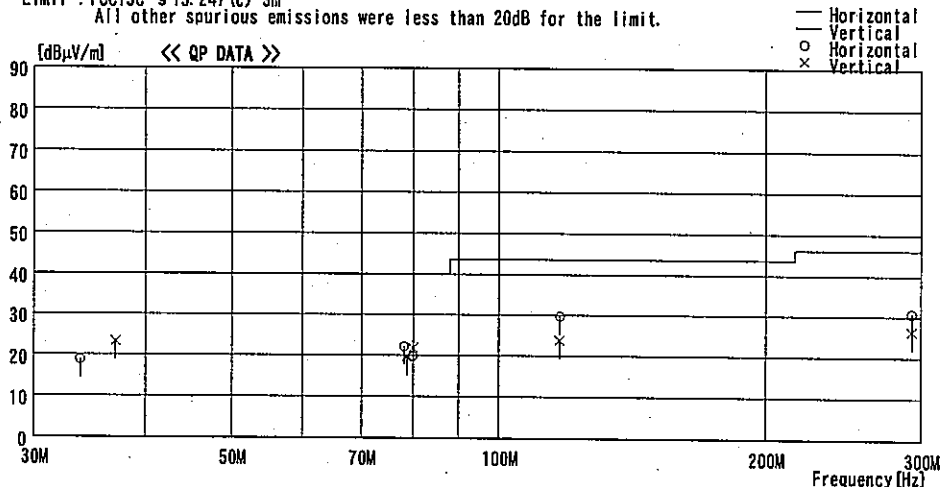
Applicant : Sharp Corporation
Kind of EUT : Quad-band GSM Mobile phone
Model No. : GX30
Serial No. : ES2-205

Report No. : 24CE0080-HO
Power : AC120V/60Hz
Temp/C/Humi% : 25 / 30
Operator : Hiroka Umeyama

Mode / Remarks: Transmitting (Ch:2480MHz)

LIMIT : FCC15C §15.247(c) 3m

All other spurious emissions were less than 20dB for the limit.



No.	FREQ [MHz]	READING QP [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEC]
----- Horizontal -----										
1	33.788	22.7	17.0	7.1	28.0	18.8	40.0	21.2	149	94
2	78.156	35.5	6.4	7.8	27.5	22.2	40.0	17.8	281	109
3	80.000	33.3	6.3	7.8	27.5	19.9	40.0	20.1	246	336
4	117.114	35.1	12.7	8.3	26.4	29.7	43.5	13.8	100	255
5	292.703	27.5	20.1	9.7	26.6	30.7	46.0	15.3	155	51
----- Vertical -----										
6	37.034	28.9	15.3	7.1	28.0	23.3	40.0	16.7	100	146
7	78.697	32.9	6.4	7.8	27.5	19.6	40.0	20.4	100	275
8	80.000	35.2	6.3	7.8	27.5	21.8	40.0	18.2	100	155
9	117.114	29.3	12.7	8.3	26.4	23.9	43.5	19.6	100	270
10	292.703	23.2	20.1	9.7	26.6	26.4	46.0	19.6	174	79

CHART: WITHOUT FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

Page:

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MF060b(10.04.03)

Test report No. : 24CE0080-HO
Page : 38 of 44
Issued date : November 21, 2003
FCC ID : APYHO00033

DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2003/11/17 20:22:09

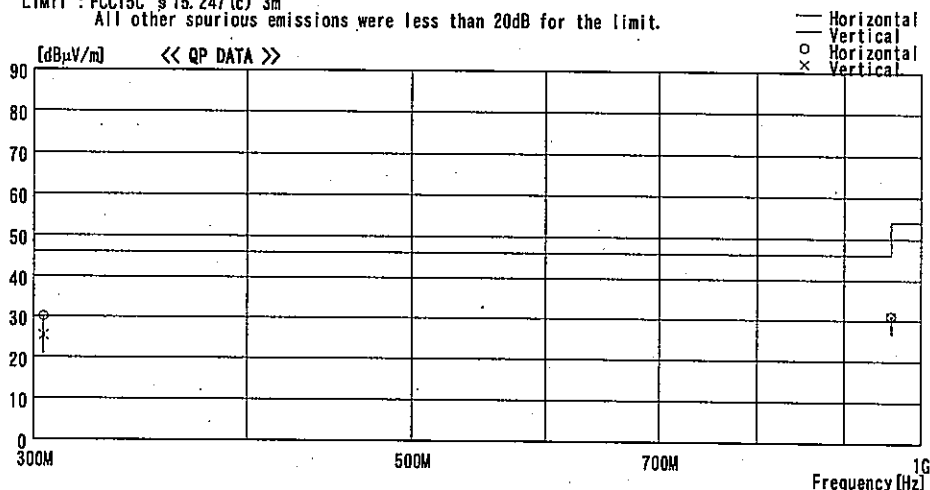
Applicant : Sharp Corporation
Kind of EUT : Quad-band GSM Mobile phone
Model No. : GX30
Serial No. : ES2-205

Report No. : 24CE0080-HO
Power : AC120V/60Hz
Temp/C/Humid% : 26 / 30
Operator : Hiroka Umeyama

Mode / Remarks: Transmitting (Ch:2480MHz)

LIMIT : FCC15C §15.247(c) 3m

All other spurious emissions were less than 20dB for the limit.



No.	FREQ [MHz]	READING QP [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	304.018	32.5	14.4	9.8	26.7	30.0	46.0	16.0	100	223
2	960.000	23.9	22.4	13.1	28.4	31.0	46.0	15.0	100	0
----- Vertical -----										
3	304.018	27.9	14.4	9.8	26.7	25.4	46.0	20.6	100	200
4	960.000	23.9	22.4	13.1	28.4	31.0	46.0	15.0	100	0

CHART: WITHOUT FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

Page:

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Facsimile : +81 596 24 8124

MF060b(10.04.03)

DATA OF SPURIOUS EMISSIONS(1GHz to 26.5GHz)

UL Apex Co., Ltd.
Head Office EMC Lab. No.1 Semi Anechoic Chamber

COMPANY : Sharp Corporation
EQUIPMENT : Quad-band GSM Mobile Phone
MODEL : GX30
S/N : ES2-205
POWER : DC3V AC120V/60Hz
MODE : Tx (2402MHz)
AXIS : Hor: X-axis, Ver: Z-axis

REGULATION : FCC Part 15 Subpart C 15.247(c)
TEST DISTANCE : 3 and 1m
DATE : 17/11/2003
TEMPERATURE : 26deg.C
HUMIDITY : 30%

ENGINEER : Hiroka Umeyama

PK DETECT

No.	FREQ [MHz]	T/R READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. OR FILTER [dB]	RESULT		LMIT PK [dBuV/m]	MARGIN		
		HOR	VER					HOR	VER		HOR	VER	
Test distance 3meters RESULT=READING + ANT FACTOR - AMP GAIN + CABLE LOSS + ATTEN. OR FILTER.													
1	2390.0	44.2	44.0	30.7	36.8	6.3	0.0	44.4	44.2	74.0	29.6	29.8	
2	4804.0	48.0	48.1	35.1	36.8	8.8	0.3	55.4	55.5	74.0	18.6	18.5	
3	7206.0	43.1	43.1	37.5	36.5	10.7	0.0	54.8	54.8	74.0	19.2	19.2	
4	9608.0	43.1	43.0	37.4	37.3	12.7	0.0	55.9	55.8	74.0	18.1	18.2	
Test distance 1meters RESULT=READING - AMP GAIN + CABLE LOSS + ATTEN OR FILTER - Dfac													
5	12010.0	43.1	43.1	40.5	36.8	14.2	0.0	51.5	51.5	74.0	22.5	22.5	
6	14412.0	43.3	42.9	42.8	35.3	15.8	0.0	57.1	56.7	74.0	16.9	17.3	
7	16814.0	42.1	42.6	45.2	36.5	17.6	0.0	58.9	59.4	74.0	15.1	14.6	
8	19216.0	43.8	43.6	41.0	36.1	18.5	0.0	57.7	57.5	74.0	16.3	16.5	
9	21618.0	45.1	43.9	40.5	36.1	18.5	0.0	58.5	57.3	74.0	15.5	16.7	
10	24020.0	44.2	44.3	40.2	36.1	18.5	0.0	57.3	57.4	74.0	16.7	16.6	

AV DETECT

No.	FREQ [MHz]	T/R READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. OR FILTER [dB]	RESULT		LMIT AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=READING + ANT FACTOR -AMP GAIN + CABLE LOSS + ATTEN. OR FILTER.												
1	2390.0	31.7	31.6	30.7	36.8	6.3	0.0	31.9	31.8	54.0	22.1	22.2
2	4804.0	36.1	36.1	35.1	36.8	8.8	0.3	43.5	43.5	54.0	10.5	10.5
3	7206.0	30.5	30.4	37.5	36.5	10.7	0.0	42.2	42.1	54.0	11.8	11.9
4	9608.0	30.7	30.7	37.4	37.3	12.7	0.0	43.5	43.5	54.0	10.5	10.5
Test distance 1meters RESULT=READING - AMP GAIN + CABLE LOSS + ATTEN OR FILTER - Dfac												
5	12010.0	31.2	31.2	40.5	36.8	14.2	0.0	39.6	39.6	54.0	14.4	14.4
6	14412.0	30.6	30.5	42.8	35.3	15.8	0.0	44.4	44.3	54.0	9.6	9.7
7	16814.0	30.1	29.9	45.2	36.5	17.6	0.0	46.9	46.7	54.0	7.1	7.3
8	19216.0	30.1	30.1	41.0	36.1	18.5	0.0	44.0	44.0	54.0	10.0	10.0
9	21618.0	31.5	31.0	40.5	36.1	18.5	0.0	44.9	44.4	54.0	9.1	9.6
10	24020.0	30.9	30.8	40.2	36.1	18.5	0.0	44.0	43.9	54.0	10.0	10.1

Test Distance 1.0m : Distance Factor(Dfac) = $20\log(3/1.0) =$

9.5 dB

*1: Except for the above table : All other spurious emissions were less than 20dB for the limit.

*2: ATTEN : 1 to 3.5GHz, FILTER : 3.5 to 26GHz

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MF060b(10.04.03)

DATA OF SPURIOUS EMISSIONS(1GHz to 26.5GHz)

UL Apex Co., Ltd.
Head Office EMC Lab. No.1 Semi Anechoic Chamber

COMPANY : Sharp Corporation
EQUIPMENT : Quad-band GSM Mobile Phone
MODEL : GX30
S/N : ES2-205
POWER : DC3V AC120V/60Hz
MODE : Tx (2441MHz)
AXIS : Hor: X-axis, Ver: Z-axis

REGULATION : FCC Part 15 Subpart C 15.247(c)
TEST DISTANCE : 3 and 1m
DATE : 17/11/2003
TEMPERATURE : 26deg.C
HUMIDITY : 30%

ENGINEER : Hiroka Umeyama

PK DETECT

No.	FREQ [MHz]	T/R READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. OR FILTER [dB]	RESULT		LMIT PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=READING + ANT FACTOR -AMP GAIN + CABLE LOSS + ATTEN. OR FILTER.												
1	4882.0	47.1	47.6	35.5	36.8	6.4	0.3	52.5	53.0	74.0	21.5	21.0
2	7329.4	43.1	43.4	37.8	36.6	7.6	0.0	51.9	52.2	74.0	22.1	21.8
3	9764.0	43.1	42.8	37.0	37.2	9.0	0.0	51.9	51.6	74.0	22.1	22.4
Test distance 1meters RESULT=READING - AMP GAIN + CABLE LOSS + ATTEN OR FILTER - D _{fac}												
4	12205.0	43.2	43.0	41.2	36.7	14.3	0.0	52.5	52.3	74.0	21.5	21.7
5	14646.0	43.5	42.8	43.1	35.5	16.0	0.0	57.6	56.9	74.0	16.4	17.1
6	17087.0	42.5	42.5	45.5	36.2	17.8	0.0	60.1	60.1	74.0	13.9	13.9
7	19528.0	43.2	43.5	40.5	36.1	18.5	0.0	56.6	56.9	74.0	17.4	17.1
8	21969.0	45.0	43.9	40.6	36.1	18.5	0.0	58.5	57.4	74.0	15.5	16.6
9	24410.0	44.1	44.2	40.4	36.1	18.5	0.0	57.4	57.5	74.0	16.6	16.5

AV DETECT

No.	FREQ	T/R READING		ANT FACTOR	AMP GAIN	CABLE LOSS	ATTEN. OR FILTER	RESULT		LIMIT AV	MARGIN	
	[MHz]	HOR	VER					[dBuV/m]	[dB/m]		[dB]	HOR
Test distance 3meters RESULT=READING + ANT FACTOR -AMP GAIN + CABLE LOSS + ATTEN. OR FILTER.												
1	4882.0	34.7	35.2	35.5	36.8	6.4	0.3	40.1	40.6	54.0	13.9	13.4
2	7329.4	30.6	30.7	37.8	36.6	7.6	0.0	39.4	39.5	54.0	14.6	14.5
3	9764.0	30.6	30.6	37.0	37.2	9.0	0.0	39.4	39.4	54.0	14.6	14.6
Test distance 1meters RESULT=READING - AMP GAIN + CABLE LOSS + ATTEN OR FILTER - Dfac												
4	12205.0	30.8	30.8	41.2	36.7	14.3	0.0	40.1	40.1	54.0	13.9	13.9
5	14646.0	30.6	30.7	43.1	35.5	16.0	0.0	44.7	44.8	54.0	9.3	9.2
6	17087.0	29.8	29.9	45.5	36.2	17.8	0.0	47.7	47.5	54.0	6.3	6.5
7	19528.0	30.1	30.1	40.5	36.1	18.5	0.0	43.5	43.5	54.0	10.5	10.5
8	21969.0	31.5	31.0	40.6	36.1	18.5	0.0	45.0	44.5	54.0	9.0	9.5
9	24410.0	30.9	30.8	40.4	36.1	18.5	0.0	44.2	44.1	54.0	9.8	9.9

Test Distance 1.0m : Distance Factor(Dfac) = $20\log(3/1.0) =$

9.5 dB

*1: Except for the above table : All other spurious emissions were less than 20dB for the limit.

*2: ATTEN : 1 to 3.5GHz, FILTER : 3.5 to 26GHz

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MF060b(10.04.03)

DATA OF SPURIOUS EMISSIONS(1GHz to 26.5GHz)

UL Apex Co., Ltd.
Head Office EMC Lab. No.1 Semi Anechoic Chamber

COMPANY : Sharp Corporation
EQUIPMENT : Quad-band GSM Mobile Phone
MODEL : GX30
S/N : ES2-205
POWER : DC3V AC120V/60Hz
MODE : Tx (2480MHz)
AXIS : Hor: X-axis, Ver: Z-axis

REGULATION : FCC Part 15 Subpart C 15.247(c)
TEST DISTANCE : 3 and 1m
DATE : 17/11/2003
TEMPERATURE : 26deg.C
HUMIDITY : 30%

ENGINEER : Hiroka Umeyama

PK DETECT

No.	FREQ	T/R READING		ANT FACTOR	AMP GAIN	CABLE LOSS	ATTEN. OR FILTER	RESULT		LMIT PK	MARGIN	
	[MHz]	HOR	VER					HOR	VER		HOR	VER
		[dBuV/m]		[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]		[dBuV/m]	[dB]	
Test distance 3meters RESULT=READING + ANT FACTOR -AMP GAIN + CABLE LOSS + ATTEN. OR FILTER.												
1	2483.7	50.2	48.2	30.7	36.9	6.4	0.0	50.4	48.4	74.0	23.6	25.6
2	4960.0	47.1	49.6	36.0	36.8	8.9	0.0	55.2	57.7	74.0	18.8	16.3
3	7440.0	43.4	43.4	38.1	36.7	10.9	0.0	55.7	55.7	74.0	18.3	18.3
4	9920.0	43.0	43.5	36.5	37.3	13.0	0.0	55.2	55.7	74.0	18.8	18.3
Test distance 1meters RESULT=READING - AMP GAIN + CABLE LOSS + ATTEN OR FILTER - Dfac												
5	12400.0	43.4	44.0	41.8	36.6	14.5	0.0	53.6	54.2	74.0	20.4	19.8
6	14880.0	43.2	43.5	43.3	35.7	16.1	0.0	57.4	57.7	74.0	16.6	16.3
7	17360.0	43.0	42.9	45.4	36.2	18.0	0.0	60.7	60.6	74.0	13.3	13.4
8	19840.0	43.2	43.5	40.7	36.1	18.5	0.0	56.8	57.1	74.0	17.2	16.9
9	22320.0	44.9	44.0	40.7	36.1	18.5	0.0	58.5	57.6	74.0	15.5	16.4
10	24800.0	44.0	44.2	40.4	36.1	18.5	0.0	57.3	57.5	74.0	16.7	16.5

AV DETECT

No.	FREQ	T/R READING		ANT FACTOR	AMP GAIN	CABLE LOSS	ATTEN. OR FILTER	RESULT		LIMIT AV	MARGIN	
	[MHz]	HOR	VER					[dBm]	[dB]		[dB]	[dB]
Test distance 3meters RESULT=READING + ANT FACTOR -AMP GAIN + CABLE LOSS + ATTEN. OR FILTER.												
1	2483.7	32.6	32.4	30.7	36.0	6.4	0.0	33.7	33.5	54.0	20.3	20.5
2	4960.0	32.3	33.5	36.0	36.8	8.9	0.0	40.4	41.6	54.0	13.6	12.4
3	7440.0	30.9	30.9	38.1	36.7	10.9	0.0	43.2	43.2	54.0	10.8	10.8
4	9920.0	30.8	30.8	36.5	37.3	13.0	0.0	43.0	43.0	54.0	11.0	11.0
Test distance 1meters RESULT=READING - AMP GAIN + CABLE LOSS + ATTEN OR FILTER - Dfac												
5	12400.0	31.2	31.2	41.8	36.6	14.5	0.0	41.4	41.4	54.0	12.6	12.6
6	14880.0	30.7	30.6	43.3	35.7	16.1	0.0	44.9	44.8	54.0	9.1	9.2
7	17360.0	30.1	30.0	45.4	36.2	18.0	0.0	47.8	47.7	54.0	6.2	6.3
8	19840.0	30.1	30.1	40.7	36.1	18.5	0.0	43.7	43.7	54.0	10.3	10.3
9	22320.0	31.6	32.1	40.7	36.1	18.5	0.0	45.2	45.7	54.0	8.8	8.3
10	24800.0	30.9	30.7	40.4	36.1	18.5	0.0	44.2	44.0	54.0	9.8	10.0

Test Distance 1.0m : Distance Factor(Dfac) = $20\log(3/1.0) =$

9.5 dB

*1: Except for the above table : All other spurious emissions were less than 20dB for the limit.

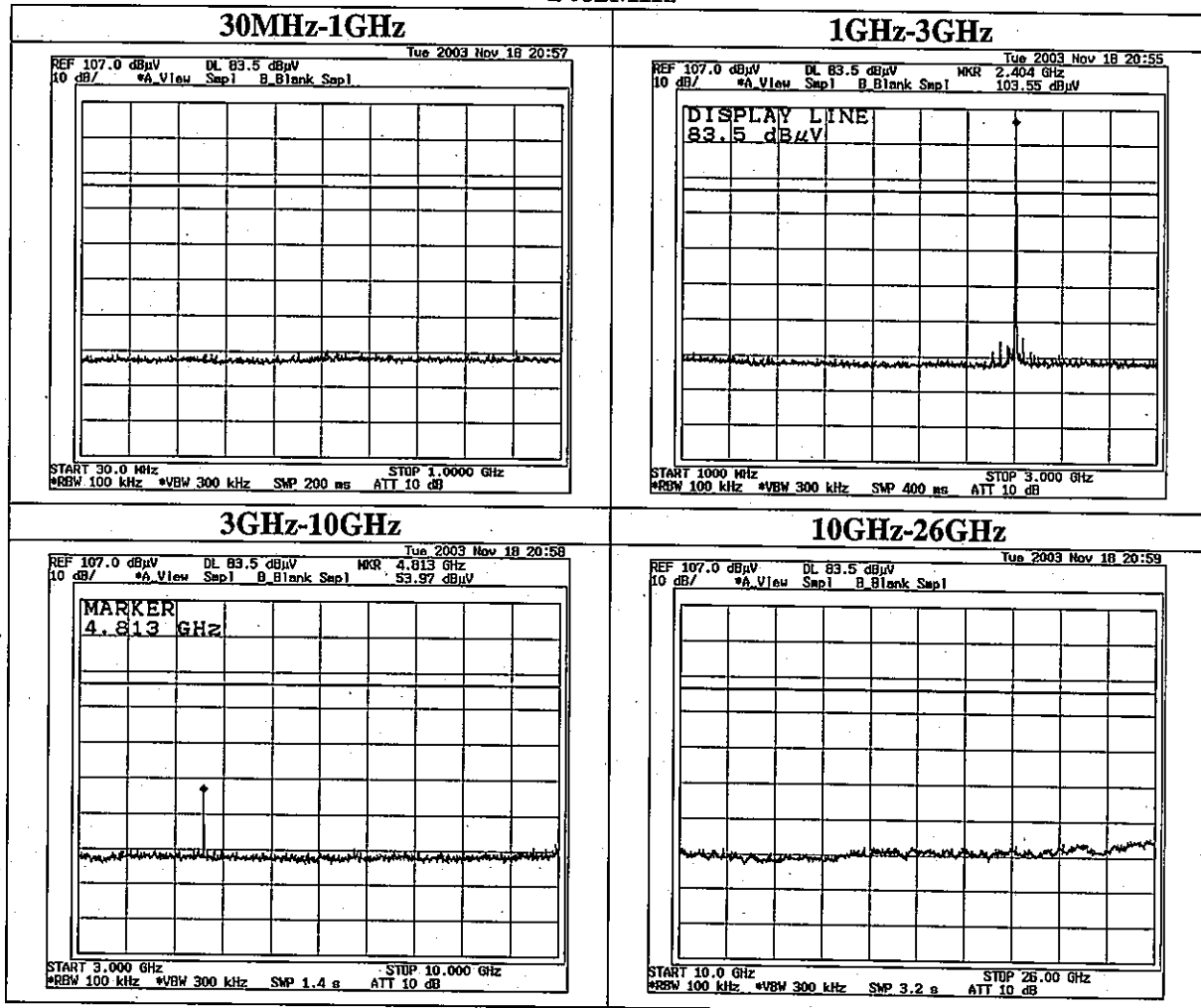
*2: ATTEN : 1 to 3.5GHz, FILTER : 3.5 to 26GHz

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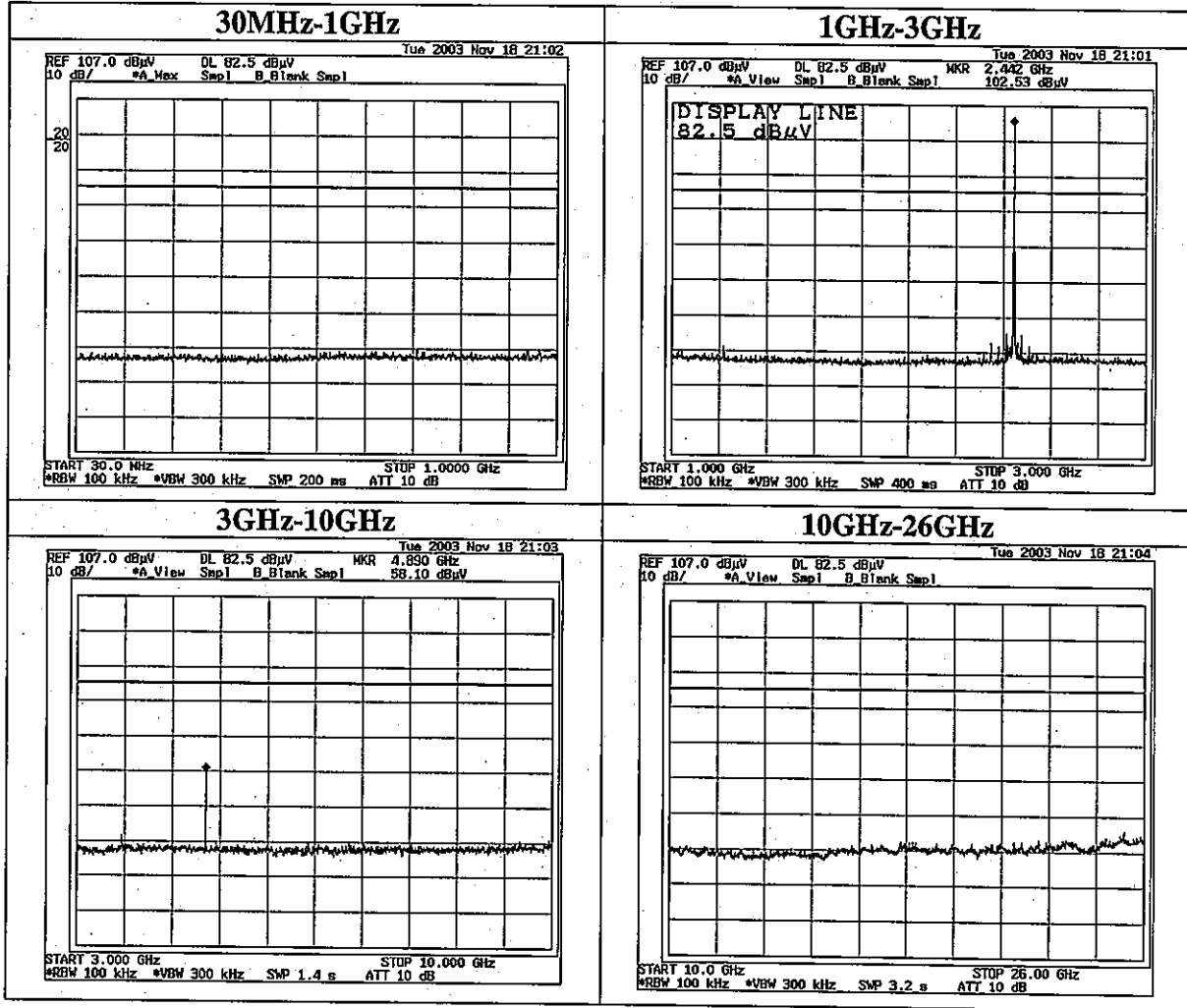
Spurious Emission(Conducted)

2402MHz



Spurious Emission(Conducted)

2441MHz



Spurious Emission(Conducted)

2480MHz

