T E S T R E P O R T

REPORT NUMBER	:	**ANKK-101057**
APPLICANT	:	**Casio Computer Co., Ltd.**
MODEL NUMBER	:	**IT-700M30RC, IT-70M30RC**
FCC ID	:	**BBQ-IT700M30RC**

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.

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TABLE OF CONTENTS

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

SECTION 1. TEST CERTIFICATION

APPLICANT INFORMATION

Company	:	Casio Computer Co., Ltd.
Address	:	3-2-1, Sakae-cho, Hamurashi, Tokyo, 205-0002 Japan

DESCRIPTION OF TEST ITEM

Kind of equipment	:	Pocket PC Terminal
Condition of equipment	:	Pre–Production
Type	:	Table–Top (Handheld type)
Trademark	:	CASIO
FCC ID	:	BBQ-IT700M30RC
Model number	:	IT-700M30RC
Serial number	:	None

TEST PERFORMED

Location	:	Kashima No. 1 Test Site (FCC File No. : 31040/SIT)
	:	Kashima No. 3 Test Site (FCC File No. : 31040/SIT)
EUT received	:	January 22, 2001
Test started	:	January 23, 2001
Test completed	:	February 8, 2001
Regulation	:	FCC Part15 Subpart C Section 15.247 Intentional Radiators
Test setup	:	ANSI C63.4–1992

Report number : ANKK–101057

Report issue date : February 19, 2001

Test engineer : Kazuhiro Ando

Report approved by : Junichi Okada
[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.

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
Restricted Bands of Operation	15.247(c) 15.205 15.209	Pass
AC Conducted Emission	15.207	Pass

Note : As for the data of the processing gain[15.247(e)], refer to the processing gain file.

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)	Pocket PC Terminal	IT-700M30RC	None	BBQ-IT700M30RC	Casio Computer Co., Ltd.	
B)	Optical Communication Unit	IT-760IOE	None	DoC	Casio Computer Co., Ltd.	Option
C)	Optical Communication Unit	IT-760IOE	None	DoC	Casio Computer Co., Ltd.	Option
D)	Optical Communication Unit	IT-760IOE	None	DoC	Casio Computer Co., Ltd.	Option
E)	Compact Flash Card	CF-256-S	None	N.A.	Casio Computer Co., Ltd.	Option
F)	Battery Pack	DT-5024LBAT	None	N.A.	Casio Computer Co., Ltd.	Option

Power ratings of EUT : DC 3.7 - 5V, 1.5 A

DoC : Device for Declaration of Conformity

Note :

1. Optical Communication Unit has already been declared as DoC.
2. Optical Communication Unit has a charging function.
3. Pocket PC Terminal and Optical communication Unit can use Infrared (IR) data communication.

3.1 Variation of model(s)

[Pocket PC Terminal]

Model	LCD Type	Remarks
IT-700M30RC	Color	Tested model
IT-70M30RC	Monochrome	

[Battery Pack]

Model	Battery Capacity	Remarks
DT-5024LBAT	Large-capacity Battery Pack	Tested model
DT-5023BAT	Standard Battery Pack	

3.2 Operating channels and frequencies

ch	Frequency (GHz)
1	2.412
2	2.417
3	2.422
4	2.427
5	2.432
6	2.437
7	2.442
8	2.447
9	2.452
10	2.457
11	2.462

Note:

1. This is for sure that all frequencies are in 2.412GHz to 2.462GHz.
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 2.412GHz to 2.462GHz. 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.

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
G) AC Adaptor	DT-825ADP-U	2412-01	DoC	Casio Computer Co., Ltd.
H) AC Adaptor	DT-825ADP-U	2412-01	DoC	Casio Computer Co., Ltd.
I) AC Adaptor	DT-825ADP-U	2412-01	DoC	Casio Computer Co., Ltd.
J) Computer	Prolinear 4/100	7423HKE20374	CNT75MBF7LM	COMPAQ
K) CRT Display	611	724BC11UB236	BR8SM-569	COMPAQ
L) Keyboard	RT6674TJP	31443055	AQ6ZG-RT687XT	COMPAQ
M) Mouse	C3751B	LZA75009362	DZL211029	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) Earphone cable	1.50 m	None	Metal	
2) RS422 cable	0.80 m	None	Plastic	
3) RS422 cable	0.80 m	None	Plastic	
4) RS-232C cable	2.00 m	Yes	Metal	
5) Video cable	1.40 m	Yes	Metal	Fixed × 1
6) Keyboard cable (Curl cord)	1.50 m	None	Metal	
7) Mouse cable	1.50 m	None	Metal	
8) Power cable for Optical Communication Unit (B)	1.80 m	None		Fixed × 1
9) Power cable for Optical Communication Unit (C)	1.80 m	None		Fixed × 1
10) Power cable for Optical Communication Unit (D)	1.80 m	None		Fixed × 1
11) Power cable for Computer	2.00 m	None		
12) Power cable for CRT Display	2.00 m	None		

Note :

a. These cables (No.8- No.10) are supplied together with Optical Communication Unit by the applicant.

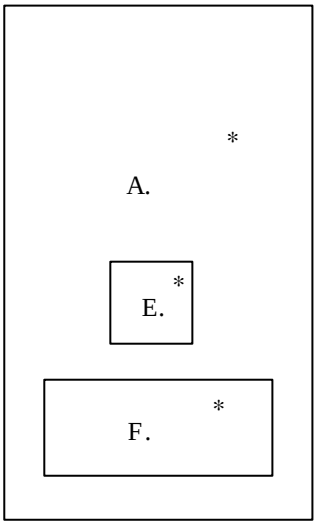
SECTION 6. CONSTRUCTION OF EQUIPMENT

The construction of EUT during the test was as follows.

6.1 Single Use

System configuration

* : EUT
■ : Ferrite core

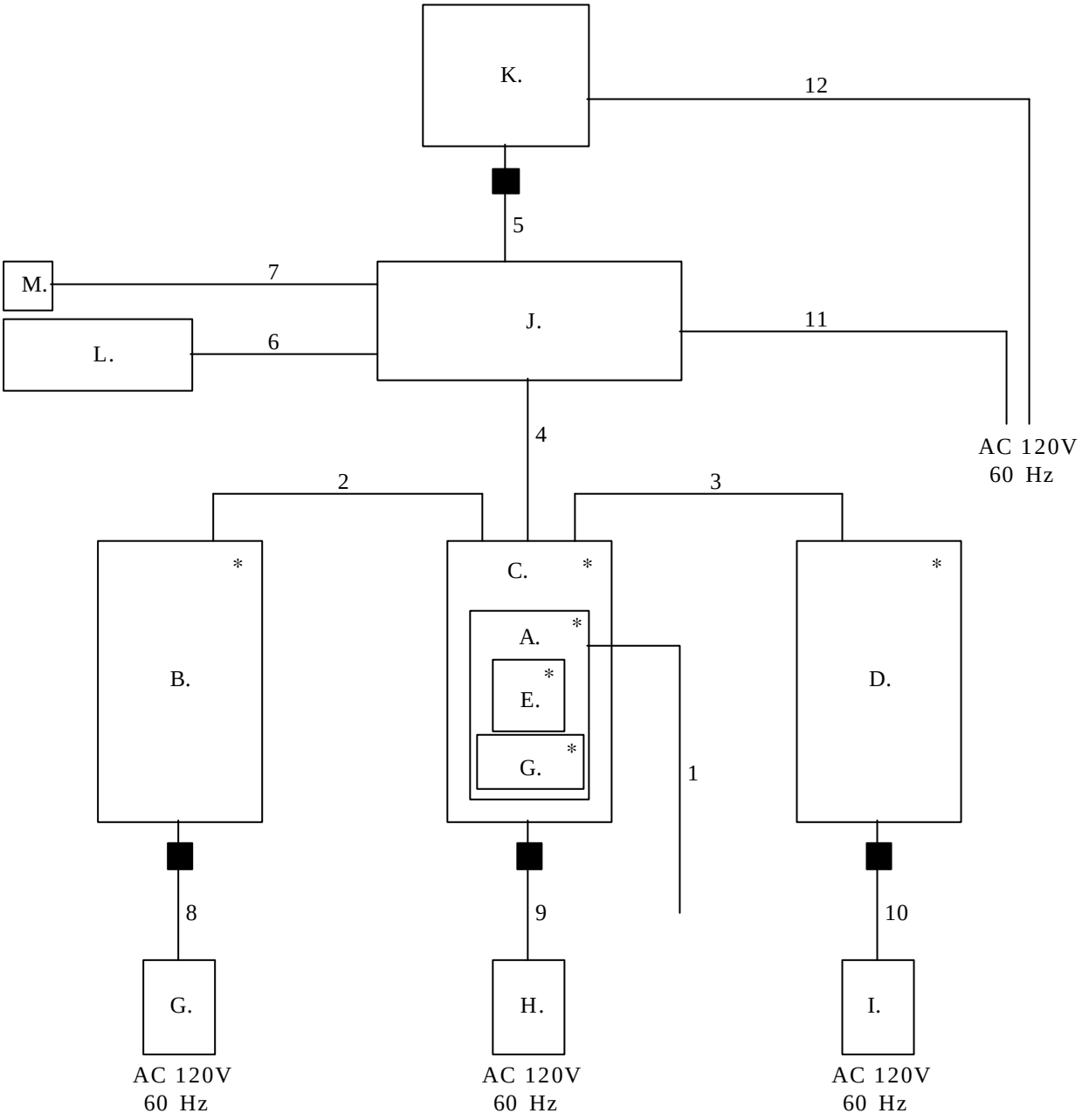


Symbols or numbers assigned to equipment or cables on this diagram are corresponded to the symbols or numbers assigned to equipment or cables on tables in Sections 3 to 5.

6.2 System Use

System configuration

* : EUT
■ : Ferrite core



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

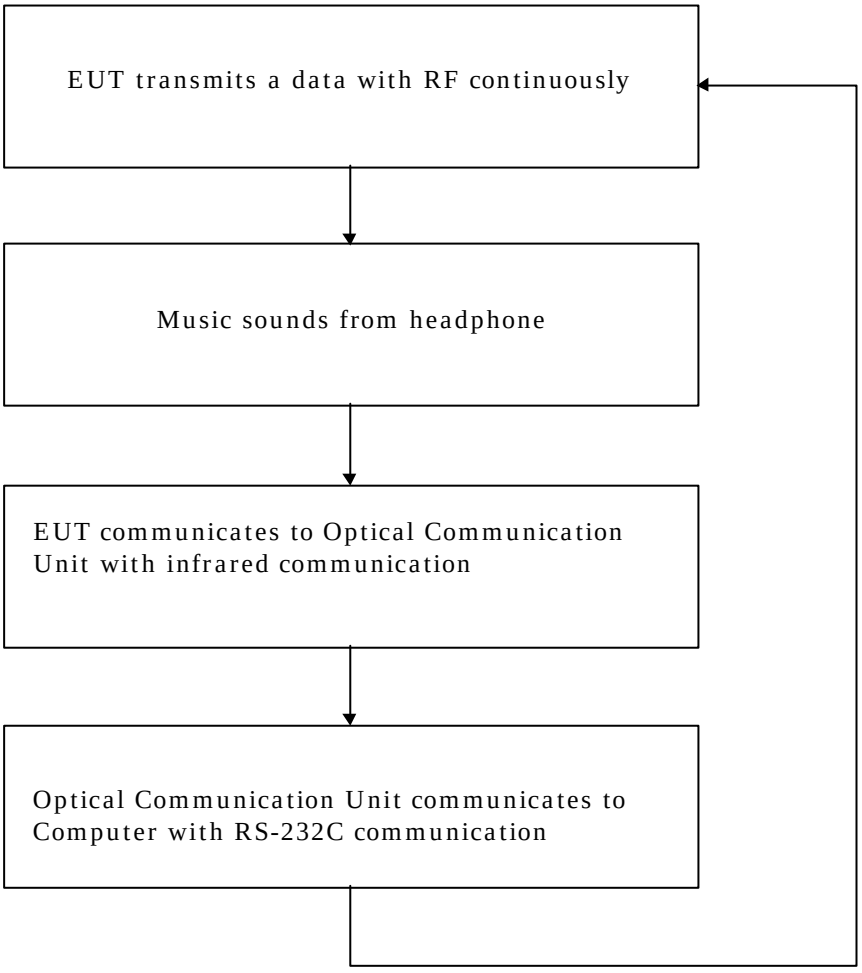
The EUT was operated under the following conditions during the test.

7.1 Operating condition

During the measurements of the transmitter, the EUT was continuously transmitting. Tests at different data rates of 1Mbps, 2Mbps, 5.5Mbps and 11Mbps were made.

7.2 Operating flow [System Use]

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.
The each spectrum to be tested are measured in quasi–peak using the test receiver. When the value in the quasi–peak mode is higher than the limit in the standard, the measurement in the average mode is done to compare to the value in the quasi–peak mode. If the value in the quasi–peak mode exceeds the value in the average mode by more than 6 dB, the value reducing 13 dB from the value in the quasi–peak mode is used to compare to the limit.

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 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 Turntable

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

8.2.2.5 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)]

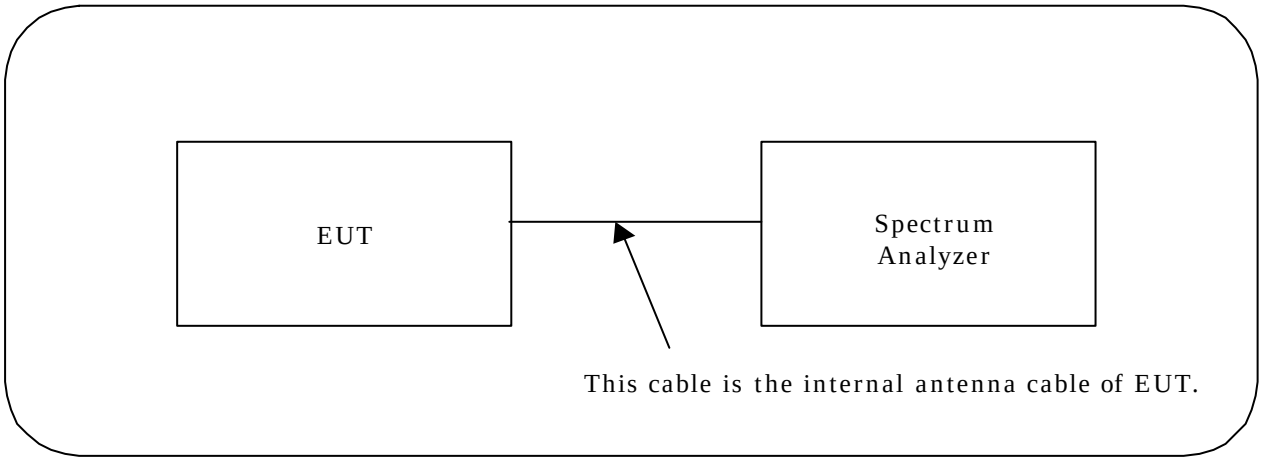
MEASUREMENT PROCEDURE:

1. The EUT was setup to operate with 1Mbps, 2Mbps, 5.5Mbps and 11MBit data rates.
2. The EUT was measured while transmitting continuously at ch 1 (low), ch 6 (mid), and ch 11 (high).
3. The Spectrum Analyzer was connected directly to the transmitter output.
4. The Spectrum Analyzer was setup using RBW = 3kHz, VBW = 10kHz, span = 300kHz and sweep = 100sec.(span/3kHz).
5. The next page shows the chart of the observed RF profiles.
6. Following data is the worst case.

Test date : January 23, 2001
Temperature : 17 °C
Humidity : 45 %

ch	Frequency (MHz)	Data Rate (bps)	Peak Level (dBm)	15.247(d) Limit (dBm)	Chart
1	2412	2	-11.67	8	Page 18
6	2437	2	-11.42	8	Page 18
11	2462	2	-12.17	8	Page 19
11	2462	11	-13.00	8	Page 19

TEST INSTRUMENTS CONFIGURATION



TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Spectrum analyzer	8564E	3643A00665	HEWLETT PACKARD	Mar. 23, 00	1 Year

Chart of Power Spectral Density in ch 1 and 2Mbps data rate

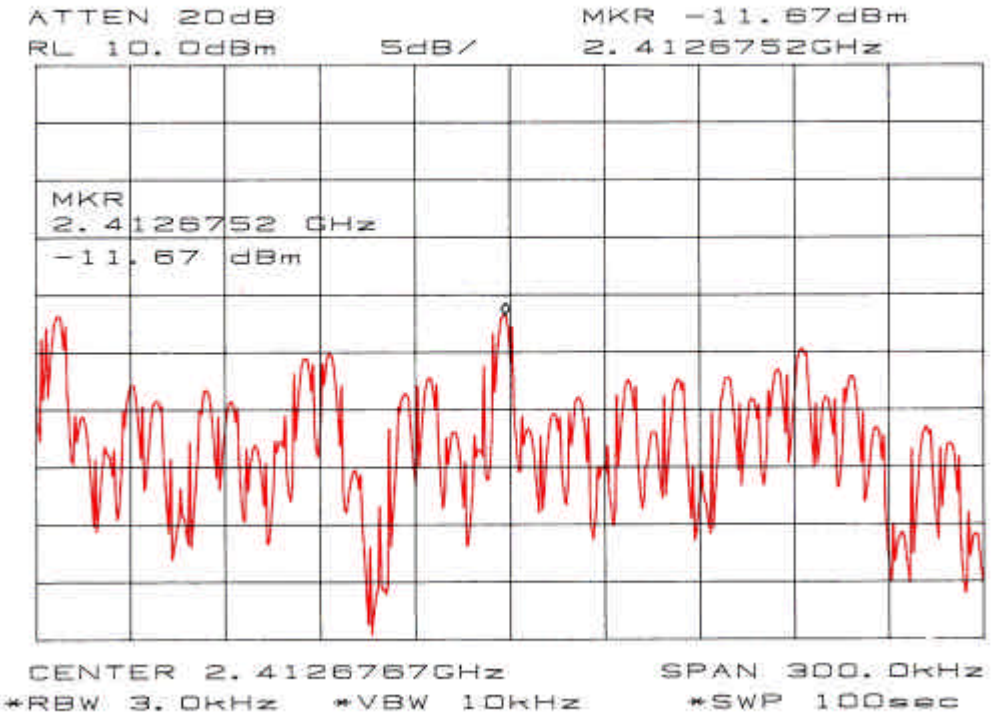


Chart of Power Spectral Density in ch 6 and 2Mbps data rate

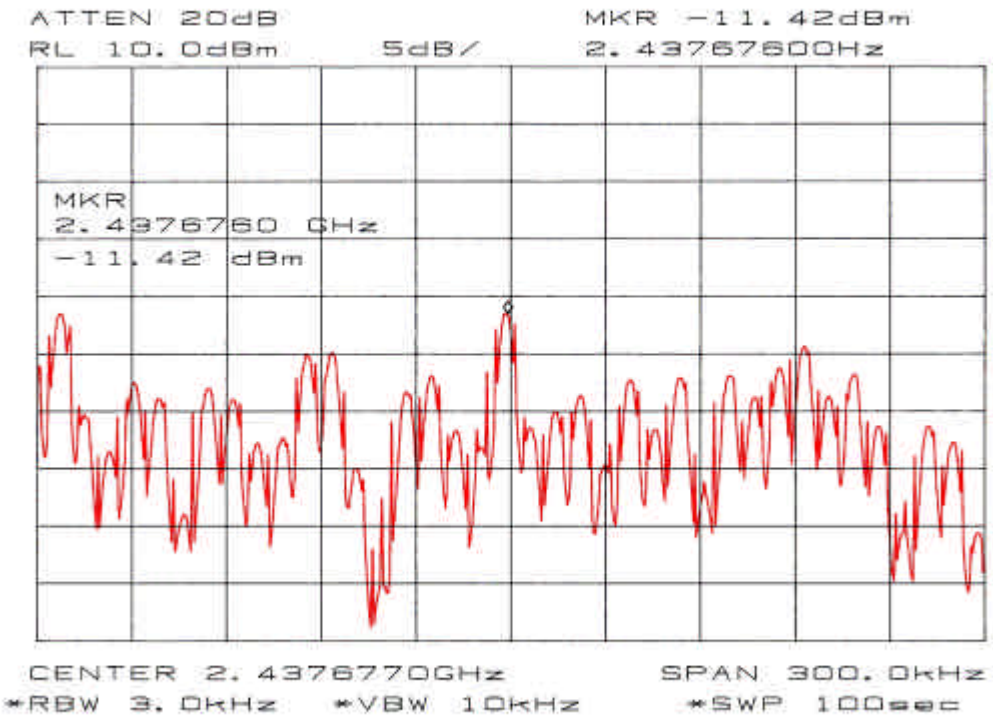


Chart of Power Spectral Density in ch 11 and 2Mbps data rate

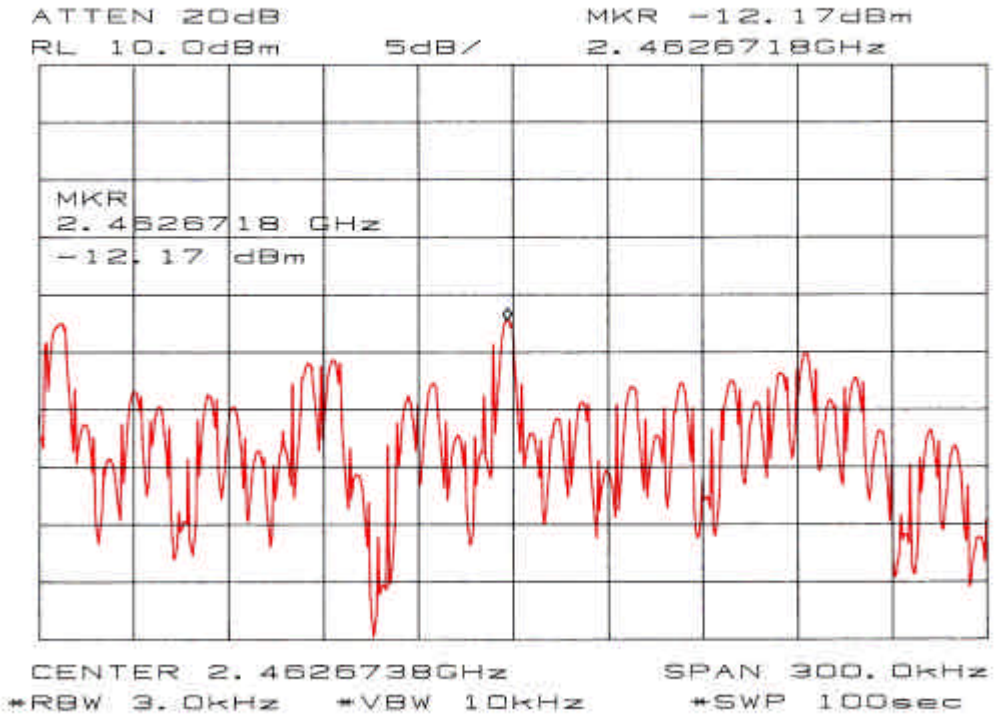
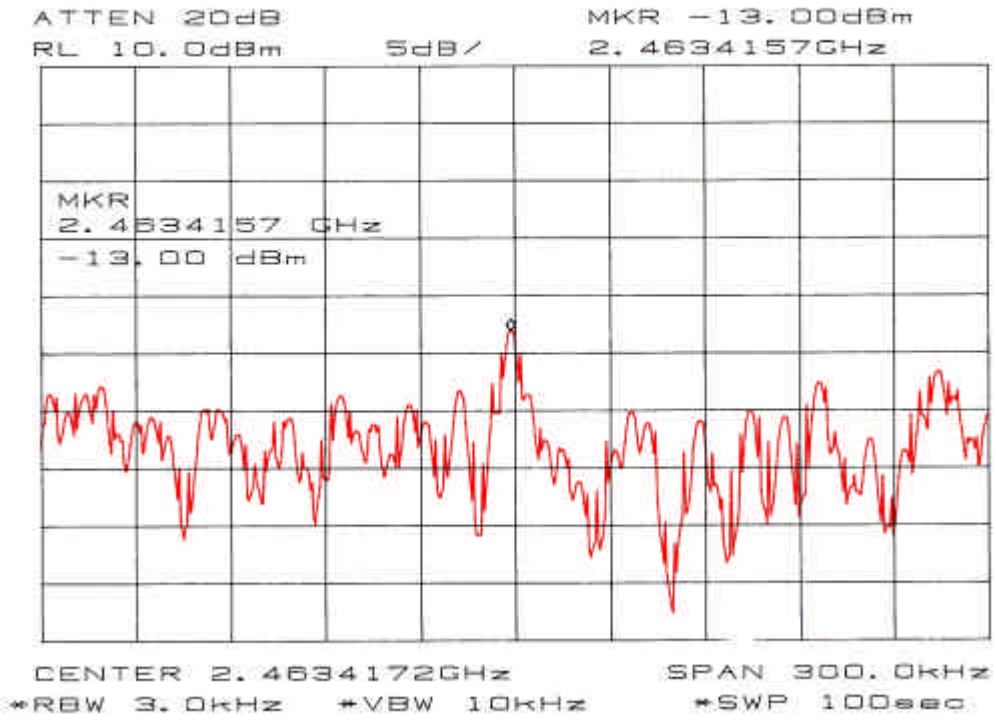


Chart of Power Spectral Density in ch 11 and 11Mbps data rate



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

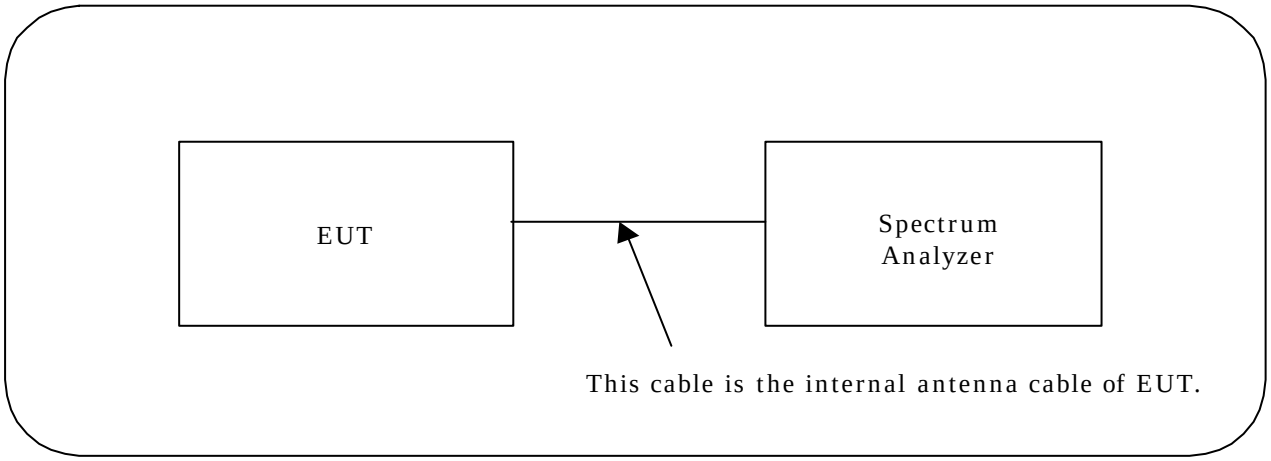
MEASUREMENT PROCEDURE:

1. The EUT was setup to operate with 1Mbps, 2Mbps, 5.5Mbps and 11MBit data rates.
2. The EUT was measured while transmitting continuously at ch 1 (low), ch 6 (mid), and ch 11 (high).
3. The Spectrum Analyzer was connected directly to the transmitter output.
4. The Spectral Analyzer was setup using RBW = 100kHz, VBW = 100kHz, and span = 50MHz (span>>RBW).
5. The next page shows the chart of the observed RF profiles.
6. Following data is the worst case.

Test date : January 23, 2001
Temperature : 17 °C
Humidity : 45 %

ch	Frequency (MHz)	Data Rate (bps)	6dB Bandwidth (MHz)	15.247(a)(2) Minimum (kHz)	Chart
1	2412	11	9.75	500	Page 21
6	2437	11	9.58	500	Page 21
11	2462	11	9.17	500	Page 22

TEST INSTRUMENTS CONFIGURATION



TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Spectrum analyzer	8564E	3643A00665	HEWLETT PACKARD	Mar. 23, 00	1 Year

Chart of Minimum 6dB Bandwidth in ch 1 and 11Mbps data rate

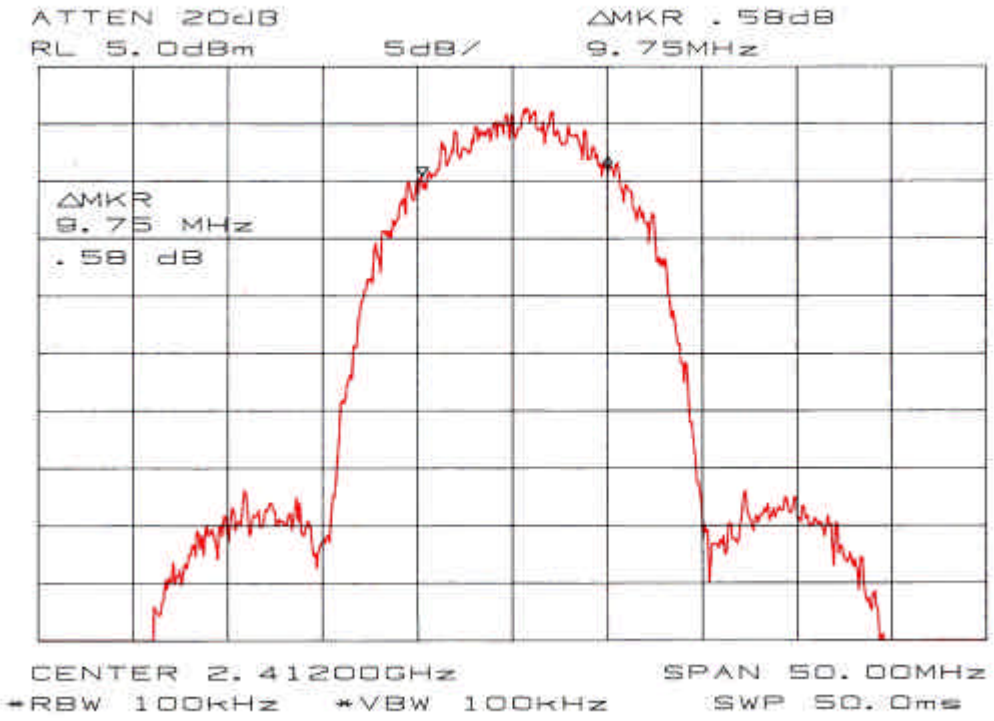


Chart of Minimum 6dB Bandwidth in ch 6 and 11Mbps data rate

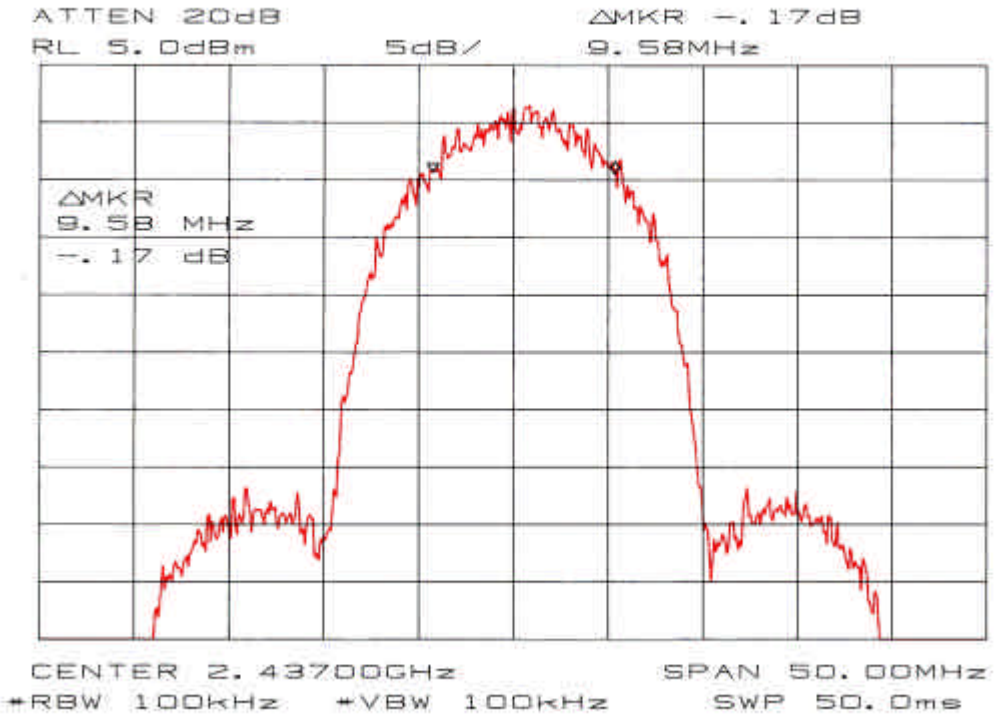
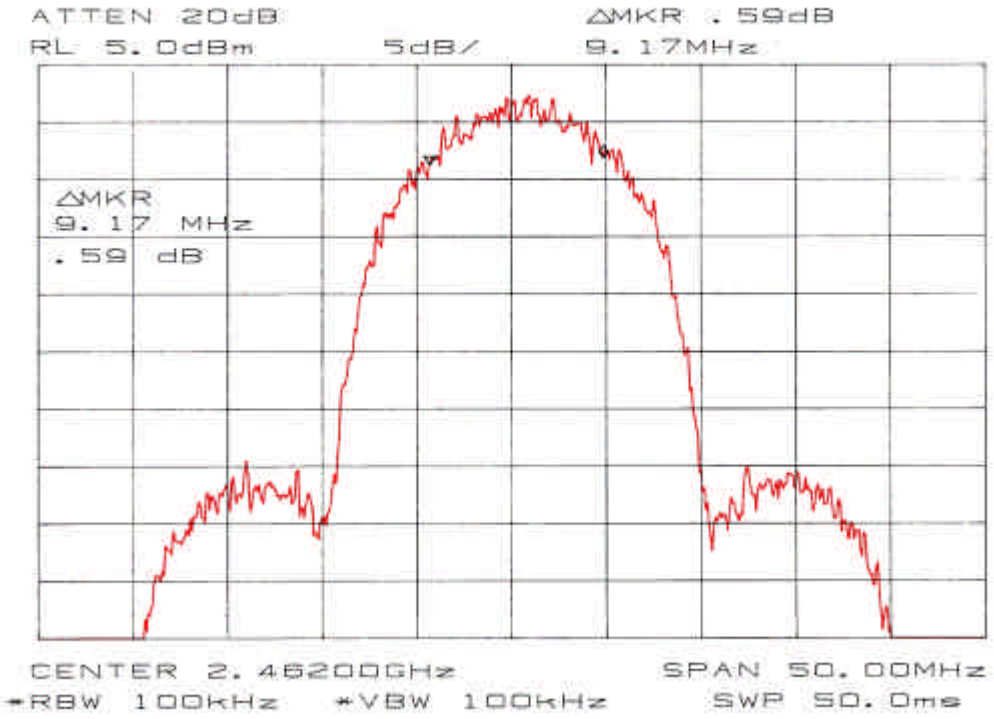


Chart of Minimum 6dB Bandwidth in ch 11 and 11Mbps data rate



9.3 Maximum Peak Output Power [15.247(b)]

MEASUREMENT PROCEDURE:

1. The EUT was setup to operate with 1Mbps, 2Mbps, 5.5Mbps and 11MBit data rates.
2. The EUT was measured while transmitting continuously at ch 1 (low), ch 6 (mid), and ch 11 (high).

Measurement of Radiated Emissions.

3. The EUT was set upon the wooden turntable 80cm above the ground plane at a distance of 3 meters from the receiving antenna.
4. The transmitted emission level was maximized by rotating the turntable and raising and lowering the search antenna.
5. The Spectral Analyzer was setup using RBW = 2MHz, VBW = 3MHz.
6. The next page shows the chart of the observed RF profiles.
7. Following data is the worst case.

Test date : February 8, 2001
Temperature : 18 °C
Humidity : 40 %

ch	Frequency (MHz)	Data Rate (Mbps)	Reading (dBuV/m)	Polari-zation (H/V)	Factor (dB)	Emission Level (dBuV/m)	Peak Output Power (mW)	15.247(b) Limit (mW)	Chart
1	2412	11	68.5	V	38.7	107.2	15.74	1000	Page 24
6	2437	11	69.6	V	38.8	108.4	20.75	1000	Page 25
11	2462	11	72.1	V	38.9	111.0	37.76	1000	Page 25

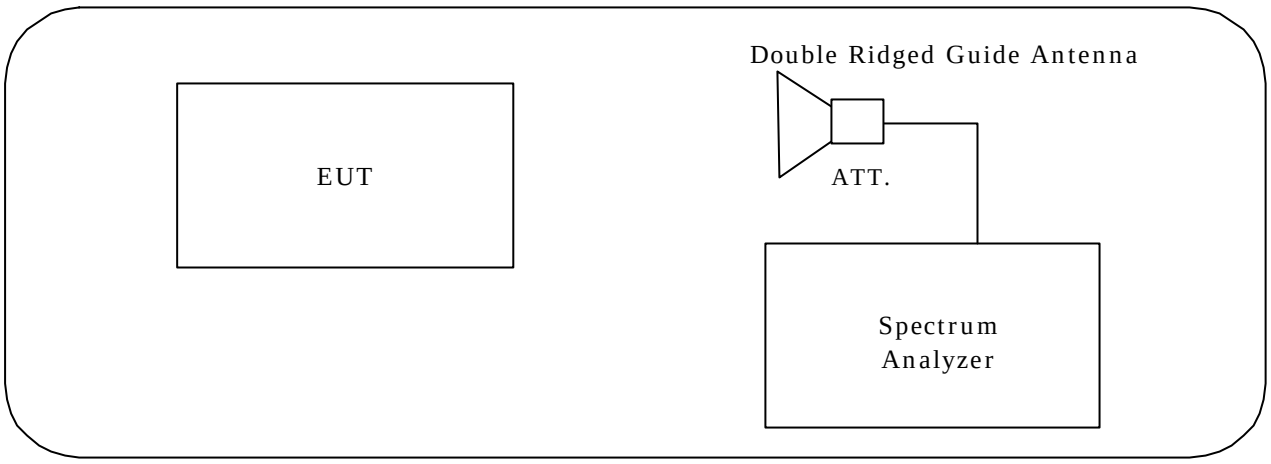
Note:

1. Emission Level = Reading + Factor (Antenna, Antenna Pad, Cable)
2. Peak Output Power : $P = (E*d)^2/30G$

where P is the power, in Watts
E is the measured peak field strength, in Volts/meter
d is the distance at which the measurement was made, in meters
G is the numeric gain of the radiating element

Example: the Max Radiated Emission of ch 11 and 11Mbps = 111.0 dBuV/m
$E = 10^{(111.0/20)} \times 10^{-6} = 0.3548$ V
$P = (0.3548 \times 3)^2 / 30 \times 1 = 37.76$ mW

TEST INSTRUMENTS CONFIGURATION



TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Spectrum analyzer	8564E	3643A00665	HEWLETT PACKARD	Mar. 23, 00	1 Year
6dB Attenuator	6806.17B	None	SUHNER	Jan. 5, 01	1 Year
Double Ridged Guide Antenna	3115	5044	EMCO	Jun. 14, 00	1 Year

Chart of Maximum Peak Output Power in ch 1 and 11Mbps data rate

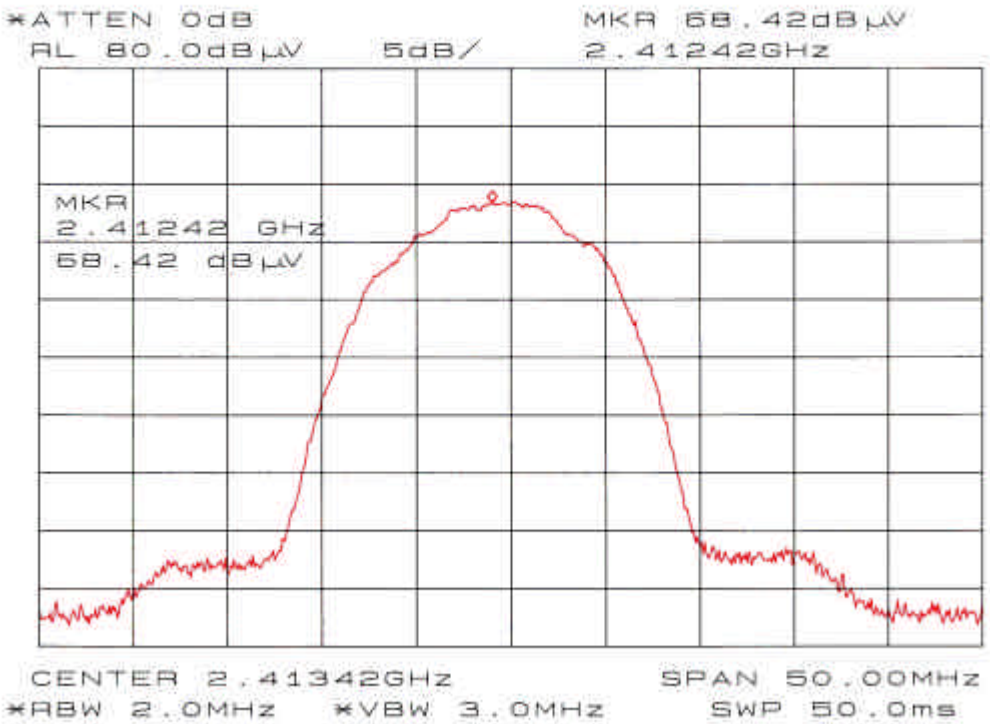


Chart of Maximum Peak Output Power in ch 6 and 11Mbps data rate

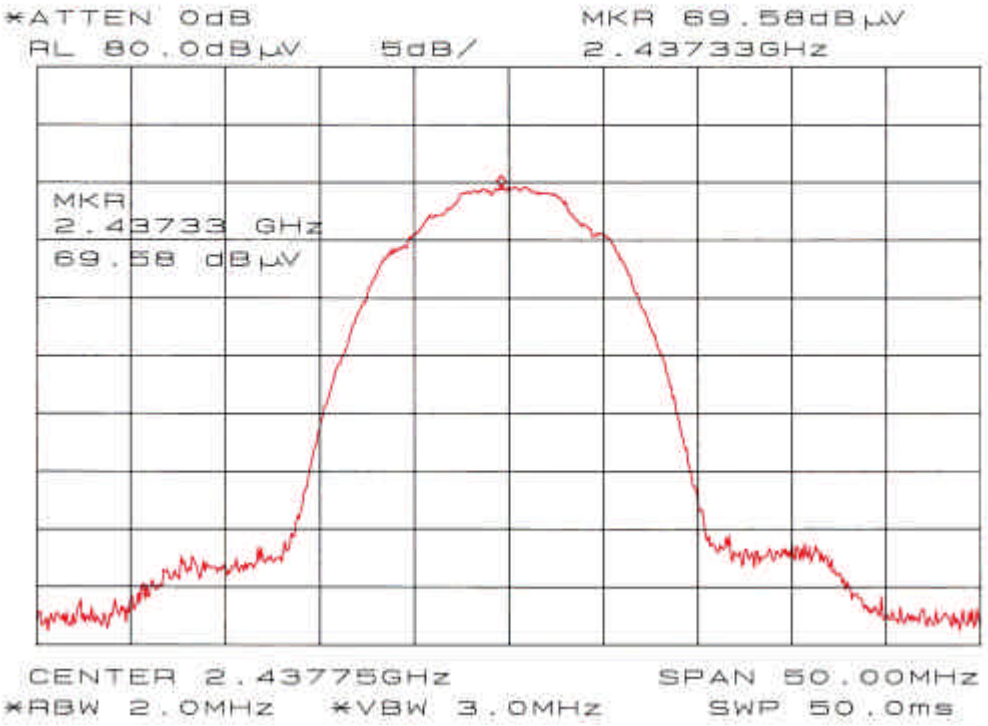
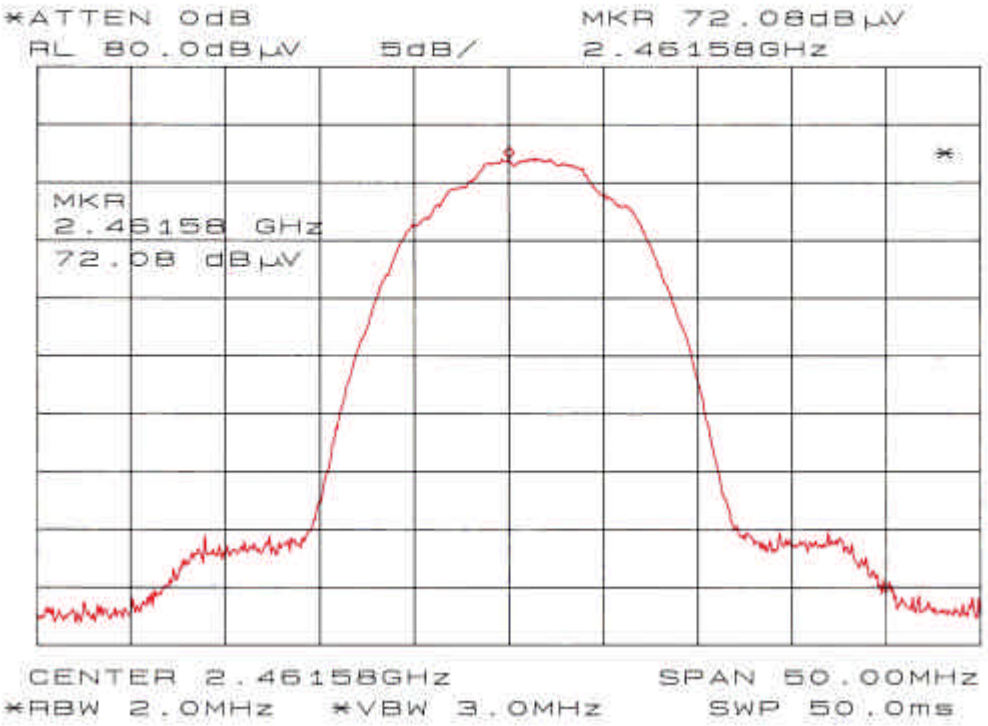


Chart of Maximum Peak Output Power in ch 11 and 11Mbps data rate



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

MEASUREMENT PROCEDURE:

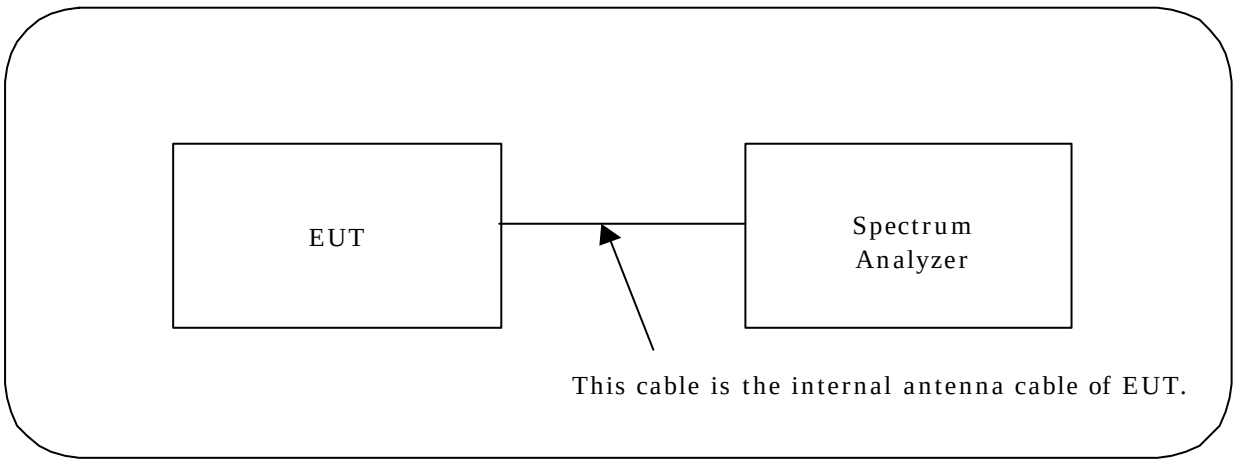
1. The EUT was setup to operate with 1Mbps, 2Mbps, 5.5Mbps and 11MBit data rates.
2. The EUT was measured while transmitting continuously at ch 1 (low), ch 6 (mid), and ch 11 (high).
3. The Spectrum Analyzer was connected directly to the transmitter output.
4. The Spectrum Analyzer was setup using RBW = 100kHz, VBW = 100kHz.
5. As for the chart of the observed RF profiles, refer to Annex A.

Test date : January 23, 2001
Temperature : 17 °C
Humidity : 45 %

ch	Frequency (MHz)	Data Rate (bps)	Chart
1	2412	11	Annex A page 2-4
6	2437	11	Annex A page 5-7
11	2462	11	Annex A 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	8564E	3643A00665	HEWLETT PACKARD	Mar. 23, 00	1 Year

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

MEASUREMENT PROCEDURE:

1. The EUT was setup to operate with 1Mbps, 2Mbps, 5.5Mbps and 11MBit data rates.
2. The EUT was measured while transmitting continuously at ch 1 (low), ch 6 (mid), and ch 11 (high).

Measurement of Radiated Emissions.

3. The EUT was set upon the wooden turntable 80cm above the ground plane at a distance of 1 meter from the receiving antenna.
4. The transmitted emission level was maximized by rotating the turntable and raising and lowering the search antenna.
5. The Spectrum Analyzer was setup using
   Peak mode: RBW = 1MHz, VBW = 1MHz
   Average mode: RBW = 1MHz, VBW = 10Hz
6. Following data is the worst case.

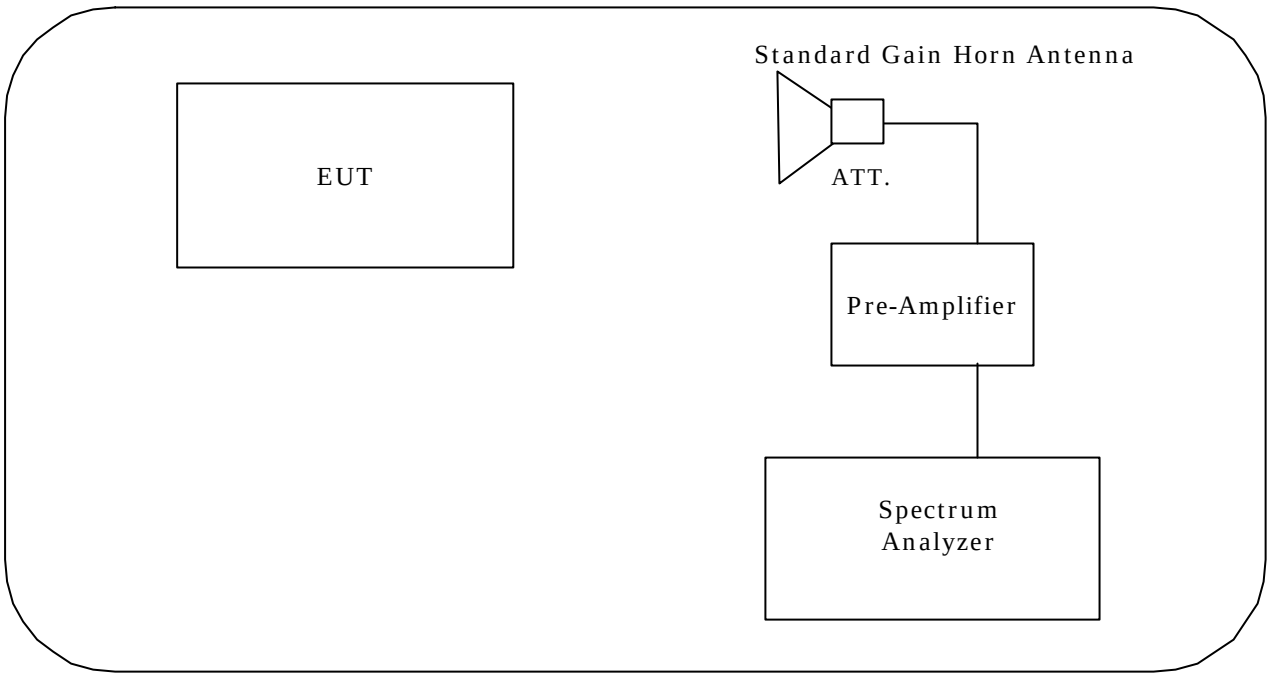
Test date : February 8, 2001
Temperature : 18 °C
Humidity : 40 %

ch	Freq. (MHz)	Data Rate (Mbps)	Reading (dBuV/m)		Polari-zation (H/V)	Factor (dB)	Emission Level (dBuV/m)		15.247(c) Limit (dBuV/m)		Margin (dB)	
			Peak	Avg.			Peak	Avg.	Peak	Avg.	Peak	Avg.
1	4824	1	47.8	44.3	H	3.1	50.9	47.4	74	54	23.1	6.6
	4824	1	44.1	38.5	V	3.1	47.2	41.6	74	54	26.8	12.4
	7236	1	34.9	24.7	H	10.6	45.5	35.3	74	54	28.5	18.7
	9648 *	1	35.9	23.8	H	17.3	53.2	41.1	74	54	20.8	12.9
	12060 *	1	35.2	23.6	H	18.8	54.0	42.4	74	54	20.0	11.6
1	4824	11	45.7	33.0	H	3.1	48.8	36.1	74	54	25.2	17.9
	4824	11	40.6	28.2	V	3.1	43.7	31.3	74	54	30.3	22.7
	7236	11	35.4	24.2	H	10.6	46.0	34.8	74	54	28.0	19.2
	9648 *	11	34.5	23.6	H	17.3	51.8	40.9	74	54	22.2	13.1
	12060 *	11	34.3	23.6	H	18.8	53.1	42.4	74	54	20.9	11.6
6	4874	1	44.6	39.7	H	3.3	47.9	43.0	74	54	26.1	11.0
	4874	1	40.9	32.2	V	3.3	44.2	35.5	74	54	29.8	18.5
	7311	1	36.5	24.3	H	10.7	47.2	35.0	74	54	26.8	19.0
	9748 *	1	35.5	23.5	H	17.4	52.9	40.9	74	54	21.1	13.1
	12185 *	1	35.6	23.4	H	18.9	54.5	42.3	74	54	19.5	11.7
11	4924	1	41.5	34.8	H	3.4	44.9	38.2	74	54	29.1	15.8
	4924	1	38.0	28.4	V	3.4	41.4	31.8	74	54	32.6	22.2
	7386	1	34.9	23.8	H	10.8	45.7	34.6	74	54	28.3	19.4
	9848 *	1	36.1	25.0	H	17.5	53.6	42.5	74	54	20.4	11.5
	12310 *	1	34.5	24.6	H	18.9	53.4	43.5	74	54	20.6	10.5

Note:

1. Emission Level = Reading + Factor (Antenna, Antenna Pad, Cable, Pre-Amp., Distance)
2. Other frequencies : Below the 15.247(c) limit
3. * : This signal is at the system floor noise level.
4. All 100kHz bandwidth out-of-band radiated 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	8564E	3643A00665	HEWLETT PACKARD	Mar. 23, 00	1 Year
Pre-Amplifier	83051A	3332A00329	HEWLETT PACKARD	Jan. 5, 01	1 Year
6dB Attenuator	6806.17B	None	SUHNER	Jan. 5, 01	1 Year
Standard Gain Horn Antenna	3160-05	9701-1038	EMCO	Feb. 24, 99	3 Year
	3160-06	9612-1030	EMCO	Feb. 24, 99	3 Year
	3160-07	9703-1069	EMCO	Feb. 24, 99	3 Year
	3160-08	9703-1057	EMCO	Feb. 24, 99	3 Year
	3160-09	9703-1074	EMCO	Feb. 24, 99	3 Year

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

MEASUREMENT PROCEDURE:

1. The EUT was setup to operate with 1Mbps, 2Mbps, 5.5Mbps and 11MBit data rates.
2. The EUT was measured while transmitting continuously at ch 1 (low) and ch 11 (high).

Measurement of Radiated Emissions.

3. The EUT was set upon the wooden turntable 80cm above the ground plane at a distance of 1 meter from the receiving antenna.
4. The transmitted emission level was maximized by rotating the turntable and raising and lowering the search antenna.
5. The Spectrum Analyzer was setup using
   Peak mode: RBW = 1MHz, VBW = 1MHz
   Average mode: RBW = 1MHz, VBW = 10Hz
6. The next page shows the chart of the observed RF profiles.
7. Following data is the worst case.

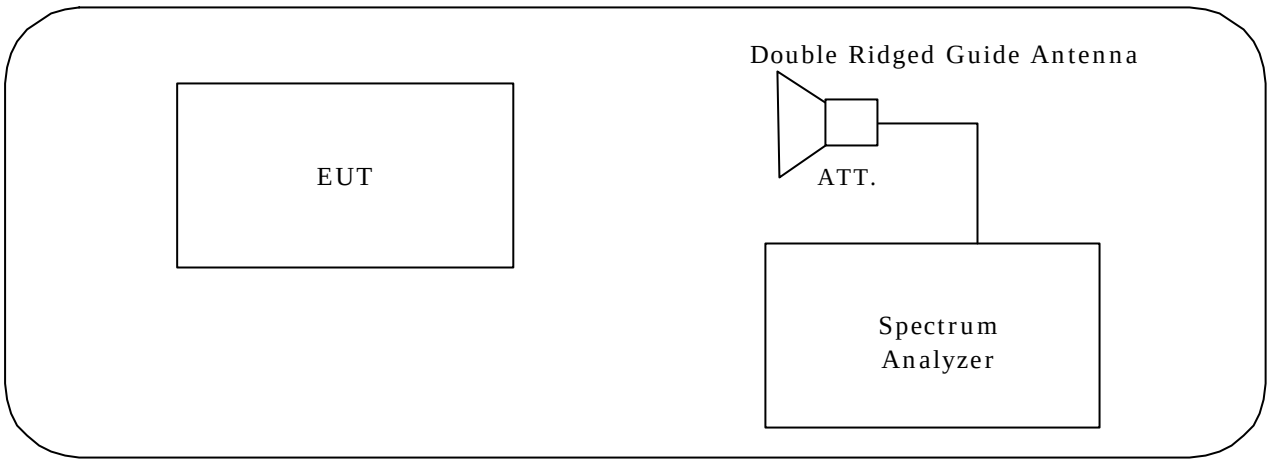
Test date : February 8, 2001
Temperature : 18 °C
Humidity : 40 %

ch	Freq. (MHz)	Data Rate (Mbps)	Reading (dBuV/m)		Polari-zation (H/V)	Factor (dB)	Emission Level (dBuV/m)		15.247(c) Limit (dBuV/m)		Margin (dB)		Chart
			Peak	Avg.			Peak	Avg.	Peak	Avg.	Peak	Avg.	
1	2390	1	25.9	17.5	V	29.2	55.1	46.7	74.0	54.0	18.9	7.3	Page 31
	2390	2	26.0	17.5	V	29.2	55.2	46.7	74.0	54.0	18.8	7.3	Page 31
	2390	5.5	25.6	17.5	V	29.2	54.8	46.7	74.0	54.0	19.2	7.3	Page 32
	2390	11	26.4	17.5	V	29.2	55.6	46.7	74.0	54.0	18.4	7.3	Page 32
11	2483.5	1	27.9	18.4	V	29.4	57.3	47.8	74.0	54.0	16.7	6.2	Page 33
	2483.5	2	28.4	18.5	V	29.4	57.8	47.9	74.0	54.0	16.2	6.1	Page 33
	2483.5	5.5	27.3	17.9	V	29.4	56.7	47.3	74.0	54.0	17.3	6.7	Page 34
	2483.5	11	27.3	18.2	V	29.4	56.7	47.6	74.0	54.0	17.3	6.4	Page 34

Note:

1. Emission Level = Reading + Factor (Antenna, Antenna Pad, Cable, Distance)

TEST INSTRUMENTS CONFIGURATION



TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Spectrum analyzer	8564E	3643A00665	HEWLETT PACKARD	Mar. 23, 00	1 Year
6dB Attenuator	6806.17B	None	SUHNER	Jan. 5, 01	1 Year
Double Ridged Guide Antenna	3115	5044	EMCO	Jun. 14, 00	1 Year

Chart of Restricted Bands of Operation in ch 1 and 1Mbps data rate

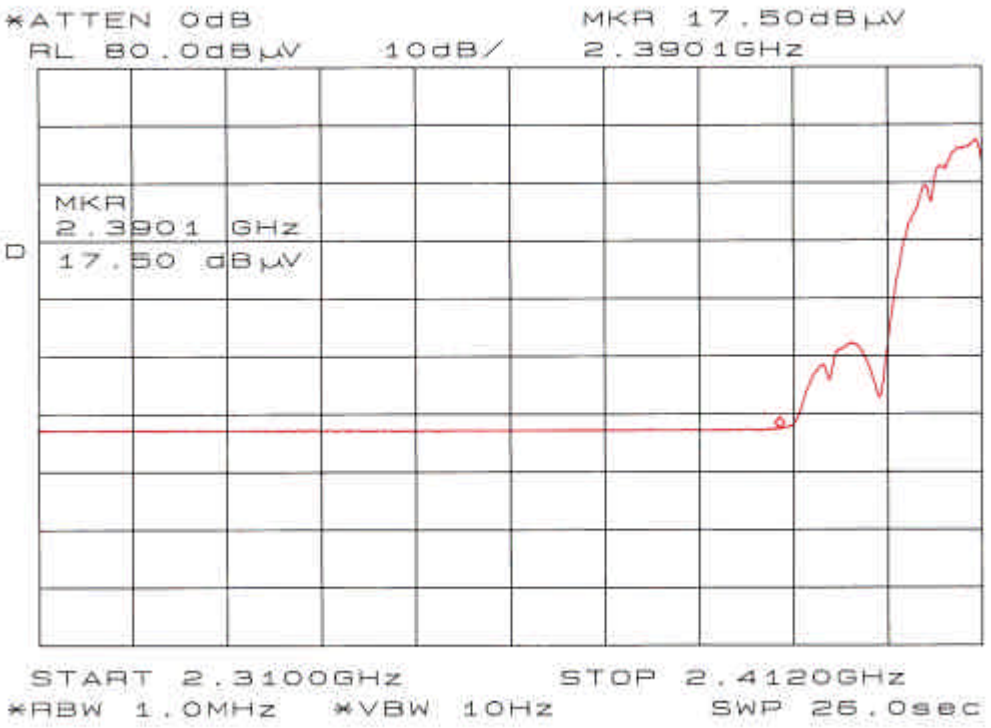


Chart of Restricted Bands of Operation in ch 1 and 2Mbps data rate

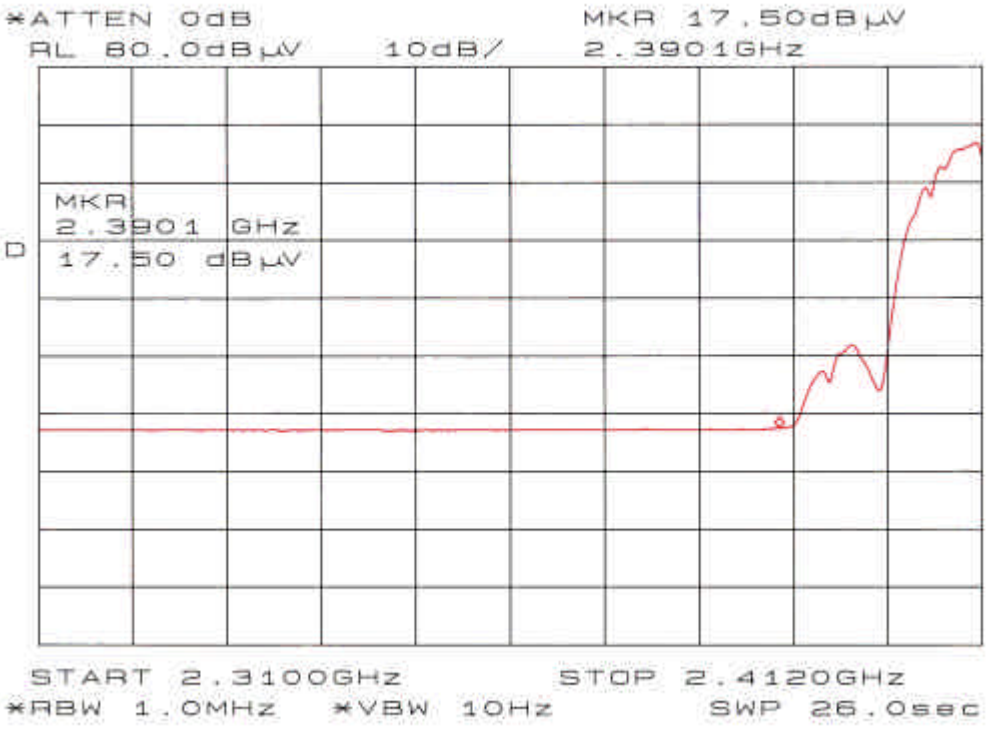


Chart of Restricted Bands of Operation in ch 1 and 5.5Mbps data rate

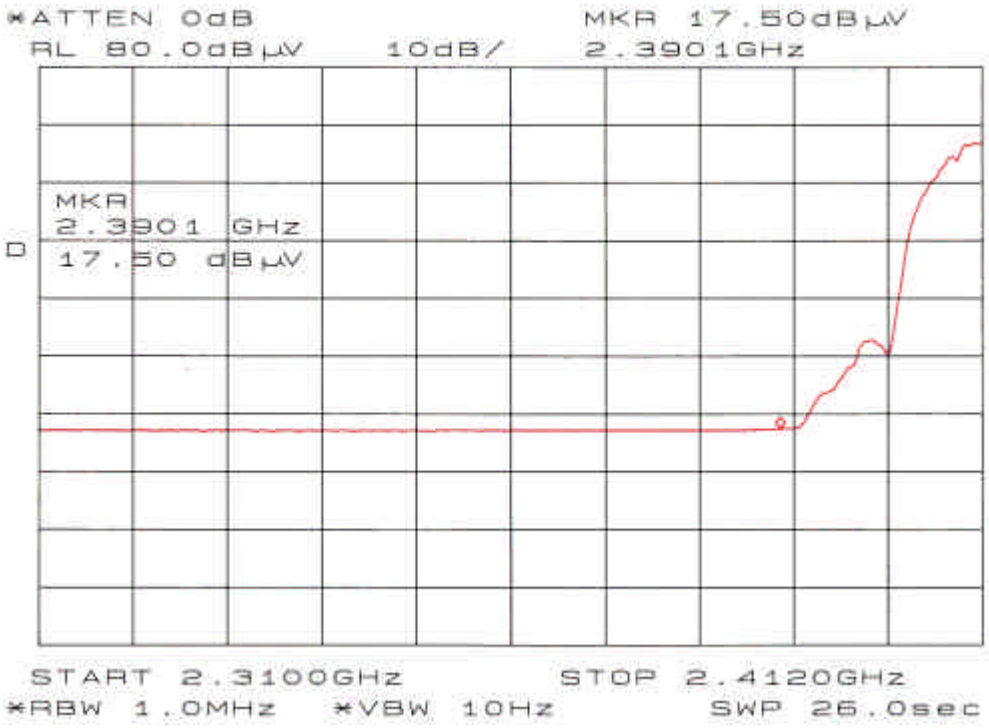


Chart of Restricted Bands of Operation in ch 1 and 11Mbps data rate

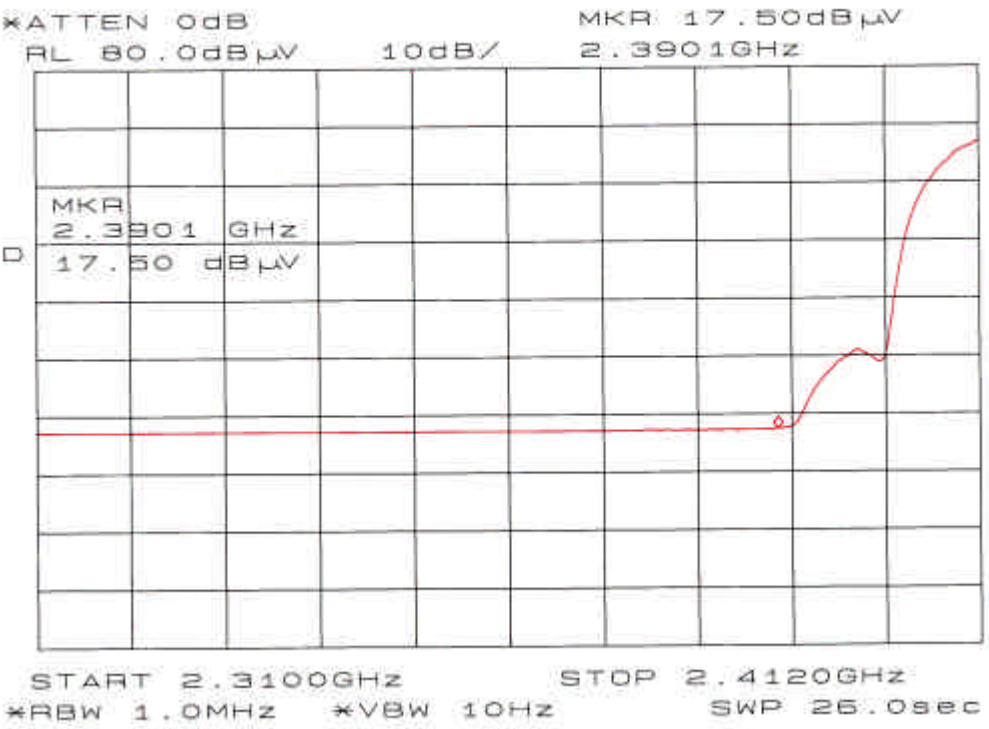


Chart of Restricted Bands of Operation in ch 11 and 1Mbps data rate

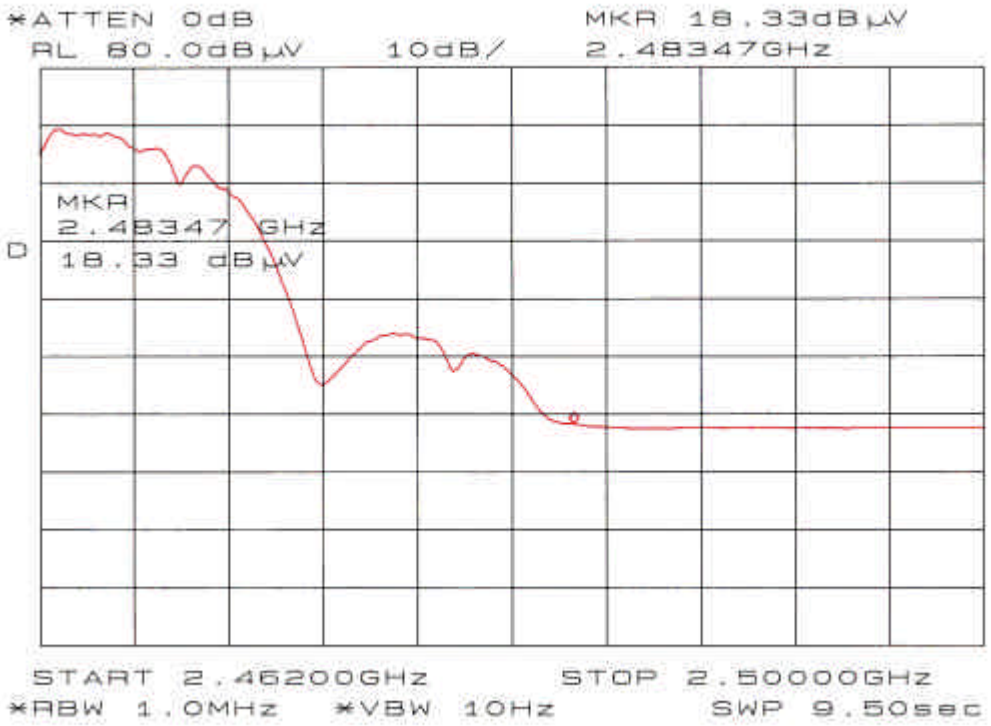


Chart of Restricted Bands of Operation in ch 11 and 2Mbps data rate

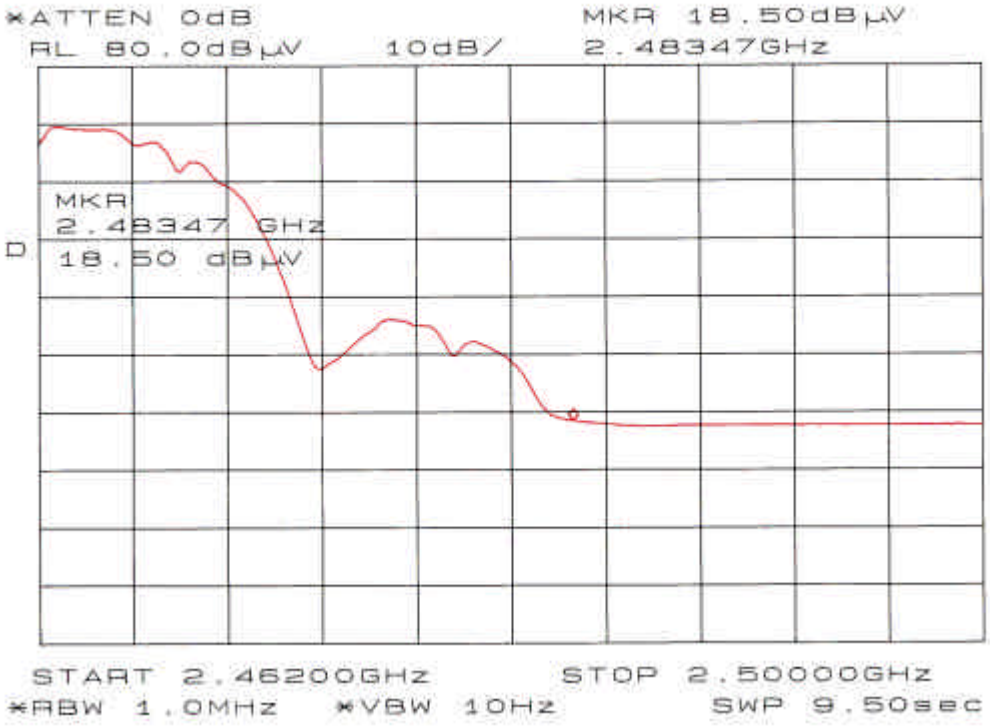


Chart of Restricted Bands of Operation in ch 11 and 5.5Mbps data rate

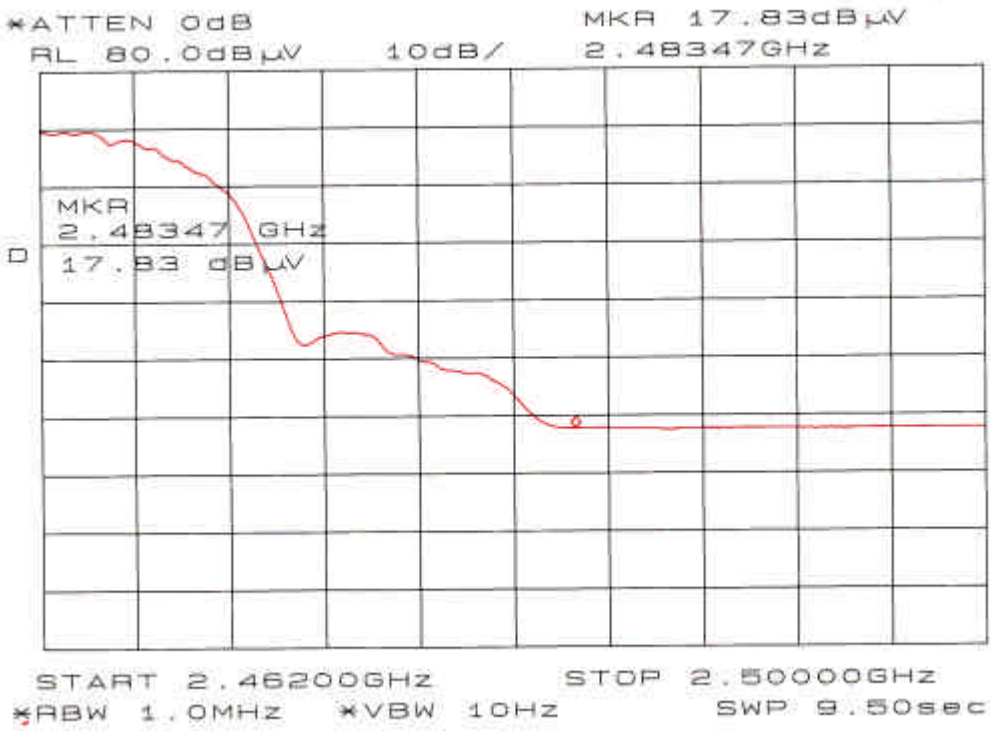
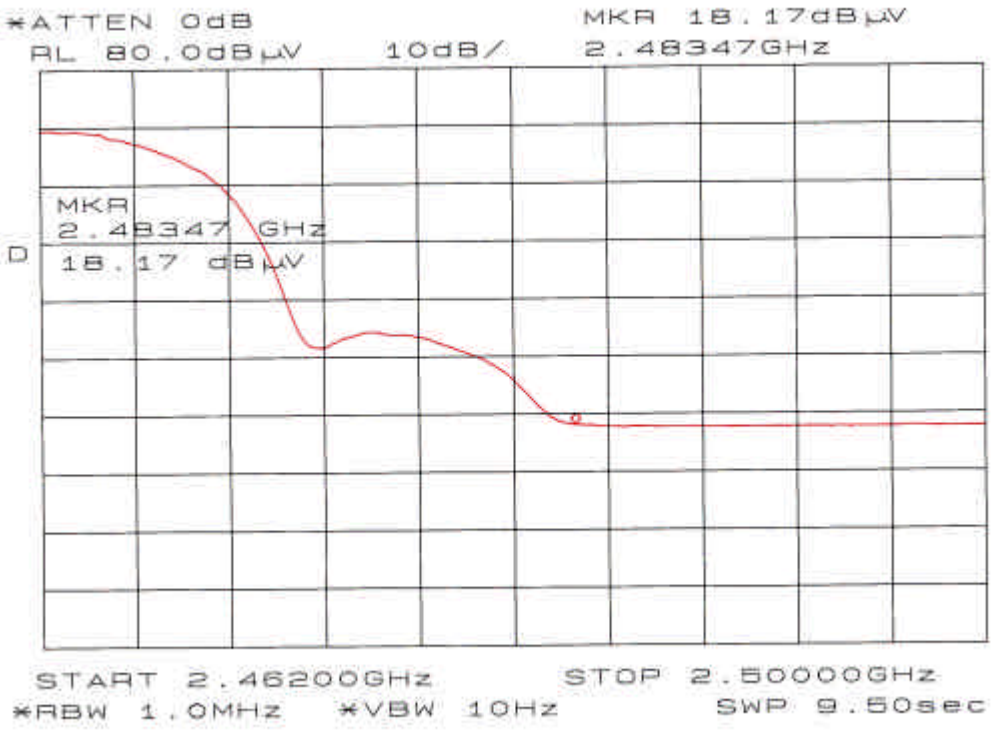


Chart of Restricted Bands of Operation in ch 11 and 11Mbps data rate



9.7 AC Conducted Emissions [15.207]

MEASUREMENT PROCEDURE:

1. The EUT was setup to operate with 1Mbps, 2Mbps, 5.5Mbps and 11MBit data rates.
2. The EUT was measured while transmitting continuously at ch 1 (low), ch 6 (mid), and ch 11 (high).

Measurement of AC Conducted Emissions.

3. The AC conducted emission measurements were performed in shielded room. The EUT was placed on a wooden table, which is 80 centimeters high, was placed 40 centimeters from the back-wall and at least 1 meter from the side-wall.
4. The Test Receiver is complied with the specification of the CISPR publication 16.
5. Following data is the worst case.

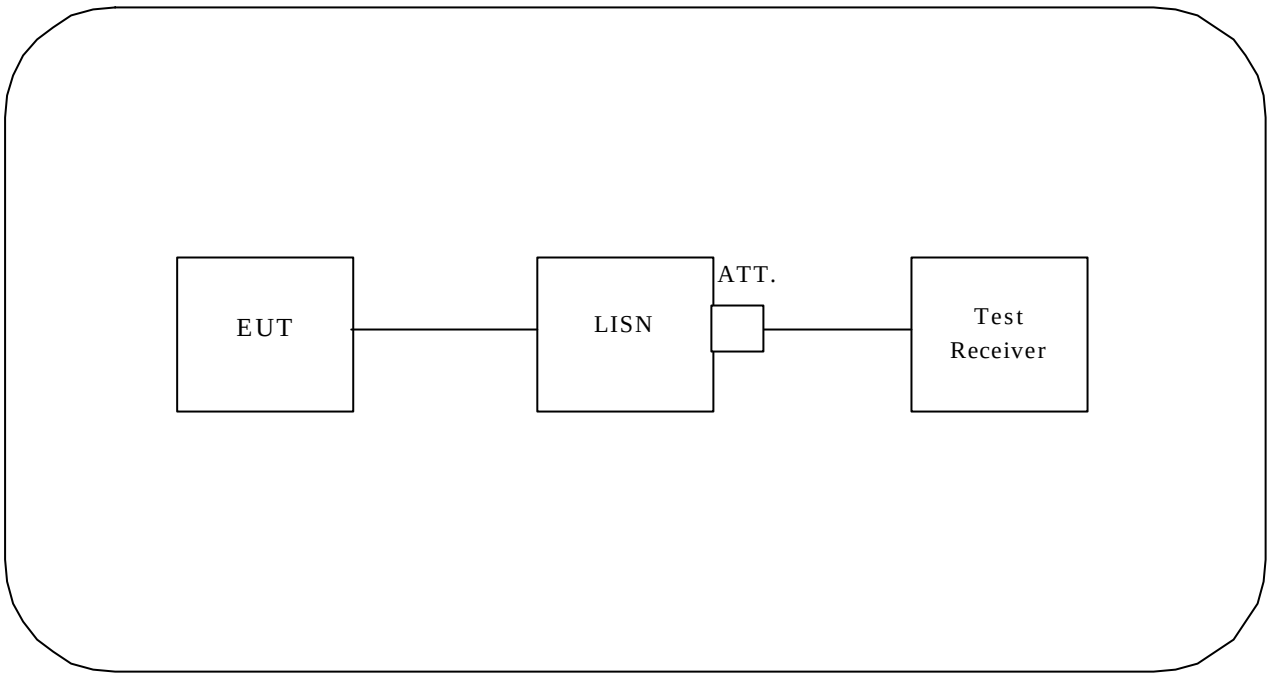
Test date : January 25, 2001
Temperature : 20 °C
Humidity : 50 %

ch	Frequency (MHz)	Data Rate (Mbps)	Reading (dBuV/m)		Factor (dB)	Emission Level (dBuV/m)		15.207 Limit (dBuV/m)	Margin (dB)	
			Line 1	Line 2		Line 1	Line 2		Line 1	Line 2
11	0.4883	1	33.6	32.3	6.3	39.9	38.6	48	8.1	9.4
	0.6141	1	34.3	34.1	6.3	40.6	40.4	48	7.4	7.6
	0.8616	1	31.8	32.1	6.3	38.1	38.4	48	9.9	9.6
	0.9762	1	32.5	32.7	6.3	38.8	39.0	48	9.2	9.0
	1.3417	1	31.0	30.8	6.5	37.5	37.3	48	10.5	10.7
	1.5861	1	29.8	29.6	6.5	36.3	36.1	48	11.7	11.9
	2.5636	1	28.0	27.7	6.6	34.6	34.3	48	13.4	13.7
	17.2111	1	28.2	28.0	6.9	35.1	34.9	48	12.9	13.1
11	0.4883	11	33.6	32.3	6.3	39.9	38.6	48	8.1	9.4
	0.6141	11	34.4	34.2	6.3	40.7	40.5	48	7.3	7.5
	0.8616	11	31.9	32.2	6.3	38.2	38.5	48	9.8	9.5
	0.9762	11	32.3	32.6	6.3	38.6	38.9	48	9.4	9.1
	1.3417	11	30.9	30.7	6.5	37.4	37.2	48	10.6	10.8
	1.5861	11	29.8	29.6	6.5	36.3	36.1	48	11.7	11.9
	2.5636	11	27.6	27.7	6.6	34.2	34.3	48	13.8	13.7
	17.2111	11	28.3	28.0	6.9	35.2	34.9	48	12.8	13.1

Note:

1. Emission Level = Reading + Factor (LISN, Pad, Cable)
2. Other frequencies: Below the 15.207 limit

TEST INSTRUMENTS CONFIGURATION



TEST INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
Test receiver	ESS	844861/004	ROHDE & SCHWARZ	Jul. 10, 00	1 Year
LISN (EUT)	ESH2-Z5	881492/014	ROHDE & SCHWARZ	Oct 17, 00	1 Year
6dB Attenuator	CFA-01	None	TME	Oct. 12, 00	1 Year
LISN (Peripheral)	KNW-242	8-851-21	KYORITSU	May 30, 00	1 Year
50Ω Termination	CT-01	A010CON50	TME	May 29, 00	1 Year

SECTION 10. PHOTOGRAPHS OF MAXIMUM EMISSION SET -UP

10.1 Conducted Emission Test [15.207]

10.1.1 System Use

Test setup in accordance with ANSI C63.4–1992

Front view

Side view

Note : Maintaining 10cm spacing between all the equipment cabinets.

10.2 RF Conducted Emission Test [15.247(a)(2), 15.247(c), 15.247(d)]

10.2.1 Single Use

Test setup in accordance with ANSI C63.4–1992

Front view

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

10.3.1 Single use

Test setup in accordance with ANSI C63.4–1992

Front view

Rear view

10.3.2 System use

Test setup in accordance with ANSI C63.4–1992

Front view

Rear view

Note : Maintaining 10cm spacing between all the equipment cabinets.

SECTION 11. 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 ..... +/– 3.9 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 12. VALIDITY OF TEST REPORT

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

13.2 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.

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

SECTION 13. DESCRIPTION OF TEST LABORATORY

13.1 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 Guide 25 (EN 45000) 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.

13.2 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)
NMi	(The Netherlands)		
TÜV PRODUCT SERVICE	(Germany)		

Note 1 : The above lists, Filing, certification, authorization and accreditation, are under preparing for the change of the company name to Akzo Nobel K.K. from Akzo Kashima Limited.

Note 2 : NVLAP accreditation does not constitute any product endorsement by NVLAP or any agent of the U.S. Government.