



# TEST REPORT

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REPORT NUMBER : ANKK-105124  
APPLICANT : Vertex Standard Co., Ltd.  
MODEL NUMBER : FT DX 9000 Contest  
FCC ID : K6620101X60  
IC : 511B-20101X60  
REGULATION : FCC Part15B – Scanning Receiver  
: Industry Canada RSS-215 Issue 1  
: FCC Part15B Class B  
: Canada ICES-003 Class B

Conducted Emission Test  
Radiated Emission Test

\* This equipment is a series of “ FT DX 9000D “ (Test Report No.:ANKK-105041),  
and there’s no change for RF Unit.

Akzo Nobel K. K.  
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Kashima Site

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**ABBREVIATIONS**

LISN = Line Impedance Stabilization Network

AMN = Artificial Mains Network

ISN = Impedance Stabilization Network

CDN = Coupling Decoupling Network

ANT = Antenna

BBA = Broadband Antenna

DIP = Dipole Antenna

AMP = Amplifier

ATT = Attenuator

EUT = Equipment Under Test

AE = Associated Equipment

Q-P = Quasi-peak

AVG = Average

RX = Receive

**SECTION 1. TEST CERTIFICATION****APPLICANT INFORMATION**

Company	: Vertex Standard Co., Ltd.
Address	: 4-8-8, Nakameguro, Meguro-ku, Tokyo, 153-8644, Japan
Telephone number	: +81 3 5725 6111
Fax number	: +81 3 5725 6225

**DESCRIPTION OF TEST ITEM**

Kind of equipment	: HF Transceiver
Condition of equipment	: Pre-Prototype
Category	: Scanning Receiver & Peripherals
Trademark	: YAESU
FCC ID	: K6620101X60
IC	: 511B-20101X60
Model number	: FT DX 9000 Contest
Serial number	: 5D000002

**TEST PERFORMED**

Location	: Kashima No. 3 Test Site (FCC Reg. :934283) : (IC File No. : IC 2065-3)
EUT received	: May 11, 2005
Test started	: May 12, 2005
Test completed	: May 12, 2005
Purpose of test	: FCC Docket 87-389 and Canadian Interference-Causing Equipment Regulations
Regulation	: FCC Part15B - Scanning Receiver Industry Canada RSS-215 Issue 1 FCC Part15B Class B - Peripherals and Canada ICES-003 Class B
Test setup	: ANSI C63.4-2003

Report issue date : May 19, 2005

Test engineer : Kazuo Masuda



Report approved by : Takeshi Yamanaka  
[Site Manager]


**Note**

- The test result of this report is effective for equipment under test itself and under the test configuration described on the report.
- 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.
- This test report shall not be reproduced except in full, without issuer's permission.

## SECTION 2. CONCLUSION

This test report clearly shows that the EUT is in compliance with the FCC Part15B (– Scanning Receiver with Industry Canada RSS-215) and FCC Part15B Class B (– Peripheral with Canada ICES-003 Class B) specification.

Traceability to national standards of test result is achieved by means of calibration traceability to national standards.

The minimum margins to the limits are as follows:

Conducted Voltages on Mains Port RX 60MHz	1.7 dB	at	0.1898 MHz
Radiated Electric Field RX 30MHz	2.3 dB	at	48.50 MHz

Note : See Section 9 for details.

Note :

Because this EUT has the same RF Unit with the certificated model : FT DX 9000D (FCC ID : K6620101X60 / IC : 511B-20101X60), the following tests were not carried out.

Antenna Power conducted Test  
38dB Rejection Test

(Refer to the Akzo Nobel Test Report No.: ANKK-105041)

**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)	HF Transceiver	FT DX9000 Contest	5D000002	K6620101X60	Vertex Standard	EUT
B)	Microphone	MH-31B8	None	N.A.	Vertex Standard	Option
C)	Headphone	YH-77STA	None	N.A.	Vertex Standard	Option
D)	Headphone	YH-77STA	None	N.A.	Vertex Standard	Option
E)	External Speaker	SP-8	None	N.A.	Vertex Standard	Option
F)	External Speaker	SP-8	None	N.A.	Vertex Standard	Option
G)	Data Manegement Unit	DMU-9000	None	N.A.	Vertex Standard	Option

Power ratings of EUT : AC 100 - 120V , 50 – 60Hz, 720VA

## 3.1 Port(s)/Connector(s) :

Port name	Connector type	Connector pin	Remarks
MIC	NC3FBV2	3 pin	Front
PHONES	6 $\phi$ Stereo	1pin	$\times$ 2
KEY	6 $\phi$ Stereo	1pin	$\times$ 3
MIC	FM214-8SMPT-NI	8pin	Rear
ANT1, 2, 3, 4, RX	MR-S	1pin	
RX OUT (Main,Sub)	BNC	1pin	
CAT	D-sub	9pin	
ROTATOR	Mini-DIN	6pin	
EXT.ALC	RCA	1pin	
BAND DATA1, 2	DIN	7pin, 8pin	
TX GND	RCA	1pin	
ACC	Mini-DIN	8pin	
TRV	RCA	1pin	
PACKET	DIN	5pin	
RTTY	DIN	4pin	
AF OUT	3.5 $\phi$ Stereo	1pin	
EXT.SPKR1, 2	3.5 $\phi$ Mono	1pin	
PATCH	RCA	1pin	
PTT	RCA	1pin	
+13.8V	RCA	1pin	
REMOTE	3.5 $\phi$ Mono	1pin	
DISPLAY	D-sub	15pin	
USB	USB Type-A	4pin	
AUDIO IN, OUT	3.5 $\phi$ Stereo	1pin	
KEY BOARD	Mini-DIN	6pin	
COM	D-sub	9pin	

## 3.2 Overview of EUT :

Frequency Ranges : 0.030 – 60.000 MHz  
 Receiver Type : Triple Conversion Super-heterodyne  
 Mode of Operation : A1A, A3E, F1B, F1D, F2D, F3E, J3E

## 3.3 Oscillator(s)/Crystal(s) :

Oscillator	Operating frequency	Board name	Remarks
16.5 MHz	16.5 MHz	CNTL Unit	Microprocessor
24.0 MHz	24.0 MHz	CNTL Unit	UART
4.9152 MHz	4.9152 MHz	CNTL Unit	KEYER
18.432 MHz	18.432 MHz	DSP Unit	DSP
10.0 MHz	10.0 MHz	REF Unit	OCXO
10.0 MHz	40.0 MHz	LOCAL Unit	Local Oscillator
40.485 - 100.455 MHz	40.485 – 100.455MHz	LOCAL Unit	Local Oscillator
40.480 – 100.450 MHz	40.480 – 100.450 MHz	LOCAL Unit	Local Oscillator
10.895 – 11.652 MHz	32.955 – 34.955 MHz	LOCAL Unit	Local Oscillator
10.983 – 11.650 MHz	32.950 – 34.950 MHz	LOCAL Unit	Local Oscillator
425 kHz or 431 kHz	425 kHz or 431 kHz	LOCAL Unit	Local Oscillator
420 kHz or 426 kHz	420 kHz or 426 kHz	LOCAL Unit	Local Oscillator
6.045 MHz	6.045 MHz	LOCAL Unit	Local Oscillator
12.0 MHz	12.0 MHz	MEMORY Unit	Memory Card
133 MHz	667 MHz	EBC365LP6	Highest Frequency

## 3.4 Operation Ranges :

RX Frequency	0.030000	to	60.000000 MHz
1st LO	40.485000	to	100.455000 MHz

## 3.5 Intermediate Frequencies :

1st	:	40.455 MHz (Upper)
2nd	:	0.455 MHz (Lower)
3rd	:	30 kHz (Upper)

**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
H)	CF Card	SDCFB-64-560	None	DoC	SanDisk	
I)	USB Memory Card	MAUSB-100	None	DoC	OLYMPUS	
J)	GPS Receiver	Etrex Venture	73800627	DoC	Garmin International	
K)	Key Board	RT7D00	TH-054EXM-37171-16Q-1253	AQ6-7D0080C0B	Dell Computer	
L)	CRT Display	D2813	TW70830537	A3KM043	Hewlett Packard	
M)	Computer	Dimension2100 MCM	3V5W41S	DoC	Dell Computer	
N)	CRT Display	E551	MY-044NEK-46632-0BF-9065	DoC	Dell Computer	
O)	Keyboard	SK-1000REW	M971229369	GYUR36SK	Dell Computer	
P)	Mouse	M-S34	LNA13038374	DZL211029	Dell Computer	
Q)	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)	MIC cable	1.00 m	Yes	Metal	
2)	KEY cable	0.40 m	Yes	Metal	
3)	KEY cable	0.40 m	Yes	Metal	
4)	PHONES cable	1.50 m	Yes	Metal	
5)	PHONES cable	1.50 m	Yes	Metal	
6)	Microphone cable	0.50 m	Yes	Metal	
7)	EXT.SPKR cable	1.00 m	Yes	Metal	
8)	EXT.SPKR cable	1.00 m	Yes	Metal	
9)	KEY cable	1.50 m	Yes	Metal	
10)	ROTATOR cable	1.50 m	Yes	Metal	
11)	EXT.ALC cable	1.00 m	Yes	Metal	
12)	BAND DATA cable	1.50 m	Yes	Metal	
13)	BAND DATA cable	1.50 m	Yes	Metal	
14)	TX GND cable	1.00 m	Yes	Metal	
15)	ACC cable	1.50 m	Yes	Metal	
16)	TRV cable	1.00 m	Yes	Metal	
17)	PACKET cable	1.50 m	Yes	Metal	
18)	RTTY cable	1.50 m	Yes	Metal	
19)	AF OUT cable	2.00 m	Yes	Metal	
20)	PATCH cable	1.00 m	Yes	Metal	
21)	PTT cable	1.00 m	Yes	Metal	
22)	+13.8V cable	1.00 m	Yes	Metal	
23)	REMOTE cable	1.50 m	Yes	Metal	

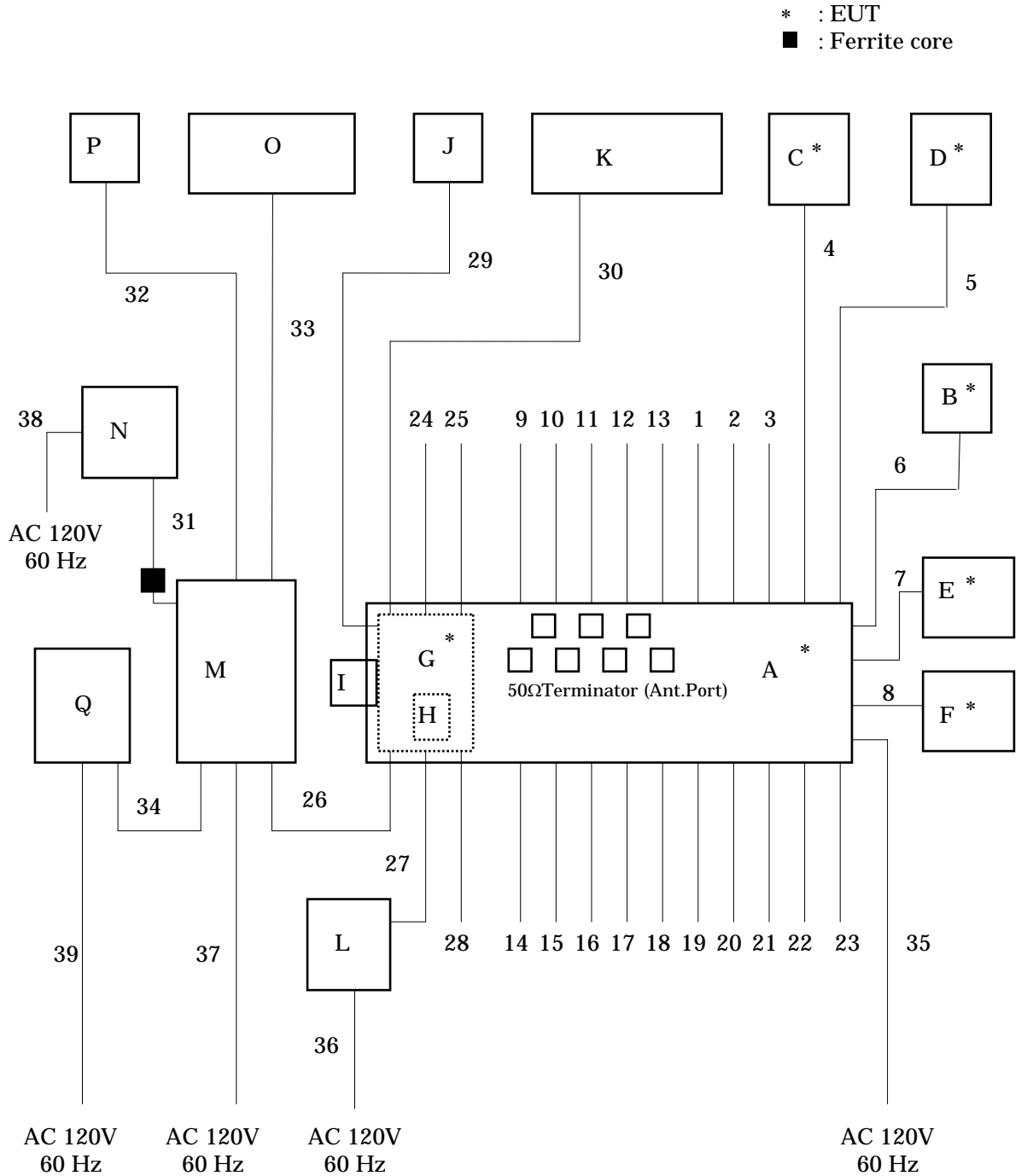
Number	Name	Length	Shield	Connector	Core
24)	AUDIO cable (IN)	1.50 m	Yes	Metal	
25)	AUDIO cable (OUT)	1.50 m	Yes	Metal	
26)	CAT cable	1.80 m	Yes	Metal	
27)	CRT Display cable	1.50 m	Yes	Metal	
28)	Modular(LAN) cable	5.00 m	None	Plastic	
29)	COM cable	2.00 m	Yes	Metal	
30)	Keyboard cable	2.00 m	Yes	Metal	
31)	CRT Display cable	1.50 m	Yes	Metal	Fixed × 1
32)	Mouse cable	1.00 m	None	Metal	
33)	Keyboard cable	1.00 m	None	Metal	
34)	Centronics cable	2.30 m	Yes	Metal	
35)	Power cable for EUT	1.80 m	None		
36)	Power cable for CRT Display (J)	1.80 m	None		
37)	Power cable for Computer	1.80 m	None		
38)	Power cable for CRT Display (L)	1.80 m	None		
39)	Power cable for Printer	1.60 m	None		

### SECTION 6. CONSTRUCTION OF EQUIPMENT

The construction of EUT during the test was as follows.

#### 6.1 Conducted Voltages on Mains Port Radiated Electric Field

System configuration



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. OPERATING CONDITIONS

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

### 7.1 Operating condition

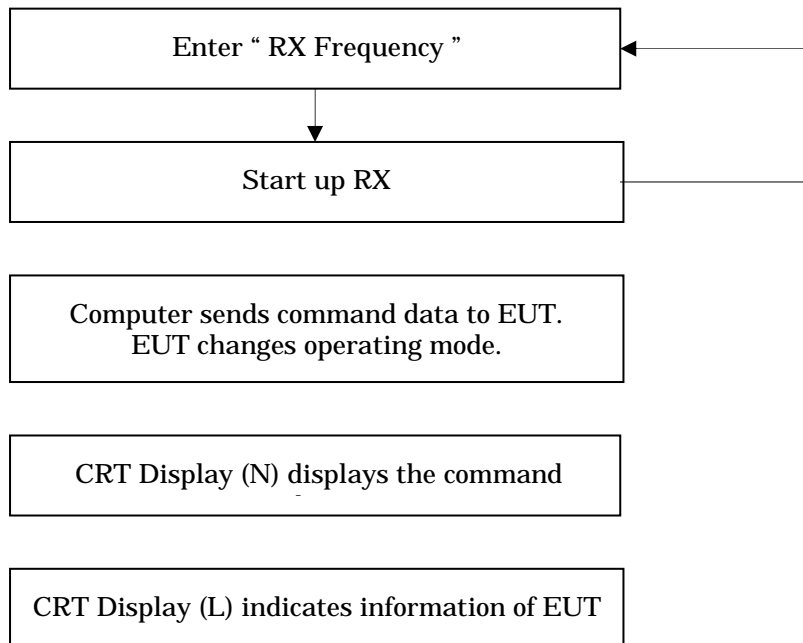
The test was carried out under RX mode.

EUT was examined in the operating conditions that had maximum disturbances.

### 7.2 Operating flow

Following operations were performed continuously.

RX mode



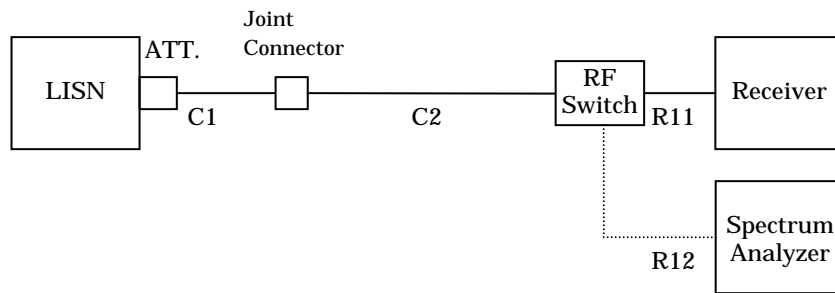
**SECTION 8. TEST PROCEDURE(S)**

Test was carried out under the following conditions.

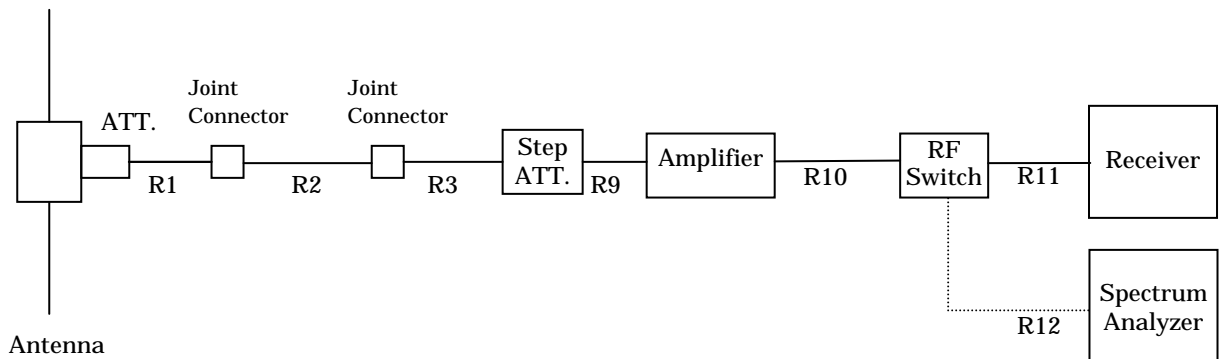
Test was carried out with no deviations from standards and test methods.

Subject	Scanned frequency
Conducted Voltages on Mains Port	0.15 – 30 MHz
Radiated Electric Field	30 – 5000 MHz

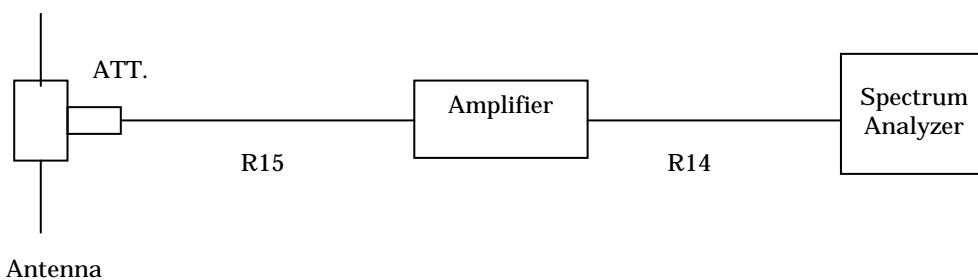
Schema for the conducted voltages on mains port measurement



Schema for the radiated electric field measurement



Above 1GHz



## Summary ;

### 8.1 Conducted Voltages on Mains Port

#### 8.1.1 Equipment Setup

System configuration and Equipment setup are shown on Section 6 and Annex A.

##### 8.1.1.1 Tabletop Equipment

EUT is placed on the wooden table, the top of which is 0.8 meter 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

Measuring instruments list and their calibration schedule are shown on Section 10. The brief description 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 50 $\mu$ H//50 $\Omega$  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 50 $\Omega$  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 the frequency range to be measured, then spectrum chart are plotted out to find the worst emission conditions in operating mode and/or configuration decision 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 emission condition found 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 Electric Field

### 8.2.1 Equipment Setup

System configuration and Equipment setup are shown on Section 6 and Annex A.

#### 8.2.1.1 Tabletop Equipment

EUT is placed on the wooden table, the top of which is 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

Measuring instruments list and their calibration schedule are shown on Section 10. The brief description 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 is 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 Electric Field 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 (Resolution bandwidth : 1 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 find the worst emission conditions in configuration, operating mode, or ambient noise notation.

#### 8.2.3.2 Final Measurement

The EUT operated in the worst emission condition found by 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. EVALUATION OF TEST RESULTS**

**9.1 Conducted Voltages on Mains Port**

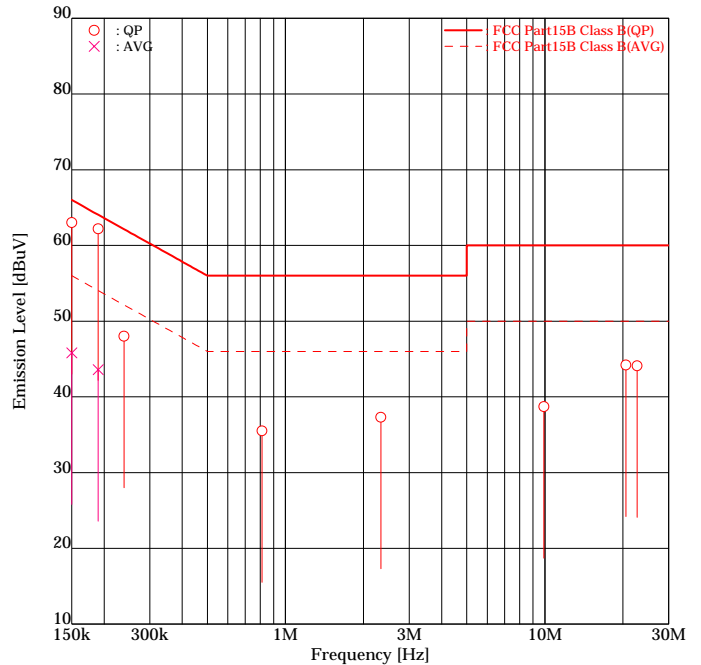
**9.1.1 RX 0.030MHz mode**

**Akzo Nobel K.K.**

**Kashima No.3 Test Site**

**Conducted Voltages on Mains Port**

APPLICANT : Vertex Standard Co., Ltd.  
 EUT NAME : HF Transceiver  
 MODEL NO. : FT DX9000 Contest  
 SERIAL NO. : 5D000002  
 TEST MODE : RX 0.030MHz (ANT1)  
 POWER SOURCE : AC120V/60Hz  
 DATE TESTED : May 12 2005  
 FILE NO. : ANKK-105124  
 REGULATION : FCC Part15B Class B  
 TEST METHOD : ANSI C63.4-2003  
 TEMPERATURE : 23.0 [degC]  
 HUMIDITY : 39.0 [%]  
 NOTE :



ENGINEER : Kazuo Masuda

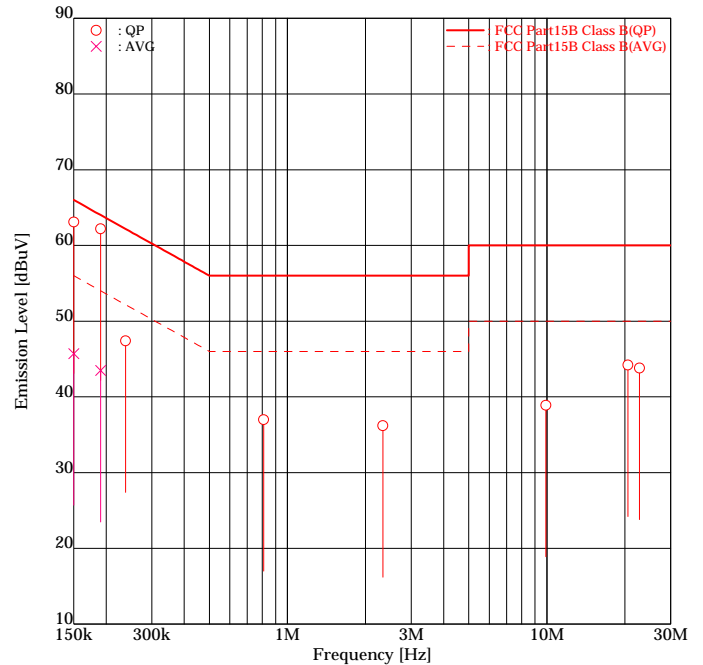
FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.1500	QP	<u>56.2</u>	56.1	6.8	6.8	<u>63.0</u>	62.9	66.0	<u>3.0</u>	3.1
2	0.1500	AVG	<u>39.0</u>	38.8	6.8	6.8	<u>45.8</u>	45.6	56.0	<u>10.2</u>	10.4
3	0.1899	QP	<u>55.4</u>	55.3	6.8	6.8	<u>62.2</u>	62.1	64.0	<u>1.8</u>	1.9
4	0.1899	AVG	<u>36.1</u>	<u>36.8</u>	6.8	6.8	<u>42.9</u>	<u>43.6</u>	54.0	<u>11.1</u>	<u>10.4</u>
5	0.2386	QP	<u>41.2</u>	40.8	6.8	6.8	<u>48.0</u>	47.6	62.1	<u>14.1</u>	14.5
6	0.8130	QP	28.6	27.8	6.9	6.9	35.5	34.7	56.0	20.5	21.3
7	2.3335	QP	30.3	28.7	7.0	7.0	37.3	35.7	56.0	18.7	20.3
8	9.9143	QP	30.9	31.4	7.3	7.3	38.2	38.7	60.0	21.8	21.3
9	20.5200	QP	35.5	<u>36.4</u>	7.5	7.8	43.0	<u>44.2</u>	60.0	17.0	<u>15.8</u>
10	22.7008	QP	35.0	36.2	7.6	7.9	42.6	44.1	60.0	17.4	15.9

Higher six points are underlined.  
 Other frequencies : Below the FCC Part15B Class B limit  
 Emission Level = Read + Factor(LISN,Pad,Cable)

9.1.2 RX 30MHz mode

**Akzo Nobel K.K.**  
**Kashima No.3 Test Site**  
**Conducted Voltages on Mains Port**

APPLICANT : Vertex Standard Co., Ltd.  
 EUT NAME : HF Transceiver  
 MODEL NO. : FT DX9000 Contest  
 SERIAL NO. : 5D000002  
 TEST MODE : RX 30MHz (ANT1)  
 POWER SOURCE : AC120V/60Hz  
 DATE TESTED : May 12 2005  
 FILE NO. : ANKK-105124  
 REGULATION : FCC Part15B Class B  
 TEST METHOD : ANSI C63.4-2003  
 TEMPERATURE : 23.0 [degC]  
 HUMIDITY : 39.0 [%]  
 NOTE :



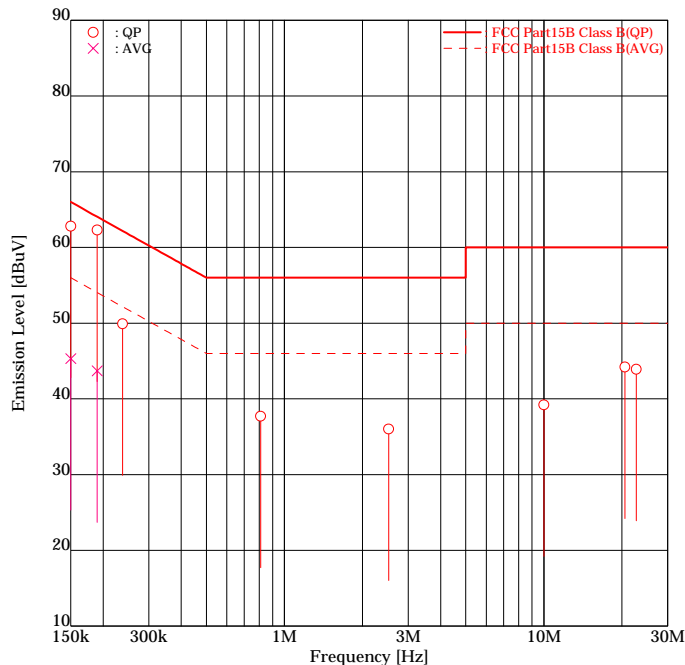
ENGINEER : Kazuo Masuda

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.1500	QP	<u>56.3</u>	56.0	6.8	6.8	<u>63.1</u>	62.8	66.0	<u>2.9</u>	3.2
2	0.1500	AVG	<u>38.9</u>	38.7	6.8	6.8	<u>45.7</u>	45.5	56.0	<u>10.3</u>	10.5
3	0.1905	QP	<u>55.4</u>	55.3	6.8	6.8	<u>62.2</u>	62.1	64.0	<u>1.8</u>	1.9
4	0.1905	AVG	36.1	<u>36.7</u>	6.8	6.8	42.9	<u>43.5</u>	54.0	11.1	<u>10.5</u>
5	0.2380	QP	40.1	<u>40.6</u>	6.8	6.8	46.9	<u>47.4</u>	62.2	15.3	<u>14.8</u>
6	0.8095	QP	30.1	29.0	6.9	6.9	37.0	35.9	56.0	19.0	20.1
7	2.3343	QP	29.2	27.7	7.0	7.0	36.2	34.7	56.0	19.8	21.3
8	9.9160	QP	31.4	31.6	7.3	7.3	38.7	38.9	60.0	21.3	21.1
9	20.5200	QP	35.6	<u>36.4</u>	7.5	7.8	43.1	<u>44.2</u>	60.0	16.9	<u>15.8</u>
10	22.7700	QP	34.6	35.9	7.6	7.9	42.2	43.8	60.0	17.8	16.2

9.1.3 RX 60MHz mode

**Akzo Nobel K.K.**  
**Kashima No.3 Test Site**  
**Conducted Voltages on Mains Port**

APPLICANT : Vertex Standard Co., Ltd.  
 EUT NAME : HF Transceiver  
 MODEL NO. : FT DX9000 Contest  
 SERIAL NO. : 5D000002  
 TEST MODE : RX 60MHz (ANT1)  
 POWER SOURCE : AC120V/60Hz  
 DATE TESTED : May 12 2005  
 FILE NO. : ANKK-105124  
 REGULATION : FCC Part15B Class B  
 TEST METHOD : ANSI C63.4-2003  
 TEMPERATURE : 23.0 [degC]  
 HUMIDITY : 39.0 [%]  
 NOTE :



ENGINEER : Kazuo Masuda

FREQUENCY [No]	MODE [MHz]	MODE	READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.1500	QP	55.9	<u>56.0</u>	6.8	6.8	62.7	<u>62.8</u>	66.0	3.3	<u>3.2</u>
2	0.1500	AVG	<u>38.5</u>	38.5	6.8	6.8	<u>45.3</u>	45.3	56.0	10.7	10.7
3	0.1898	QP	55.4	<u>55.5</u>	6.8	6.8	62.2	<u>62.3</u>	64.0	1.8	<u>1.7</u>
4	0.1898	AVG	36.0	<u>36.9</u>	6.8	6.8	42.8	<u>43.7</u>	54.0	11.2	<u>10.3</u>
5	0.2379	QP	43.0	<u>43.1</u>	6.8	6.8	49.8	<u>49.9</u>	62.2	12.4	<u>12.3</u>
6	0.8094	QP	30.8	29.1	6.9	6.9	37.7	36.0	56.0	18.3	20.0
7	2.5230	QP	29.0	27.2	7.0	7.0	36.0	34.2	56.0	20.0	21.8
8	10.0124	QP	31.4	31.9	7.3	7.3	38.7	39.2	60.0	21.3	20.8
9	20.5400	QP	35.4	<u>36.4</u>	7.5	7.8	42.9	<u>44.2</u>	60.0	17.1	<u>15.8</u>
10	22.7400	QP	34.7	36.0	7.6	7.9	42.3	43.9	60.0	17.7	16.1

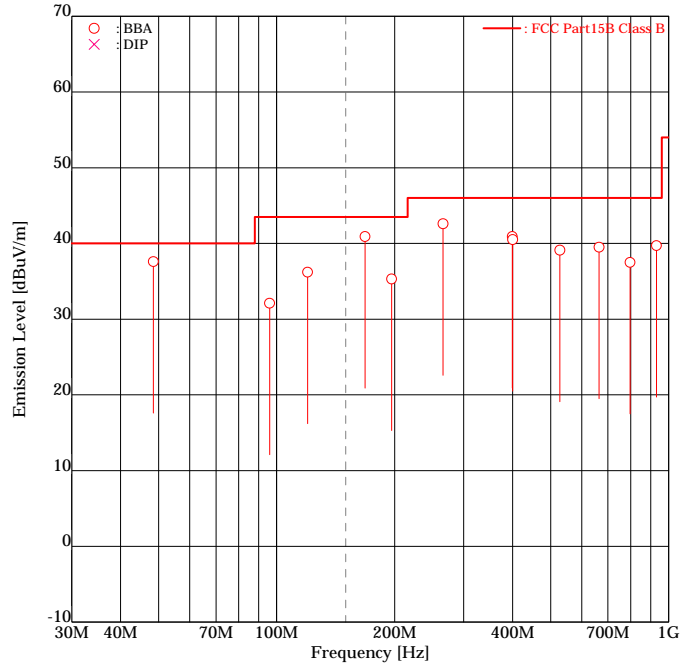
Higher six points are underlined.  
 Other frequencies : Below the FCC Part15B Class B limit  
 Emission Level = Read + Factor(LISN,Pad,Cable)

9.2 Radiated Electric Field

9.2.1 RX 0.030MHz mode (30 – 1000MHz)

**Akzo Nobel K.K.**  
**Kashima No.3 Test Site**  
**Radiated Electric Field**

APPLICANT : Vertex Standard Co., Ltd.  
 EUT NAME : HF Transceiver  
 MODEL NO. : FT DX9000 Contest  
 SERIAL NO. : 5D000002  
 TEST MODE : RX 0.030MHz (ANT1)  
 POWER SOURCE : AC120V/60Hz  
 DATE TESTED : May 12 2005  
 FILE NO. : ANKK-105124  
 REGULATION : FCC Part15B Class B  
 TEST METHOD : ANSI C63.4-2003  
 DISTANCE : 3.0 [m]  
 TEMPERATURE : 23.0 [degC]  
 HUMIDITY : 39.0 [%]  
 NOTE :



ENGINEER : Kazuo Masuda

FREQUENCY [No]	ANT. [MHz]	ANT.	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]		MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert
1	48.50	BBA	-	<u>45.2</u>	-7.6	-7.6	-	<u>37.6</u>	40.0	-	<u>2.4</u>	
2	96.01	BBA	-	43.9	-11.8	-11.8	-	32.1	43.5	-	11.4	
3	120.01	BBA	44.2	-	-8.0	-8.0	36.2	-	43.5	7.3	-	
4	168.02	BBA	43.6	<u>47.4</u>	-6.5	-6.5	37.1	<u>40.9</u>	43.5	6.4	<u>2.6</u>	
5	196.61	BBA	44.2	-	-8.9	-8.9	35.3	-	43.5	8.2	-	
6	265.97	BBA	<u>48.7</u>	46.1	-6.1	-6.1	<u>42.6</u>	40.0	46.0	<u>3.4</u>	6.0	
7	398.95	BBA	<u>42.9</u>	-	-2.0	-2.0	<u>40.9</u>	-	46.0	<u>5.1</u>	-	
8	400.00	BBA	<u>42.4</u>	-	-1.9	-1.9	<u>40.5</u>	-	46.0	<u>5.5</u>	-	
9	528.05	BBA	-	37.6	1.5	1.5	-	39.1	46.0	-	6.9	
10	664.92	BBA	-	34.4	5.1	5.1	-	39.5	46.0	-	6.5	
11	797.90	BBA	-	29.7	7.8	7.8	-	37.5	46.0	-	8.5	
12	930.88	BBA	-	<u>29.8</u>	9.9	9.9	-	<u>39.7</u>	46.0	-	<u>6.3</u>	

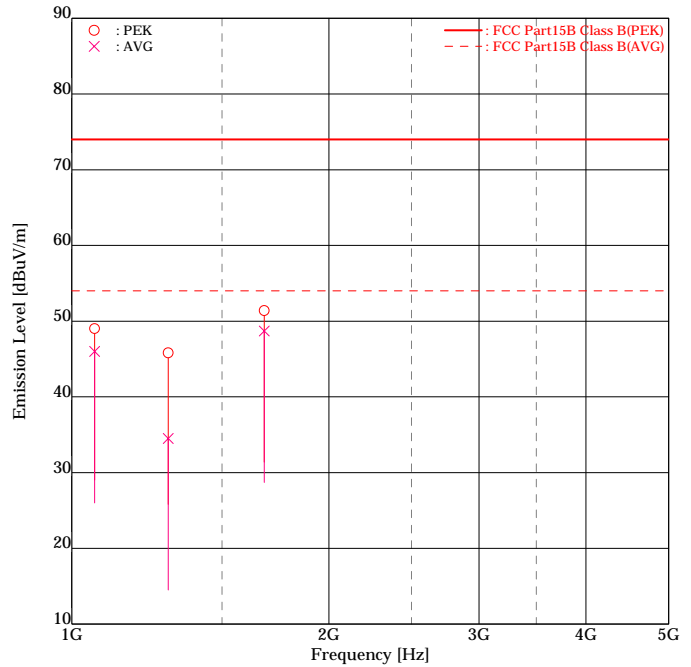
Higher six points are underlined.  
 Other frequencies : Below the FCC Part15B Class B limit  
 Emission Level = Read + Factor(Antenna, Antenna Pad, Cable, Preamp)  
 ANT. : Used antenna (BBA = Broadband antenna, DIP = Dipole antenna)

9.2.2 RX 0.030MHz mode (1000 – 5000MHz)

**Akzo Nobel K.K.**  
**Kashima No.3 Test Site**  
**Radiated Electric Field**

APPLICANT : Vertex Standard Co., Ltd.  
 EUT NAME : HF Transceiver  
 MODEL NO. : FT DX9000 Contest  
 SERIAL NO. : 5D000002  
 TEST MODE : RX 0.030MHz (ANT1)  
 POWER SOURCE : AC120V/60Hz  
 DATE TESTED : May 12 2005  
 FILE NO. : ANKK-105124  
 REGULATION : FCC Part15B Class B  
 TEST METHOD : ANSI C63.4-2003  
 DISTANCE : 3.0 [m]  
 TEMPERATURE : 23.0 [degC]  
 HUMIDITY : 39.0 [%]  
 NOTE :

ENGINEER : Kazuo Masuda



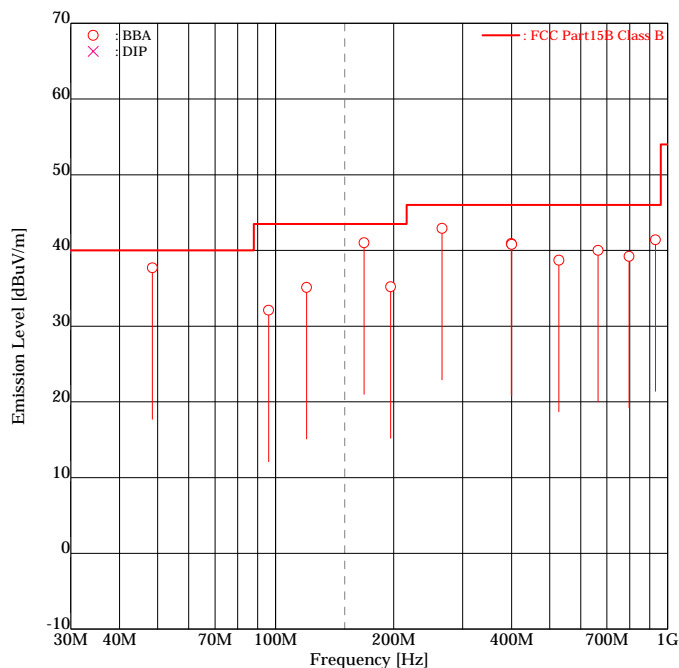
FREQUENCY [No]	MODE [MHz]	READING [dBuV]	FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]		MARGIN [dB]		
			Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert	
1	1063.90	PEK	-	<u>49.7</u>	-0.7	-0.7	-	<u>49.0</u>	74.0	-	<u>25.0</u>
2	1063.90	AVG	-	<u>46.7</u>	-0.7	-0.7	-	<u>46.0</u>	54.0	-	<u>8.0</u>
3	1297.30	PEK	-	<u>46.4</u>	-0.6	-0.6	-	<u>45.8</u>	74.0	-	<u>28.2</u>
4	1297.30	AVG	-	<u>35.1</u>	-0.6	-0.6	-	<u>34.5</u>	54.0	-	<u>19.5</u>
5	1680.42	PEK	<u>50.6</u>	49.2	0.8	0.8	<u>51.4</u>	50.0	74.0	<u>22.6</u>	24.0
6	1680.42	AVG	<u>47.9</u>	45.9	0.8	0.8	<u>48.7</u>	46.7	54.0	<u>5.3</u>	7.3

Higher six points are underlined.  
 Other frequencies : Below the FCC Part15B Class B limit  
 Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)  
 ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

9.2.3 RX 30MHz mode (30 – 1000MHz)

**Akzo Nobel K.K.**  
**Kashima No.3 Test Site**  
**Radiated Electric Field**

APPLICANT : Vertex Standard Co., Ltd.  
 EUT NAME : HF Transceiver  
 MODEL NO. : FT DX9000 Contest  
 SERIAL NO. : 5D000002  
 TEST MODE : RX 30MHz (ANT1)  
 POWER SOURCE : AC120V/60Hz  
 DATE TESTED : May 12 2005  
 FILE NO. : ANKK-105124  
 REGULATION : FCC Part15B Class B  
 TEST METHOD : ANSI C63.4-2003  
 DISTANCE : 3.0 [m]  
 TEMPERATURE : 23.0 [degC]  
 HUMIDITY : 39.0 [%]  
 NOTE :



ENGINEER : Kazuo Masuda

FREQUENCY [No]	ANT. [MHz]	ANT.	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]		MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert
1	48.50	BBA	-	<u>45.3</u>	-7.6	-7.6	-	<u>37.7</u>	40.0	-	<u>2.3</u>	
2	96.01	BBA	-	43.9	-11.8	-11.8	-	32.1	43.5	-	11.4	
3	120.01	BBA	43.1	-	-8.0	-8.0	35.1	-	43.5	8.4	-	
4	168.02	BBA	43.8	<u>47.5</u>	-6.5	-6.5	37.3	<u>41.0</u>	43.5	6.2	<u>2.5</u>	
5	196.61	BBA	44.1	-	-8.9	-8.9	35.2	-	43.5	8.3	-	
6	265.97	BBA	<u>49.0</u>	45.9	-6.1	-6.1	<u>42.9</u>	39.8	46.0	<u>3.1</u>	6.2	
7	398.95	BBA	<u>42.9</u>	-	-2.0	-2.0	<u>40.9</u>	-	46.0	<u>5.1</u>	-	
8	400.00	BBA	<u>42.7</u>	-	-1.9	-1.9	<u>40.8</u>	-	46.0	<u>5.2</u>	-	
9	528.05	BBA	-	37.2	1.5	1.5	-	38.7	46.0	-	7.3	
10	664.92	BBA	-	34.9	5.1	5.1	-	40.0	46.0	-	6.0	
11	797.90	BBA	-	31.4	7.8	7.8	-	39.2	46.0	-	6.8	
12	930.88	BBA	-	<u>31.5</u>	9.9	9.9	-	<u>41.4</u>	46.0	-	<u>4.6</u>	

Higher six points are underlined.

Other frequencies : Below the FCC Part15B Class B limit

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

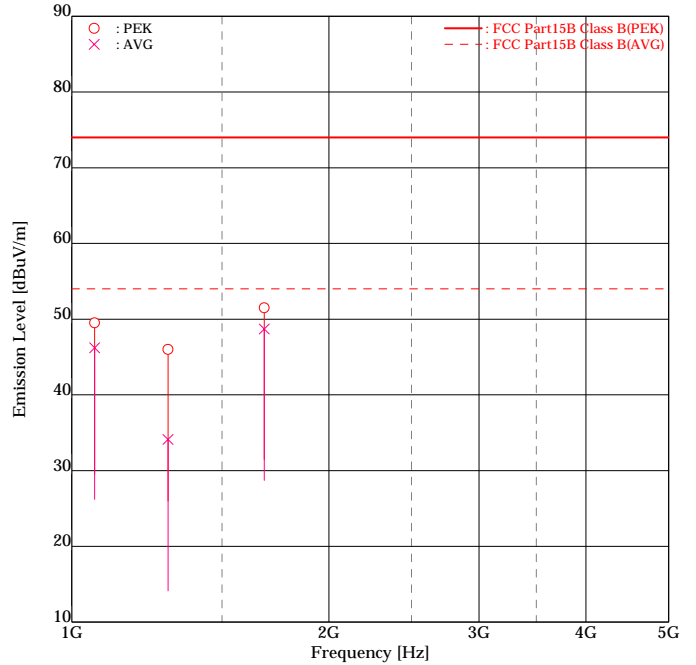
ANT. : Used antenna (BBA = Broadband antenna, DIP = Dipole antenna)

9.2.4 RX 30MHz mode (1000 – 5000MHz)

**Akzo Nobel K.K.**  
**Kashima No.3 Test Site**  
**Radiated Electric Field**

APPLICANT : Vertex Standard Co., Ltd.  
 EUT NAME : HF Transceiver  
 MODEL NO. : FT DX9000 Contest  
 SERIAL NO. : 5D000002  
 TEST MODE : RX 30MHz (ANT1)  
 POWER SOURCE : AC120V/60Hz  
 DATE TESTED : May 12 2005  
 FILE NO. : ANKK-105124  
 REGULATION : FCC Part15B Class B  
 TEST METHOD : ANSI C63.4-2003  
 DISTANCE : 3.0 [m]  
 TEMPERATURE : 23.0 [degC]  
 HUMIDITY : 39.0 [%]  
 NOTE :

ENGINEER : Kazuo Masuda



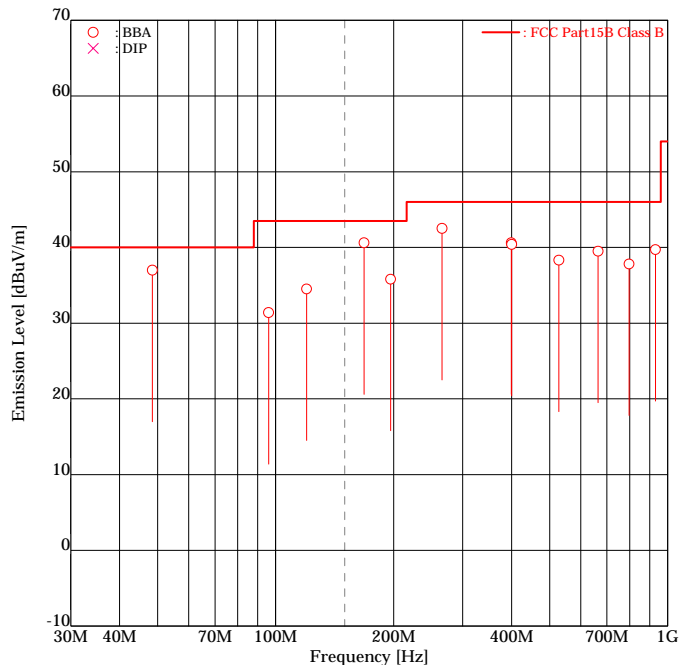
FREQUENCY [No]	MODE [MHz]	READING [dBuV]	FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]		MARGIN [dB]		
			Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert	
1	1063.90	PEK	-	<u>50.2</u>	-0.7	-0.7	-	<u>49.5</u>	74.0	-	<u>24.5</u>
2	1063.90	AVG	-	<u>46.9</u>	-0.7	-0.7	-	<u>46.2</u>	54.0	-	<u>7.8</u>
3	1296.50	PEK	-	<u>46.6</u>	-0.6	-0.6	-	<u>46.0</u>	74.0	-	<u>28.0</u>
4	1296.50	AVG	-	<u>34.7</u>	-0.6	-0.6	-	<u>34.1</u>	54.0	-	<u>19.9</u>
5	1680.38	PEK	<u>50.7</u>	49.2	0.8	0.8	<u>51.5</u>	50.0	74.0	<u>22.5</u>	24.0
6	1680.38	AVG	<u>47.9</u>	45.9	0.8	0.8	<u>48.7</u>	46.7	54.0	<u>5.3</u>	7.3

Higher six points are underlined.  
 Other frequencies : Below the FCC Part15B Class B limit  
 Emission Level = Read + Factor(Antenna, Antenna Pad, Cable, Preamp)  
 ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

9.2.5 RX 60MHz mode (30 – 1000MHz)

**Akzo Nobel K.K.**  
**Kashima No.3 Test Site**  
**Radiated Electric Field**

APPLICANT : Vertex Standard Co., Ltd.  
 EUT NAME : HF Transceiver  
 MODEL NO. : FT DX9000 Contest  
 SERIAL NO. : 5D000002  
 TEST MODE : RX 60MHz (ANT1)  
 POWER SOURCE : AC120V/60Hz  
 DATE TESTED : May 12 2005  
 FILE NO. : ANKK-105124  
 REGULATION : FCC Part15B Class B  
 TEST METHOD : ANSI C63.4-2003  
 DISTANCE : 3.0 [m]  
 TEMPERATURE : 23.0 [degC]  
 HUMIDITY : 39.0 [%]  
 NOTE :



ENGINEER : Kazuo Masuda

FREQUENCY [No]	ANT. [MHz]	ANT.	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]		MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert
1	48.50	BBA	-	<u>44.6</u>	-7.6	-7.6	-	<u>37.0</u>	40.0	-	<u>3.0</u>	
2	96.01	BBA	-	43.2	-11.8	-11.8	-	31.4	43.5	-	12.1	
3	120.01	BBA	42.5	-	-8.0	-8.0	34.5	-	43.5	9.0	-	
4	168.02	BBA	43.7	<u>47.1</u>	-6.5	-6.5	37.2	<u>40.6</u>	43.5	6.3	<u>2.9</u>	
5	196.61	BBA	44.7	-	-8.9	-8.9	35.8	-	43.5	7.7	-	
6	265.97	BBA	<u>48.6</u>	46.0	-6.1	-6.1	<u>42.5</u>	39.9	46.0	<u>3.5</u>	6.1	
7	398.95	BBA	<u>42.6</u>	-	-2.0	-2.0	<u>40.6</u>	-	46.0	<u>5.4</u>	-	
8	400.00	BBA	<u>42.3</u>	-	-1.9	-1.9	<u>40.4</u>	-	46.0	<u>5.6</u>	-	
9	528.05	BBA	-	36.8	1.5	1.5	-	38.3	46.0	-	7.7	
10	664.92	BBA	-	34.4	5.1	5.1	-	39.5	46.0	-	6.5	
11	797.90	BBA	-	30.0	7.8	7.8	-	37.8	46.0	-	8.2	
12	930.88	BBA	-	<u>29.8</u>	9.9	9.9	-	<u>39.7</u>	46.0	-	<u>6.3</u>	

Higher six points are underlined.  
 Other frequencies : Below the FCC Part15B Class B limit  
 Emission Level = Read + Factor(Antenna, Antenna Pad, Cable, Preamp)  
 ANT. : Used antenna (BBA = Broadband antenna, DIP = Dipole antenna)

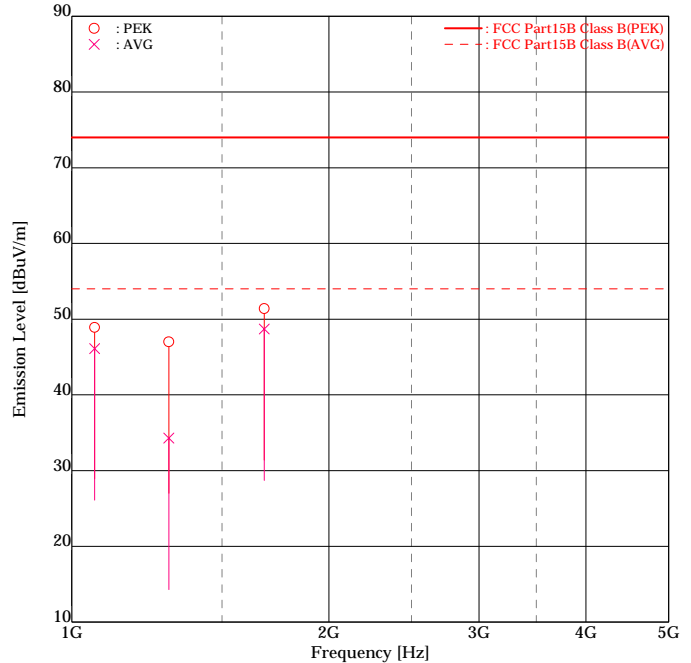


9.2.6 RX 60MHz mode (1000 – 5000MHz)

**Akzo Nobel K.K.**  
**Kashima No.3 Test Site**  
**Radiated Electric Field**

APPLICANT : Vertex Standard Co., Ltd.  
 EUT NAME : HF Transceiver  
 MODEL NO. : FT DX9000 Contest  
 SERIAL NO. : 5D000002  
 TEST MODE : RX 60MHz (ANT1)  
 POWER SOURCE : AC120V/60Hz  
 DATE TESTED : May 12 2005  
 FILE NO. : ANKK-105124  
 REGULATION : FCC Part15B Class B  
 TEST METHOD : ANSI C63.4-2003  
 DISTANCE : 3.0 [m]  
 TEMPERATURE : 23.0 [degC]  
 HUMIDITY : 39.0 [%]  
 NOTE :

ENGINEER : Kazuo Masuda



FREQUENCY [No]	MODE [MHz]	MODE	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]		MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert
1	1063.90	PEK	-	<u>49.6</u>	-0.7	-0.7	-	<u>48.9</u>	74.0	-	<u>25.1</u>	
2	1063.90	AVG	-	<u>46.8</u>	-0.7	-0.7	-	<u>46.1</u>	54.0	-	<u>7.9</u>	
3	1299.60	PEK	-	<u>47.6</u>	-0.6	-0.6	-	<u>47.0</u>	74.0	-	<u>27.0</u>	
4	1299.60	AVG	-	<u>34.9</u>	-0.6	-0.6	-	<u>34.3</u>	54.0	-	<u>19.7</u>	
5	1680.48	PEK	<u>50.6</u>	49.1	0.8	0.8	<u>51.4</u>	49.9	74.0	<u>22.6</u>	24.1	
6	1680.48	AVG	<u>47.9</u>	45.9	0.8	0.8	<u>48.7</u>	46.7	54.0	<u>5.3</u>	7.3	

Higher six points are underlined.  
 Other frequencies : Below the FCC Part15B Class B limit  
 Emission Level = Read + Factor(Antenna, Antenna Pad, Cable, Preamp)  
 ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

### 9.3 Sample Calculations

#### 9.3.1 Conducted Voltages on Mains Port

##### Example @ 0.1898MHz (QP)

---

Emission Level	=	Meter Reading		55.5	dBuV
	+	Factor		6.8	dB
				<hr/>	
				=	62.3 dBuV
Margin	=	Limit		64.0	dBuV
	-	Emission Level		62.3	dBuV
				<hr/>	
				=	1.7 dB

---

Factor = LISN Factor + Cable Loss + Pad Loss

#### 9.3.2 Radiated Electric Field

##### Example @ 48.50MHz

---

Emission Level	=	Meter Reading		45.3	dBuV
	+	Factor		7.6	dB/m
				<hr/>	
				=	37.7 dBuV/m
Margin	=	Limit		40.0	dBuV/m
	-	Emission Level		37.7	dBuV/m
				<hr/>	
				=	2.3 dB

---

Factor = Antenna Factor + Cable Loss – Amplifier Gain + Pad Loss

**SECTION 10. INSTRUMENTS USED FOR FINAL TEST**

Instrument	Model No.	Serial No.	Manufacturer	Cal.expired
LISN (EUT)	ESH2-Z5	882395/022	ROHDE & SCHWARZ	Sep. 30, 05
6dB Attenuator	CFA-01	None	TME	Jan. 31, 06
LISN (Peripheral)	KNW-407	8-532-11	KYORITSU	May 31, 06
50Ω Termination	CT-01	A030CON50	TME	Jul. 31, 05
Coaxial cable	RG-5A/U (7.2 m)	C1	AKZO	Jan. 31, 06
	RG-5A/U (4.0 m)	C2	AKZO	Jan. 31, 06
	RG-5A/U (1.1 m)	R11	AKZO	Jan. 31, 06
	RG-5A/U (1.0 m)	R12	AKZO	Jan. 31, 06
Broad Band antenna	VULB9168	107	SCHWARZ	Jul. 31, 05
Double Ridged antenna	3115	5044	EMCO	Jun. 30, 05
6dB Attenuator	MP721B	M56993	ANRITSU	Feb. 28, 06
3dB Attenuator	4768-3	79	NARDA	Sep. 30, 05
Step Attenuator	8494B	2406A09036	HEWLETT PACKARD	Feb. 28, 06
Amplifier	8447D	2443A03849	HEWLETT PACKARD	Feb. 28, 06
	83051A	3332A00329	HEWLETT PACKARD	Sep. 30, 05
Coaxial cable	RG-5A/U (12.3 m)	R1	AKZO	Feb. 28, 06
	23D-4AF (10.0 m)	R2	AKZO	Feb. 28, 06
	RG-5A/U (1.8 m)	R3	AKZO	Feb. 28, 06
	RG-5A/U (0.2 m)	R9	AKZO	Feb. 28, 06
	RG-5A/U (0.4 m)	R10	AKZO	Feb. 28, 06
	RG-5A/U (1.1 m)	R11	AKZO	Feb. 28, 06
	RG-5A/U (1.0 m)	R12	AKZO	Feb. 28, 06
	SUCOFLEX102 (1.0 m)	R14	SUHNER	Sep. 30, 05
	KPS-1501-1969- KPS (5.0 m)	R15	INSULATED WIRE	Sep. 30, 05
Test receiver	ESS (Firmware Version 1.08)	847151/012	ROHDE & SCHWARZ	Jan. 31, 06
Spectrum Analyzer	8564E	3643A00665	HEWLETT PACKARD	Aug. 31, 05
RF Switch	ACX-150	None	AKZO	Feb. 28, 06
Site Attenuation				Feb. 28, 06

Instrument	Model No.	Serial No.	Manufacturer	Cal.expired
ANT Termination	M1426	9C3425	WEINSCHEL	-
	MP752A	M65225	ANRITSU	-
	11593A	None	AGILENT	- (× 5)

Note : Test instruments are calibrated according to Quality Manual and Calibration Rules of EMC division.

**SECTION 11. MEASUREMENT UNCERTAINTY**

The uncertainty of the measurements performed for this report lies:

Radiated Electric Field at 3m	
30 MHz – 1000 MHz .....	+/- 4.07 dB
Above 1 GHz .....	+/- 3.90 dB
Conducted Voltages on Mains Port	
9 kHz – 30 MHz .....	+/- 2.45 dB
Conducted Power on Antenna Port	
30 MHz – 1000 MHz .....	+/- 2.50 dB
Above 1 GHz .....	+/- 3.00 dB
38dB Rejection	
30 kHz – 60 MHz .....	+/- 0.71 dB

**Note on Radiated Electric Field 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. DESCRIPTION OF TEST LABORATORY

### 12.1 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/IEC17025 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.

### 12.2 Filing, certification, authorization and accreditation list

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

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