T E S T R E P O R T

REPORT NUMBER	:	ANKK–102291
APPLICANT	:	CASIO COMPUTER CO., LTD.
MODEL NUMBER	:	DT-X10M30URC
FCC ID	:	BBQDT-X10M30URC
REGULATION	:	FCC Part15C Section 15.247 (Direct Sequence Spred Spectrum Systems)

NVLAP LAB CODE 100290–0

NVLAP accreditation is valid for FCC Part15 (Digital Devices), CISPR22 and AS/NZS 3548. NVLAP accreditation does not cover ICES–003.

Akzo Nobel K. K.
EMC Division
Kashima Site

1, Oaza Sunayama, Hasaki-machi, Kashima-gun
Ibaraki-ken, 314-0255 Japan
Tel.: +81 479 40 1097 Fax.: +81 479 46 1788

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ABBREVIATIONS

LISN = Line Impedance Stabilization Network

AMN = Artificial Mains Network

ANT = Antenna

BBA = Broad–band Antenna

DIP = Dipole Antenna

AMP = Amplifier

ATT = Attenuator

EUT = Equipment Under Test

Q–P = Quasi–peak

AVG = Average

Ch = Channel

CCK = Complementary Code Keying

SECTION 1. TEST CERTIFICATION

APPLICANT INFORMATION

Company	:	CASIO COMPUTER CO., LTD.
Address	:	3-2-1, Sakae-cho, Hamura-shi, Tokyo, 205-0002 Japan
Telephone number	:	+81 042 563 1115
Fax number	:	+81 042 563 2456

DESCRIPTION OF TEST ITEM

Kind of equipment	:	Handheld Terminal
Condition of equipment	:	Pre-Production
Type	:	Table–Top (Handheld type)
Trademark	:	CASIO
FCC ID	:	BBQDT-X10M30URC
Model number	:	DT-X10M30URC
Serial number	:	CS94

TEST PERFORMED

Location	:	Kashima No. 3 Test Site (FCC Reg. No. : 90433)
EUT received	:	December 20, 2002
Test started	:	February 10, 2003
Test completed	:	March 12, 2003
Regulation	:	FCC Part15 Subpart C Section 15.247 Intentional Radiators
Test setup	:	ANSI C63.4–1992

Report issue date : March 14, 2003

Test engineer : Kazuo Masuda

Report approved by : Takeshi Yamanaka
[Site Manager]

On the basis of the measurements made, the equipment tested is capable of operation in compliance with the requirements of Part 15 of the FCC Rules under normal use and maintenance.

Note

a. The test result of this report is effective for equipment under test itself and under the test configuration described on the report.

b. This test report does not assure that whether the test result taken in other testing laboratory is compatible or reproducible to the test result on this report or not.

c. This test report shall not be reproduced except in full, without issuer's permission.

SECTION 2. SUMMARY OF RESULTS

Test	Reference	Result
Minimum 6dB Bandwidth	15.247(a)(2)	Pass
Maximum Peak Output Power	15.247(b)	Pass
Spurious Emissions - RF Antenna Conducted Test	15.247(c)	Pass
Spurious Emissions - Radiated Emission Test	15.247(c) 15.205 15.209	Pass
Power Spectral Density	15.247(d)	Pass
Antenna Requirement	15.203	Pass Note1
Restricted Bands of Operation	15.247(c) 15.205 15.209	Pass
AC Conducted Emission	15.207	Pass

Note 1 : As for the detail of the Antenna Requirement, refer to separate attachment.
Note 2 : As for the FCC Part 15 Subpart B-Unintentional Radiators, the EUT has been measured and declared as DoC by CASIO COMPUTER CO., LTD.

SECTION 3. EQUIPMENT UNDER TEST

The equipment under test (EUT) consisted of the following equipment.
Indication in the following left side column corresponds to Section 6.

Symbol	Item	Model No.	Serial No.	FCC ID / DoC	Manufacturer	Remarks
A)	Handheld Terminal	DT-X10M30URC	CS94	BBQDT-X10M30URC	CASIO COMPUTER CO., LTD.	
B)	Satellite Cradle	DT-160IOE	FCC1	DoC	CASIO COMPUTER CO., LTD.	Option
C)	AC Adapter	MPC-577ADP	01X02304	N.A.	CASIO COMPUTER CO., LTD.	Option

Power ratings of EUT : DC 3.7V / 5V (1.5A)

DoC : Device for Declaration of Conformity

3.1 Overview of EUT

Operating Frequency Range	2412 – 2462 GHz
Access Method	IEEE 802.11b
Number of Operating Channel	11
Modulation Method	CCK
Data Transfer Rate	1 Mbps / 2 Mbps / 5.5 Mbps / 11 Mbps
Output RF Power	26.9mW
Antenna Gain	- 0.23dBi

3.2 Operating channels and frequencies

Ch	Frequency (MHz)	Ch	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437		

Note:

1. This is for sure that all frequencies are in 2412 MHz to 2462 MHz.
2. Section 15.31(m): Measurements on intentional radiators or receivers shall be performed at three frequencies for operating frequency range over 10 MHz. (The locations of these frequencies one near the low, one near the middle and one near the high.)
3. After test, the EUT operating frequencies are in 2412 MHz to 2462 MHz. So all the items as followed in testing report are need to test these three frequencies: low: ch 1, middle: ch 6, high: ch 11.

3.3 Port(s)/Connector(s) :

Port name	Connector type	Connector pin	Remarks
USB	mini B	5 pin	
Earphones Jack	mini pin-Jack	1 pin	

3.4 Oscillator(s)/Crystal(s) :

Oscillator	Operating frequency	Board name	Remarks
32.768 kHz	32.768 kHz	Main Board	Real Time Clock
3.68 MHz	25 MHz	Main Board	Audio
	50 MHz	Main Board	System
	100 MHz	Main Board	Memory Access
16.00 MHz	2402 – 2480 MHz	Main Board	Bluetooth Module Highest frequency
44.000 MHz	748 MHz	WCF Card	802.11b Module
	2074 MHz	WCF Card	802.11b Module

3.5 Variation of Model(s) :

Model	Scanning Method	Remarks
DT-X10M30URC	1 or 2 dimensions	Tested model
DT-X10M20URC	1 dimension only	

SECTION 4. SUPPORT EQUIPMENT USED

The EUT was supported by the following equipment during the test.
Indication in the following left side column corresponds to Section 6.

Symbol Item	Model No.	Serial No.	FCC ID / DoC	Manufacturer	Remarks
D) Headset	RBEM07	None	N.A.	Telephone Lease	
E) Computer	DCS	TG3VG	DoC	Dell Computer Corporation	
F) CRT Display	6543-476	97-48819	BEJCS587J	IBM CORPORATION	
G) Keyboard	SK-1000REW	M970431006	GYUR36SK	Dell Computer Corporation	
H) Serial Mouse	Mouse Port Compatible Mouse 2.1A	3406976-00000	C3KKMP1	Microsoft	
I) Printer	C3941A	JPCD204480	B94C3941A	HEWLETT PACKARD	

DoC : Device was tested and authorized under a Declaration of Conformity to the applicable FCC rules.

SECTION 5. CABLE (S) USED

The following cable(s) was used for the test.
Indication number in the following left side column corresponds to Section 6.

Number	Name	Length	Shield	Connector	Core
1)	USB cable	2.00 m	Yes	Metal	Fixed × 2
2)	Headset cable	1.10 m	None	Metal	
3)	Video cable	1.80 m	Yes	Metal	Fixed × 2
4)	Keyboard cable	1.80 m	Yes	Metal	
5)	Mouse cable	1.90 m	Yes	Metal	
6)	Centronics cable	2.40 m	Yes	Metal	
7)	Power cable for AC Adapter (DC)	1.80 m	None		Fixed × 1
8)	Power cable for AC Adapter (AC)	1.70 m	None		
9)	Power cable for Computer	1.80 m	None		
10)	Power cable for CRT Display	2.30 m	None		
11)	Power cable for Printer	2.20 m	None		

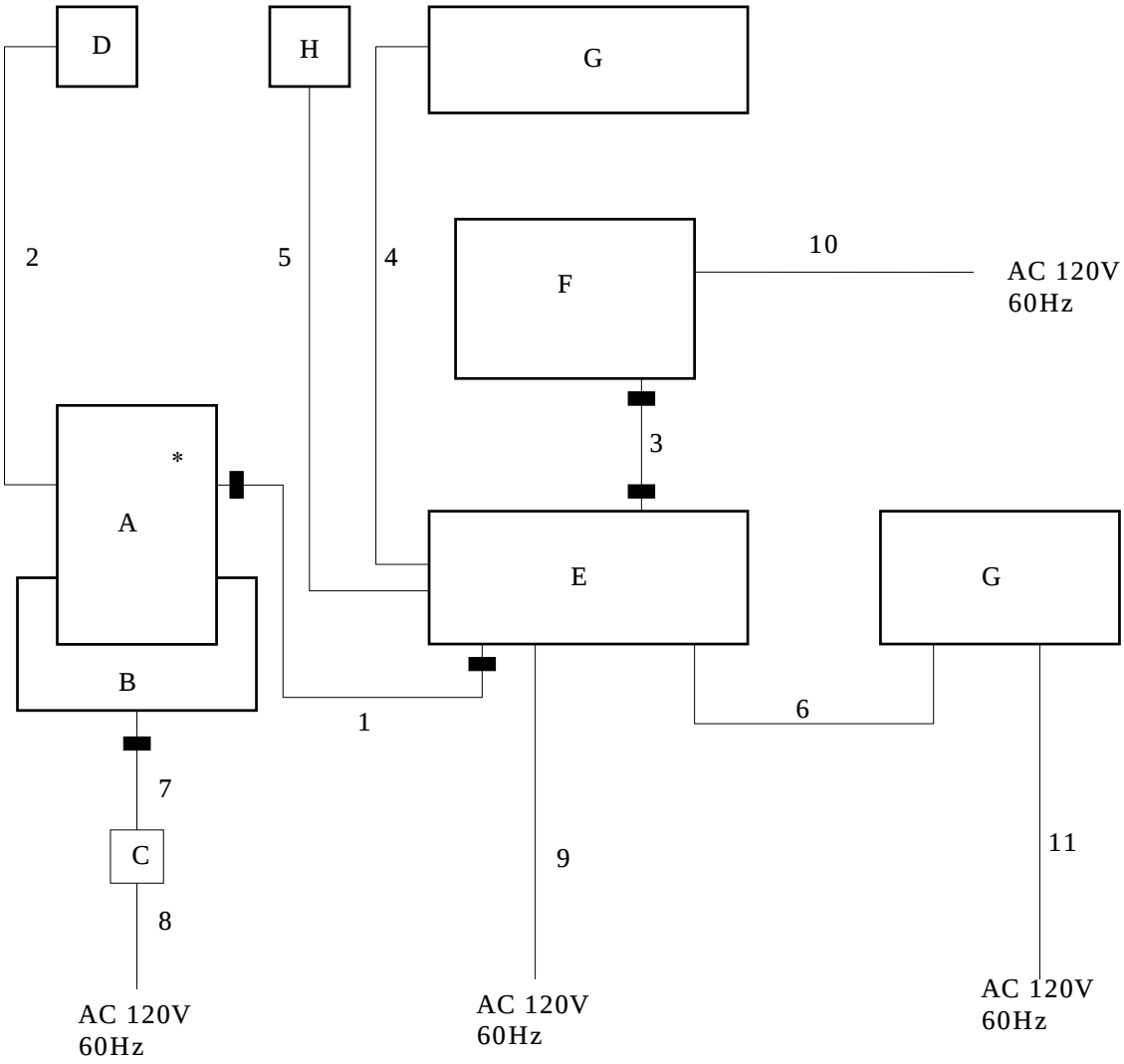
SECTION 6. CONSTRUCTION OF EQUIPMENT

The construction of EUT during the test was as follows.

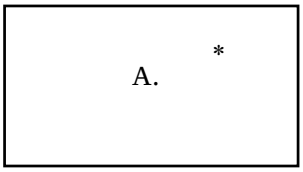
System configuration

* : EUT
■ : Ferrite core

6.1 System use



6.2 Single use



Symbols or numbers assigned to equipment or cables on this diagram are corresponded to the symbols or numbers assigned to equipment or cables on tables in Sections 3 to 5.

SECTION 7. GENERAL TEST CONDITIONS

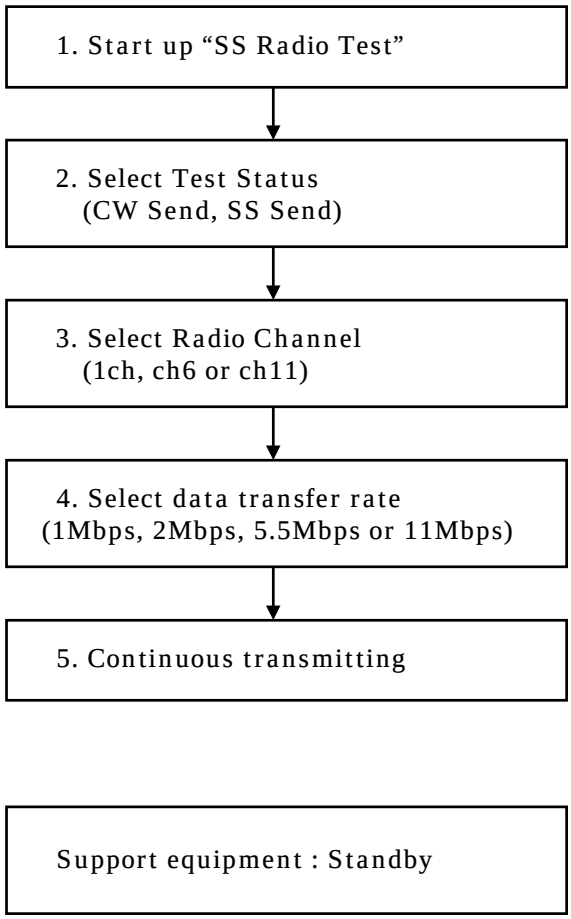
The EUT was operated under the following conditions during the test.

7.1 Operating condition

The test was carried out with the transmitter set at maximum power in Test mode. EUT was examined in the operating conditions that had maximum emissions.

7.2 Operating flow

Following operations were performed continuously.



SECTION 8. TEST PROCEDURE(S)

Test was carried out under the following conditions.
Test was carried out with no deviations from standards and test methods.

8.1 Conducted Emission Test [15.207]

8.1.1 Equipment Setup

System configuration and Equipment setup are shown on Section 6 and Section 10.

8.1.1.1 Table–Top Equipment

EUT is placed on the wooden table raised 0.8meter above the metal ground plane.

8.1.1.2 Interconnecting Cables

Excess part of the interconnecting cables longer than 1 meter are bundled in the center. Cables that hang closer than 40 cm to the ground plane is folded back and forth forming bundle 30 to 40 cm long, hanging approx, in the middle between ground plane and table.

8.1.1.3 AC Power Cable

AC power cable for EUT is connected to one LISN which is placed on the ground plane. The LISN is placed in 80 cm from the nearest part of EUT chassis.
The excess power cable is bundled in the center, or shortened to appropriate length.
AC cables except from the EUT are connected second LISN.

8.1.2 Measuring Instruments

Brief description of Measuring Instruments are as follows;

8.1.2.1 Spectrum Analyzer

The Spectrum analyzer is used for preliminary measurement.

8.1.2.2 EMI Test Receiver

The Quasi–peak detector (IF bandwidth : 10 kHz) and average detector (IF bandwidth : 10 kHz) built in test receiver is used for final measurement.
The test receiver is complied with the specification of the CISPR publication 16.

8.1.2.3 LISN

Two 50μH//50Ω LISN are used. The chassis of the LISN is bonded to the ground plane by the copper blade.
One LISN is connected to the EUT. Other LISN (2nd LISN) is connected to the support equipment. The signal output of the 2nd LISN is terminated with a 50Ω termination.

8.1.3 Test Procedure

8.1.3.1 Preliminary Measurement

EUT is tested on all operating conditions.
The spectrum analyzer is controlled by the computer program to sweep regulation frequency, then spectrum chart are plotted out to detect the worst conditions in operating mode and/or configuration for the final test.
All leads other than safety ground are tested.

8.1.3.2 Final Measurement

The EUT is operated in the worst condition where maximum emission is detected by the preliminary test. The equipment and cables are arranged or manipulated within the range of the test standard in the above condition.
At least six highest spectrum are measured in quasi–peak and average (if necessary) using the test receiver.

8.2 Radiated Emission Test [15.247(b), 15.247(c), 15.205, 15.209]

8.2.1 Equipment Setup

System configuration and Equipment setup are shown on Section 6 and Section 10.

8.2.1.1 Table–Top Equipment

EUT is placed on the wooden table raised 0.8meter above the metal ground plane (turntable).

8.2.1.2 Interconnecting Cables

Excess part of the interconnecting cables longer than 1 meter are bundled in the center. Cables that hang closer than 40 cm to the ground plane is folded back and forth forming bundle 30 to 40 cm long, hanging approx, in the middle between ground plane and table.

8.2.2 Measuring Instruments

Brief description of Measuring Instruments are as follows;

8.2.2.1 Antennas

The broadband Tri-Log antenna is used for measurement on the frequency range 30 – 1000 MHz.
The Double ridged guide antenna and the Standard gain horn antennas are used for frequency higher than 1000 MHz.
If uncertain result was obtained, the broadband antenna is replaced by the half wave length dipole, then measurement is carried out over again.

8.2.2.2 Pre–amplifier

The broadband pre–amplifier is used for radiated emission measurement.
The signal to noise ratio is improved by using pre–amplifier.

8.2.2.3 Spectrum Analyzer

The spectrum analyzer is used for preliminary measurement of frequency range 30 – 1000 MHz, and also used for final measurement of higher than 1000 MHz

8.2.2.4 EMI Test Receiver

The Quasi–peak detector (IF bandwidth : 120 kHz) built in test receiver is used for final measurement of the frequency 30 – 1000 MHz.
The test receiver is complied with the specification of the CISPR publication 16.

8.2.2.5 Turntable

The turntable is capable for EUT weight and rotatable 0 to 360 degree horizontally by remote control in the test room.

8.2.2.6 Antenna Mast

The antenna mast is attachable to all antennas described on clause 8.2.2.1 and antenna height is adjustable 1 to 4 meters continuously by remote control at the test room, and antenna polarization is also changed by the remote control.

8.2.3 Test Procedure

8.2.3.1 Preliminary Measurement

EUT is tested on all operating conditions.
The spectrum analyzer is set max–hold mode and swept during turntable was rotated 0 to 360 degree. Then spectrum chart are plotted out to detect the worst conditions in configuration, operating mode, or ambient noise notation.

8.2.3.2 Final Measurement

The EUT operated in the condition where maximum emission is detected in the preliminary test.
The turntable azimuth (EUT direction) and antenna height are adjusted the position so that maximum field strength is obtained for each frequency spectrum to be measured. The equipment and cables are arranged or manipulated within the range of the test standard in the above condition.
When the uncertain result was obtained, the measurement is retried by using the half wave dipole antenna instead of the broadband antenna.

SECTION 9. TEST DATA

9.1 Power Spectral Density [15.247(d)]

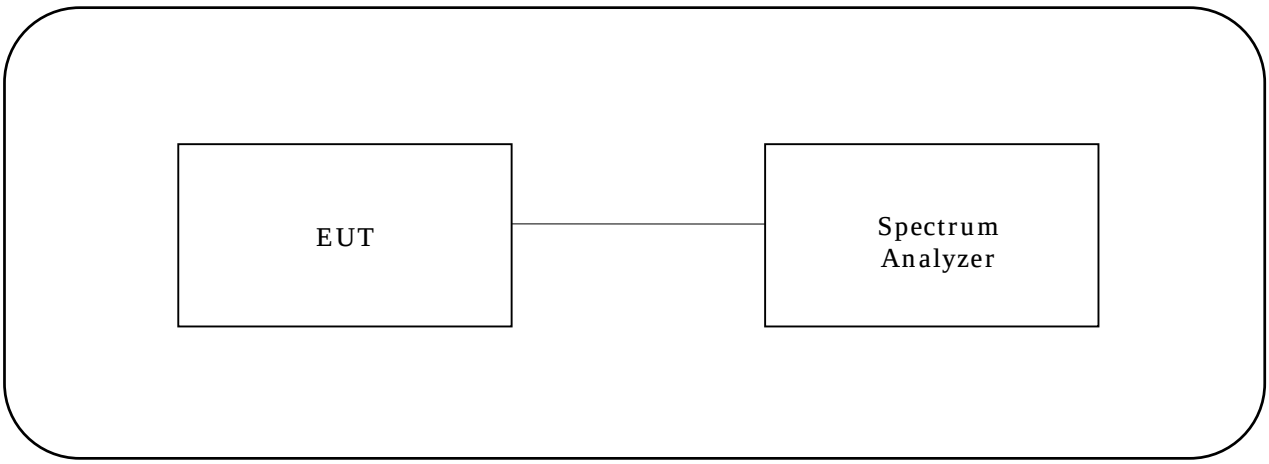
MEASUREMENT PROCEDURE:

1. The EUT was set to operate with following conditions.
   - ch1 / ch6 / ch11
   - Data Transfer Rate (1 Mbps / 2 Mbps / 5.5 Mbps / 11 Mbps)
2. The Spectrum Analyzer was connected directly to the transmitter output.
3. The Spectrum Analyzer was setup using RBW = 3kHz, VBW = 10kHz, span = 300kHz and sweep = 100sec.(span/3kHz).
4. As for the typical chart of the observed RF profiles, refer to page 18 – 19.

Test date : March 12, 2003
Temperature : 19 °C
Humidity : 34 %

ch	Frequency (MHz)	Data Transfer Rate (Mbps)	Reading (dBm)	Cable Loss (dB)	Peak Power Spectral Dencity (dBm)	15.247(d) Limit (dBm)	Chart
1	2412	1	-7.8	1.0	-6.8	8	Page 18
		2	-8.0	1.0	-7.0	8	-
		5.5	-8.5	1.0	-7.5	8	-
		11	-8.3	1.0	-7.3	8	-
6	2437	1	-8.0	1.0	-7.0	8	-
		2	-7.0	1.0	-6.0	8	Page 18
		5.5	-8.6	1.0	-7.6	8	-
		11	-8.5	1.0	-7.5	8	-
11	2462	1	-8.0	1.0	-7.0	8	Page 19
		2	-8.5	1.0	-7.5	8	-
		5.5	-8.8	1.0	-7.8	8	-
		11	-9.6	1.0	-8.6	8	-

TEST INSTRUMENTS CONFIGURATION



TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Spectrum Analyzer	8563E	3337A01513	HEWLETT PACKARD	Apl.04, 02	1 Year

Chart of ch 1 with 1 Mbps

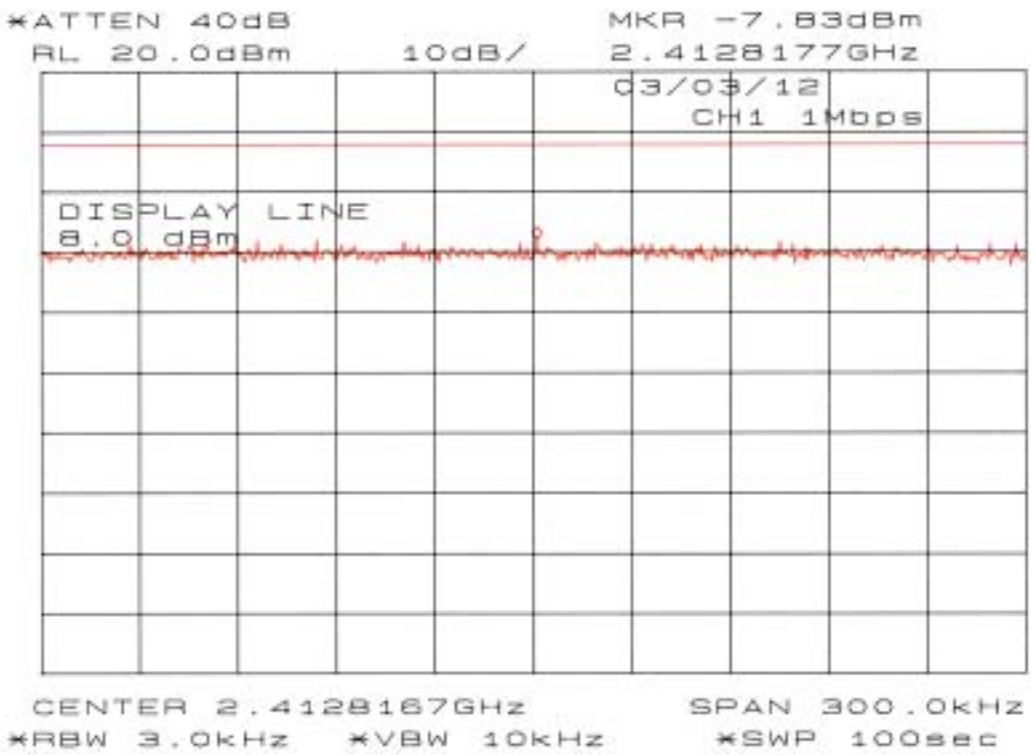


Chart of ch 6 with 2 Mbps

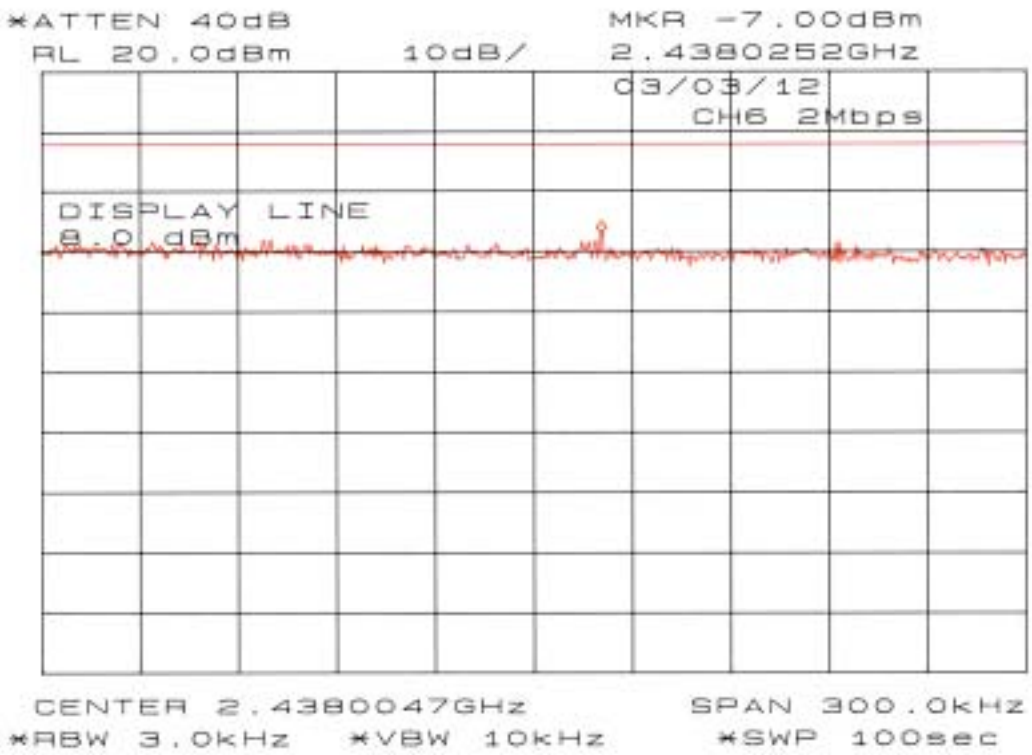
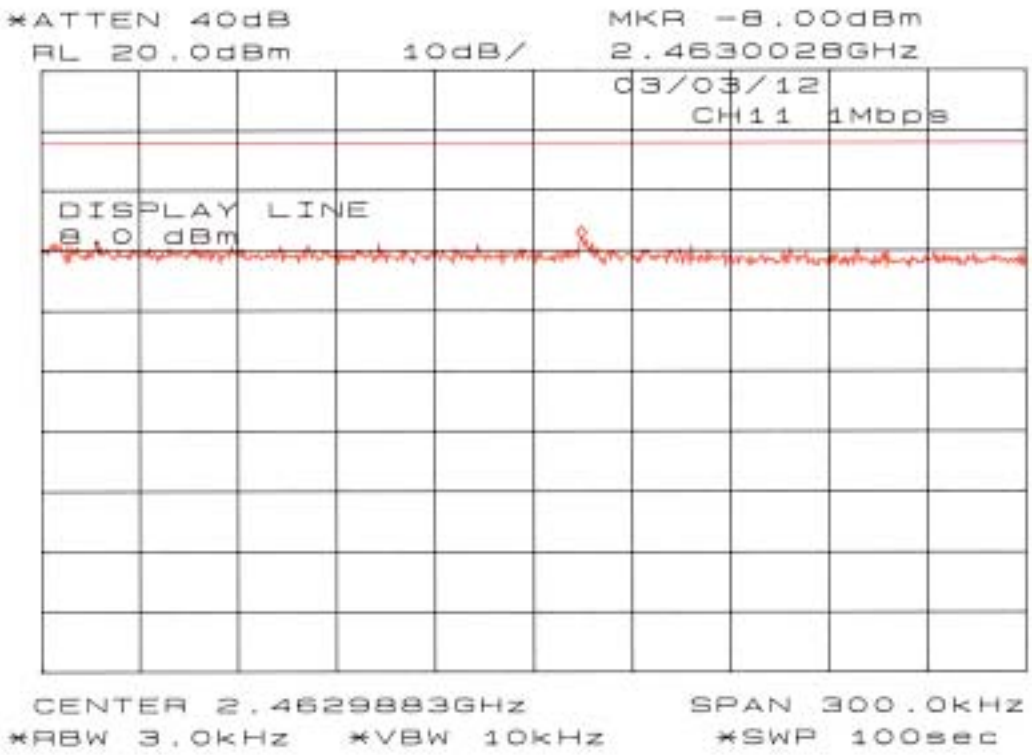


Chart of ch 11 with 1 Mbps



9.2 Minimum 6dB Bandwidth [15.247(a)(2)]

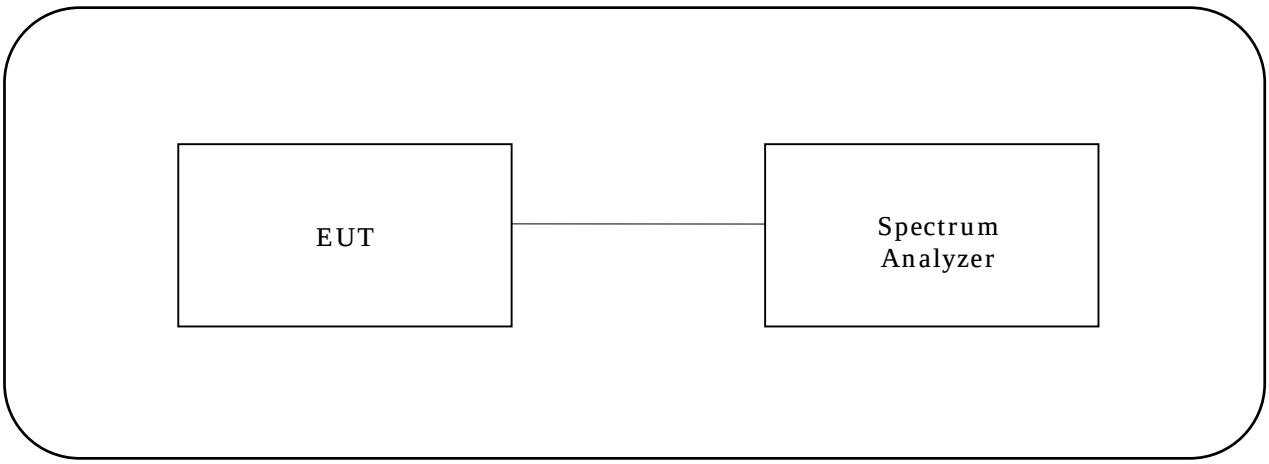
MEASUREMENT PROCEDURE:

1. The EUT was set to operate with following conditions.
   - ch1 / ch6 / ch11
   - Data Transfer Rate (1 Mbps / 2 Mbps / 5.5 Mbps / 11 Mbps)
2. The Spectrum Analyzer was connected directly to the transmitter output.
3. The Spectrum Analyzer was setup using RBW = 100kHz, VBW = 100kHz, and span = 50MHz (span>>RBW).
4. As for the typical chart of the observed RF profiles, refer to page 22 – 23.

Test date : February 10, 2003
Temperature : 18°C
Humidity : 44%

ch	Frequency (MHz)	Data Transfer Rate (Mbps)	6dB Bandwidth (MHz)	15.247(a)(2) Limit (kHz)	Chart
1	2412	1	11.00	500	-
		2	11.08	500	-
		5.5	10.67	500	-
		11	10.58	500	Page 22
6	2437	1	11.00	500	-
		2	10.08	500	Page 22
		5.5	10.58	500	-
		11	11.00	500	-
11	2462	1	11.08	500	-
		2	11.08	500	-
		5.5	10.58	500	Page 23
		11	10.92	500	-

TEST INSTRUMENTS CONFIGURATION



TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Spectrum Analyzer	8563E	3337A01513	HEWLETT PACKARD	Apl.04, 02	1 Year

Chart of ch 1 with 11 Mbps

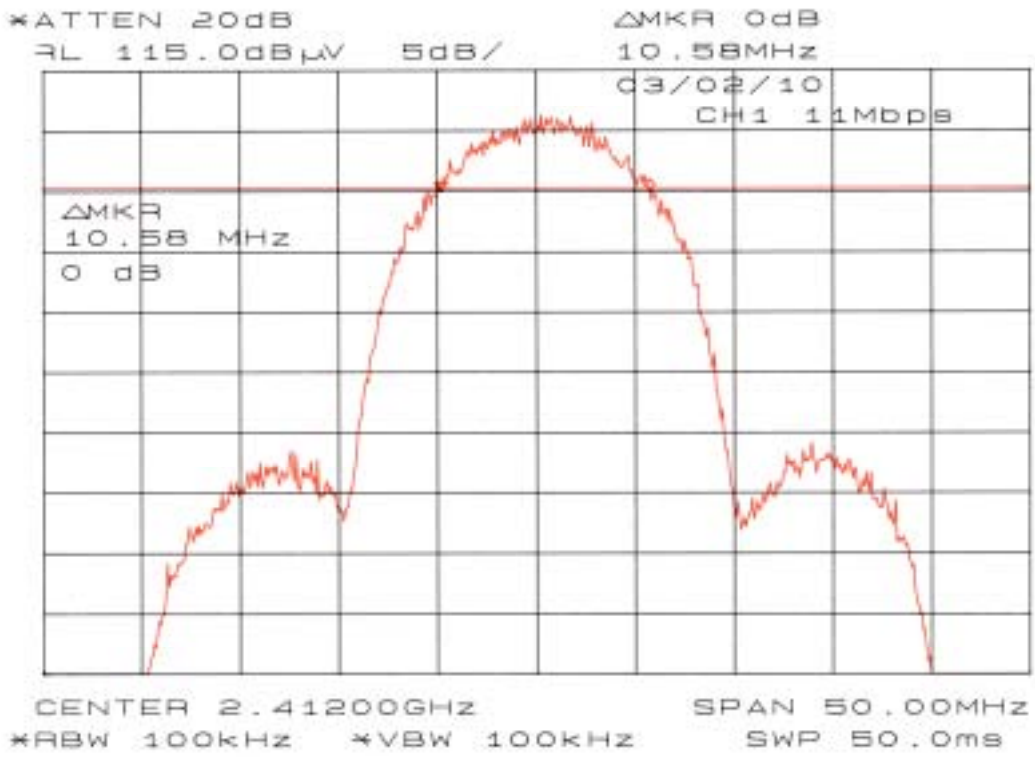


Chart of ch 6 with 2 Mbps

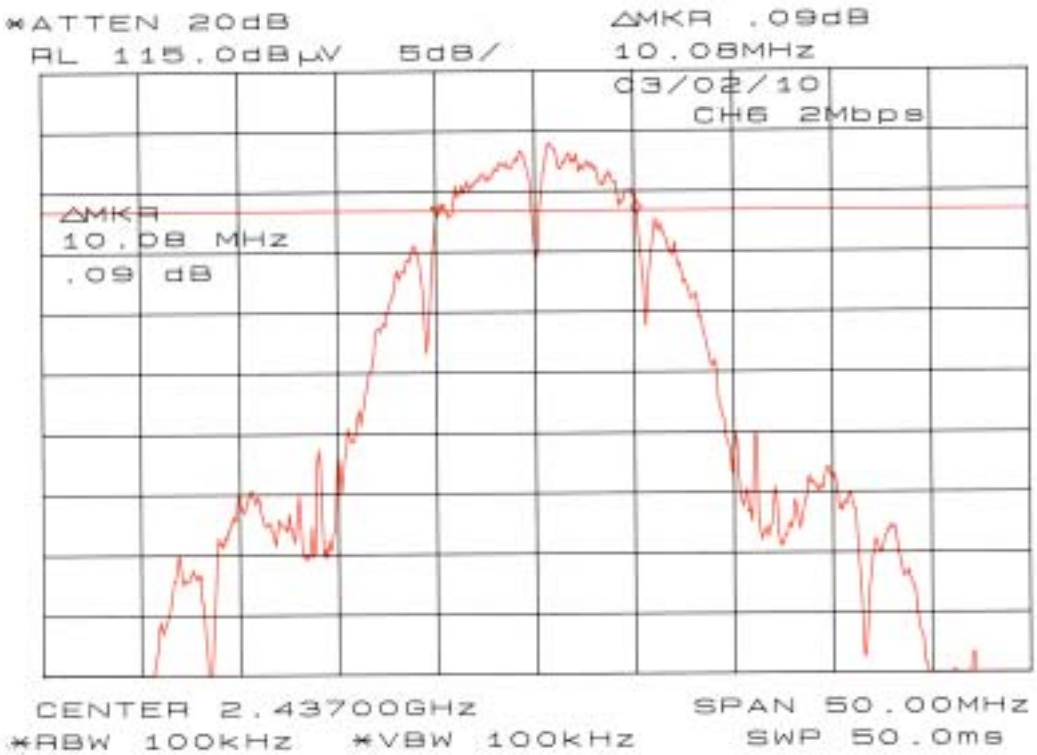
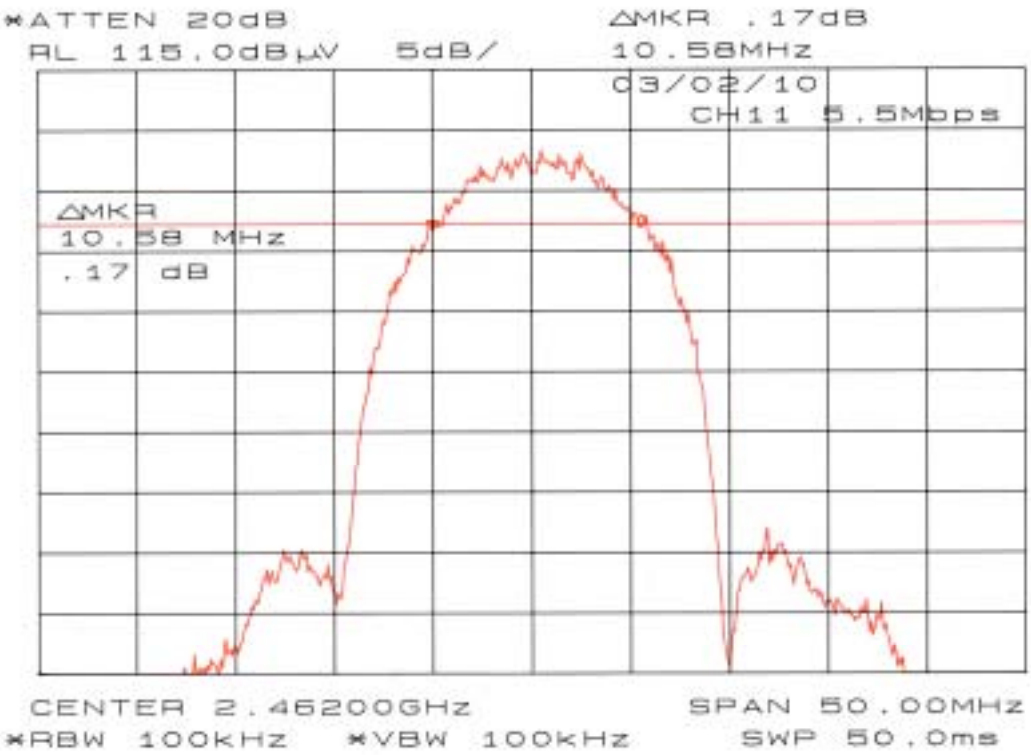


Chart of ch 11 with 5.5 Mbps



9.3 Maximum Peak Output Power [15.247(b)]

MEASUREMENT PROCEDURE:

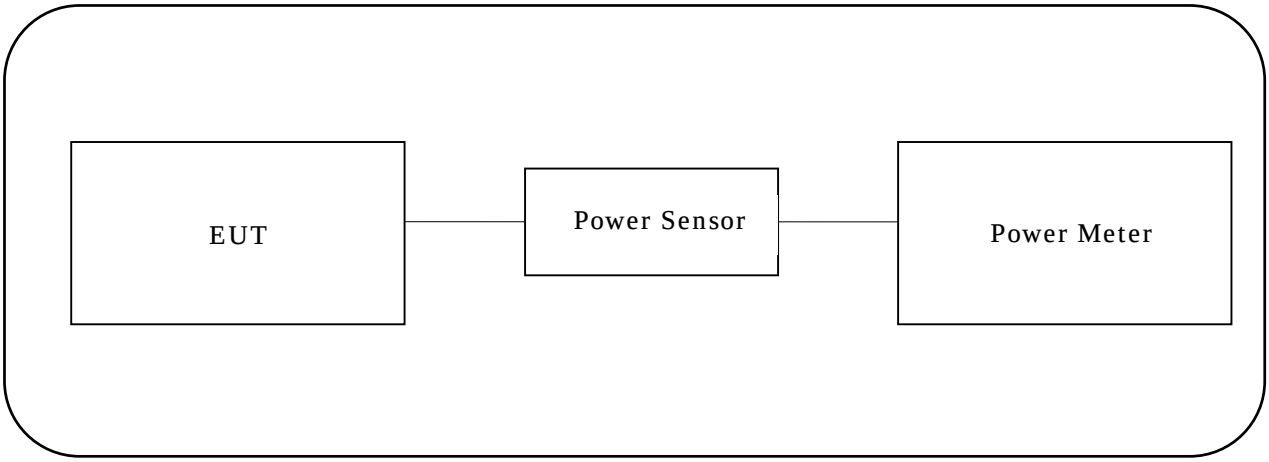
1. The EUT was set to operate with following conditions.
   - ch1 / ch6 / ch11
   - Unmodulated-carrier
2. The power Meter was connected directly to the transmitter output.
3. Maximum Antenna Gain : - 0.23 dBi

Test date : February 10, 2003
Temperature : 18°C
Humidity : 44%

ch	Frequency (MHz)	Reading (dBm)	Cable Loss (dB)	Maximum Peak Output Power (dBm)	Maximum Peak Output Power (mW)	15.247(b) Limit (mW)
1	2412	13.2	1.0	14.2	26.3	1000
6	2437	13.3	1.0	14.3	26.9	1000
11	2462	12.6	1.0	13.6	22.9	1000

Note: Maximum peak output power was detected at ch 6.
= 14.3 dBm (=26.9 mW)
Therefore, the maximum EIRP = 14.3 dBm - 0.23 dBi = 14.1 dBm (=25.7 mW)

TEST INSTRUMENTS CONFIGURATION



TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Power Meter	E4418B	GB38410265	HEWLETT PACKARD	Feb. 28, 02	1 Year
Power Sensor	8481A	3318A99780	HEWLETT PACKARD	Jan. 22, 03	1 Year

9.4 Spurious Emissions – RF Antenna Conducted Test [15.247(c)]

MEASUREMENT PROCEDURE:

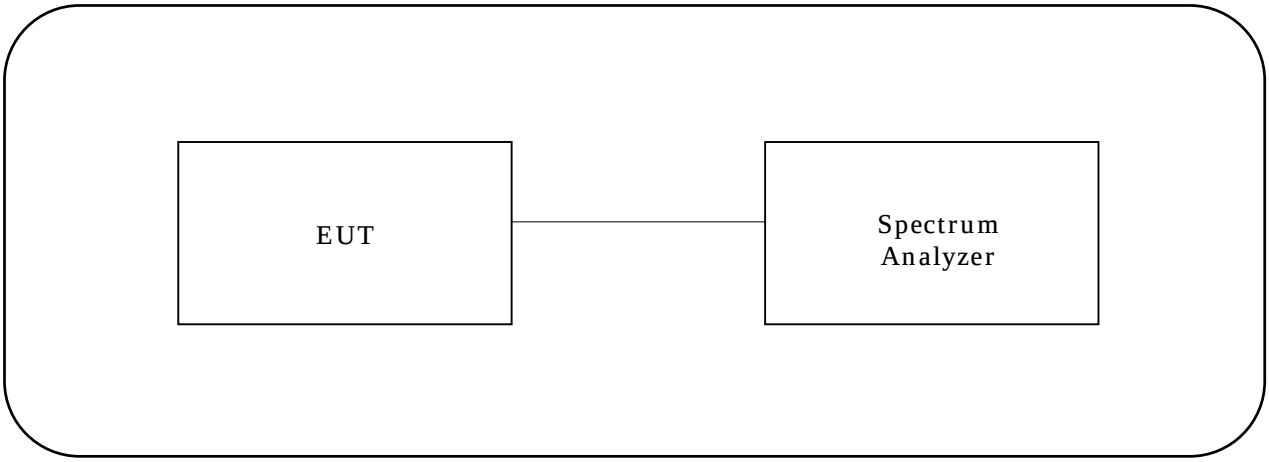
1. The EUT was set to operate with following conditions.
   - ch1 / ch6 / ch11
   - Data Transfer Rate (1 Mbps / 2 Mbps / 5.5 Mbps / 11 Mbps)
2. The Spectrum Analyzer was connected directly to the transmitter output.
3. The Spectrum Analyzer was setup using RBW = 100kHz, VBW = 100kHz.
4. As for the typical chart of the observed RF profiles, refer to Annex F.

Test date : February 10, 2003
Temperature : 18 °C
Humidity : 44%

ch	Frequency (MHz)	Chart
1	2412	Annex F page 2-4
6	2437	Annex F page 5-7
11	2462	Annex F page 8-10

Note:
1. All out-of-band conducted emissions were more than 20 dB below a carrier.

TEST INSTRUMENTS CONFIGURATION



TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Spectrum Analyzer	8563E	3337A01513	HEWLETT PACKARD	Apl. 04, 02	1 Year

9.5 Spurious Emissions – Radiated Emission Test [15.247(c), 15.205, 15.209]

MEASUREMENT PROCEDURE:

1. The EUT was set to operate with following conditions.
   - ch1 / ch6 / ch11
   - Data Transfer Rate (1 Mbps / 2 Mbps / 5.5 Mbps / 11 Mbps)
2. The Spectrum Analyzer was setup using
   Peak mode: RBW = 1MHz, VBW = 1MHz
   Average mode: RBW = 1MHz, VBW = 10Hz
3. Measurement distance was 3 meters.
4. Following data is the worst case.

Test date	:	February 11, 2003
Temperature	:	19 °C
Humidity	:	40%

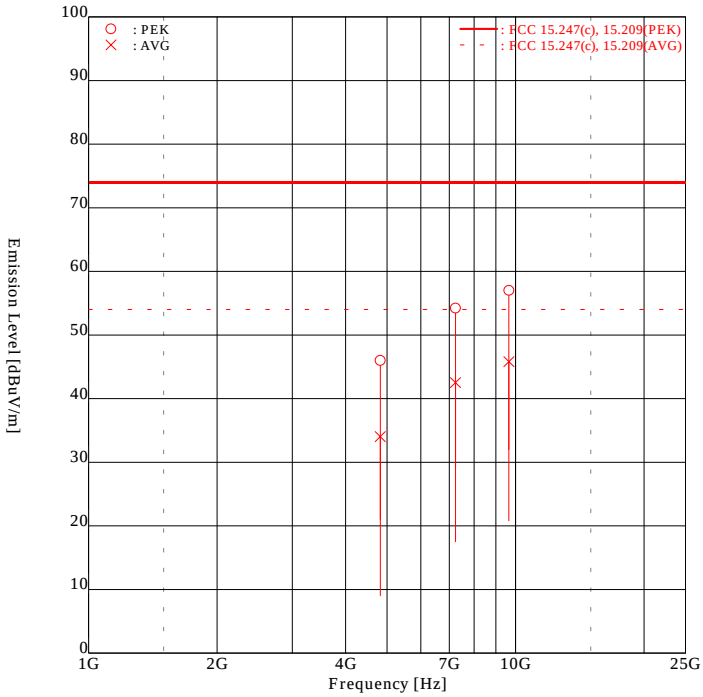
Data of ch 1 with 1 Mbps

Akzo Nobel K. K.

Kashima No.3 Test Site

Spurious Emissions

APPLICANT : CASIO COMPUTER CO.,LTD.
EUT NAME : Handheld Terminal
MODEL NO. : DT-X10M30URC
SERIAL NO. : CS94
TEST MODE : DSS TX (Ch1 / 1Mbps)
POWER SOURCE : DC3.7V (Cradle : AC120V/60Hz)
DATE TESTED : Feb 11 2003
FILE NO. : ANKK-102291
REGULATION : FCC 15.247(c), 15.209
TEST METHOD : ANSI C63.4:1992
DISTANCE : 3.0 [m]
TEMPERATURE : 19.0 [degC]
HUMIDITY : 40.0 [%]
NOTE :



ENGINEER : Kazuo Masuda

[No]	FREQUENCY [MHz]	MODE	READING [dBuV] Hori	READING [dBuV] Vert	FACTOR [dB/m] Hori	FACTOR [dB/m] Vert	EMISSION [dBuV/m] Hori	EMISSION [dBuV/m] Vert	LIMIT [dBuV/m]	MARGIN [dB] Hori	MARGIN [dB] Vert
1	4824.00	PEK	40.5	40.4	5.5	5.5	46.0	45.9	74.0	28.0	28.1
2	4824.00	AVG	28.5	28.3	5.5	5.5	34.0	33.8	54.0	20.0	20.2
3	7236.00	PEK	42.6	42.6	11.6	11.6	54.2	54.2	74.0	19.8	19.8
4	7236.00	AVG	30.8	30.9	11.6	11.6	42.4	42.5	54.0	11.6	11.5
5	9648.00	PEK	40.2	40.5	16.5	16.5	56.7	57.0	74.0	17.3	17.0
6	9648.00	AVG	29.2	29.3	16.5	16.5	45.7	45.8	54.0	8.3	8.2

Higher six points are underlined.
Other frequencies : Below the FCC 15.247(c), 15.209 limit
Emisson Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

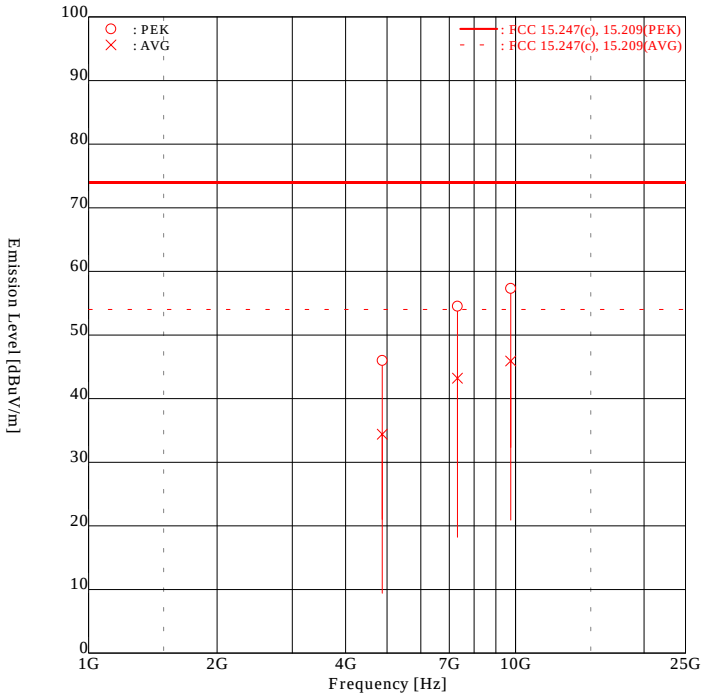
Data of ch 6 with 1Mbps

Akzo Nobel K. K.

Kashima No.3 Test Site

Spurious Emissions

APPLICANT	: CASIO COMPUTER CO.,LTD.
EUT NAME	: Handheld Terminal
MODEL NO.	: DT-X10M30URC
SERIAL NO.	: CS94
TEST MODE	: DSS TX (Ch6 / 1Mbps)
POWER SOURCE	: DC3.7V (Cradle : AC120V/60Hz)
DATE TESTED	: Feb 11 2003
FILE NO.	: ANKK-102291
REGULATION	: FCC 15.247(c), 15.209
TEST METHOD	: ANSI C63.4:1992
DISTANCE	: 3.0 [m]
TEMPERATURE	: 19.0 [degC]
HUMIDITY	: 40.0 [%]
NOTE	:



ENGINEER : Kazuo Masuda

[No]	FREQUENCY [MHz]	MODE	READING [dBuV] Hori	READING [dBuV] Vert	FACTOR [dB/m] Hori	FACTOR [dB/m] Vert	EMISSION [dBuV/m] Hori	EMISSION [dBuV/m] Vert	LIMIT [dBuV/m]	MARGIN [dB] Hori	MARGIN [dB] Vert
1	4874.00	PEK	40.4	40.3	5.6	5.6	46.0	45.9	74.0	28.0	28.1
2	4874.00	AVG	28.8	28.5	5.6	5.6	34.4	34.1	54.0	19.6	19.9
3	7311.00	PEK	42.8	42.7	11.7	11.7	54.5	54.4	74.0	19.5	19.6
4	7311.00	AVG	31.5	31.5	11.7	11.7	43.2	43.2	54.0	10.8	10.8
5	9748.00	PEK	40.7	40.7	16.6	16.6	57.3	57.3	74.0	16.7	16.7
6	9748.00	AVG	29.2	29.3	16.6	16.6	45.8	45.9	54.0	8.2	**8.1**

Higher six points are underlined.

Other frequencies : Below the FCC 15.247(c), 15.209 limit

Emisson Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)

ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

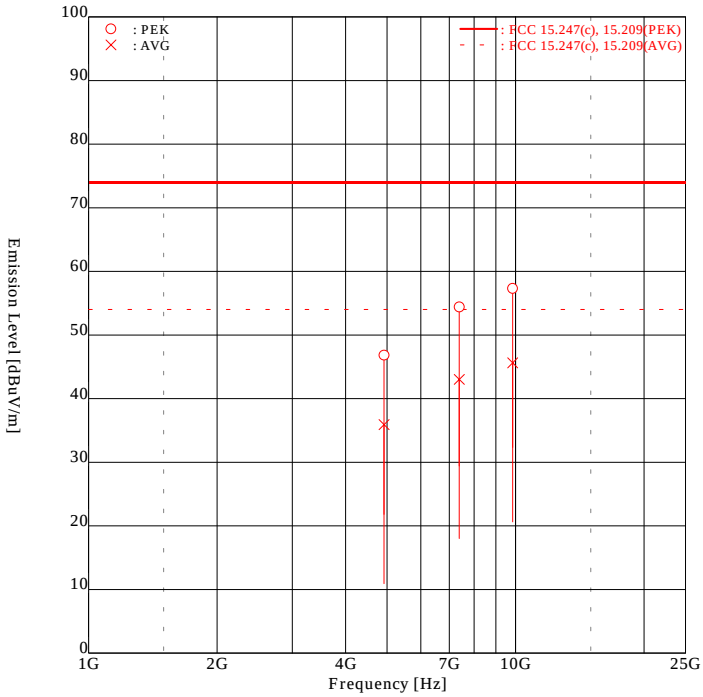
Data of ch 11 with 1 Mbps

Akzo Nobel K. K.

Kashima No.3 Test Site

Spurious Emissions

APPLICANT	: CASIO COMPUTER CO.,LTD.
EUT NAME	: Handheld Terminal
MODEL NO.	: DT-X10M30URC
SERIAL NO.	: CS94
TEST MODE	: DSS TX (Ch11 / 1Mbps)
POWER SOURCE	: DC3.7V (Cradle : AC120V/60Hz)
DATE TESTED	: Feb 11 2003
FILE NO.	: ANKK-102291
REGULATION	: FCC 15.247(c), 15.209
TEST METHOD	: ANSI C63.4:1992
DISTANCE	: 3.0 [m]
TEMPERATURE	: 19.0 [degC]
HUMIDITY	: 40.0 [%]
NOTE	:

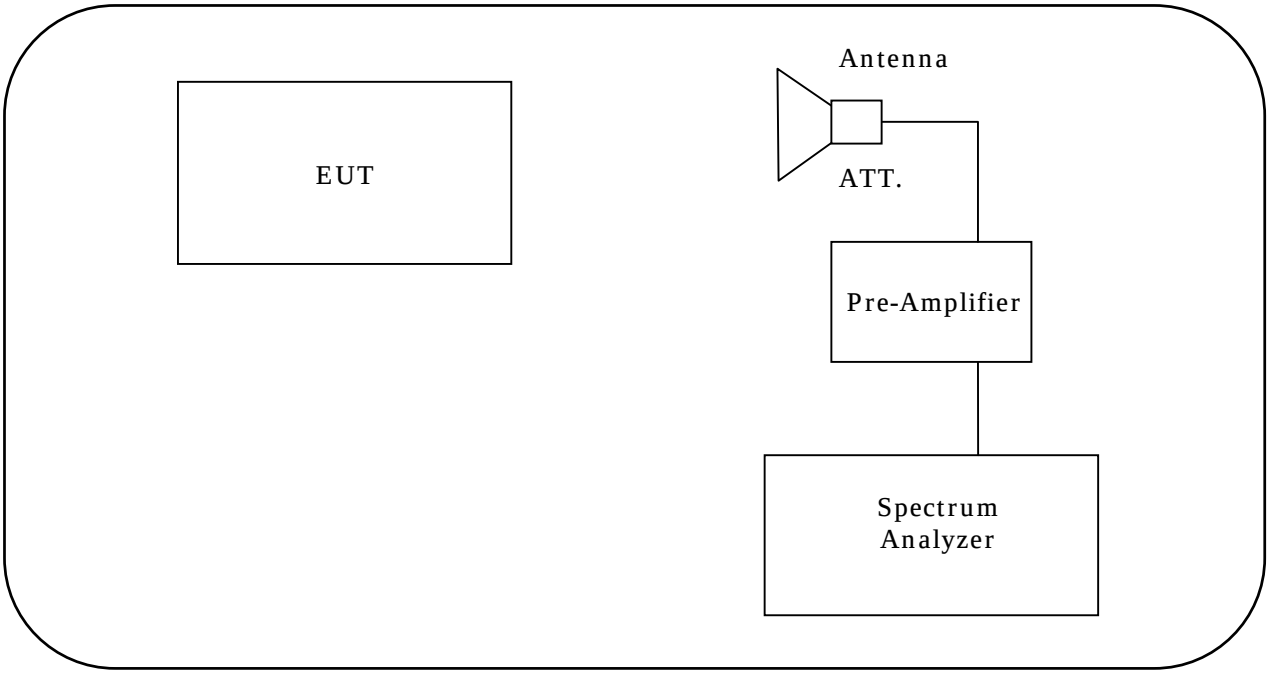


ENGINEER : Kazuo Masuda

[No]	FREQUENCY [MHz]	MODE	READING [dBuV] Hori	READING [dBuV] Vert	FACTOR [dB/m] Hori	FACTOR [dB/m] Vert	EMISSION [dBuV/m] Hori	EMISSION [dBuV/m] Vert	LIMIT [dBuV/m]	MARGIN [dB] Hori	MARGIN [dB] Vert
1	4924.00	PEK	41.1	41.0	5.7	5.7	46.8	46.7	74.0	27.2	27.3
2	4924.00	AVG	29.5	30.2	5.7	5.7	35.2	35.9	54.0	18.8	18.1
3	7386.00	PEK	42.6	42.3	11.8	11.8	54.4	54.1	74.0	19.6	19.9
4	7386.00	AVG	31.2	31.2	11.8	11.8	43.0	43.0	54.0	11.0	11.0
5	9848.00	PEK	40.2	40.7	16.6	16.6	56.8	57.3	74.0	17.2	16.7
6	9848.00	AVG	28.8	29.0	16.6	16.6	45.4	45.6	54.0	8.6	**8.4**

Higher six points are underlined.
Other frequencies : Below the FCC 15.247(c), 15.209 limit
Emisson Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

TEST INSTRUMENTS CONFIGURATION



TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Spectrum Analyzer	8563E	3337A01513	HEWLETT PACKARD	Apl. 04, 02	1 Year
Pre-Amplifier	83051A	3332A00329	HEWLETT PACKARD	Jun. 02, 02	1 Year
3dB Attenuator	6803.17.B	None	SUHNER	Jun. 02, 02	1 Year
Double Ridged Guide Antenna	3115	5044	EMCO	Jun. 09, 02	1 Year
Standard Gain Horn Antenna	3160-04	1080	EMCO	Jan. 15, 03	1 Year
	3160-05	1075	EMCO	Jan. 15, 03	1 Year
	3160-06	1114	EMCO	Jan. 15, 03	1 Year
	3160-07	1160	EMCO	Jan. 15, 03	1 Year
	3160-08	1144	EMCO	Jan. 15, 03	1 Year
	3160-09	1262	EMCO	Jan. 15, 03	1 Year

9.6 Restricted Bands of Operation [15.247(c), 15.205, 15.209]

MEASUREMENT PROCEDURE:

1. The EUT was set to operate with following conditions.
   - ch1 / ch6 / ch11
   - Data Transfer Rate (1 Mbps / 2 Mbps / 5.5 Mbps / 11 Mbps)
2. Measurement distance was 1 meter.
3. The Spectrum Analyzer was setup using
   Peak mode: RBW = 1MHz, VBW = 1MHz
   Average mode: RBW = 1MHz, VBW = 10Hz
4. Following data is the worst case.
5 As for the typical chart of the observed RF profiles, refer to Page 36 – 37.

Test date	:	February 11, 03
Temperature	:	19°C
Humidity	:	40%

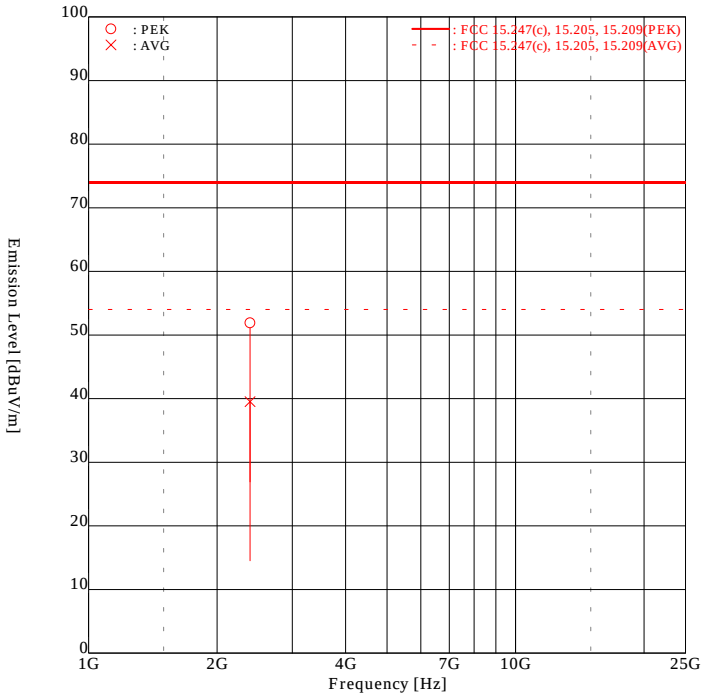
Data of ch 1 with 11 Mbps

Akzo Nobel K. K.

Kashima No.3 Test Site

Spurious Emissions - Bandedge

APPLICANT	: CASIO COMPUTER CO.,LTD.
EUT NAME	: Handheld Terminal
MODEL NO.	: DT-X10M30URC
SERIAL NO.	: CS94
TEST MODE	: DSS TX (Ch1 / 11Mbps)
POWER SOURCE	: DC3.7V (Cradle : AC120V/60Hz)
DATE TESTED	: Feb 11 2003
FILE NO.	: ANKK-102291
REGULATION	: FCC 15.247(c), 15.205, 15.209
TEST METHOD	: ANSI C63.4:1992
DISTANCE	: 1.0 [m]
TEMPERATURE	: 19.0 [degC]
HUMIDITY	: 40.0 [%]
NOTE	:



ENGINEER : Kazuo Masuda

[No]	FREQUENCY [MHz]	MODE	READING [dBuV] Hori	READING [dBuV] Vert	FACTOR [dB/m] Hori	FACTOR [dB/m] Vert	EMISSION [dBuV/m] Hori	EMISSION [dBuV/m] Vert	LIMIT [dBuV/m]	MARGIN [dB] Hori	MARGIN [dB] Vert
1	2390.00	PEK	30.8	31.5	20.4	20.4	51.2	51.9	74.0	22.8	22.1
2	2390.00	AVG	19.1	19.0	20.4	20.4	39.5	39.4	54.0	**14.5**	14.6

Higher six points are underlined.
Other frequencies : Below the FCC 15.247(c), 15.205, 15.209 limit
Emisson Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

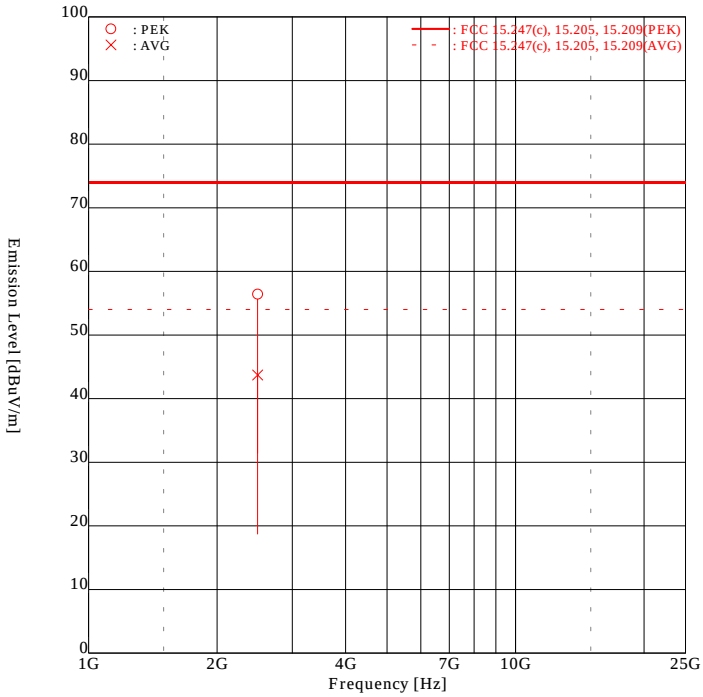
Data of ch 11 with 11 Mbps

Akzo Nobel K. K.

Kashima No.3 Test Site

Spurious Emissions - Bandedge

APPLICANT	: CASIO COMPUTER CO.,LTD.
EUT NAME	: Handheld Terminal
MODEL NO.	: DT-X10M30URC
SERIAL NO.	: CS94
TEST MODE	: DSS TX (Ch11 / 11Mbps)
POWER SOURCE	: DC3.7V (Cradle : AC120V/60Hz)
DATE TESTED	: Feb 11 2003
FILE NO.	: ANKK-102291
REGULATION	: FCC 15.247(c), 15.205, 15.209
TEST METHOD	: ANSI C63.4:1992
DISTANCE	: 1.0 [m]
TEMPERATURE	: 19.0 [degC]
HUMIDITY	: 40.0 [%]
NOTE	:



ENGINEER : Kazuo Masuda

[No]	FREQUENCY [MHz]	MODE	READING [dBuV] Hori	READING [dBuV] Vert	FACTOR [dB/m] Hori	FACTOR [dB/m] Vert	EMISSION [dBuV/m] Hori	EMISSION [dBuV/m] Vert	LIMIT [dBuV/m]	MARGIN [dB] Hori	MARGIN [dB] Vert
1	2489.00	PEK	35.8	35.0	20.6	20.6	56.4	55.6	74.0	17.6	18.4
2	2489.00	AVG	23.0	23.1	20.6	20.6	43.6	43.7	54.0	10.4	**10.3**

Higher six points are underlined.
Other frequencies : Below the FCC 15.247(c), 15.205, 15.209 limit
Emisson Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

Chart of ch 1 with 11 Mbps

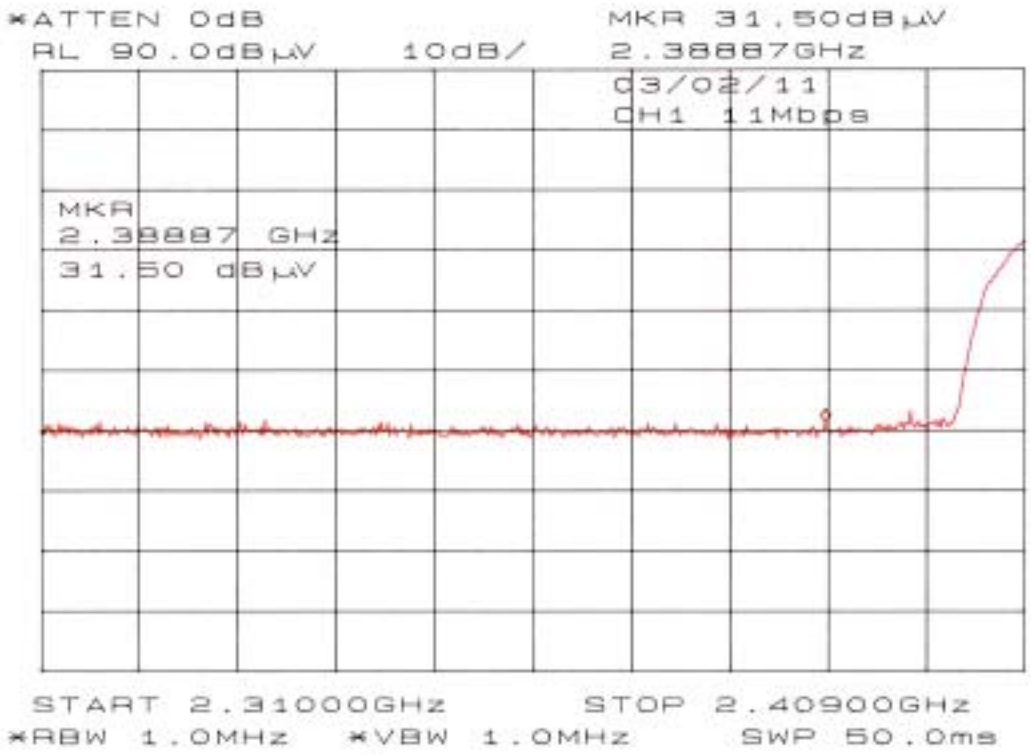
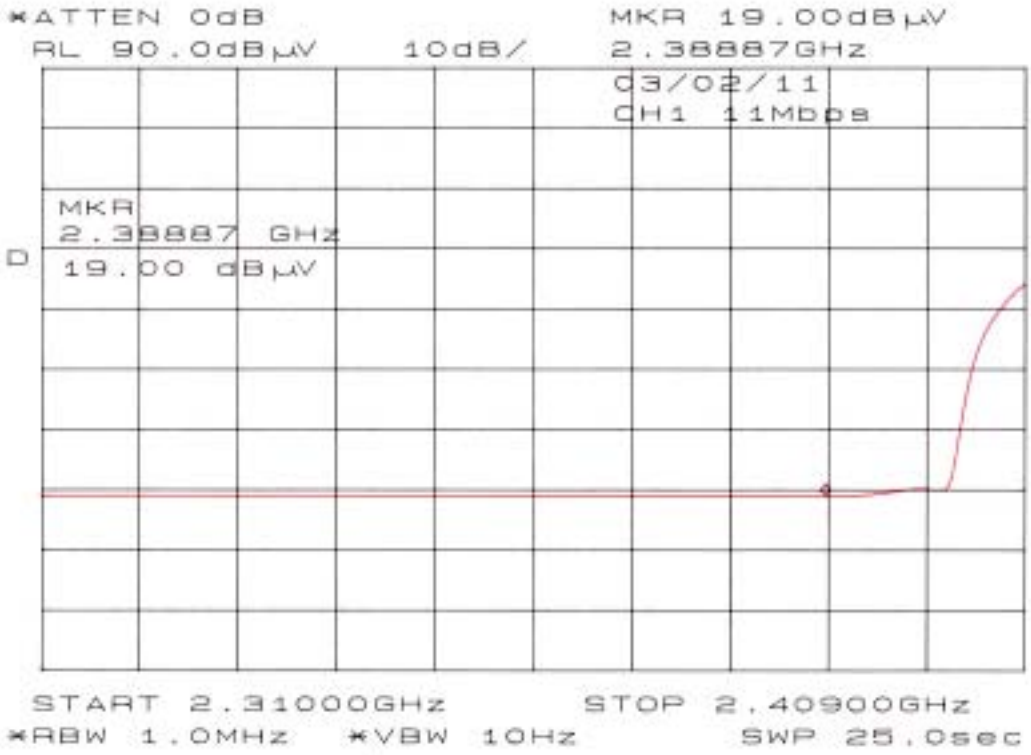


Chart of ch 1 with 11 Mbps



Cchart of ch 11 with 11 Mbps

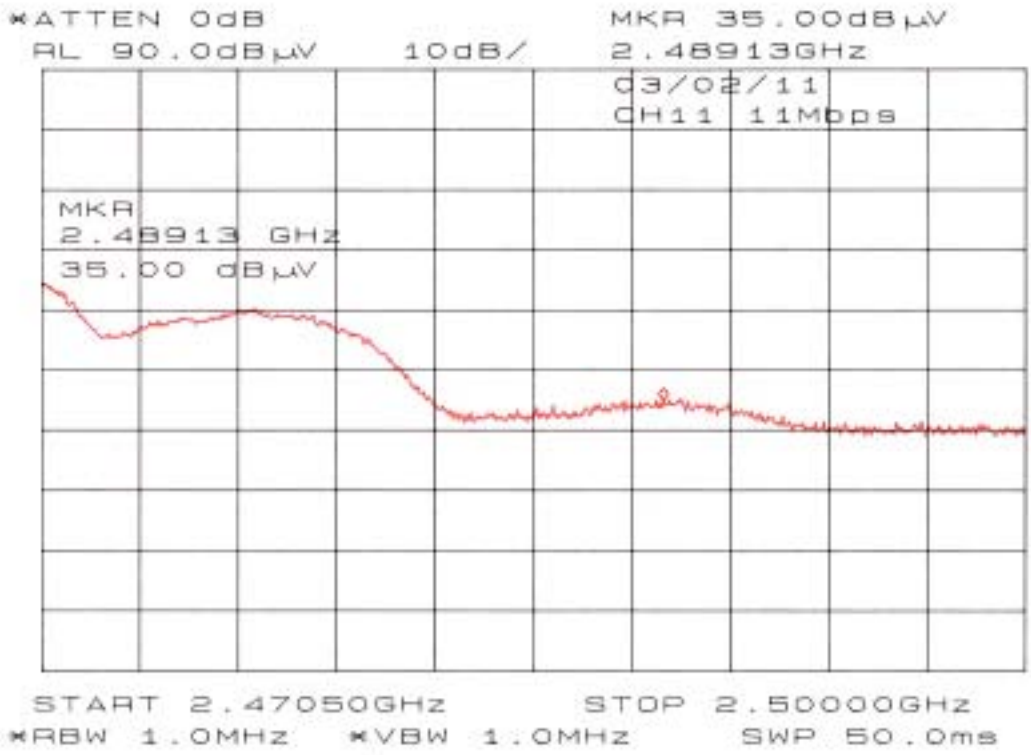
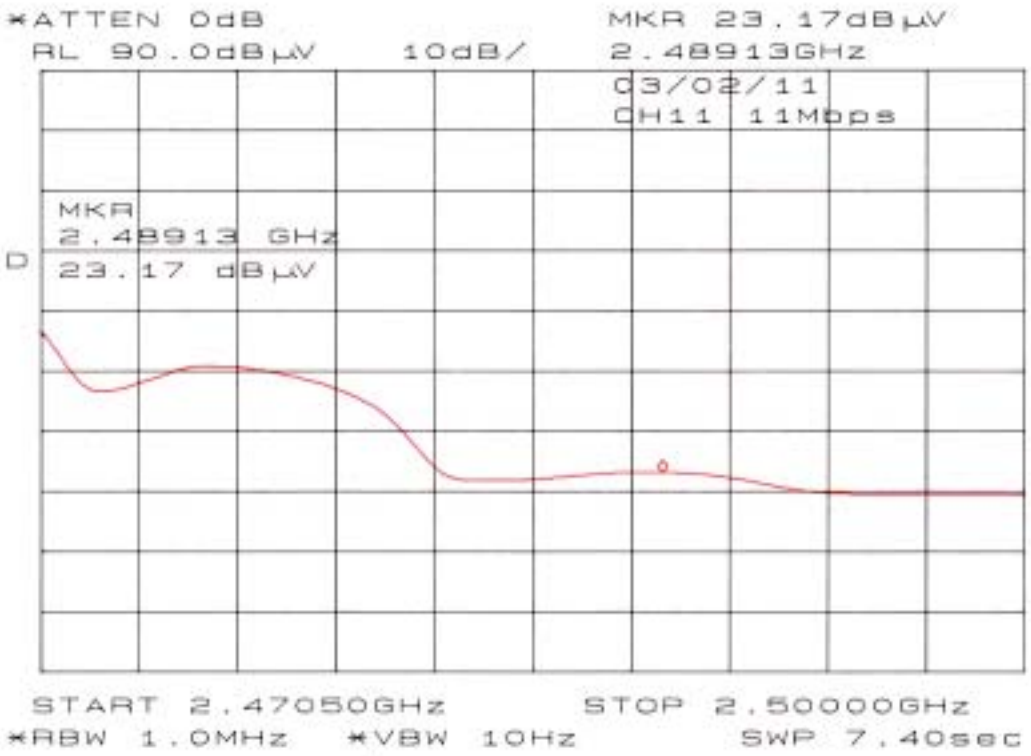
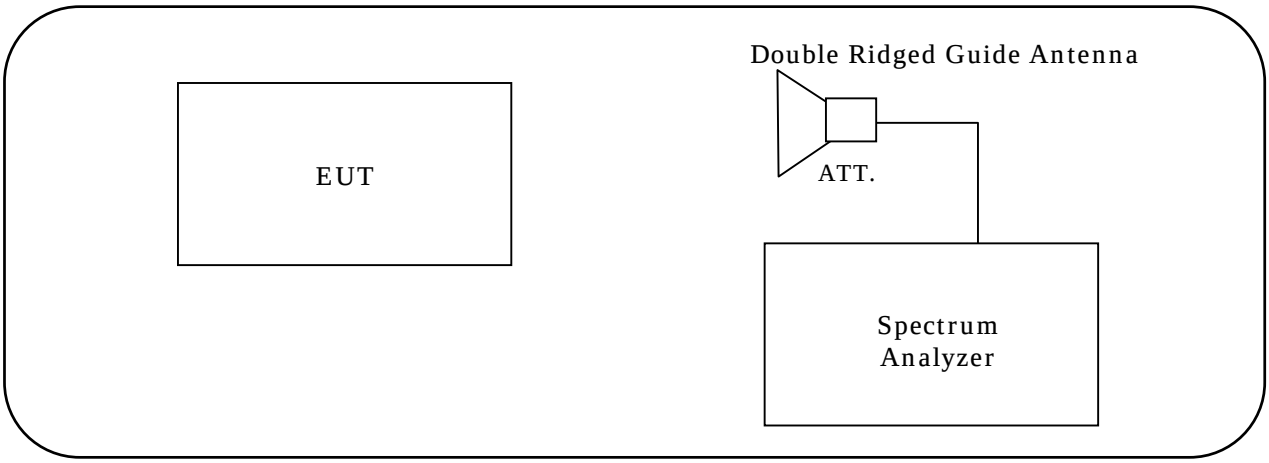


Chart of ch 11 with 11 Mbps



TEST INSTRUMENTS CONFIGURATION



TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Spectrum Analyzer	8563E	3337A01513	HEWLETT PACKARD	Apl. 04, 02	1 Year
3dB Attenuator	6803.17.B	None	SUHNER	Jun. 02, 02	1 Year
Double Ridged Guide Antenna	3115	5044	EMCO	Jun. 09, 02	1 Year

9.7 AC Conducted Emissions [15.207]

MEASUREMENT PROCEDURE:

1. The EUT was set to operate with following conditions.
   - ch1 / ch6 / ch11
   - Data Transfer Rate (1 Mbps / 2 Mbps / 5.5 Mbps / 11 Mbps)
2. The Test Receiver is complied with the specification of the CISPR publication 16.
3. Following data is the worst case.

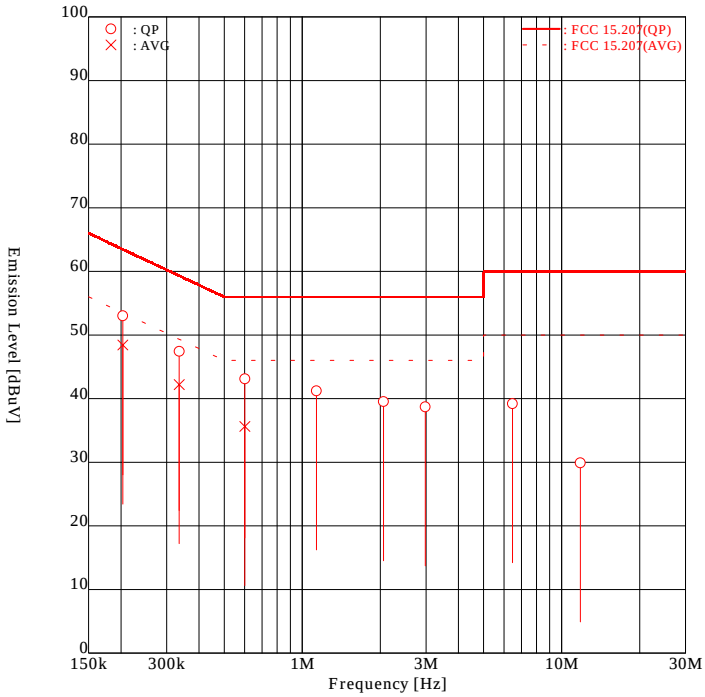
Data of ch 1 with 11 Mbps

Akzo Nobel K. K.

Kashima No.3 Test Site

Conducted Voltages on Mains Port

APPLICANT	: CASIO COMPUTER CO.,LTD.
EUT NAME	: Handheld Terminal
MODEL NO.	: DT-X10M30URC
SERIAL NO.	: CS94
TEST MODE	: DSS TX (Ch1 / 11Mbps)
POWER SOURCE	: DC3.7V (Cradle : AC120V/60Hz)
DATE TESTED	: Feb 14 2003
FILE NO.	: ANKK-102291
REGULATION	: FCC 15.207
TEST METHOD	: ANSI C63.4-1992
TEMPERATURE	: 19.0 [degC]
HUMIDITY	: 40.0 [%]
NOTE	:



ENGINEER : Kazuo Masuda

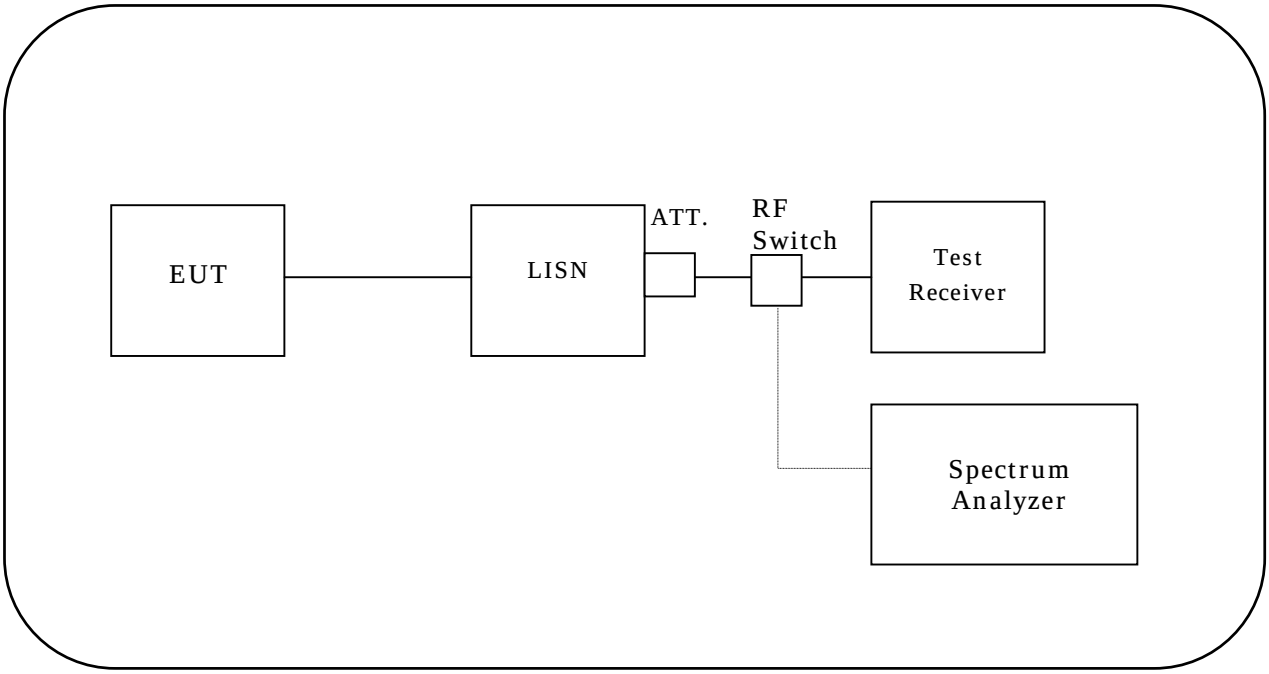
[No]	FREQUENCY [MHz]	MODE	READING [dBuV] Line1	READING [dBuV] Line2	FACTOR [dB] Line1	FACTOR [dB] Line2	EMISSION [dBuV] Line1	EMISSION [dBuV] Line2	LIMIT [dBuV]	MARGIN [dB] Line1	MARGIN [dB] Line2
1	0.2035	QP	41.1	46.3	6.7	6.7	47.8	53.0	63.5	15.7	10.5
2	0.2035	AVG	37.2	41.7	6.7	6.7	43.9	48.4	53.5	9.6	**5.1**
3	0.3355	QP	38.2	40.7	6.7	6.7	44.9	47.4	59.3	14.4	11.9
4	0.3355	AVG	32.8	35.5	6.7	6.7	39.5	42.2	49.3	9.8	7.1
5	0.6008	QP	36.3	36.4	6.7	6.7	43.0	43.1	56.0	13.0	12.9
6	0.6008	AVG	28.6	28.9	6.7	6.7	35.3	35.6	46.0	10.7	10.4
7	1.1352	QP	34.5	34.4	6.7	6.8	41.2	41.2	56.0	14.8	14.8
8	2.0561	QP	32.6	32.0	6.9	6.9	39.5	38.9	56.0	16.5	17.1
9	2.9812	QP	31.5	31.8	6.9	6.9	38.4	38.7	56.0	17.6	17.3
10	6.4630	QP	32.0	32.1	7.1	7.1	39.1	39.2	60.0	20.9	20.8
11	11.7943	QP	22.5	22.8	7.1	7.1	29.6	29.9	60.0	30.4	30.1

Higher six points are underlined.

Other frequencies : Below the FCC 15.207 limit

Emisson Level = Read + Factor(LISN,Pad,Cable)

TEST INSTRUMENTS CONFIGURATION



TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Test receiver	ESS	842886/011	ROHDE & SCHWARZ	Mar. 05, 02	1 Year
LISN (EUT)	ESH2-Z5	881492/014	ROHDE & SCHWARZ	Sep. 30, 02	1 Year
6dB Attenuator	CFA-01	None	TME	Jan. 10, 03	1 Year
LISN (Peripheral)	KNW-407	8-532-11	KYORITSU	Mar. 13, 02	1 Year
50Ω Termination	CT-01	A030CON50	TME	Jun. 26, 02	1 Year
RF Switch	ACX-150	None	AKZO NOBEL	Jan. 10, 03	1 Year

SECTION 10. MEASUREMENT UNCERTAINTY

The uncertainty of the measurements performed for this report lies:

Minimum 6dB Bandwidth [15.247(a)(2)]
Above 1 GHz ..... +/– 46.7kHz

Maximum Peak Output Power [15.247(b)]
Above 1 GHz ..... +/– 0.04 dB

Spurious Emissions
- RF Antenna Conducted Test [15.247(c)]
Above 1 GHz ..... +/– 2.9 dB

Spurious Emissions
- Radiated Emission Test [15.247(c), 15.205, 15.209]
Above 1 GHz ..... +/– 3.9 dB

Power Spectral Density [15.247(d)]
Above 1 GHz ..... +/– 2.9 dB

AC Conducted Emission [15.207]
9 kHz – 30 MHz ..... +/– 1.8 dB

Note on Radiated Emission measurement uncertainty
The following items are not included in the calculations in spite of their own uncertainty components because it is impracticable to find the value.
It is our problem awaiting solution in future.

(1)Repeatability of measurement
It is not possible to calculate repeatability since the measurement was carried out only one time.

(2)Antenna factor variation
The definition of measured (radiated electric field strength) is not completed on the referred standard(s).

(3)Loss of EUT radiation propagation
It is certainly one of the uncertainty components, however is not able to calculate.

Please note that these uncertainties are not reflected to the compliance judgement of the test results in this report.

SECTION 11. DESCRIPTION OF TEST LABORATORY

11.1 Outline of Akzo Nobel K. K. (formerly Akzo Kashima Limited), EMC Division

Akzo Nobel K. K., the country organization in Japan for Akzo Nobel NV, was established in 1968. The shares are owned by Akzo Nobel NV (100%). Akzo Nobel NV, headquartered in the Netherlands, is one of the world's leading companies in selected areas of chemicals, coatings, healthcare products and fibers with work force of approximately 70,000 people in over 50 countries.

In 1984, in order to respond to the growing testing demand, in particular, for FCC filing, Akzo Nobel K. K. started EMI testing business, installing the first open air test site in Kashima, Ibaraki prefecture. Further the business has been expanded by installing additional testing facilities not only in Ibaraki but also in other areas such as Shizuoka, Nagano, Kanagawa and Tochigi. As results, Akzo Nobel K. K. has now 16 open air test sites and 4 anechoic chambers for EMI/EMC testing. As the largest EMC testing laboratory in number of testing facilities and staffs, EMC Division has been organized separately in the company and independently operated in conformity with the requirements of ISO/IEC 17025 for its competency as a testing laboratory.

Akzo Nobel K. K. EMC Division is the first foreign private laboratory accredited by NVLAP, National Voluntary Laboratory Accreditation Program-NIST, USA. The division has been certified, authorized and/or filed as a competent testing laboratory by various testing organizations/authorities as described below.

11.2 Filing, certification, authorization and accreditation list

EMI/EMC testing		Telecommunications terminal testing	
FCC	(USA)	FCC	(USA)
NVLAP	(USA)	NVLAP	(USA)
NEMKO	(Norway)	NATA	(Australia)
VCCI	(Japan)	IC	(Canada)
ETL SEMKO	(Sweden)		
TÜV PRODUCT SERVICE	(Germany)		

Note 1 : NVLAP accreditation does not constitute any product endorsement by NVLAP or any agent of the U.S. Government.