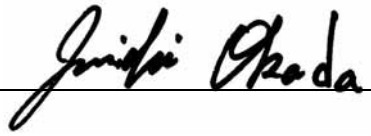
TEST REPORT

REGULATION : FCC Part15 Subpart C Section 15.249

Applicant	Testing Laboratory
Fuji Electric Systems Co., Ltd. 1, Fuji-machi, Hino-city, Tokyo 191-8502, Japan Tel. +81 42 585 6171	Intertek Japan K.K. Kashima Site URL: http://www.japan.intertek-etlsemko.com 3-2 Sunayama, Kamisu, Ibaraki 314-0255 Japan Tel. +81 479 40 1097

Equipment Type	Wireless Base Unit
Trademark	Fe
Model(s)	NRA50201-YYYYY-S
Serial No.	080001
FCC ID	WY5NRA50201
Test Result	Complied
Report Number	JK09010001
Report Issue Date	March 9, 2009

Approved by



Junichi Okada
[Site Manager]

Tested by

Kazuo Masuda

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SECTION 1. GENERAL INFORMATION

TEST PERFORMED

Location	Kashima No.1 Test Site (FCC Reg.: JP0008)
EUT Received	January 8, 2009
Date of Test	From January 8, 2009 to January 16, 2009
Standard Applied	FCC Part15C – Section 15.249
Measurement methods	ANSI C63.4-2003
Test Procedure	Document number : 03-10-003, 03-10-004
Deviation from Standard(s)	None

QUALIFICATIONS OF TESTING LABORATORY

ACCREDITATION	**SCOPE**	**LAB. CODE**	**Remarks**
NVLAP	EMC Testing	100290-0	USA
VLAC	EMC Testing	VLAC-008-1	JAPAN
BSMI	EMC Testing	SL2-IN-E-6008	TAIWAN
FILING			
VCCI	EMC Testing	R-788, C-278, C-279, T-351, T-352 R-274, C-280, C-281, T-353, T-359 R-272, C-276, C-277, T-360, T-361 R-576, C-590, T-362	JAPAN
FCC	EMC Testing	Designation Number : JP0008	USA
IC	EMC Testing	2065A-1, 2065A-3	CANADA
SAUDI ARABIA	EMC Testing	N/A	

ABBREVIATIONS

EUT	Equipment Under Test	DoC	Declaration of Conformity
AMN	Artificial Mains Network	ISN	Impedance Stabilization Network
LISN	Line Impedance Stabilization Network	Q-P	Quasi-peak
AMP	Amplifier	AVG	Average
ATT	Attenuator	PK	Peak
ANT	Antenna	Cal	Calibration
BBA	Broadband Antenna	N/A	Not applicable or Not available
DIP	Dipole Antenna	LCD	Liquid-Crystal Display
AE	Associated Equipment		

SECTION 2. SUMMARY OF TEST RESULTS

The minimum margins to the limits are as follows:

Test	Reference < FCC >	Result
AC Conducted Emission	15.207	Complied
Field Strength Emission	15.249 (a)	Complied
Spurious Emissions – Radiated	15.249 (d) 15.209 15.205	Complied
Restricted Bands of Operation	15.205 15.209	Complied
Variation Carrier Output Power	15.31(e)	Complied
Variation Carrier Frequency Stability	15.31(e)	Complied

Note : See Section 10 for details.

< Measurement data correction >

* Conducted disturbance at mains terminals
  Emission Level [dBµV] = Meter Reading [dBµV] + Factor [dB]
  Margin [dB] = Limit [dBµV] - Emission Level [dBµV]
  * Factor = LISN Factor + Cable Loss + ATT

* Radiated disturbance
  Emission Level [dBµV/m] = Meter Reading [dBµV] + Factor [dB/m]
  Margin [dB] = Limit [dBµV/m] - Emission Level [dBµV/m]
  * Factor = Antenna Factor + Cable Loss - Amplifier Gain + ATT
  (– Distance Conversion Factor)

SECTION 3. EQUIPMENT UNDER TEST

The equipment under test (EUT) consisted of the following apparatus.

3.1 System Configuration

Symbol	Item	Model No.	Serial No.	Manufacturer	Notes	FCC ID
A1	Wireless Base Unit	NRA50201-YYYYY-S	080001	Fuji Electric Systems Co., Ltd.	EUT	WY5NRA50201
A2	AC Adapter	GFP051U-0510	None	Fuji Electric Systems Co., Ltd.	Option	N.A.
Rated Power : DC5V, 80mA (AC Adapter : AC100 – 240V, 50/60Hz, 0.2A)						
Supplied Power : DC5V, (AC Adapter : AC120V, 60Hz)						
Condition of Equipment	Prototype					
Type	Built-in					
Suppression Devices	No Modifications by the laboratory were made to the device					

3.2 Overview of EUT

Carrier Frequency Ranges	915.00 – 917.85 MHz
Number of RF Channel	20
Carrier Spacing	150kHz
Modulation Method	Two Level Frequency Shift Keying
RF Output Power	90.5 dBuV/m (at 3.0m : Measurement value)
Antenna Gain	1.98dBd (Maximum:-0.17dBi)

3.3 Port(s)/Connector(s)

Port Name	Connector Type	Connector Pin	Remarks
RS-232C	D-sub	9pin	

3.4 Highest Frequency Oscillator(s) / Crystal(s)

Base Clock	Operating Frequency	Board Name	Remarks
1830 MHz	915 MHz	Wireless Base Unit (IC1)	
24.576 MHz	24.576 MHz	Wireless Base Unit (IC1)	
12 MHz	24 MHz	Wireless Base Unit (IC2)	

3.5 Frequency Range of Measurements

AC Conducted Emission	0.15 – 30 MHz
Field Strength Emission	915.00 – 917.85 MHz
Spurious Emissions – Radiated	30 – 10000 MHz
Frequency Tolerance	915.00 – 917.85 MHz

3.6 Frequency allocation :

Channel Number	Frequency (MHz)	Notes
1	915.00	Tested Channel (Low)
2	915.15	
3	915.30	
4	915.45	
5	915.60	
6	915.75	
7	915.90	
8	916.05	
9	916.20	
10	916.35	Tested Channel (Mid)
11	916.50	
12	916.65	
13	916.80	
14	916.95	
15	917.10	
16	917. 25	
17	917.40	
18	917.55	
19	917.70	
20	917.85	Tested Channel (High)

SECTION 4. SUPPORT EQUIPMENT

The EUT was supported by the following equipment during the test.

Symbol	Item	Model No.	Serial No.	Manufacturer	FCC ID
B	Computer	Optiplex 755 2000SFF (WXP DG)	BQ82HBX	DELL	DoC
C	LCD Display	RDT175LM	61114659VJ	MITSUBISHI	DoC
D	Keyboard	L100	CN0RH657658907 A080198	DELL	DoC
E	Mouse	OXN967	H1006VGL	DELL	DoC
F	Printer	K10232	FBWW72034	CANON	DoC
G	AC Adapter	K30217	031207TT7	CANON	N.A.
Supplied Power:					
B, C, G	AC120 V, 60 Hz				

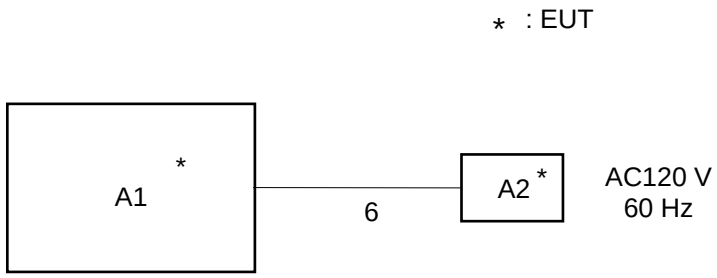
SECTION 5. USED CABLE(S)

The following cable(s) was used for the test.

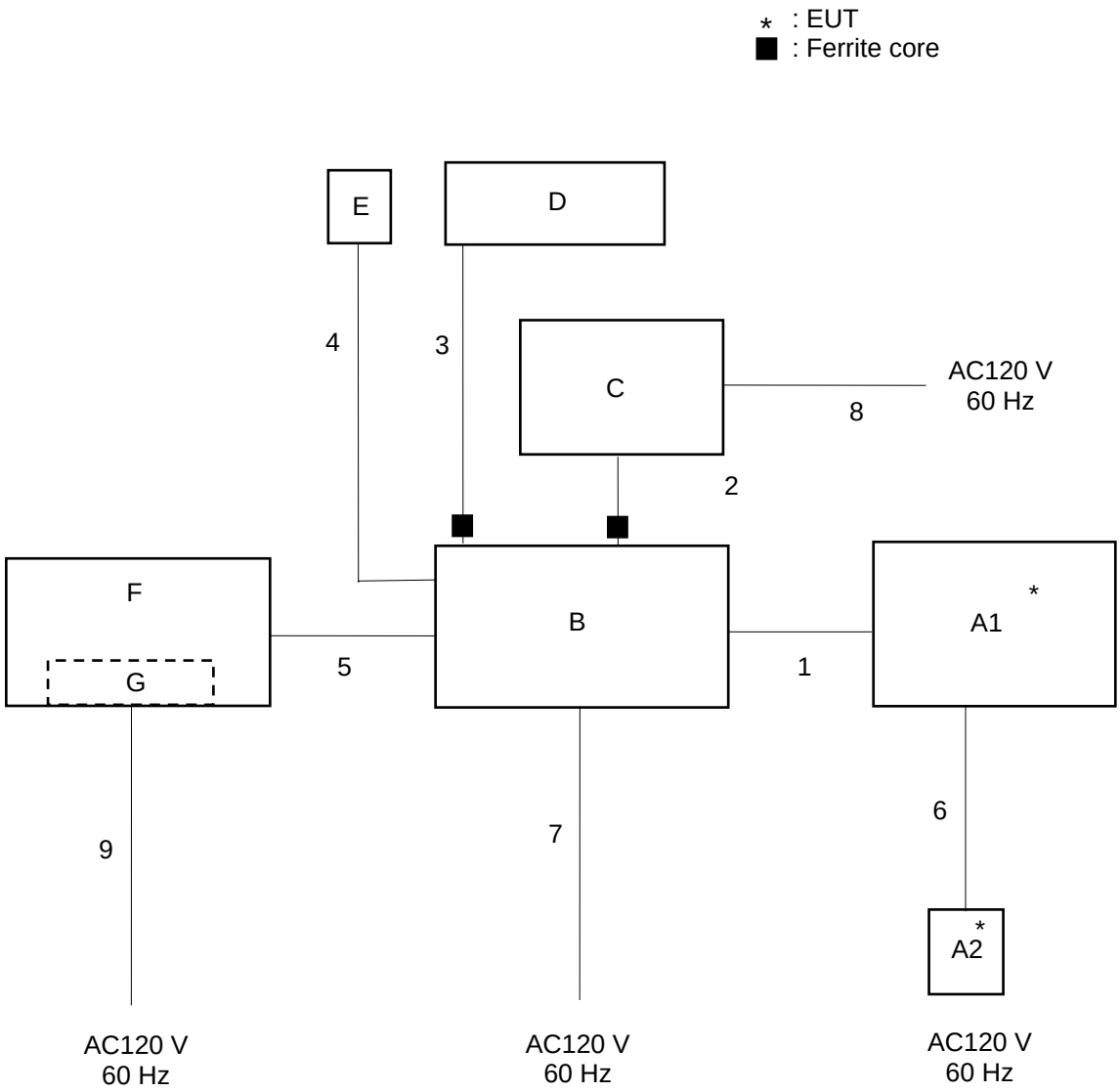
No.	Name	Length (m)	Shield	Metal Connector	Ferrite Core
1	RS-232C cable	2.00	Yes	Yes	
2	Video cable	1.80	Yes	Yes	Fixed
3	Keyboard cable	2.10	Yes	Yes	Fixed
4	Mouse cable	1.80	Yes	Yes	
5	Centronics cable	2.40	Yes	Yes	
6	Power cable for EUT (AC Adapter)	1.80	No	No	
7	Power cable for Computer	1.90	No	No	
8	Power cable for LCD Display	1.70	No	No	
9	Power cable for Printer	1.70	No	No	

SECTION 6. TEST CONFIGURATION

6.1 TX mode



6.2 Test mode



The symbols and numbers assigned to the equipments and cables on this diagram correspond to the ones in Sections 3 to 5.

SECTION 7. OPERATING CONDITION

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

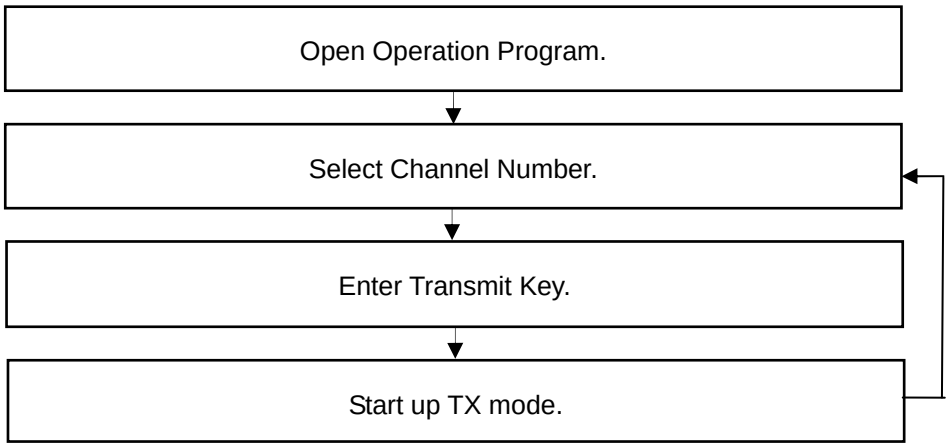
7.1 Operating Condition

The test was carried out under TX mode and Test mode.
EUT was examined in the operating conditions that had maximum emissions.

7.2 Operating Flow [TX mode and Test mode]

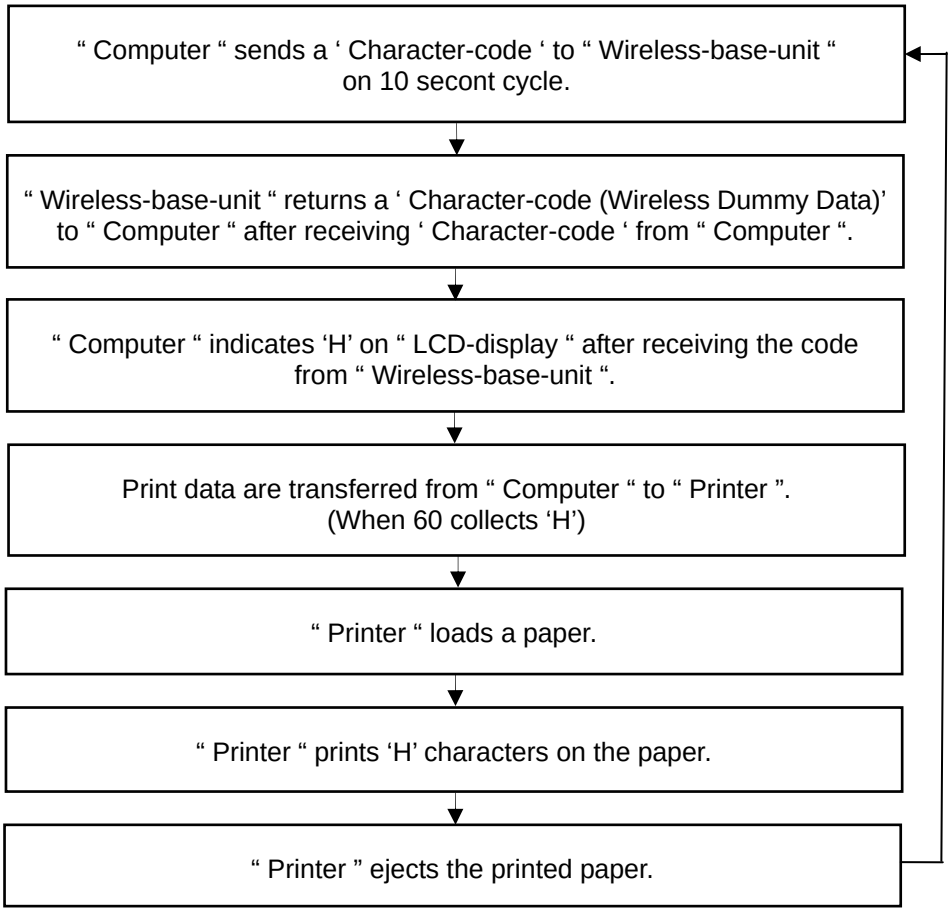
7.2.1 TX mode

Following operations were performed continuously.



7.2.2 Test mode

Following operations were performed continuously.

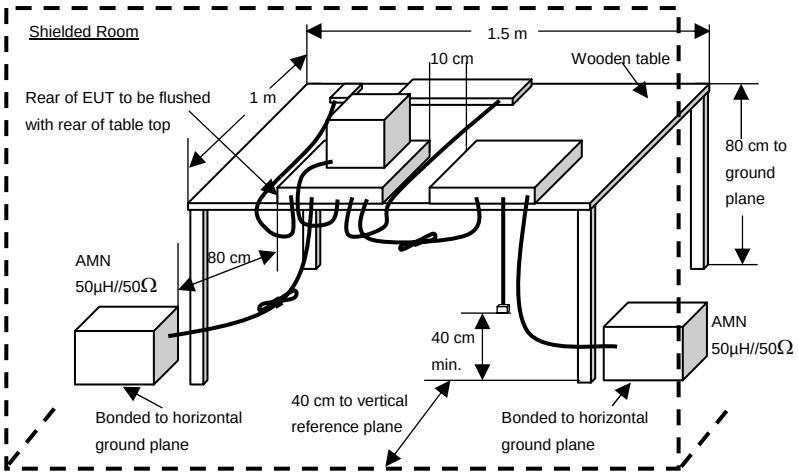


SECTION 8. TEST PROCEDURE(S)

Test was carried out under the following conditions.

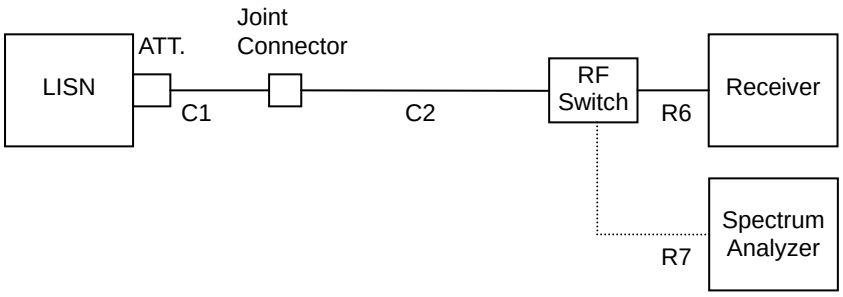
AC Conducted Emission

Test setup



* Reference Ground plane : greater than 2 x 2m

Schema for the AC conducted emission measurement



Instrument setup

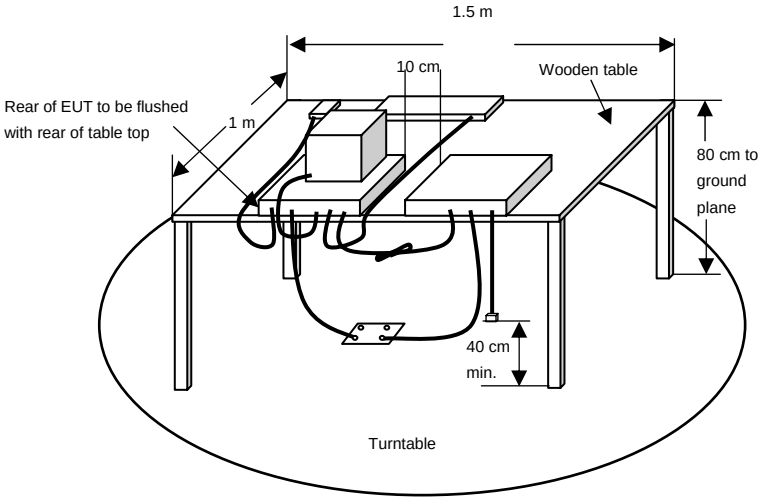
Frequency [MHz]	Instrument	Detector Function	Resolution Bandwidth	Video Bandwidth
0.15 – 30	Receiver	Quasi Peak	10 kHz	N/A.
		Average	10 kHz	N/A.

[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 is 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.

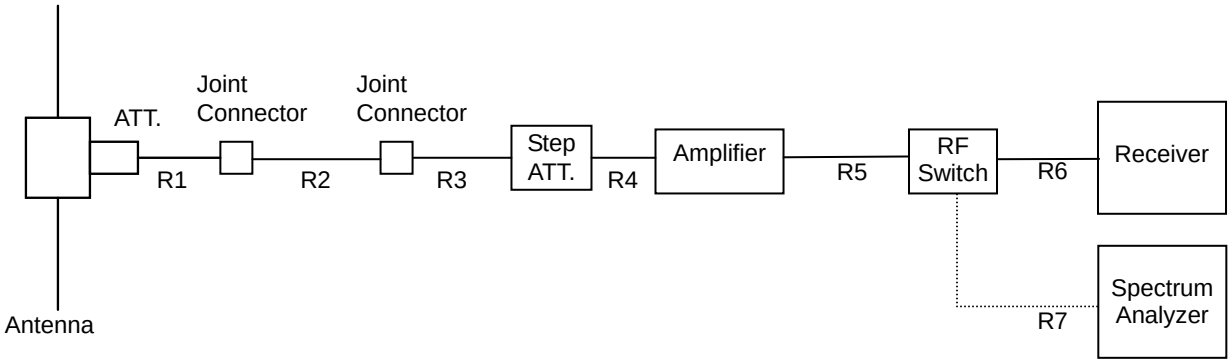
[Final Measurement]
The EUT is operated in the worst emission condition found by the preliminary test.
The equipment and cables are arranged or manipulated within the range of the test standard in the above condition.
At least six highest spectrum are measured in quasi-peak and average (if necessary)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

Field Strength Emission & Spurious Emissions - Radiated

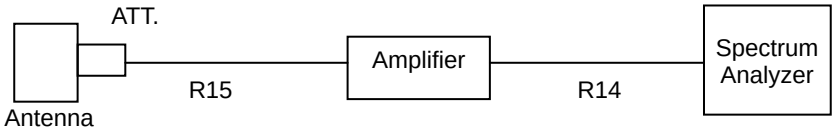
Test setup



Schema for the spurious emission radiated electric field measurement < 30 - 1000MHz >



< Above 1GHz >



[Instrument Setup]

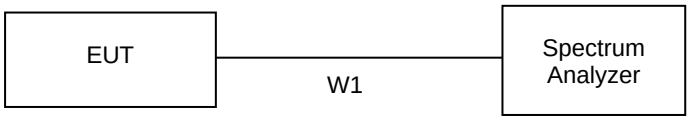
Frequency [MHz]	Instrument	Detector Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	Receiver	Quasi Peak	120 kHz	N.A.
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
		Average	1 MHz	10 Hz

[Preliminary Measurement]
EUT is tested on all operating conditions.
The antenna mast is attachable to the broadband Tri-Log and antenna height is adjustable 1 to 4 meters continuously, and antenna polarization is also changed. (vertical and horizontal)
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.

[Final Measurement]
The EUT operated in the worst emission condition found by the preliminary test.
The turntable azimuth (EUT direction) and antenna height (1 to 4 meters) 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. At least six highest spectrum are measured by the test receiver (quasi-peak) and spectrum analyzer (peak and average).When the uncertain result was obtained, the measurement is retried by using the half wave dipole antenna instead of the broadband antenna.

Restricted Bands of Operation

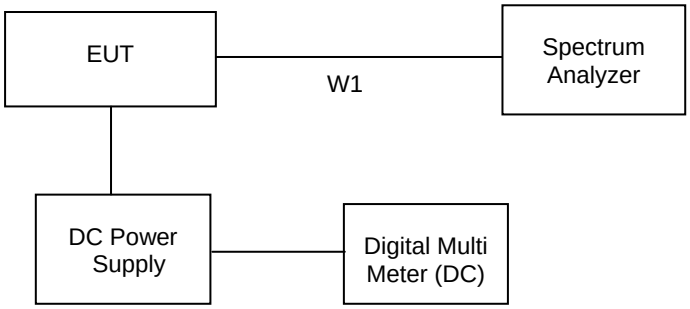
Schema for the spurious emissions conducted measurement



[Measurement]
The Spectrum Analyzer was connected directly to the antenna cable port.
The Spectrum Analyzer was setup using RBW = 100kHz, VBW = 100kHz
and sweep time = Auto.
EUT is tested on all operating conditions.
The spectrum are measured by spectrum analyzer.

Carrier Frequency Stability

Schema for the voltage variation measurement



[Preliminary Measurement]
The Spectrum Analyzer was connected directly to the antenna cable port.
The Spectrum Analyzer was setup using RBW = 1MHz, VBW = 3MHz
and sweep time = Auto.
EUT is tested on all operating conditions.
The power supply voltage to the EUT was the normal value measured at the input to the EUT.

[Final Measurement]
The power supply voltage to the EUT was varied from 85% to 115% of the normal value measured at the input to the EUT.

SECTION 9. MEASUREMENT UNCERTAINTY

Radiated disturbance at 3m	
30 MHz – 1000 MHz Above 1 GHz	+/- 4.6 dB +/- 4.3 dB
Radiated disturbance at 10m	
30 MHz – 1000 MHz Above 1 GHz	+/- 5.5 dB +/- 4.3 dB
Radiated disturbance at 30m	
	N/A
Radiated disturbance (power)	
11.7 GHz – 12.7 GHz	+/- 4.3 dB
Conducted disturbance at mains terminals	
9 kHz – 30 MHz	+/- 3.0 dB
Conducted disturbance at telecommunication ports (voltage)	
9 kHz – 30 MHz	+/- 3.4 dB
Conducted disturbance at telecommunication ports (current)	
9 kHz – 30 MHz	+/- 2.8 dB
Conducted disturbance at terminals	
150 kHz – 30 MHz	+/- 2.8 dB
Disturbance power	
30 MHz – 300 MHz	+/- 4.9 dB
Radiated Magnetic Field	
9 kHz – 30 MHz	+/- 2.94 dB
Frequency Stability	
10 kHz – 1000 MHz	+/- 0.2 %

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 judgment of the test results in this report.

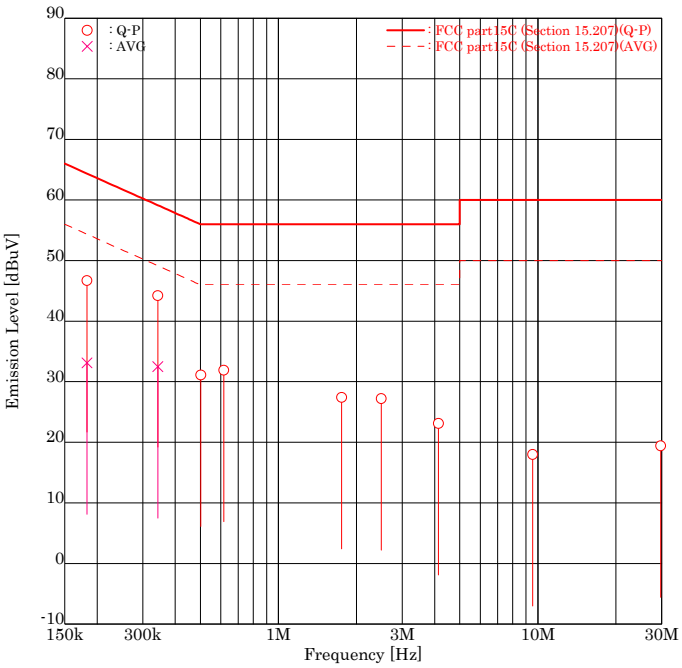
SECTION 10. EVALUATION OF TEST RESULTS

10.1 AC Conducted Emission Test

10.1.1 TX 915.00MHz mode (Ch : Low) & Test mode

Intertek Japan K.K
Kashima No.1 Test Site
AC Conducted Emission Test

APPLICANT	: Fuji Electric Systems Co., Ltd.
EUT NAME	: Wireless Base Unit
MODEL NO.	: NRA50201-YYYYY-S
SERIAL NO.	: 080001
TEST MODE	: TX 915.00MHz mode (Ch : Low)
POWER SOURCE	: AC120V/60Hz
DATE TESTED	: Jan 13 2009
FILE NO.	: JK09010001
REGULATION	: FCC part15C (Section 15.207)
TEST METHOD	: ANSI C63.4-2003
TEMPERATURE	: 20.0 [degC]
HUMIDITY	: 30.0 [%]
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	0.1827	Q-P	36.4	36.6	10.1	10.1	46.5	46.7	64.4	17.9	17.7
2	0.1827	AVG	23.0	23.0	10.1	10.1	33.1	33.1	54.4	21.3	21.3
3	0.3428	Q-P	34.0	33.5	10.2	10.2	44.2	43.7	59.1	**14.9**	15.4
4	0.3428	AVG	21.6	22.3	10.2	10.2	31.8	32.5	49.1	17.3	16.6
5	0.5025	Q-P	20.1	20.8	10.3	10.3	30.4	31.1	56.0	25.6	24.9
6	0.6164	Q-P	17.4	21.6	10.3	10.3	27.7	31.9	56.0	28.3	24.1
7	1.7514	Q-P	13.0	17.1	10.3	10.3	23.3	27.4	56.0	32.7	28.6
8	2.4930	Q-P	14.4	16.8	10.4	10.4	24.8	27.2	56.0	31.2	28.8
9	4.1424	Q-P	10.9	12.5	10.6	10.6	21.5	23.1	56.0	34.5	32.9
10	9.5453	Q-P	6.1	7.3	10.8	10.7	16.9	18.0	60.0	43.1	42.0
11	29.7773	Q-P	7.7	8.0	11.3	11.4	19.0	19.4	60.0	41.0	40.6

Higher six points are underlined.
Other frequencies : Below the FCC part15C (Section 15.207) limit
Emisson Level = Read + Factor(LISN,Pad,Cable)

emiT 3, 0, 0, 0

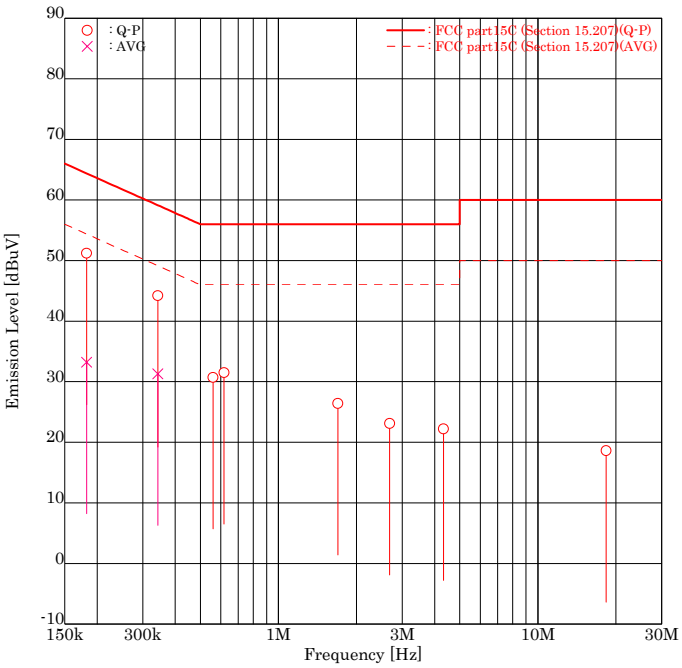
10.1.2 TX 916.35MHz mode (Ch : Mid) & Test mode

Intertek Japan K.K

Kashima No.1 Test Site

AC Conducted Emission Test

APPLICANT	: Fuji Electric Systems Co., Ltd.
EUT NAME	: Wireless Base Unit
MODEL NO.	: NRA50201-YYYYY-S
SERIAL NO.	: 080001
TEST MODE	: TX 916.35MHz mode (Ch : Mid)
POWER SOURCE	: AC120V/60Hz
DATE TESTED	: Jan 13 2009
FILE NO.	: JK09010001
REGULATION	: FCC part15C (Section 15.207)
TEST METHOD	: ANSI C63.4-2003
TEMPERATURE	: 20.0 [degC]
HUMIDITY	: 30.0 [%]
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	0.1821	Q-P	41.1	40.7	10.1	10.1	51.2	50.8	64.4	**13.2**	13.6
2	0.1821	AVG	23.1	23.0	10.1	10.1	33.2	33.1	54.4	21.2	21.3
3	0.3426	Q-P	34.0	33.3	10.2	10.2	44.2	43.5	59.1	14.9	15.6
4	0.3426	AVG	21.1	20.7	10.2	10.2	31.3	30.9	49.1	17.8	18.2
5	0.5599	Q-P	16.0	20.4	10.3	10.3	26.3	30.7	56.0	29.7	25.3
6	0.6175	Q-P	16.1	21.2	10.3	10.3	26.4	31.5	56.0	29.6	24.5
7	1.6931	Q-P	13.8	16.1	10.3	10.3	24.1	26.4	56.0	31.9	29.6
8	2.6851	Q-P	12.6	12.7	10.4	10.4	23.0	23.1	56.0	33.0	32.9
9	4.3235	Q-P	10.4	11.6	10.6	10.6	21.0	22.2	56.0	35.0	33.8
10	18.3189	Q-P	6.4	7.3	11.2	11.3	17.6	18.6	60.0	42.4	41.4

Higher six points are underlined.
Other frequencies : Below the FCC part15C (Section 15.207) limit
Emisson Level = Read + Factor(LISN,Pad,Cable)

emiT 3, 0, 0, 0

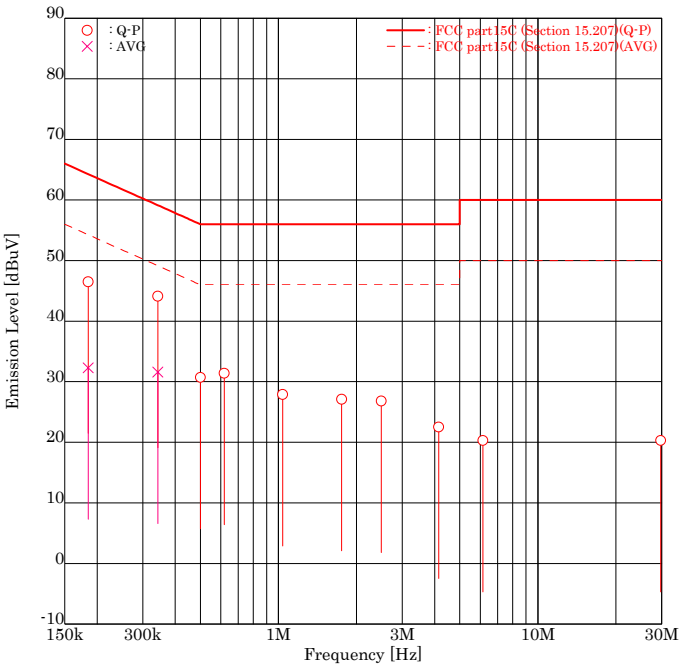
10.1.3 TX 917.85MHz mode (Ch : High) & Test mode

Intertek Japan K.K

Kashima No.1 Test Site

AC Conducted Emission Test

APPLICANT	: Fuji Electric Systems Co., Ltd.
EUT NAME	: Wireless Base Unit
MODEL NO.	: NRA50201-YYYYY-S
SERIAL NO.	: 080001
TEST MODE	: TX 917.85MHz mode (Ch : High)
POWER SOURCE	: AC120V/60Hz
DATE TESTED	: Jan 13 2009
FILE NO.	: JK09010001
REGULATION	: FCC part15C (Section 15.207)
TEST METHOD	: ANSI C63.4-2003
TEMPERATURE	: 20.0 [degC]
HUMIDITY	: 30.0 [%]
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	0.1847	Q-P	36.4	36.1	10.1	10.1	46.5	46.2	64.3	17.8	18.1
2	0.1847	AVG	22.2	22.0	10.1	10.1	32.3	32.1	54.3	22.0	22.2
3	0.3430	Q-P	33.9	33.2	10.2	10.2	44.1	43.4	59.1	**15.0**	15.7
4	0.3430	AVG	21.4	21.4	10.2	10.2	31.6	31.6	49.1	17.5	17.5
5	0.5007	Q-P	20.1	20.4	10.3	10.3	30.4	30.7	56.0	25.6	25.3
6	0.6181	Q-P	16.9	21.1	10.3	10.3	27.2	31.4	56.0	28.8	24.6
7	1.0373	Q-P	16.3	17.6	10.3	10.3	26.6	27.9	56.0	29.4	28.1
8	1.7518	Q-P	13.1	16.8	10.3	10.3	23.4	27.1	56.0	32.6	28.9
9	2.4925	Q-P	14.5	16.4	10.4	10.4	24.9	26.8	56.0	31.1	29.2
10	4.1444	Q-P	11.0	11.9	10.6	10.6	21.6	22.5	56.0	34.4	33.5
11	6.1402	Q-P	9.7	8.2	10.6	10.6	20.3	18.8	60.0	39.7	41.2
12	29.7747	Q-P	8.1	8.9	11.3	11.4	19.4	20.3	60.0	40.6	39.7

Higher six points are underlined.
Other frequencies : Below the FCC part15C (Section 15.207) limit
Emisson Level = Read + Factor(LISN,Pad,Cable)

emiT 3, 0, 0, 0

10.2 Field Strength Emission Test

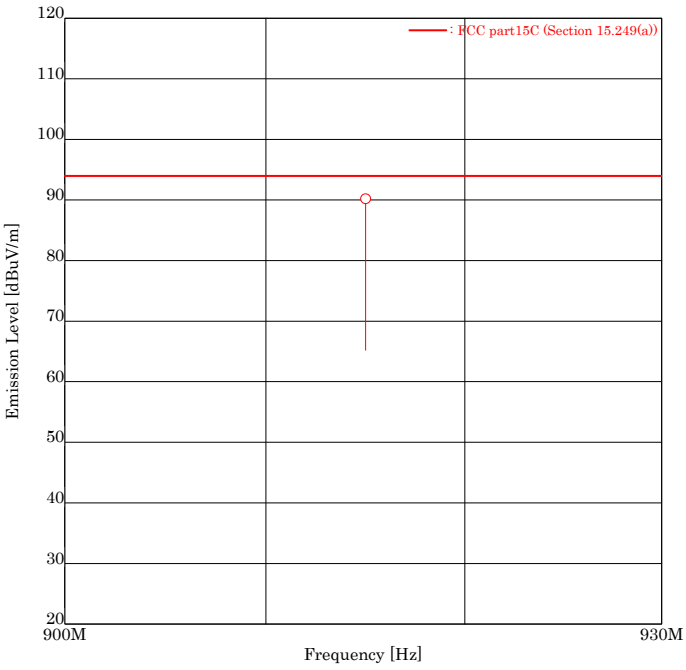
10.2.1 TX 915.00MHz mode (Ch : Low)

Intertek Japan K.K

Kashima No.1 Test Site

Field Strength of Fundamental

APPLICANT	: Fuji Electric Systems Co., Ltd.
EUT NAME	: Wireless Base Unit
MODEL NO.	: NRA50201-YYYYY-S
SERIAL NO.	: 080001
TEST MODE	: TX 915.00MHz mode (Ch : Low)
POWER SOURCE	: AC120V/60Hz
DATE TESTED	: Jan 08 2009
FILE NO.	: JK09010001
REGULATION	: FCC part15C (Section 15.249(a))
TEST METHOD	: ANSI C63.4-2003
DISTANCE	: 3.00 [m]
TEMPERATURE	: 22.0 [degC]
HUMIDITY	: 33.0 [%]
NOTE	:



ENGINEER : Kazuo Masuda

[No]	FREQUENCY [MHz]	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	915.00	74.6	76.7	13.5	13.5	88.1	90.2	94.0	5.9	**3.8**

Higher six points are underlined.
Other frequencies : Below the FCC part15C (Section 15.249(a)) limit
Emisson Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

emiT 3, 0, 0, 0

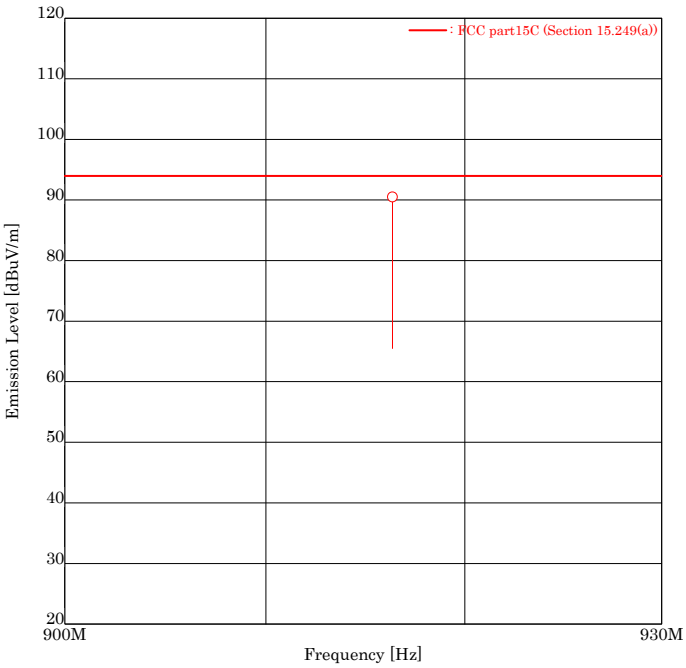
10.2.2 TX 916.35MHz mode (Ch : Mid)

Intertek Japan K.K

Kashima No.1 Test Site

Field Strength of Fundamental

APPLICANT	: Fuji Electric Systems Co., Ltd.
EUT NAME	: Wireless Base Unit
MODEL NO.	: NRA50201-YYYYY-S
SERIAL NO.	: 080001
TEST MODE	: TX 916.35MHz mode (Ch : Mid)
POWER SOURCE	: AC120V/60Hz
DATE TESTED	: Jan 08 2009
FILE NO.	: JK09010001
REGULATION	: FCC part15C (Section 15.249(a))
TEST METHOD	: ANSI C63.4-2003
DISTANCE	: 3.00 [m]
TEMPERATURE	: 22.0 [degC]
HUMIDITY	: 33.0 [%]
NOTE	:



ENGINEER : Kazuo Masuda

[No]	FREQUENCY [MHz]	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	916.35	74.7	77.0	13.5	13.5	88.2	90.5	94.0	5.8	**3.5**

Higher six points are underlined.
Other frequencies : Below the FCC part15C (Section 15.249(a)) limit
Emisson Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

emiT 3, 0, 0, 0

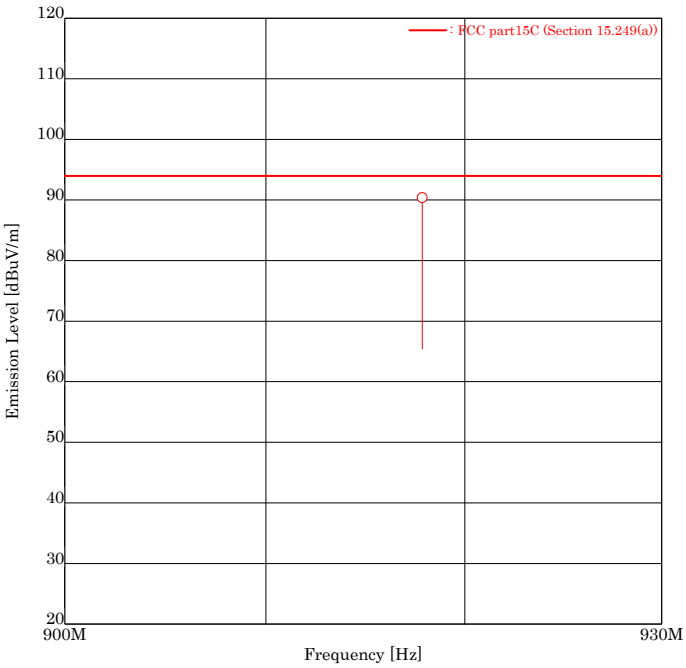
10.2.3 TX 917.85MHz mode (Ch : High)

Intertek Japan K.K

Kashima No.1 Test Site

Field Strength of Fundamental

APPLICANT	: Fuji Electric Systems Co., Ltd.
EUT NAME	: Wireless Base Unit
MODEL NO.	: NRA50201-YYYYY-S
SERIAL NO.	: 080001
TEST MODE	: TX 917.85MHz mode (Ch : High)
POWER SOURCE	: AC120V/60Hz
DATE TESTED	: Jan 08 2009
FILE NO.	: JK09010001
REGULATION	: FCC part15C (Section 15.249(a))
TEST METHOD	: ANSI C63.4-2003
DISTANCE	: 3.00 [m]
TEMPERATURE	: 22.0 [degC]
HUMIDITY	: 33.0 [%]
NOTE	:



ENGINEER : Kazuo Masuda

[No]	FREQUENCY [MHz]	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	917.85	74.8	76.8	13.6	13.6	88.4	90.4	94.0	5.6	**3.6**

Higher six points are underlined.
Other frequencies : Below the FCC part15C (Section 15.249(a)) limit
Emisson Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

emiT 3, 0, 0, 0

10.3 Spurious Emissions – Radiated Test

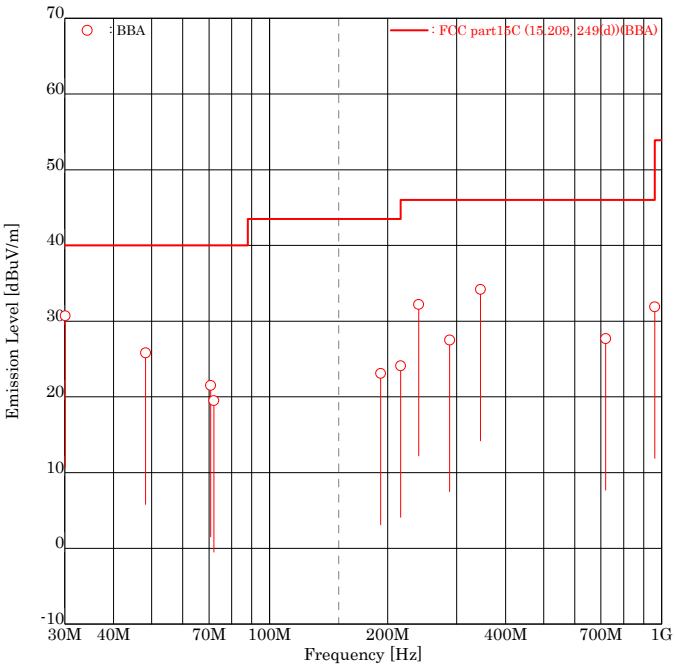
10.3.1 TX 915.00MHz mode (Ch : Low) & Test mode < 30MHz – 1000MHz >

Intertek Japan K.K

Kashima No.1 Test Site

Spurious Emissions - Radiated Test

APPLICANT	: Fuji Electric Systems Co., Ltd.
EUT NAME	: Wireless Base Unit
MODEL NO.	: NRA50201-YYYYY-S
SERIAL NO.	: 080001
TEST MODE	: TX 915.00MHz mode (Ch : Low) & Test mode
POWER SOURCE	: AC120V/60Hz
DATE TESTED	: Jan 09 2009
FILE NO.	: JK09010001
REGULATION	: FCC part15C (15.209, 249(d))
TEST METHOD	: ANSI C63.4-2003
DISTANCE	: 3.00 [m]
TEMPERATURE	: 23.0 [degC]
HUMIDITY	: 32.0 [%]
NOTE	:



ENGINEER : Kazuo Masuda

[No]	FREQUENCY [MHz]	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	30.10	-	35.0	-4.3	-4.3	-	30.7	40.0	-	**9.3**
2	48.23	-	28.1	-2.3	-2.3	-	25.8	40.0	-	14.2
3	70.72	-	25.7	-4.2	-4.2	-	21.5	40.0	-	18.5
4	72.00	24.0	-	-4.5	-4.5	19.5	-	40.0	20.5	-
5	192.00	27.2	-	-4.1	-4.1	23.1	-	43.5	20.4	-
6	215.99	28.2	-	-4.1	-4.1	24.1	-	43.5	19.4	-
7	240.00	35.3	-	-3.1	-3.1	32.2	-	46.0	13.8	-
8	288.00	-	28.2	-0.7	-0.7	-	27.5	46.0	-	18.5
9	345.00	31.8	33.1	1.1	1.1	32.9	34.2	46.0	13.1	11.8
10	720.00	-	17.3	10.4	10.4	-	27.7	46.0	-	18.3
11	959.99	17.5	15.0	14.4	14.4	31.9	29.4	46.0	14.1	16.6

Higher six points are underlined.
Other frequencies : Below the FCC part15C (15.209, 249(d)) limit
Emisson Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

emiT 3, 0, 0, 0

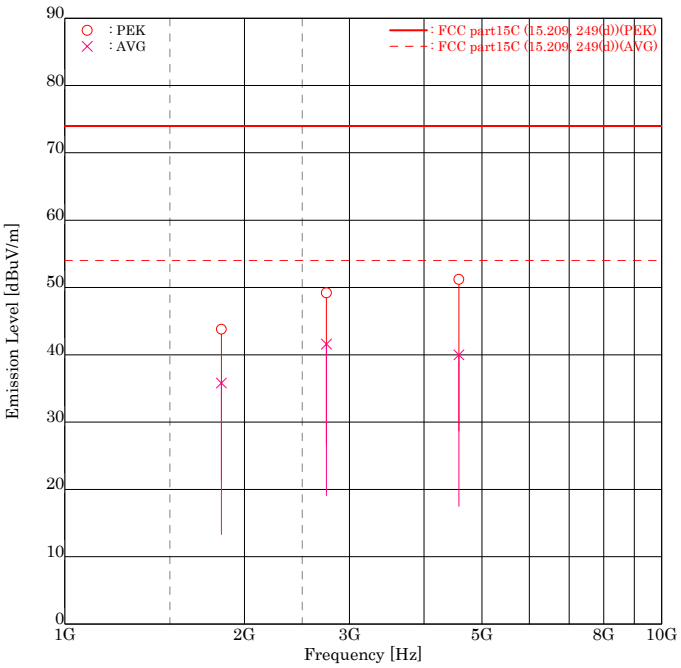
10.3.2 TX 915.00MHz mode (Ch : Low) & Test mode < 1GHz – 10GHz >

Intertek Japan K.K

Kashima No.1 Test Site

Spurious Emissions - Radiated Test

APPLICANT	: Fuji Electric Systems Co., Ltd.
EUT NAME	: Wireless Base Unit
MODEL NO.	: NRA50201-YYYYY-S
SERIAL NO.	: 080001
TEST MODE	: TX 915.00MHz mode (Ch : Low) & Test mode
POWER SOURCE	: AC120V/60Hz
DATE TESTED	: Jan 14 2009
FILE NO.	: JK09010001
REGULATION	: FCC part15C (15.209, 249(d))
TEST METHOD	: ANSI C63.4-2003
DISTANCE	: 3.00 [m]
TEMPERATURE	: 21.0 [degC]
HUMIDITY	: 28.0 [%]
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	1830.00	PEK	41.5	41.5	2.3	2.3	43.8	43.8	74.0	30.2	30.2
2	1830.00	AVG	32.5	33.5	2.3	2.3	34.8	35.8	54.0	19.2	18.2
3	2745.00	PEK	43.2	40.5	6.0	6.0	49.2	46.5	74.0	24.8	27.5
4	2745.00	AVG	35.6	30.6	6.0	6.0	41.6	36.6	54.0	**12.4**	17.4
5	4575.00	PEK	39.5	-	11.7	11.7	51.2	-	74.0	22.8	-
6	4575.00	AVG	28.3	-	11.7	11.7	40.0	-	54.0	14.0	-

Higher six points are underlined.
Other frequencies : Below the FCC part15C (15.209, 249(d)) limit
Emisson Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

emiT 3, 0, 0, 0

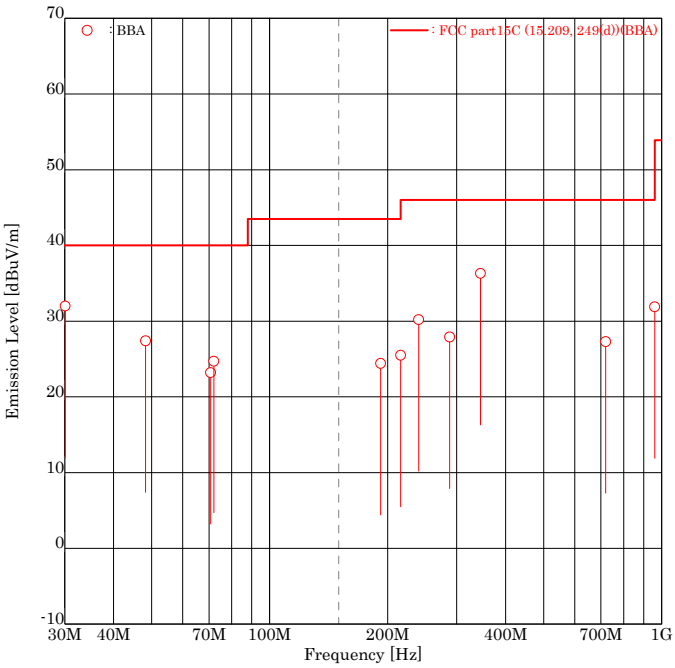
10.3.3 TX 916.35MHz mode (Ch : Mid) & Test mode < 30MHz – 1000MHz >

Intertek Japan K.K

Kashima No.1 Test Site

Spurious Emissions - Radiated Test

APPLICANT	: Fuji Electric Systems Co., Ltd.
EUT NAME	: Wireless Base Unit
MODEL NO.	: NRA50201-YYYYY-S
SERIAL NO.	: 080001
TEST MODE	: TX 916.50MHz mode (Ch : Mid) & Test mode
POWER SOURCE	: AC120V/60Hz
DATE TESTED	: Jan 09 2009
FILE NO.	: JK09010001
REGULATION	: FCC part15C (15.209, 249(d))
TEST METHOD	: ANSI C63.4-2003
DISTANCE	: 3.00 [m]
TEMPERATURE	: 23.0 [degC]
HUMIDITY	: 32.0 [%]
NOTE	:



ENGINEER : Kazuo Masuda

[No]	FREQUENCY [MHz]	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	30.10	-	36.3	-4.3	-4.3	-	32.0	40.0	-	**8.0**
2	48.23	-	29.7	-2.3	-2.3	-	27.4	40.0	-	12.6
3	70.72	-	27.4	-4.2	-4.2	-	23.2	40.0	-	16.8
4	72.00	29.2	-	-4.5	-4.5	24.7	-	40.0	15.3	-
5	192.00	28.5	-	-4.1	-4.1	24.4	-	43.5	19.1	-
6	215.99	29.6	-	-4.1	-4.1	25.5	-	43.5	18.0	-
7	240.00	33.3	-	-3.1	-3.1	30.2	-	46.0	15.8	-
8	288.00	-	28.6	-0.7	-0.7	-	27.9	46.0	-	18.1
9	345.00	32.9	35.2	1.1	1.1	34.0	36.3	46.0	12.0	9.7
10	720.00	-	16.9	10.4	10.4	-	27.3	46.0	-	18.7
11	959.99	17.5	15.1	14.4	14.4	31.9	29.5	46.0	14.1	16.5

Higher six points are underlined.
Other frequencies : Below the FCC part15C (15.209, 249(d)) limit
Emisson Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

emiT 3, 0, 0, 0

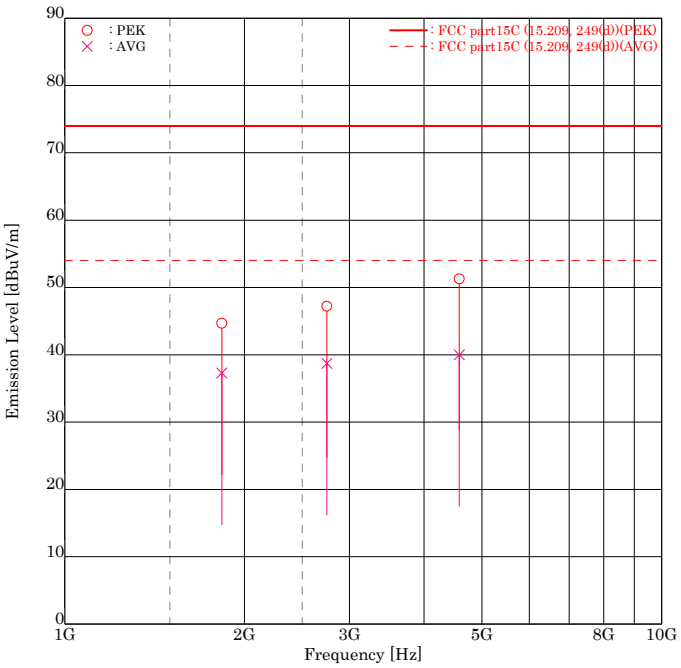
10.3.4 TX 916.35MHz mode (Ch : Mid) & Test mode < 1GHz – 10GHz >

Intertek Japan K.K

Kashima No.1 Test Site

Spurious Emissions - Radiated Test

APPLICANT	: Fuji Electric Systems Co., Ltd.
EUT NAME	: Wireless Base Unit
MODEL NO.	: NRA50201-YYYYY-S
SERIAL NO.	: 080001
TEST MODE	: TX 916.35MHz mode (Ch : Mid) & Test mode
POWER SOURCE	: AC120V/60Hz
DATE TESTED	: Jan 08 2009
FILE NO.	: JK09010001
REGULATION	: FCC part15C (15.209, 249(d))
TEST METHOD	: ANSI C63.4-2003
DISTANCE	: 3.00 [m]
TEMPERATURE	: 22.0 [degC]
HUMIDITY	: 33.0 [%]
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	1832.70	PEK	39.5	42.4	2.3	2.3	41.8	44.7	74.0	32.2	29.3
2	1832.70	AVG	30.5	35.0	2.3	2.3	32.8	37.3	54.0	21.2	16.7
3	2749.05	PEK	41.2	39.9	6.0	6.0	47.2	45.9	74.0	26.8	28.1
4	2749.05	AVG	32.7	31.5	6.0	6.0	38.7	37.5	54.0	15.3	16.5
5	4581.75	PEK	39.6	-	11.7	11.7	51.3	-	74.0	22.7	-
6	4581.75	AVG	28.3	-	11.7	11.7	40.0	-	54.0	**14.0**	-

Higher six points are underlined.
Other frequencies : Below the FCC part15C (15.209, 249(d)) limit
Emisson Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

emiT 3, 0, 0, 0

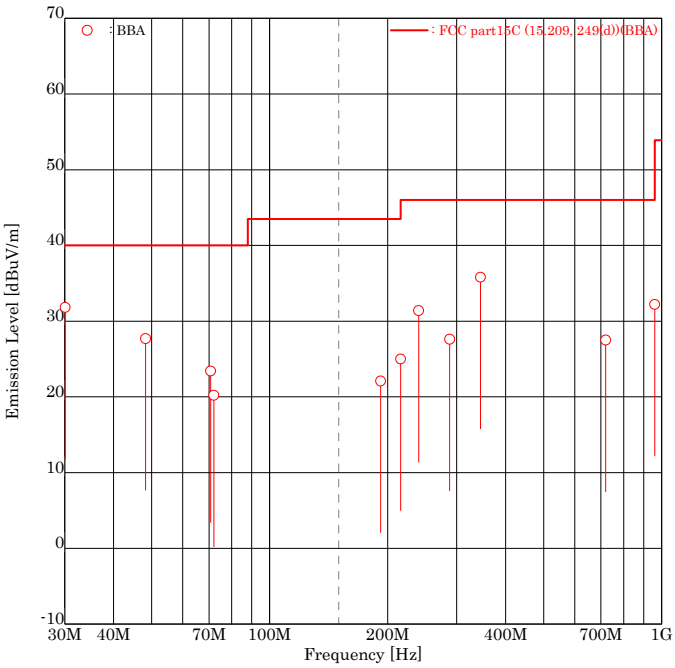
10.3.5 TX 917.85MHz mode (Ch : High) & Test mode < 30MHz – 1000MHz >

Intertek Japan K.K

Kashima No.1 Test Site

Spurious Emissions - Radiated Test

APPLICANT	: Fuji Electric Systems Co., Ltd.
EUT NAME	: Wireless Base Unit
MODEL NO.	: NRA50201-YYYYY-S
SERIAL NO.	: 080001
TEST MODE	: TX 917.85MHz mode (Ch : High) & Test mode
POWER SOURCE	: AC120V/60Hz
DATE TESTED	: Jan 09 2009
FILE NO.	: JK09010001
REGULATION	: FCC part15C (15.209, 249(d))
TEST METHOD	: ANSI C63.4-2003
DISTANCE	: 3.00 [m]
TEMPERATURE	: 23.0 [degC]
HUMIDITY	: 32.0 [%]
NOTE	:



ENGINEER : Kazuo Masuda

[No]	FREQUENCY [MHz]	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	30.10	-	36.1	-4.3	-4.3	-	31.8	40.0	-	**8.2**
2	48.23	-	30.0	-2.3	-2.3	-	27.7	40.0	-	12.3
3	70.72	-	27.6	-4.2	-4.2	-	23.4	40.0	-	16.6
4	72.00	24.7	-	-4.5	-4.5	20.2	-	40.0	19.8	-
5	192.00	26.2	-	-4.1	-4.1	22.1	-	43.5	21.4	-
6	215.99	29.1	-	-4.1	-4.1	25.0	-	43.5	18.5	-
7	240.00	34.5	-	-3.1	-3.1	31.4	-	46.0	14.6	-
8	288.00	-	28.3	-0.7	-0.7	-	27.6	46.0	-	18.4
9	345.00	32.3	34.7	1.1	1.1	33.4	35.8	46.0	12.6	10.2
10	720.00	-	17.1	10.4	10.4	-	27.5	46.0	-	18.5
11	959.99	17.8	15.4	14.4	14.4	32.2	29.8	46.0	13.8	16.2

Higher six points are underlined.
Other frequencies : Below the FCC part15C (15.209, 249(d)) limit
Emisson Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

emiT 3, 0, 0, 0

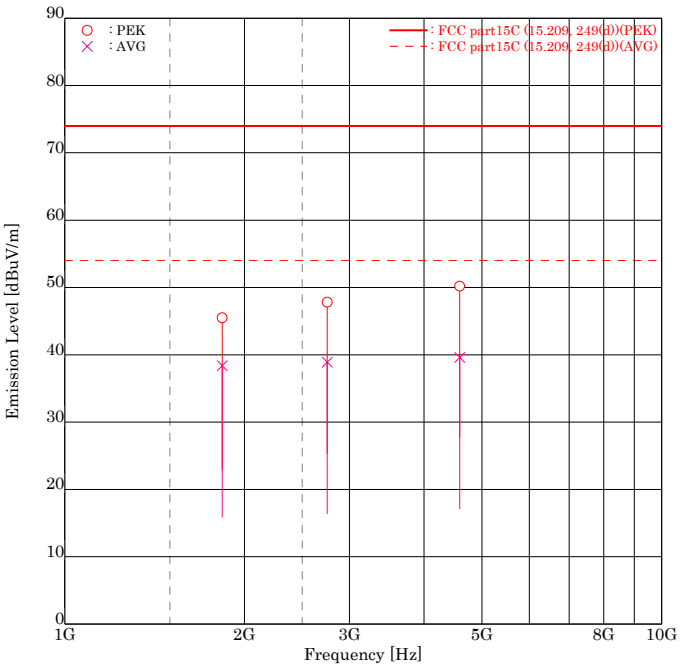
10.3.6 TX 917.85MHz mode (Ch : High) & Test mode　< 1GHz – 10GHz >

Intertek Japan K.K

Kashima No.1 Test Site

Spurious Emissions - Radiated Test

APPLICANT	: Fuji Electric Systems Co., Ltd.
EUT NAME	: Wireless Base Unit
MODEL NO.	: NRA50201-YYYYY-S
SERIAL NO.	: 080001
TEST MODE	: TX 917.85MHz mode (Ch : High) & Test mode
POWER SOURCE	: AC120V/60Hz
DATE TESTED	: Jan 14 2009
FILE NO.	: JK09010001
REGULATION	: FCC part15C (15.209, 249(d))
TEST METHOD	: ANSI C63.4-2003
DISTANCE	: 3.00 [m]
TEMPERATURE	: 21.0 [degC]
HUMIDITY	: 28.0 [%]
NOTE	:



ENGINEER : Kazuo Masuda

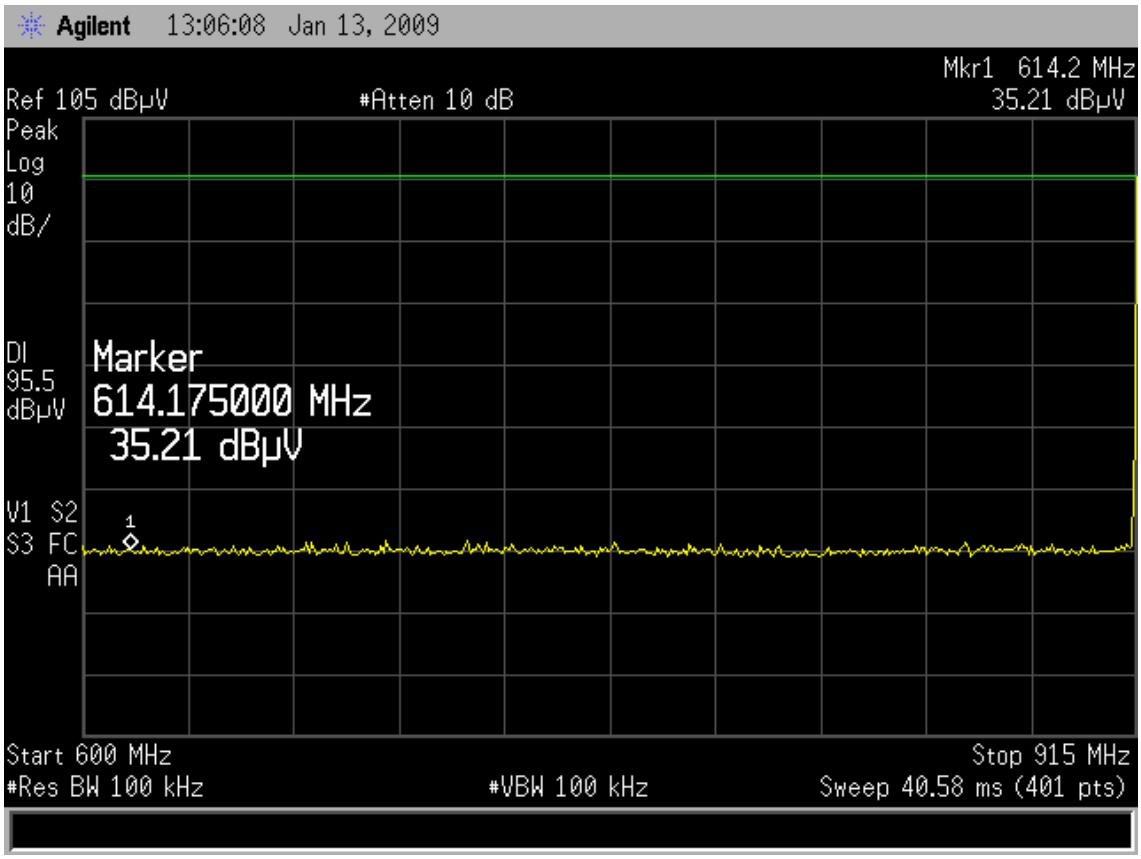
[No]	FREQUENCY [MHz]	MODE	READING [dBuV] Hori	READING [dBuV] Vert	FACTOR [dB/m] Hori	FACTOR [dB/m] Vert	EMISSION [dBuV/m] Hori	EMISSION [dBuV/m] Vert	LIMIT [dBuV/m]	MARGIN [dB] Hori	MARGIN [dB] Vert
1	1835.70	PEK	41.0	43.1	2.4	2.4	43.4	45.5	74.0	30.6	28.5
2	1835.70	AVG	31.0	36.0	2.4	2.4	33.4	38.4	54.0	20.6	15.6
3	2753.55	PEK	41.8	41.0	6.0	6.0	47.8	47.0	74.0	26.2	27.0
4	2753.55	AVG	32.9	31.5	6.0	6.0	38.9	37.5	54.0	15.1	16.5
5	4589.25	PEK	38.5	-	11.7	11.7	50.2	-	74.0	23.8	-
6	4589.25	AVG	27.9	-	11.7	11.7	39.6	-	54.0	**14.4**	-

Higher six points are underlined.
Other frequencies : Below the FCC part15C (15.209, 249(d)) limit
Emisson Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

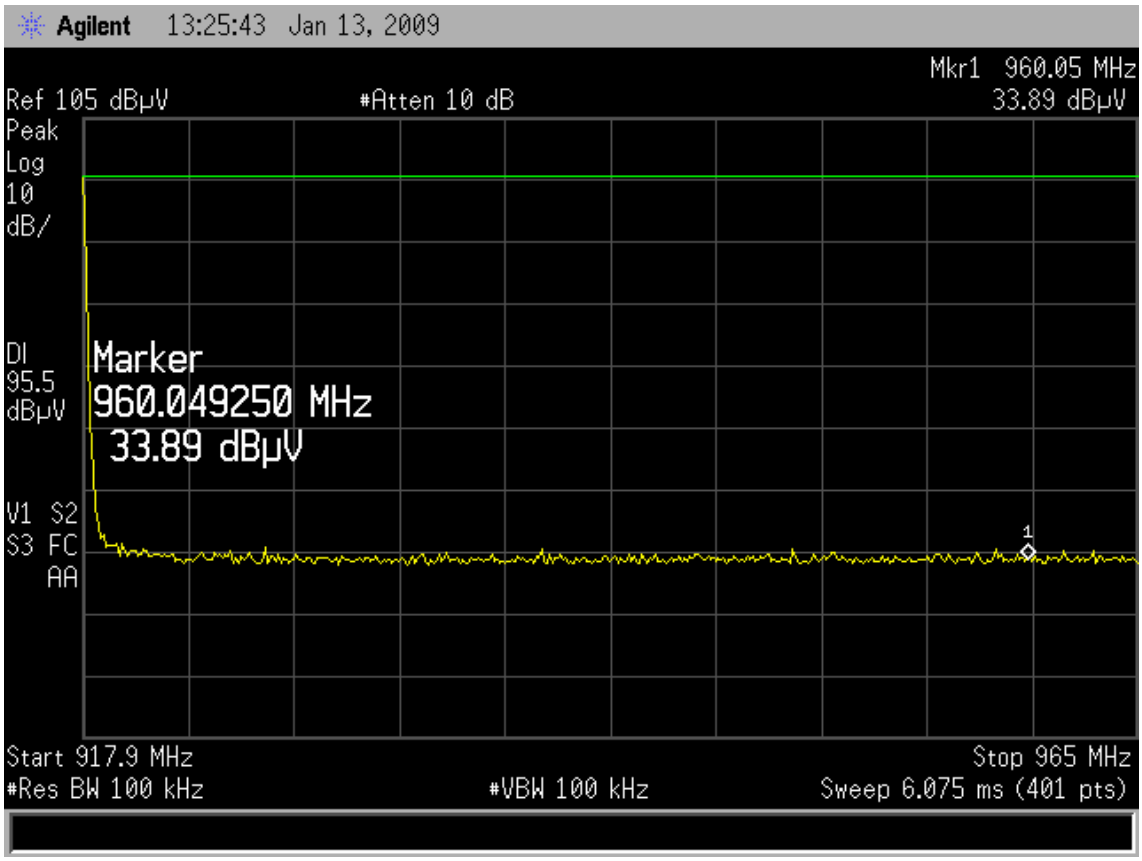
emiT 3, 0, 0, 0

10.4 Spurious Emissions – RF Antenna Conducted & Restricted bands of operation

10.4.1 TX 915.00MHz mode (Ch : Low)



10.4.2 TX 917.85MHz mode (Ch : High)



10.5 Frequency Tolerance

Test date	:	January 16, 2009
Temperature	:	22 °C
Humidity	:	25 %
Engineer	:	Kazuo Masuda

10.5.1 Variation Carrier Frequency Stability

Ch	Rate (%)	Voltage (V)	Frequency (MHz)	Deviation (ppm)
1	85	4.25	915.0245	0.55
	100	5.00	915.0250	–
	115	5.75	915.0275	2.73
10	85	4.25	916.3380	13.10
	100	5.00	916.3500	–
	115	5.75	916.3800	10.91
20	85	4.25	917.8795	5.99
	100	5.00	917.8850	–
	115	5.75	917.8775	8.17

10.5.2 Variation Carrier Output Power

Ch	Rate (%)	Voltage (V)	Reading Level (dBm)	Cable Loss (dB)	Maximum Output Power (dBm)	Deviation (dBm)
1	85	4.25	-11.77	0.2	-11.57	-0.01
	100	5.00	-11.76	0.2	-11.56	–
	115	5.75	-11.76	0.2	-11.56	0.00
10	85	4.25	-11.35	0.2	-11.15	-0.02
	100	5.00	-11.33	0.2	-11.13	–
	115	5.75	-11.33	0.2	-11.13	0.00
20	85	4.25	-11.70	0.2	-11.50	-0.10
	100	5.00	-11.60	0.2	-11.40	–
	115	5.75	-11.69	0.2	-11.49	-0.09

SECTION 11. LIST OF MEASURING INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Cal. date	Due date
AC Conducted Emission					
LISN (EUT)	ESH2-Z5	882395/022	Rohde & Schwarz	Sep. 04, 08	Sep. 30, 09
6dB Attenuator	CFA-01	None	TME	Nov. 12, 08	Nov. 31, 09
LISN (Peripheral)	KNW242	8-851-21	Kyoritsu	Nov. 12, 08	Nov. 31, 09
Terminator	CT-01	A010CON50	TME	Oct. 15, 08	Oct. 30, 09
Test Receiver	ESS	844861/004	Rohde & Schwarz	Jun. 05, 08	Jun. 30, 09
RF Switch	ACX-150	None	Intertek Japan	Nov. 12, 08	Nov. 30, 09
Coaxial cable	5D-2W(7.0m)	C1	Intertek Japan	Nov. 12, 08	Nov. 30, 09
Coaxial cable	5D-2W(2.0m)	C2	Intertek Japan	Nov. 12, 08	Nov. 30, 09
Coaxial cable	5D-2W(1.0m)	R6	Intertek Japan	Nov. 12, 08	Nov. 30, 09
Coaxial cable	5D-2W(1.0m)	R7	Intertek Japan	Nov. 12, 08	Nov. 30, 09
Field Strength Emission & Spurious Emissions - Radiated					
Tri-Log Antenna	VULB9168WP	287	Schwarzbeck	Nov. 18, 08	Nov. 30, 09
6dB Attenuator	MP721B	M57593	Anritsu	Nov. 12, 08	Nov. 30, 09
Step Attenuator	8494B	2726A14513	Hewlett Packard	Nov. 12, 08	Nov. 30, 09
Amplifier	ZX60-3018G	001	Intertek Japan	Nov. 12, 08	Nov. 30, 09
RF Switch	ACX-150	None	Intertek Japan	Nov. 12, 08	Nov. 30, 09
Coaxial cable	5D-2W(9.0m)	R1	Intertek Japan	Nov. 12, 08	Nov. 30, 09
Coaxial cable	10D-2W(5.5m)	R2	Intertek Japan	Nov. 12, 08	Nov. 30, 09
Coaxial cable	5D-2W(2.0m)	R3	Intertek Japan	Nov. 12, 08	Nov. 30, 09
Coaxial cable	5D-2W(0.2m)	R4	Intertek Japan	Nov. 12, 08	Nov. 30, 09
Coaxial cable	5D-2W(1.0m)	R5	Intertek Japan	Nov. 12, 08	Nov. 30, 09
Coaxial cable	5D-2W(1.0m)	R6	Intertek Japan	Nov. 12, 08	Nov. 30, 09
Coaxial cable	5D-2W(1.0m)	R7	Intertek Japan	Nov. 12, 08	Nov. 30, 09
Test Receiver	ESS	844861/004	Rohde & Schwarz	Jun. 05, 08	Jun. 30, 09
Double Ridged Antenna	3115	5044	EMCO	Jun. 18, 08	Jun. 30, 09
3dB Attenuator	4768-3	79	narda	Oct. 31, 08	Oct. 31, 09
Amplifier	83051A	3332A00329	Hewlett Packard	Oct. 31, 08	Oct. 31, 09
Coaxial cable	SOCOFLEX102 (1.0m)	R14	SUHNER	Oct. 31, 08	Oct. 31, 09
Coaxial cable	KPS-1501-1969-KPS (5.0m)	R15	Insulated Wire	Oct. 31, 08	Oct. 31, 09
Spectrum Analyzer	8564E	3643A00665	Hewlett Packard	May 08, 08	May 31, 09
Site Attenuation				Dec. 26, 08	Dec. 31, 09
Spurious Emissions – RF Antenna Conducted & Restricted bands of operation					
Spectrum Analyzer	R3182	111100429	ADVANTEST	Jun. 06, 08	Jun. 30, 09
Coaxial cable	5B-048-98-98-500	040511 (W1)	Candox Systems	Jan. 14, 09	Jan. 31, 10
Frequency Tolerance					
Spectrum Analyzer	E7403A	MY42000067	Agilent	Feb. 08, 08	Feb. 28, 09
Coaxial cable	5B-048-98-98-500	040511 (W1)	Candox Systems	Jan. 14, 09	Jan. 31, 10
Digital Multi Meter	CD721	3051002	Sanwa	Jan. 08, 09	Jan. 31, 10

Note : Test instruments are calibrated according to Quality Manual and Calibration Rules of Intertek Japan K.K.