

EMI TEST REPORT

Test Report No. : 25HE0267-HO

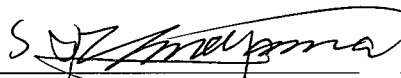
Applicant : Sharp Corporation
Type of Equipment : GSM & WCDMA Cellular Phone
Model No. : 903SH
Test standard : FCC Part 15 Subpart C
Section 15.207, Section 15.247 : 2005
FCC ID : APYHRO00041
Test Result : Complied

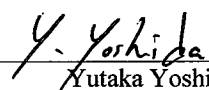
1. This test report shall not be reproduced in full or partial, without the written approval of UL Apex Co., Ltd.
2. The results in this report apply only to the sample tested.
3. This equipment is in compliance with above regulation. We hereby certify that the data contain a true representation of the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

Date of test:

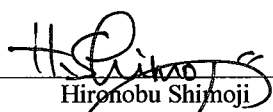
May 16 and 17, 2005

Tested by:


Hiroka Umeyama
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Yutaka Yoshida
EMC Service

**Approved
by :**


Hironobu Shimoji
Group Leader of
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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 4: Operation of E.U.T. during testing	6
SECTION 5: Conducted Emission	7
SECTION 6: Spurious Emission	8
SECTION 7: Bandwidth	8
SECTION 8: Maximum Peak Output Power	9
SECTION 9: Carrier Frequency Separation	9
SECTION 10: Number of Hopping Frequency	9
SECTION 11: Dwell time	9
APPENDIX 1: Photographs of test setup	10
Conducted Emission	10
Spurious Emission (Radiated)	11
Worst Case Position (X-axis:Horizontal / X-axis:Vertical)	12
APPENDIX 2: Test instruments	13
APPENDIX 3: Data of EMI test	14
Conducted Emission	14
Carrier Frequency Separation	17
20dB Bandwidth	19
Number of Hopping Frequency	21
Maximum Peak Output Power	26
Radiated Spurious Emission	28
Conducted Spurious Emission	34
99% Occupied Bandwidth	38

SECTION 1: Client information

Company Name : Sharp Corporation
Brand or Trade name : SHARP
Address : 2-13-1 Iida Hachihonmatsu HigashiHiroshima-City, Hiroshima-pref.,
739-0192 Japan
Telephone Number : +81-82-420-1592
Facsimile Number : +81-82-420-1852
Contact Person : Seiichi Ichikawa

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

2.1 Identification of E.U.T.

Type of Equipment : GSM & WCDMA Cellular Phone
Model No. : 903SH
Serial No. : 004400/01/047613/1
004400/01/047609/9
Rating : DC4.0V, AC120V/60Hz
Country of Manufacture : Japan
Receipt Date of Sample : May 12, 2005
Condition of EUT : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)

2.2 Product Description

Clock frequencies in the system	CPU:13MHz/ RTC:32.768kHz
Feature of EUT	903SH is Tri-Band GSM & WCDMA Mobile Cellular Phone. The EUT has the interface of Bluetooth wireless technology for establishing contact and transmitting data with certain devices.

Equipment Type	Transceiver
Frequency of Operation	2402MHz to 2480MHz
Bandwidth & Channel spacing	1MHz & 1MHz
Type of Modulation	FHSS
Antenna Type	Internal Antenna
Antenna Connector Type	Soldering
Antenna Gain	0 dBi
Mode of Operation	Simplex
ITU code	F1D, F1E, F1W
Operating voltage (Inner)	DC2.9V
Operating temperature	-10 to +55 deg.C.

FCC 15.31 (e)

This EUT provides stable voltage(DC4.0V) from Host, and it is constantly converted into and provided with DC2.9V for the Operational voltage within RF Module regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part15 Subpart C : 2005
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits : 2005
Section 15.247 Operation within the bands 902-928MHz,
2400-2483.5MHz, and 5725-5850MHz : 2005

3.2 Procedures and results

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin*0)	Results
1	Conducted emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	Section 15.207	-	N/A	31.6dB 0.5842MHz, QP, N	Complied
2	Carrier Frequency Separation	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(a)(1)	Conducted	N/A	*See data.	Complied
3	20dB Bandwidth	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(a)(1)	Conducted	N/A		Complied
4	Number of Hopping Frequency	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(a)(1)(iii)	Conducted	N/A		Complied
5	Dwell time	ANSI C63.4:2003 13.Measurement of intentional radiators	Section15.247(a)(1)(iii)	Conducted	N/A		Complied
6	Maximum Peak Output Power	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(b)(1)	Conducted	N/A		Complied
7	Band Edge Compliance	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(d)	Conducted	N/A		Complied
8	Spurious Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(d)	Conducted/ Radiated	N/A	3.2dB 2483.5MHz, PK, Vertical	Complied

Note: UL Apex's EMI Work Procedures No.QPM05 and QPM15.

*0) The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

Uncertainty:

*In case of the margin below the EMC Head Office's uncertainty.

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

Conducted Emission

The measurement uncertainty (with a 95% confidence level) for this test is ± 1.3 dB.

Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is ± 4.5 dB(3m)/ ± 4.7 dB(10m).

The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is ± 5.2 dB(3m)/ ± 3.8 dB(10m).

The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is ± 6.6 dB.

Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test is ± 3.0 dB.

*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.

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3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	RSS-210(issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004 + Amendment4: 2004	RSS-210(issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004 + Amendment4: 2004	Conducted	N/A	N/A	N/A

3.4 Test Location

UL Apex Co., Ltd. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
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	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	IC4247	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber	846015	IC4247-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.4 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1 and No.2 semi-anechoic and No.3 shielded room.

3.5 Test set up, Test instruments and Data of EMI

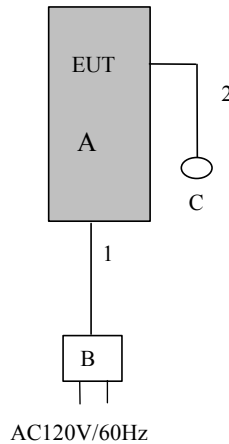
Refer to APPENDIX 1 to 3.

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

4.1 Operating Modes

The mode is used : [FHSS: Bluetooth]
1) Transmitting mode
Data : PRBS9
Packet : DH5
Channel : Low Channel :2402MHz
Mid Channel :2441MHz
High Channel :2480MHz
2) Inquiry

4.2 Configuration and peripherals



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

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID
A	GSM & WCDMA Cellular Phone	903SH	004400/01/047613/1 (for Radiated emission and Conducted emission tests) 004400/01/047609/9 (for the other tests)	Sharp Corporation	APYHRO00041
B	AC Charger	XN-1QC93	N/A	HOSIDEN	N/A
C	Earphone	N/A	N/A	Sharp Corporation	N/A

List of cables used

No.	Name	Length (m)	Shield	Backshell Material
1	AC Charger Cable	1.5	N	Polyvinyl chloride
2	Earphone Cable	1.8	N	Polyvinyl chloride

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SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a platform of nominal size, 0.5m by 1.0m, 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 a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center.

1) For the tests on EUT itself (as a stand alone equipment)

Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN/(AMN) to the input power source. All unused 50ohm connectors of the LISN(AMN) were resistivity terminated in 50ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber or a Measurement Room.

The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

Detector	: CISPR quasi-peak and average detector (IF BW 9 kHz)
Measurement range	: 0.15-30MHz
Test data	: APPENDIX 3
Test result	: Pass

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SECTION 6: Spurious Emission

[Conducted]

Test Procedure

The test 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, 0.5m by 1.0m, raised 80cm above the conducting ground plane.

The Radiated Electric Field Strength intensity has been measured in a Semi Anechoic Chamber with a ground plane and at a distance of 3m(Below 10GHz) and 1m(Upper 10GHz).

The height of the measuring varied between 1 and 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 with the Test Receiver, or the Spectrum Analyzer (in linear mode).

The test was made with the detector (RBW/VBW) in the following table.

When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

Test data : APPENDIX 3

Test result : Pass

20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver / Spectrum Analyzer	Spectrum Analyzer
Detector	QP: BW 120kHz(T/R)	PK: RBW:1MHz/VBW: 1MHz
IF Bandwidth	20dBc : RBW: 100kHz VBW: 300kHz (S/A)	AV: RBW:1MHz/VBW:10Hz 20dBc : RBW:100kHz/VBW:300kHz

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

SECTION 7: Bandwidth

Test Procedure

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

Test data : APPENDIX 3

Test result : Pass

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SECTION 8: Maximum Peak Output Power

Test Procedure

The Maximum Peak Output Power was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3
Test result : Pass

SECTION 9: Carrier Frequency Separation

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 10: Number of Hopping Frequency

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

SECTION 11: Dwell time

Test Procedure

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

Test data : APPENDIX 3
Test result : Pass

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APPENDIX 1: Photographs of test setup

Conducted Emission

This page has been submitted for a separate exhibit.

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Spurious Emission (Radiated)

This page has been submitted for a separate exhibit.

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

This page has been submitted for a separate exhibit.

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	RE / CE	2004/11/13 * 12
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	RE / CE	2004/11/12 * 12
MBA-01	Biconical Antenna	Schwarzbeck	BBA9106	RE	2004/10/14 * 12
MLA-01	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2004/10/14 * 12
MCC-01	Coaxial Cable 0.1-3000MHz	Suhner/storm/Agilent/TSJ	-	RE	2004/12/19 * 12
MAT-06	Attenuator(6dB)	Weinschel Corp	2	RE	2004/12/16 * 12
MPA-04	Pre Amplifier	Agilent	8447D	RE	2004/05/25 * 12
MHA-05	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2005/01/10 * 12
MHA-01	Horn Antenna	EMCO	3160-09	RE	2005/01/10 * 12
MCC-18	Microwave Cable	Suhner	SUCOFLEX 104	RE	2005/02/03 * 12
MCC-26	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	RE	2004/08/26 * 12
MBF-01	SHF Bandpass Filter	M-City	5GHz BPF	RE	2004/05/21 * 12
MBF-02	SHF Bandpass Filter	M-City	8GHz BPF	RE	2004/05/21 * 12
MPA-05	Pre Amplifier	TSJ	TSJ 1-26.5GHz PreAmp	RE	2004/06/12 * 12
MLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	CE(EUT)	2004/11/10 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/Agilent/TSJ	-	CE	2004/12/24 * 12
MCC-11	Microwave cable 1G-26.5GHz	Suhner	SUCOFLEX 104	RE	2005/03/26 * 12
MBTR10	Spectrum Analyzer	Rohde & Schwarz	FSP30	1-8	2004/11/02 * 12
MAT-22	Attenuator(10dB) (above1GHz)	Orient Microwave	BX10-0476-00	1-8	2005/03/16 * 12
MCC-15	Microwave Cable	Suhner	SUCOFLEX 104	1-8	2005/02/03 * 12

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

Test Item:

- CE: Conducted emission, RE: Radiated emission,
1: Carrier Frequency Separation 2: 20dB Bandwidth
3: Number of Hopping Frequency 4: Dwell Time
5: Maximum Peak Output Power 6: Band Edge compliance
7: 99% Occupied Bandwidth 8: Spurious Emission(Conducted)

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APPENDIX 3: Data of EMI test

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

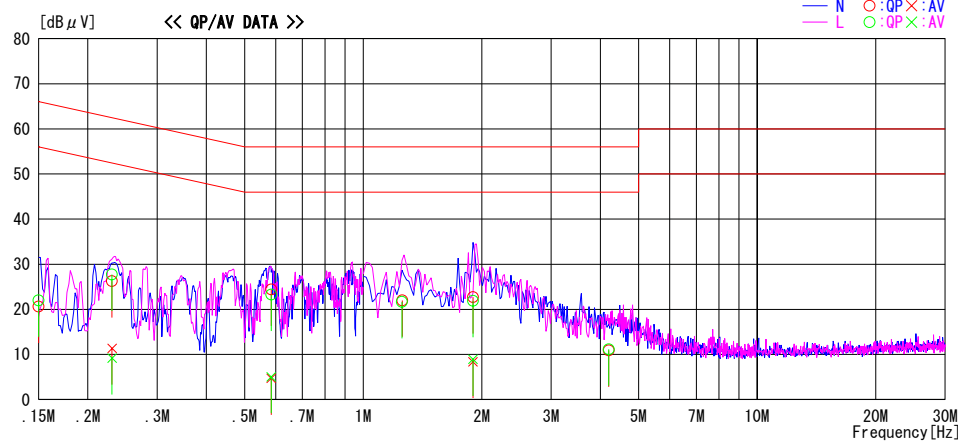
UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2005/05/16 17:34:32

Applicant : Sharp Corporation
Kind of EUT : GSM & WCDMA Cellular Phone
Model No. : 903SH
Serial No. : 004400/01/047613/1

Report No. : 25HE0267-HO
Power : DC4.0V (ACAdapter: AC120V/60Hz)
Temp°C/Humi% : 24deg. C / 33%
Operator : Hiroka Umeyama

Mode / Remarks : Bluetooth, Tx 2402MHz, PRBS9, Packet DH5

LIMIT : FCC15C § 15.207 (QP)
FCC15C § 15.207 (AV)



NO	FREQ [MHz]	READING		C. F	RESULT		LIMIT		MARGIN		PHASE
		QP [dB μ V]	AV [dB μ V]		QP [dB μ V]	AV [dB μ V]	QP [dB μ V]	AV [dB μ V]	QP [dB]	AV [dB]	
1	0.1500	20.3	---	0.3	20.6	---	66.0	---	45.4	---	N
2	0.2302	25.8	10.9	0.5	26.3	11.4	62.4	52.4	36.1	41.0	N
3	0.5842	23.8	4.1	0.6	24.4	4.7	56.0	46.0	31.6	41.3	N
4	1.2554	21.5	---	0.5	22.0	---	56.0	---	34.0	---	N
5	1.9000	22.1	7.8	0.6	22.7	8.4	56.0	46.0	33.3	37.6	N
6	4.2022	10.0	---	0.9	10.9	---	56.0	---	45.1	---	N
7	0.1500	21.7	---	0.3	22.0	---	66.0	---	44.0	---	L
8	0.2302	27.2	8.7	0.5	27.7	9.2	62.4	52.4	34.7	43.2	L
9	0.5842	22.7	4.5	0.6	23.3	5.1	56.0	46.0	32.7	40.9	L
10	1.2550	21.2	---	0.5	21.7	---	56.0	---	34.3	---	L
11	1.9000	21.3	8.3	0.6	21.9	8.9	56.0	46.0	34.1	37.1	L
12	4.2044	10.3	---	0.9	11.2	---	56.0	---	44.8	---	L

CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C. F (LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

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DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2005/05/16 17:30:40

Applicant : Sharp Corporation
Kind of EUT : GSM & WCDMA Cellular Phone
Model No. : 903SH
Serial No. : 004400/01/047613/1

Report No. : 25HE0267-HO
Power : DC4.0V (ACAdapter:AC120V/60Hz)
Temp°C/Humi% : 24deg.C / 33%
Operator : Hiroka Umeyama

Mode / Remarks : Bluetooth, Tx 2441MHz, PRBS9, Packet DH5

LIMIT : FCC15C §15.207 (QP)
FCC15C §15.207 (AV)

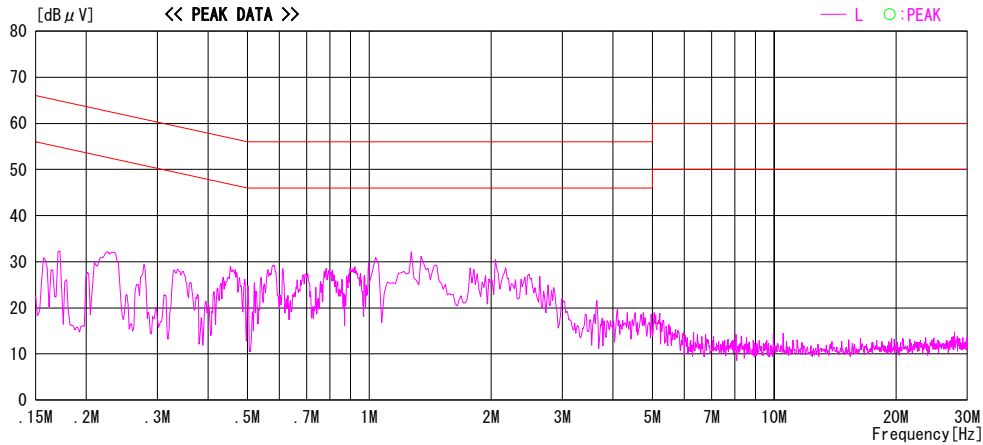
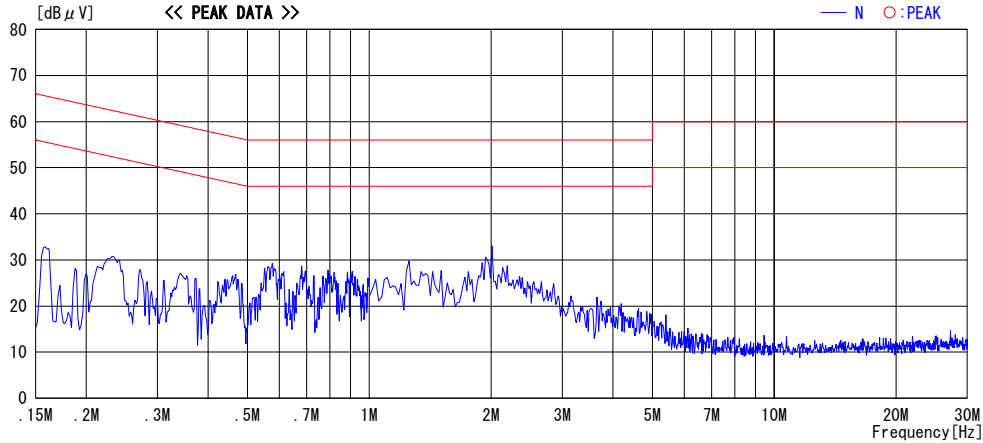


CHART:WITH FACTOR, Peak hold data. Data is uncorrected. CALCURATION:RESULT=READING+C.F (LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2005/05/16 17:26:06

Applicant : Sharp Corporation
Kind of EUT : GSM & WCDMA Cellular Phone
Model No. : 903SH
Serial No. : 004400/01/047613/1

Report No. : 25HE0267-HO
Power : DC4.0V (ACAdapter: AC120V/60Hz)
Temp°C/Humi% : 24deg.C / 33%
Operator : Hiroka Umeyama

Mode / Remarks : Bluetooth, Tx 2480MHz, PRBS9, Packet DH5

LIMIT : FCC15C § 15.207 (QP)
FCC15C § 15.207 (AV)

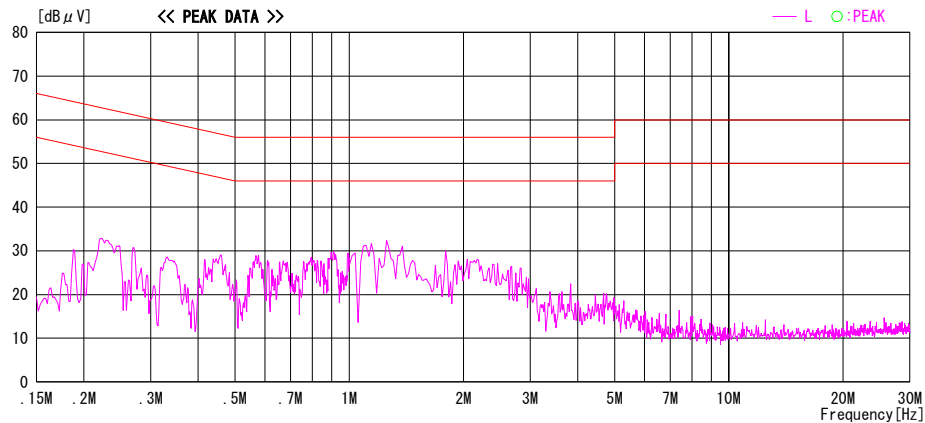
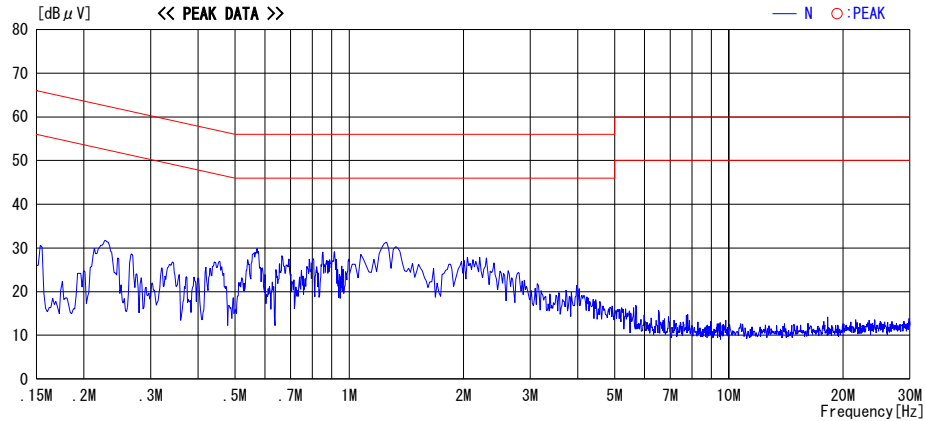


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

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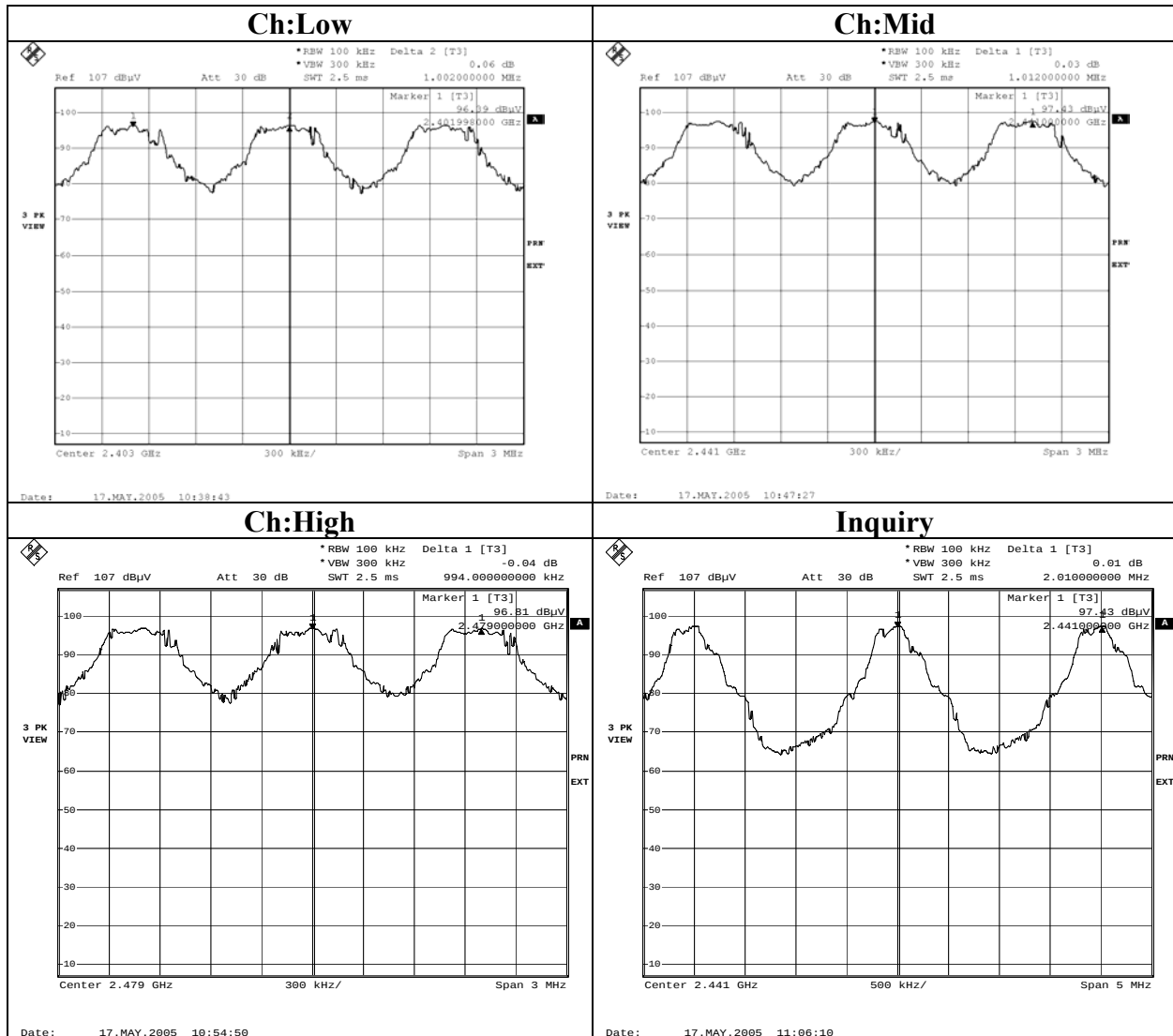
Carrier Frequency Separation

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

COMPANY	: Sharp Corporation	REGULATION	: Fcc Part15 Subpart C 15.247(a)(1)
EQUIPMENT	: GSM & WCDMA Cellular phone	TEST DISTANCE	: -
MODEL	: 903SH	DATE	: 05/17/2005
S/ N	: 004400/01/047609/9	TEMPERATURE	: 23deg.C
POWER	: AC120V/60Hz(DC4.0V)	HUMIDITY	: 48%
MODE	: Tx(Hopping on)/Inquiry	ENGINEER	: Yutaka Yoshida

Ch	Freq. [MHz]	Channel separation [MHz]	Limit
Low	2402.0	1.002	>20dB Bandwidth and 25[kHz]
Mid	2441.0	1.012	>20dB Bandwidth and 25[kHz]
High	2480.0	0.994	>20dB Bandwidth and 25[kHz]
Inquiry	2441.0	2.010	>20dB Bandwidth and 25[kHz]

Carrier Frequency Separation



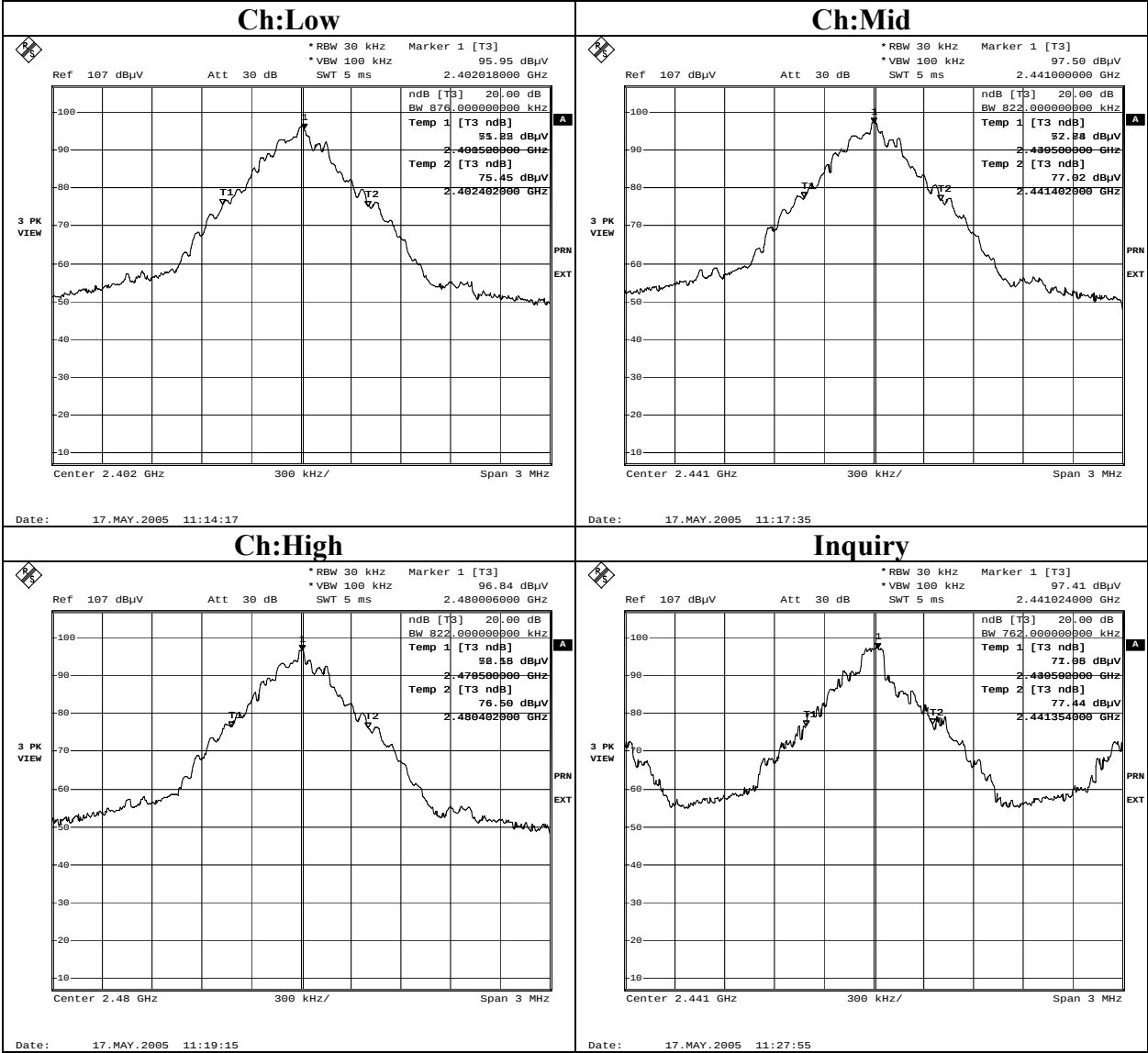
20dB Bandwidth

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

COMPANY	: Sharp Corporation	REGULATION	: Fcc Part15 Subpart C 15.247(a)(1)
EQUIPMENT	: GSM & WCDMA Cellular phone	TEST DISTANCE	: -
MODEL	: 903SH	DATE	: 05/17/2005
S/ N	: 004400/01/047609/9	TEMPERATURE	: 23deg.C
POWER	: AC120V/60Hz(DC4.0V)	HUMIDITY	: 48%
MODE	: Tx (Hopping off) /Inquiry	ENGINEER	: Yutaka Yoshida

Ch	Freq.	20dB Bandwidth	Limit
	[MHz]	[MHz]	[MHz]
Low	2402.0	0.876	-
Mid	2441.0	0.822	-
High	2480.0	0.822	-
Inquiry	2441.0	0.762	-

20dB Bandwidth



Number of Hopping Frequency

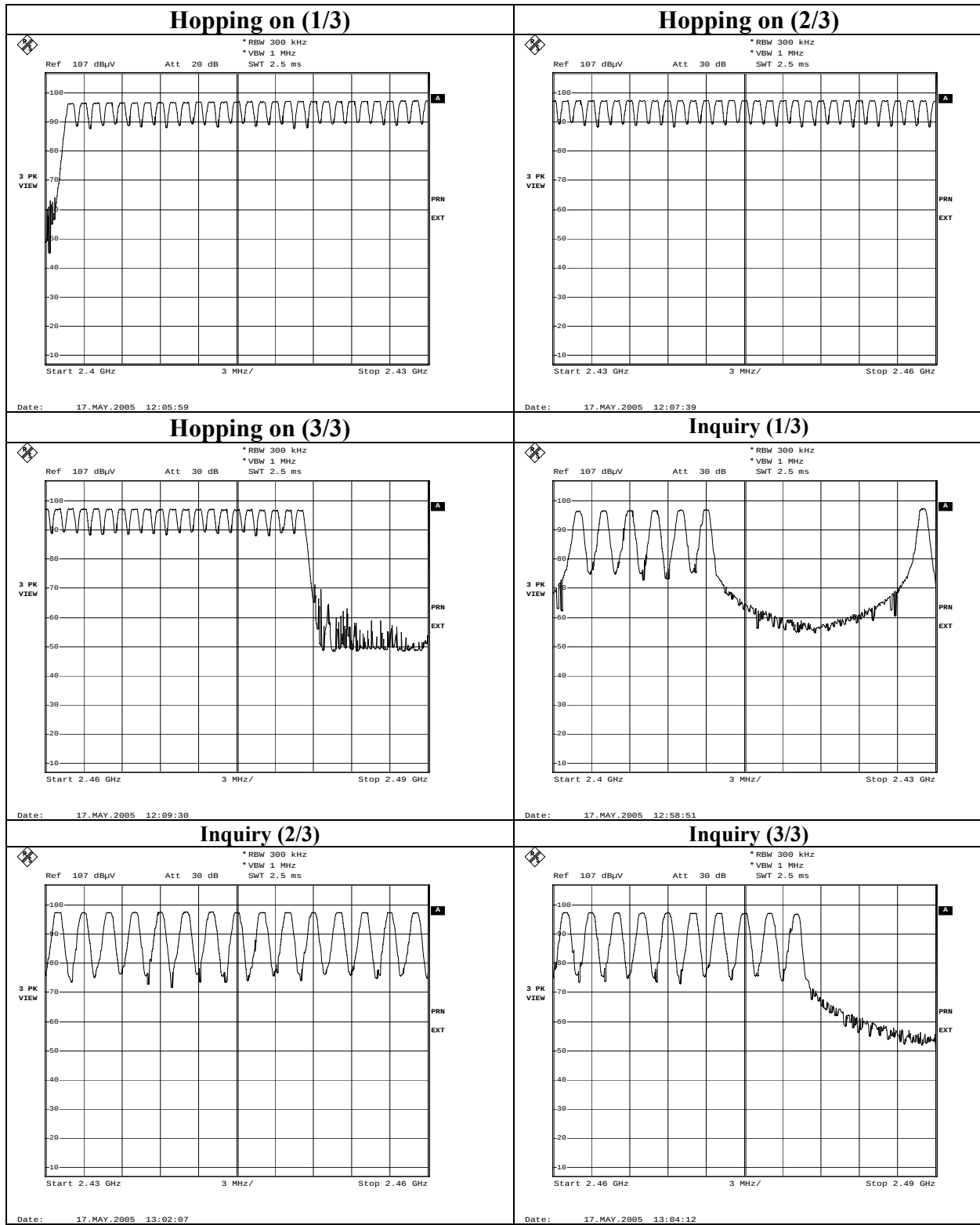
Head Office EMC Lab. No.3 Shielded Room

COMPANY	: Sharp Corporation	REGULATION	: Fcc Part15 Subpart C 15.247(a)(1)(iii)
EQUIPMENT	: GSM & WCDMA Cellular phone	TEST DISTANCE	: -
MODEL	: 903SH	DATE	: 05/17/2005
S/ N	: 004400/01/047609/9	TEMPERATURE	: 23deg.C
POWER	: AC120V/60Hz(DC4.0V)	HUMIDITY	: 48%
MODE	: Tx (Hopping on) /Inquiry	ENGINEER	: Yutaka Yoshida

Mode	Number of channel	Limit
	[time]	[time]
Tx(Hoppng on)	79	≥ 15

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

Number of Hopping Frequency



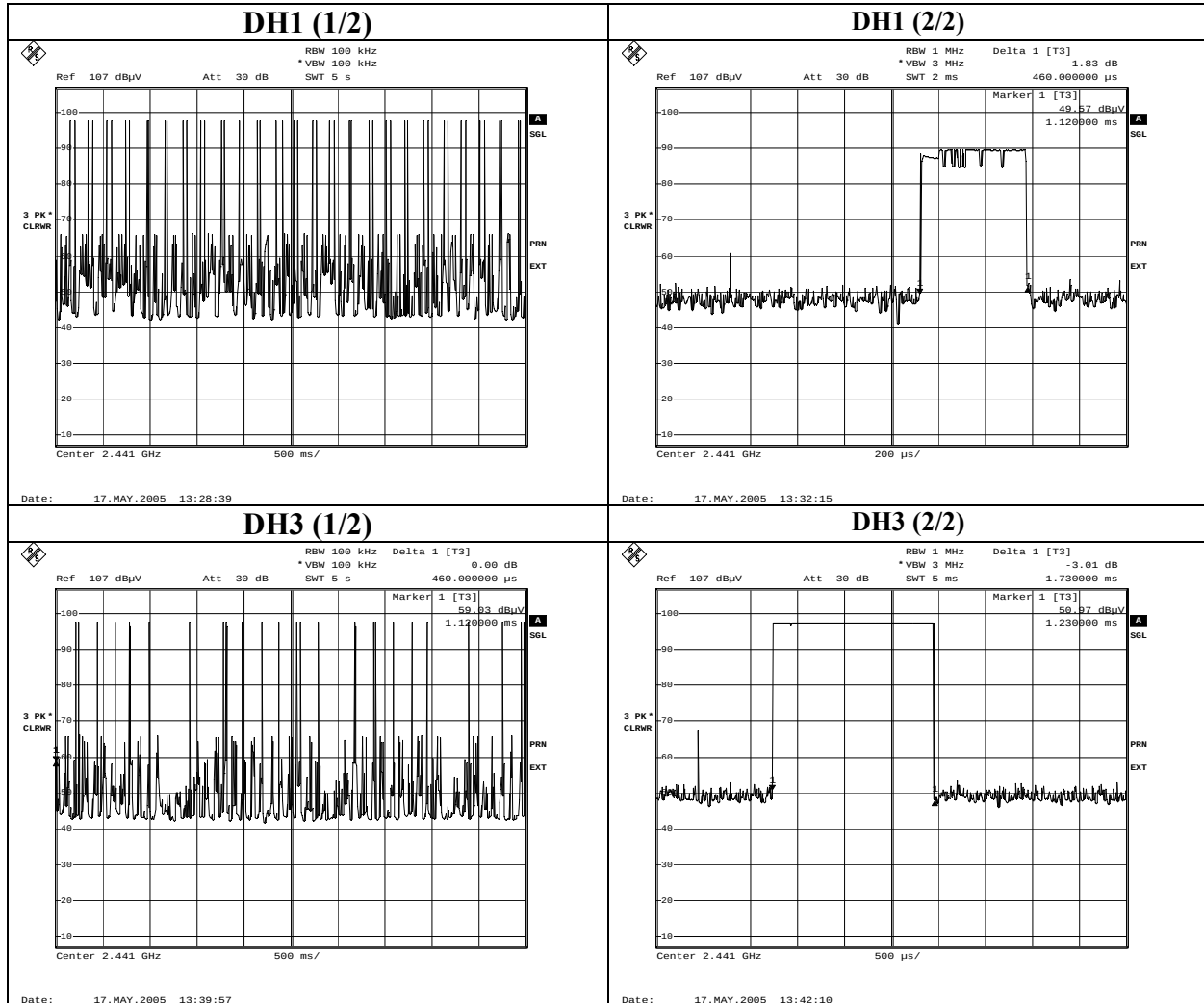
Dwell time

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

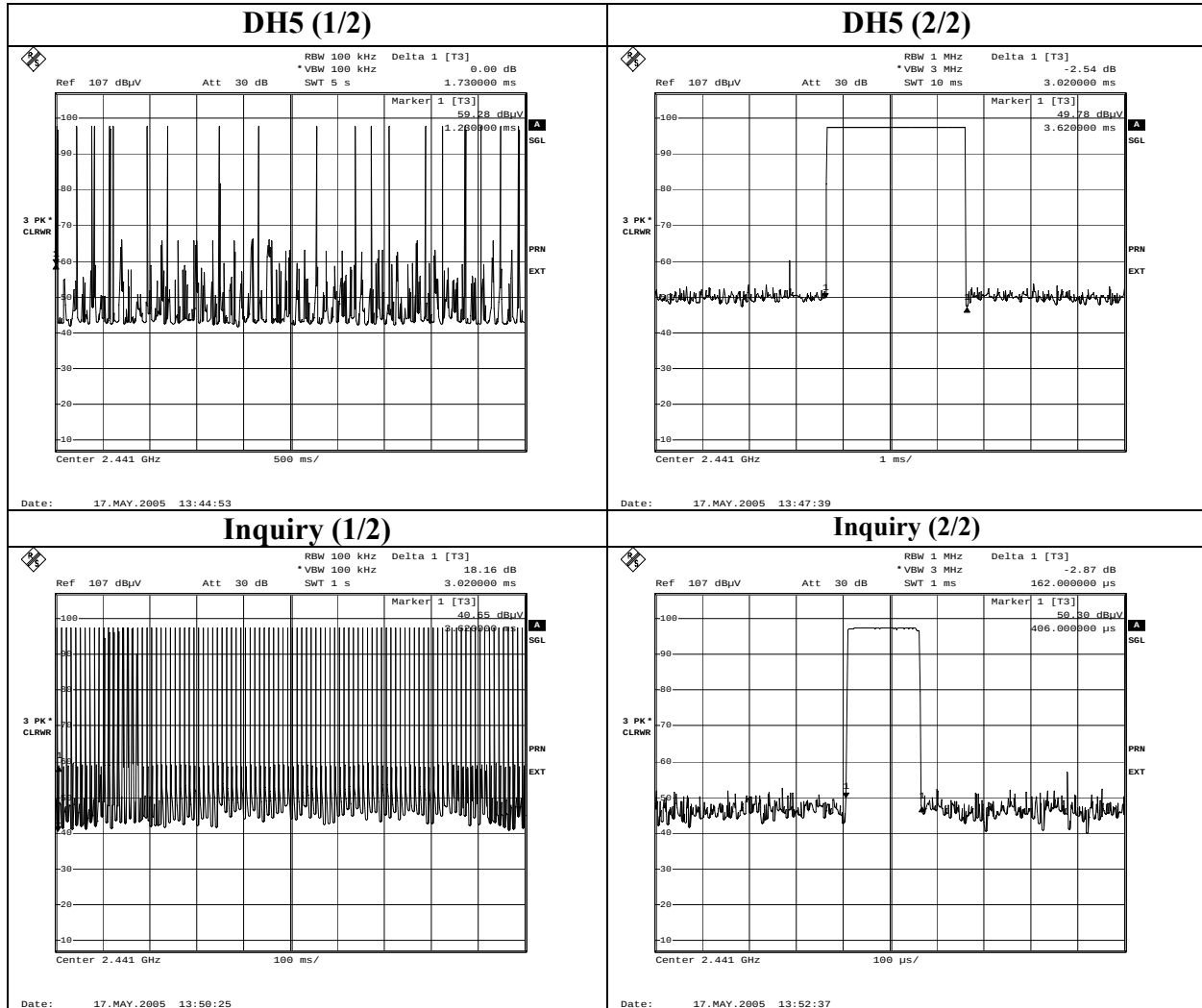
COMPANY	: Sharp Corporation	REGULATION	: Fcc Part15 Subpart C 15.247(a)(1)(iii)
EQUIPMENT	: GSM & WCDMA Cellular phone	TEST DISTANCE	: -
MODEL	: 903SH	DATE	: 05/17/2005
S/ N	: 004400/01/047609/9	TEMPERATURE	: 23deg.C
POWER	: AC120V/60Hz(DC4.0V)	HUMIDITY	: 48%
MODE	: Tx (Hopping on) /Inquiry	ENGINEER	: Yutaka Yoshida

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	49 times /5sec. x 31.6 = 310 times	0.460	143	400
DH3	25 times / 5sec. x 31.6 = 158 times	1.730	273	400
DH5	20 times / 5 sec. x 31.6 = 126.4 times	3.020	382	400
Inquiry	100 times / 1sec. x 12.8 = 1280 times	0.162	215	400

Dwell time



Dwell time



Maximum Peak Output Power

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

COMPANY	: Sharp Corporation	REGULATION	: Fcc Part15 Subpart C 15.247(b)(1)
EQUIPMENT	: GSM & WCDMA Cellular phone	TEST DISTANCE	: -
MODEL	: 903SH	DATE	: 05/17/2005
S/ N	: 004400/01/047609/9	TEMPERATURE	: 23deg.C
POWER	: AC120V/60Hz(DC4.0V)	HUMIDITY	: 48%
MODE	: Tx (Hopping off) /Inquiry	ENGINEER	: Yutaka Yoshida

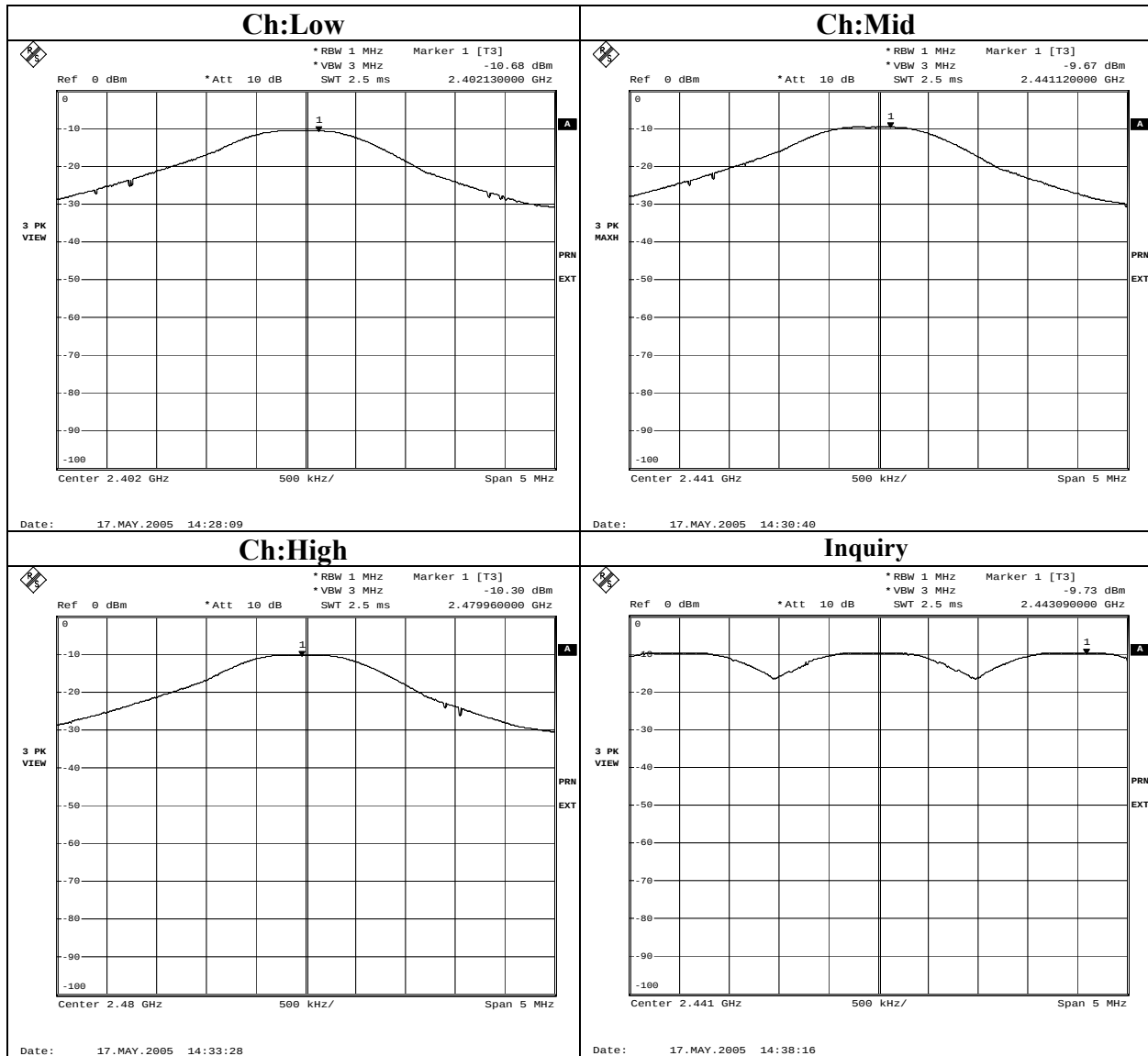
Ch	Freq. [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit (1W) [dBm]	Margin [dB]
Low	2402.1	-10.68	0.70	10.00	0.02	30.00	29.98
Mid	2441.1	-9.67	0.70	10.00	1.03	30.00	28.97
High	2480.0	-10.30	0.70	10.00	0.40	30.00	29.60
Inquiry	2443.1	-9.73	0.70	10.00	0.97	30.00	29.03

Sample Calculation:

Result = Reading + Cable Loss (including customer cable)+ Attenuator

* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

Maximum Peak Output Power



Radiated Spurious Emission

* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2005/05/16 15:30:44

Applicant : Sharp Corporation
Kind of EUT : GSM & WCDMA Cellular Phone
Model No. : 903SH
Serial No. : 004400/01/047613/1

Report No. : 25HE0267-HO
Power : DC4.0V (ACAdapter:AC120V/60Hz)
Temp/C/Humi% : 21 / 39%
Operator : Hiroka Umeyama

Mode / Remarks : Bluetooth, Tx 2402MHz, PRBS9, Packet DH5, X-Axis(MAX)

LIMIT : FCC15C §15.247(d) 3m, below 1GHz:QP, above 1GHz:AV
All other spurious emissions were less than 20dB for the limit.

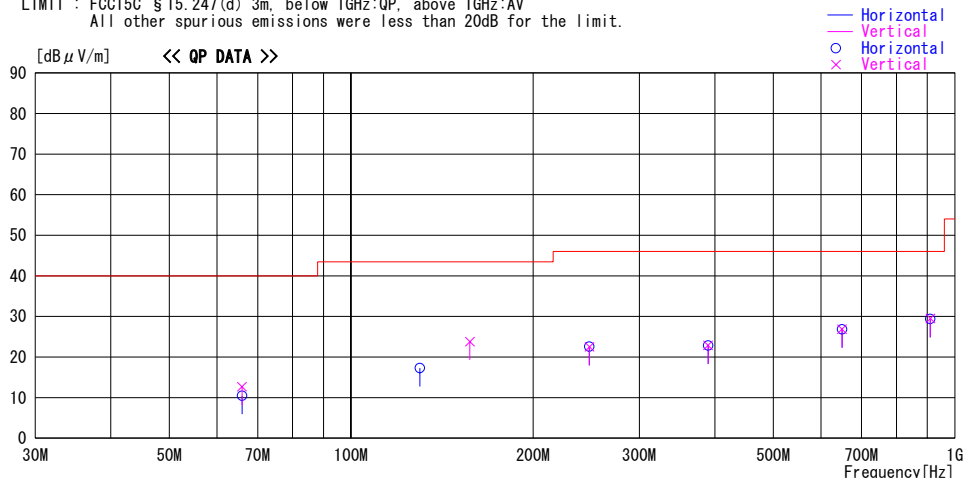


CHART:WITHOUT FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

Page:

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Radiated Spurious Emission

* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

DATA OF RADIATED EMISSION TEST

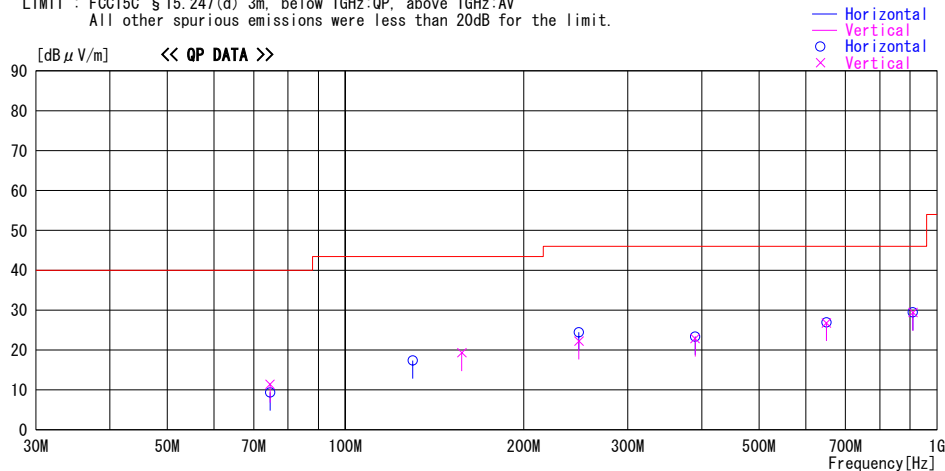
UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2005/05/16 16:14:34

Applicant : Sharp Corporation
Kind of EUT : GSM & WCDMA Cellular Phone
Model No. : 903SH
Serial No. : 004400/01/047613/1

Report No. : 25HE0267-HO
Power : DC4.0V (ACAdapter:AC120V/60Hz)
Temp°C/Humi% : 21 / 39%
Operator : Hiroka Umeyama

Mode / Remarks : Bluetooth, Tx 2441MHz, PRBS9, Packet DH5, X-Axis(MAX)

LIMIT : FCC15C §15.247(d) 3m, below 1GHz:OP, above 1GHz:AV
All other spurious emissions were less than 20dB for the limit.



No.	FREQ [MHz]	READING QP [dB μ V]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB μ V/m]	LIMIT [dB μ V/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	74.600	22.6	6.8	7.6	27.6	9.4	40.0	30.6	300	350
2	130.000	22.9	13.7	8.5	27.7	17.4	43.5	26.1	295	248
3	248.000	24.5	17.4	9.6	27.0	24.5	46.0	21.5	100	168
4	390.000	22.7	17.7	10.7	27.7	23.4	46.0	22.6	130	345
5	650.000	23.1	20.4	12.0	28.6	26.9	46.0	19.1	100	209
6	910.000	23.3	21.6	13.1	28.5	29.5	46.0	16.5	250	120
----- Vertical -----										
7	74.600	24.6	6.8	7.6	27.6	11.4	40.0	28.6	100	145
8	157.320	22.7	15.5	8.7	27.6	19.3	43.5	24.2	100	354
9	248.000	22.2	17.4	9.6	27.0	22.2	46.0	23.8	100	354
10	390.000	22.2	17.7	10.7	27.7	22.9	46.0	23.1	165	110
11	650.000	23.0	20.4	12.0	28.6	26.8	46.0	19.2	150	0
12	910.000	23.2	21.6	13.1	28.5	29.4	46.0	16.6	155	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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Radiated Spurious Emission

* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

DATA OF RADIATED EMISSION TEST

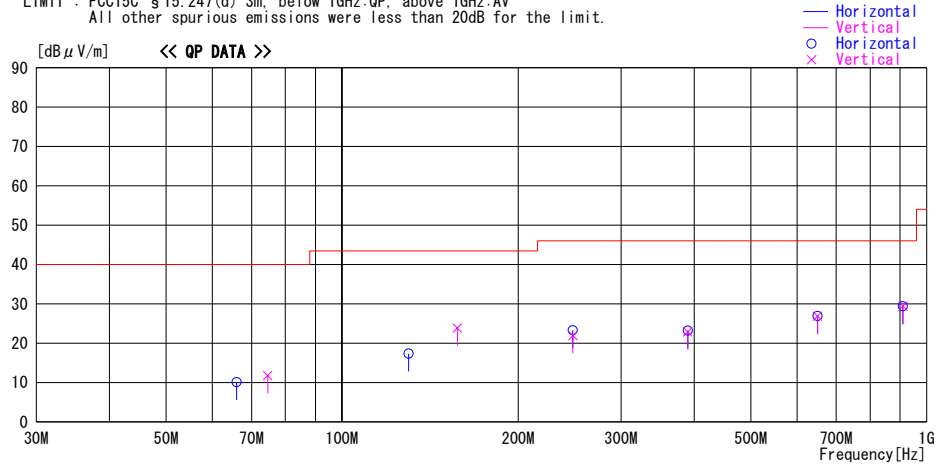
UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2005/05/16 16:41:46

Applicant : Sharp Corporation
Kind of EUT : GSM & WCDMA Cellular Phone
Model No. : 903SH
Serial No. : 004400/01/047613/1

Report No. : 25HE0267-HO
Power : DC4.0V (ACAdapter: AC120V/60Hz)
Temp/C/Humi% : 21 / 39%
Operator : Hiroka Umeyama

Mode / Remarks : Bluetooth, Tx 2480MHz, PRBS9, Packet DH5, X-Axis (MAX)

LIMIT : FCC15C §15.247(d) 3m, below 1GHz:QP, above 1GHz:AV
All other spurious emissions were less than 20dB for the limit.



No.	FREQ [MHz]	READING QP [dB μ V]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dB μ V/m]	LIMIT [dB μ V/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	66.000	22.7	7.5	7.5	27.6	10.1	40.0	29.9	260	352
2	130.000	22.9	13.7	8.5	27.7	17.4	43.5	26.1	295	248
3	248.000	23.3	17.4	9.6	27.0	23.3	46.0	22.7	320	300
4	390.000	22.5	17.7	10.7	27.7	23.2	46.0	22.8	130	345
5	650.000	23.1	20.4	12.0	28.6	26.9	46.0	19.1	100	200
6	910.000	23.2	21.6	13.1	28.5	29.4	46.0	16.6	250	120
----- Vertical -----										
7	74.600	25.0	6.8	7.6	27.6	11.8	40.0	28.2	100	145
8	157.400	27.3	15.5	8.7	27.6	23.9	43.5	19.6	100	209
9	248.000	22.0	17.4	9.6	27.0	22.0	46.0	24.0	100	209
10	390.000	22.2	17.7	10.7	27.7	22.9	46.0	23.1	165	110
11	650.000	23.1	20.4	12.0	28.6	26.9	46.0	19.1	150	0
12	910.000	23.2	21.6	13.1	28.5	29.4	46.0	16.6	155	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:

Radiated Spurious Emission

UL Apex Co., Ltd.

Head Office EMC Lab. No.1 Semi Anechoic Chamber

Company	: Sharp Corporation	REPORT NO	: 25HE0267-HO
Equipment	: GSM & WCDMA Cellular Phone	REGULATION	: Fcc Part15 Subpart C 15.247(d)
Model	: 903SH	TEST DISTANCE	: 3/1m
Sample No.	: 004400/01/047613/1	DATE	: 16/05/2005
Power	: AC 120 V / 60 Hz(DC 4.0V)	TEMPERATURE	: 21deg.C
Mode	: Bluetooth, Tx 2402MHz	HUMIDITY	: 39%
Remarks	: Max-axis(Hor : X-axis, Ver : X-axis)	ENGINEER	: Hiroka Umeyama

PK DETECT (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2390.0	66.1	66.5	31.0	39.9	2.6	0.0	59.8	60.2	74.0	14.2	13.8
3	4804.0	56.2	58.1	34.9	41.2	4.4	0.1	54.4	56.3	74.0	19.6	17.7
4	7206.0	49.5	49.8	37.6	40.4	5.3	0.0	52.0	52.3	74.0	22.0	21.7
5	9608.0	47.3	49.2	36.3	39.5	5.6	0.0	49.7	51.6	74.0	24.3	22.4
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
6	12010.0	48.8	48.7	41.4	39.6	6.6	0.0	47.7	47.6	74.0	26.3	26.4
7	14412.0	48.4	48.4	41.7	41.0	6.7	0.0	46.3	46.3	74.0	27.7	27.7
8	16814.0	48.8	48.8	44.7	41.7	7.1	0.0	49.4	49.4	74.0	24.6	24.6
9	19216.0	46.1	45.5	41.7	40.3	7.6	0.0	45.6	45.0	74.0	28.4	29.0
10	21618.0	46.8	46.4	40.4	35.4	8.2	0.0	50.5	50.1	74.0	23.5	23.9
11	24020.0	46.5	46.1	41.0	32.9	8.2	0.0	53.3	52.9	74.0	20.7	21.1

AV DETECT (RBW: 1MHz, VBW: 10Hz)

No.	FREQ	S/A READING		ANT Factor	AMP GAIN	CABLE LOSS	Hi-Pass Filter	RESULT		Limit AV	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
	[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]		[dBuV/m]	[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2390.0	43.9	43.9	31.0	39.9	2.6	0.0	37.6	37.6	54.0	16.4	16.4
3	4804.0	44.1	44.0	34.9	41.2	4.4	0.1	42.3	42.2	54.0	11.7	11.8
4	7206.0	35.7	35.6	37.6	40.4	5.3	0.0	38.2	38.1	54.0	15.8	15.9
5	9608.0	35.4	36.0	36.3	39.5	5.6	0.0	37.8	38.4	54.0	16.2	15.6
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
6	12010.0	37.3	35.9	41.4	39.6	6.6	0.0	36.2	34.8	54.0	17.8	19.2
7	14412.0	35.5	35.5	41.7	41.0	6.7	0.0	33.4	33.4	54.0	20.6	20.6
8	16814.0	35.6	35.7	44.7	41.7	7.1	0.0	36.2	36.3	54.0	17.8	17.7
9	19216.0	32.6	32.7	41.7	40.3	7.6	0.0	32.1	32.2	54.0	21.9	21.8
10	21618.0	33.1	33.2	40.4	35.4	8.2	0.0	36.8	36.9	54.0	17.2	17.1
11	24020.0	33.1	33.2	41.0	32.9	8.2	0.0	39.9	40.0	54.0	14.1	14.0

20dBc(Fundamental 2402MHz) (RBW: 100kHz, VBW: 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	[dB]
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
0	2402.0	109.9	104.2	30.9	39.9	2.7	0.0	103.6	97.9	-	-	-
2	2400.0	68.9	65.5	30.9	39.9	2.6	0.0	62.5	59.1	Funda-20dB	21.1	18.8

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

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

*In the frequency over the fifth harmonic, the noise from the EUT was not seen. The data above is its base noise.

*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

*Hi-Pass Filter was not used for factor 0.0dB of the above table.

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Radiated Spurious Emission

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

Company : Sharp Corporation	REPORT NO : 25HE0267-HO
Equipment : GSM & WCDMA Cellular Phone	REGULATION : Fcc Part15 Subpart C 15.247(d)
Model : 903SH	TEST DISTANCE : 3/1m
Sample No. : 004400/01/047613/1	DATE : 16/05/2005
Power : AC 120 V / 60 Hz(DC 4.0V)	TEMPERATURE : 21deg.C
Mode : Bluetooth, Tx 2441MHz	HUMIDITY : 39%
Remarks : Max-axis(Hor : X-axis, Ver : X-axis)	ENGINEER : Hiroka Umeyama

PK DETECT (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	4882.0	57.8	57.0	35.3	41.2	4.4	0.1	56.4	55.6	74.0	17.6	18.4
2	7323.0	49.3	49.3	37.8	40.4	5.3	0.0	52.0	52.0	74.0	22.0	22.0
3	9764.0	47.8	48.5	36.2	39.6	5.6	0.0	50.0	50.7	74.0	24.0	23.3
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
4	12205.0	50.8	50.0	41.5	39.8	6.6	0.2	49.8	49.0	74.0	24.2	25.0
5	14646.0	48.6	48.4	42.2	40.9	6.7	0.0	47.1	46.9	74.0	26.9	27.1
6	17087.0	47.1	46.8	44.5	41.8	7.1	0.0	47.4	47.1	74.0	26.6	26.9
7	19528.0	45.5	46.3	41.4	39.8	7.9	0.0	45.5	46.3	74.0	28.5	27.7
8	21969.0	48.2	47.6	40.5	35.9	8.2	0.0	51.5	50.9	74.0	22.5	23.1
9	24410.0	45.2	41.1	41.1	33.8	8.4	0.0	51.4	47.3	74.0	22.6	26.7

AV DETECT (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	4882.0	44.0	44.1	35.3	41.2	4.4	0.1	42.6	42.7	54.0	11.4	11.3
2	7323.0	35.4	35.5	37.8	40.4	5.3	0.0	38.1	38.2	54.0	15.9	15.8
3	9764.0	35.4	37.4	36.2	39.6	5.6	0.0	37.6	39.6	54.0	16.4	14.4
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
4	12205.0	36.5	36.3	41.5	39.8	6.6	0.2	35.5	35.3	54.0	18.5	18.7
5	14646.0	35.1	32.5	42.2	40.9	6.7	0.0	33.6	31.0	54.0	20.4	23.0
6	17087.0	32.6	32.8	44.5	41.8	7.1	0.0	32.9	33.1	54.0	21.1	20.9
7	19528.0	32.3	32.3	41.4	39.8	7.9	0.0	32.3	32.3	54.0	21.7	21.7
8	21969.0	35.1	35.1	40.5	35.9	8.2	0.0	38.4	38.4	54.0	15.6	15.6
9	24410.0	32.3	32.4	41.1	33.8	8.4	0.0	38.5	38.6	54.0	15.5	15.4

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

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

*In the frequency over the fifth harmonic, the noise from the EUT was not seen. The data above is its base noise.

*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

*Hi-Pass Filter was not used for factor 0.0dB of the above table.

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MF060b(10.04.03)

Radiated Spurious Emission

DATA OF SPURIOUS EMISSIONS(1GHz to 26GHz)

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

Company : Sharp Corporation	REPORT NO : 25HE0267-HO
Equipment : GSM & WCDMA Cellular Phone	REGULATION : Fcc Part15 Subpart C 15.247(d)
Model : 903SH	TEST DISTANCE : 3/1m
Sample No. : 004400/01/047613/1	DATE : 16/05/2005
Power : AC 120 V / 60 Hz(DC 4.0V)	TEMPERATURE : 21deg.C
Mode : Bluetooth, Tx 2480MHz	HUMIDITY : 39%
Remarks : Max-axis(Hor : X-axis, Ver : X-axis)	ENGINEER : Hiroka Umeyama

PK DETECT (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2483.5	77.3	77.5	30.8	40.0	2.5	0.0	70.6	70.8	74.0	3.4	3.2
2	4960.0	58.1	58.0	35.8	41.3	4.4	0.2	57.2	57.1	74.0	16.8	16.9
3	7440.0	48.9	49.6	37.9	40.3	5.3	0.1	51.9	52.6	74.0	22.1	21.4
4	9920.0	48.3	47.9	36.2	39.6	5.8	0.0	50.7	50.3	74.0	23.3	23.7
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
5	12400.0	48.9	48.8	41.6	40.0	6.6	0.0	47.6	47.5	74.0	26.4	26.5
6	14880.0	49.8	50.2	42.6	40.9	6.9	0.0	48.9	49.3	74.0	25.1	24.7
7	17360.0	48.7	49.1	44.4	41.6	7.1	0.0	49.1	49.5	74.0	24.9	24.5
8	19840.0	45.1	45.2	41.1	39.4	8.0	0.0	45.3	45.4	74.0	28.7	28.6
9	22320.0	46.9	47.8	40.4	35.3	8.2	0.0	50.7	51.6	74.0	23.3	22.4
10	24800.0	45.8	46.9	41.1	34.6	8.6	0.0	51.4	52.5	74.0	22.6	21.5

AV DETECT (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2483.5	49.0	49.1	30.8	40.0	2.5	0.0	42.3	42.4	54.0	11.7	11.6
2	4960.0	44.2	44.3	35.8	41.3	4.4	0.2	43.3	43.4	54.0	10.7	10.6
3	7440.0	36.1	36.0	37.9	40.3	5.3	0.1	39.1	39.0	54.0	14.9	15.0
4	9920.0	34.9	35.5	36.2	39.6	5.8	0.0	37.3	37.9	54.0	16.7	16.1
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
5	12400.0	35.7	36.0	41.6	40.0	6.6	0.0	34.4	34.7	54.0	19.6	19.3
6	14880.0	35.4	35.5	42.6	40.9	6.9	0.0	34.5	34.6	54.0	19.5	19.4
7	17360.0	35.0	35.4	44.4	41.6	7.1	0.0	35.4	35.8	54.0	18.6	18.2
8	19840.0	32.2	32.1	41.1	39.4	8.0	0.0	32.4	32.3	54.0	21.6	21.7
9	22320.0	34.3	34.3	40.4	35.3	8.2	0.0	38.1	38.1	54.0	15.9	15.9
10	24800.0	33.5	33.7	41.1	34.6	8.6	0.0	39.1	39.3	54.0	14.9	14.7

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

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

*In the frequency over the fifth harmonic, the noise from the EUT was not seen. The data above is its base noise.

*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

*Hi-Pass Filter was not used for factor 0.0dB of the above table.

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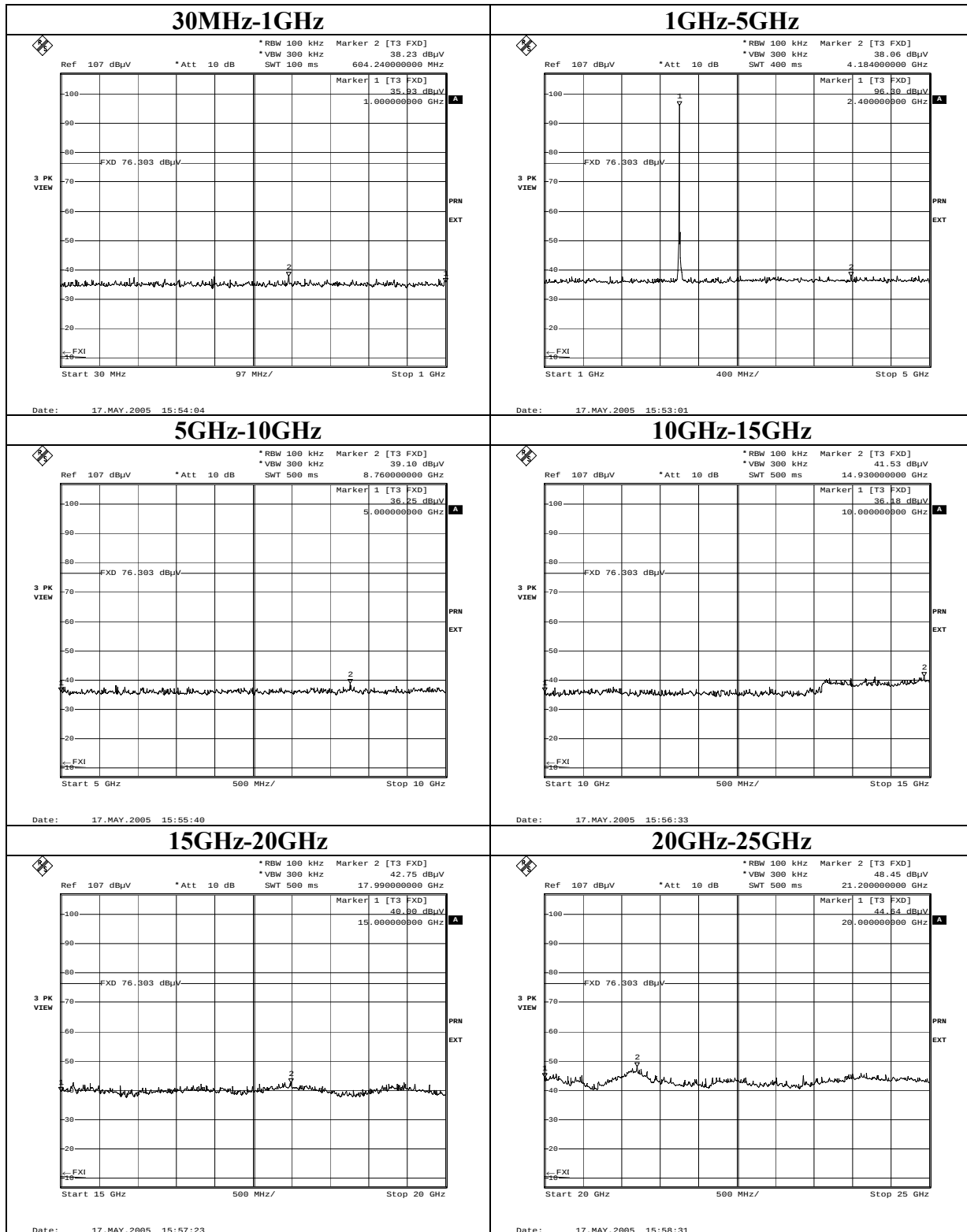
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Conducted Spurious Emission

Ch:Low

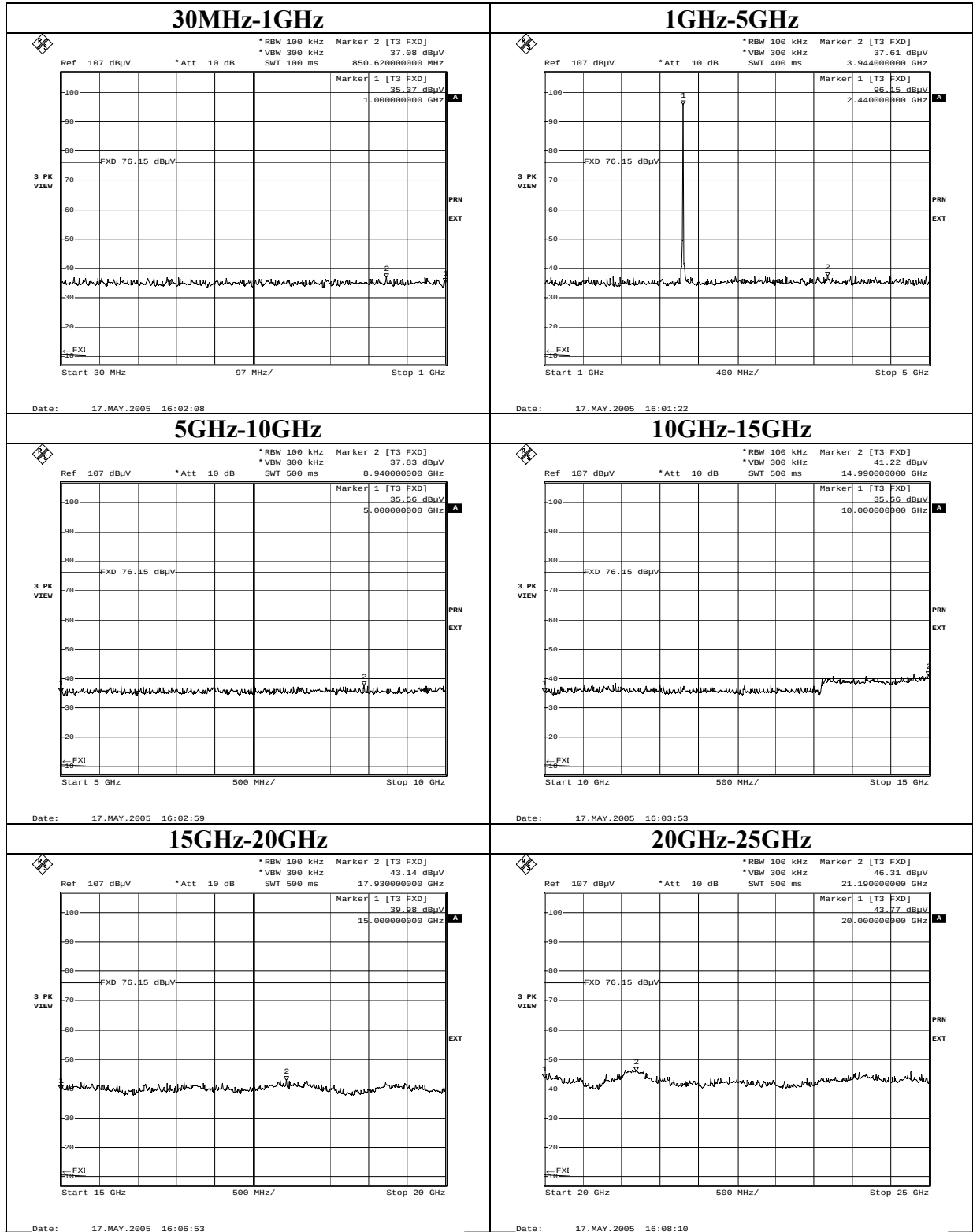


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Conducted Spurious Emission

Ch:Mid



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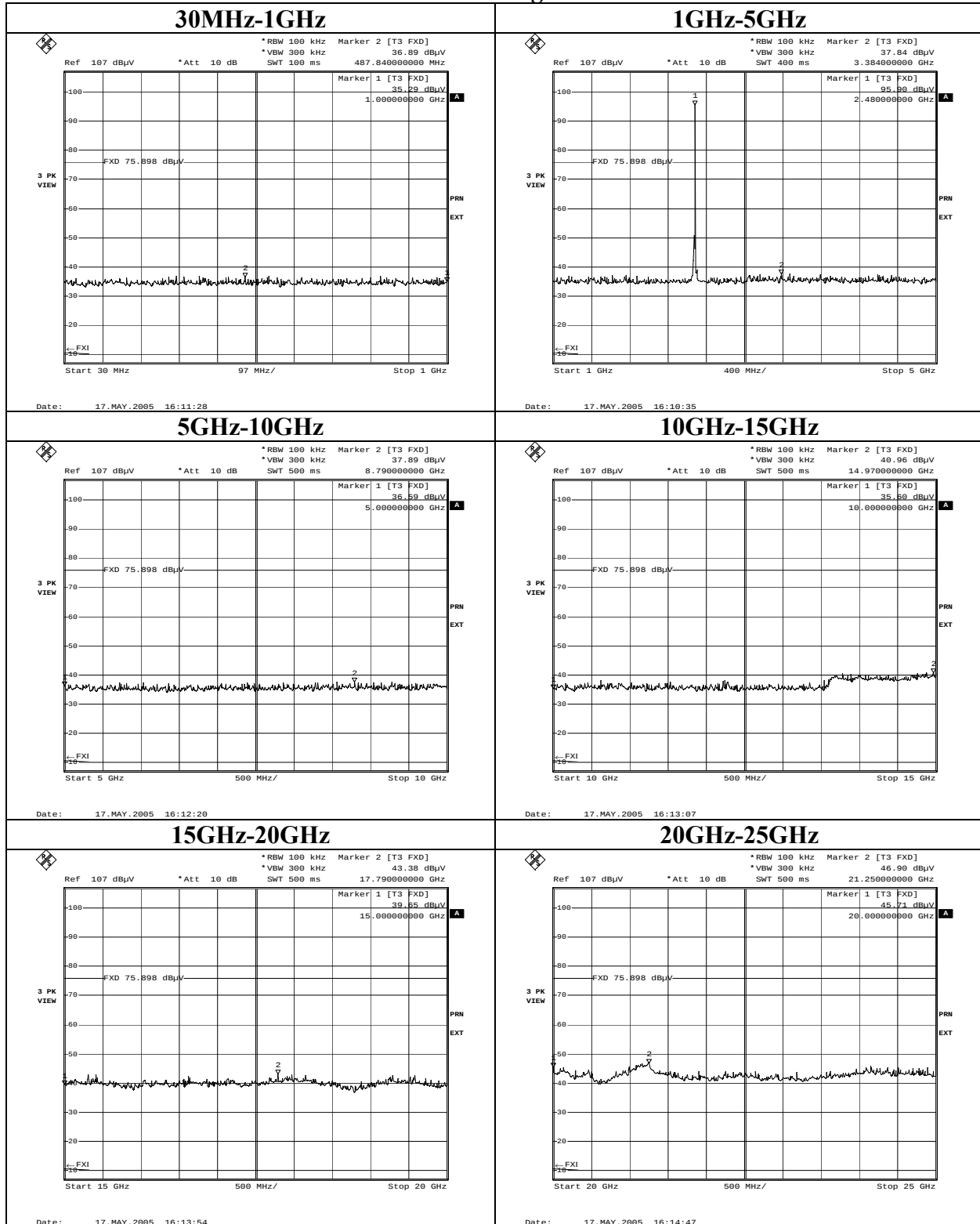
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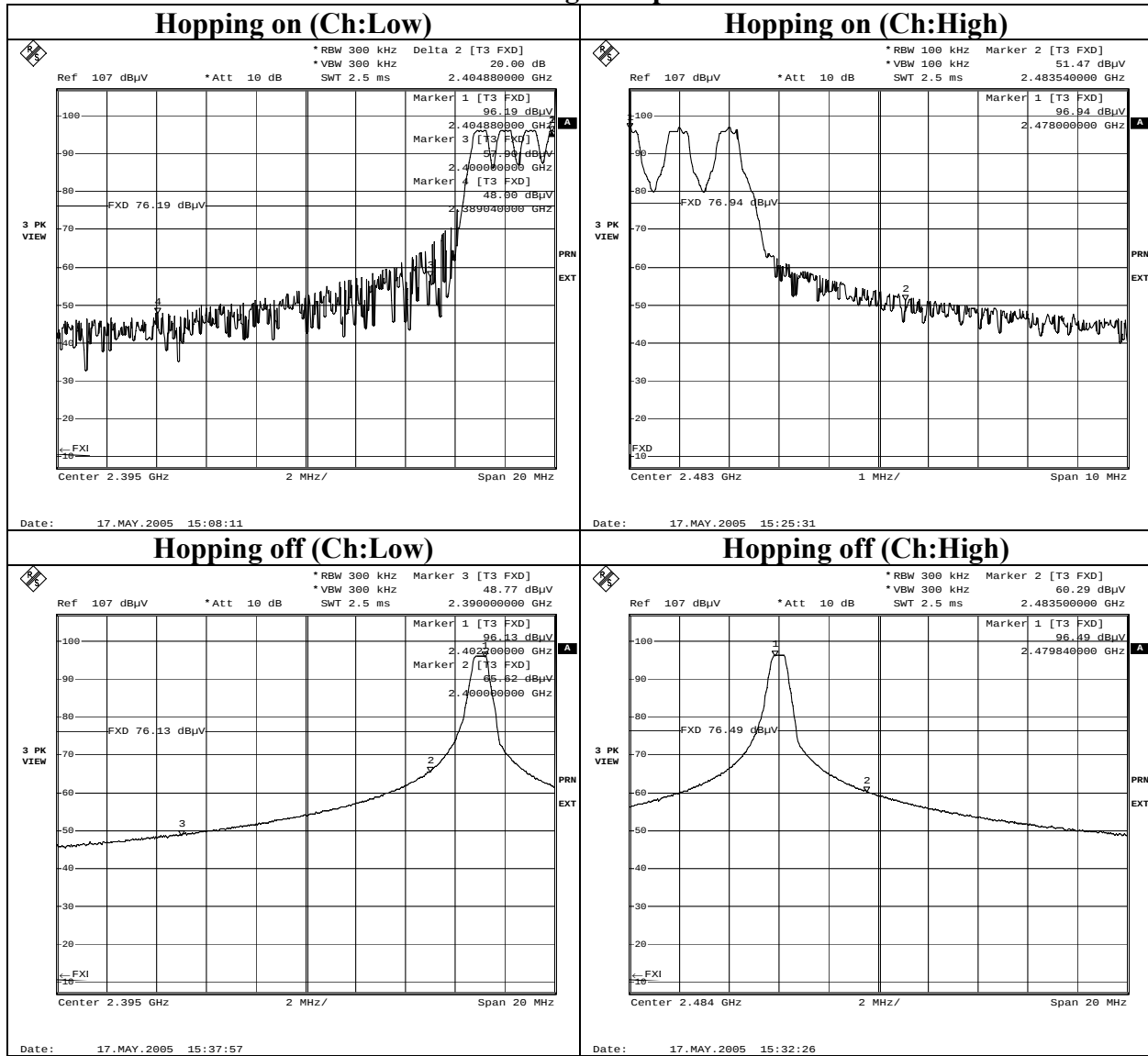
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Conducted Spurious Emission

Ch:High



Conducted Spurious Emission Band Edge compliance



99% Occupied Bandwidth

