EMI TEST REPORT

Test Report No. : 26GE0136-YK-F1

Applicant	**: Alps Electric Co., Ltd.**
Type of Equipment	**: Bluetooth Transceiver Module**
Model No.	**: UGPZ6**
FCC ID	**: CWTUGPZ6**
Test Item and Standard	**: Conducted Emissions Out of Band Emissions (Radiated) FCC Part15 Subpart C, Section 15.207, 15.209, 15.247: 2006**
Test Result	**: Complied**

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

Date of test: March 4 and 5, 2006

Tested by: T. Imamura
Toyokazu Imamura

Approved by: O. Watatani
Osamu Watatani
Site Manager of Yamakita EMC Lab.

Table of Contents

1 Applicant Information

Company Name : Alps Electric Co., Ltd.

Brand Name : ALPS

Address : 1-7, Yukigaya, Otsuka-cho, Ota-ku, Tokyo, 145-8501 JAPAN

Telephone Number : +81 244 35 1207

Facsimile Number : +81 244 35 1602

Contact Person : Masaaki Ueki

2 Product Description

Type of Equipment	:	Bluetooth Transceiver Module
Model No.	:	UGPZ6
Serial No.	:	UGPZ6-001
Rating	:	DC 3.3V
Country of Manufacture	:	Japan
Receipt Date of Sample	:	February 23, 2006
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)

Model: UGPZ6 (referred to as the EUT in this report) is a Bluetooth Transceiver Module.

The clock frequency used in EUT: 26MHz

Equipment type	:	Transceiver
Frequency of operation	:	2402 - 2480 MHz
Band width	:	79 MHz
Channel spacing	:	1 MHz
Channel number	:	79 channels
Type of modulation	:	FHSS
Antenna model	:	WDAN-SCMS2003-1F
Antenna type	:	PIFA antenna
Antenna connector type	:	U. FL (Hirose)
Antenna gain (with cable loss):		-1.9 dBi (Peak)
Emission Designation	:	F1D, G1D
Operation temperature range:		15 - 35 deg. C.

FCC Part15.31 (e)
Host devise (ex. PC) provides the Bluetooth Transceiver Module with stable power supply (DC1.8V), and the power is not changed when voltage of the device is varied. Therefore, the equipment complies power supply regulation.

FCC Part15.203 Antenna requirement
Bluetooth Transceiver Module complies with the requirement. When it is put up for sale, one of the antennas is attached and the antenna is with a unique coupling to the intentional radiator.

3 Test Specification, Procedures and Results

3.1 Test specification

Test specification : FCC Part15 Subpart C: 2006
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz

3.2 Procedures & Results

Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results
Conducted emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	Section 15.207	-	N/A	11.6dB (0.2093MHz, N, AV Tx 2402MHz)	Complied
Carrier Frequency Separation	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247 (a)(1)	Conducted	Excluded *1	-	N/A
20dB Bandwidth	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247 (a)(1)	Conducted	Excluded *1		N/A
Number of Hopping Frequency	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247 (a)(1)(iii)	Conducted	Excluded *1		N/A
Dwell time	ANSI C63.4:2003 13.Measurement of intentional radiators	Section15.247 (a)(1)(iii)	Conducted	Excluded *1		N/A
Maximum Peak Output Power	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247 (b)(1)	Conducted	Excluded *1		N/A
Spurious Emission & Band Edge Compliance	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(d)	Conducted	Excluded *1		N/A
Spurious Emission & Band Edge Compliance	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.209 Section15.247(d)	Radiated	N/A	0.3dB, AV, Tx 2480MHz (17360MHz, Horizontal & Vertical, 24800MHz, Horizontal)	Complied

The measurements also referred to FCC Public Notice DA 00-705 "Guidance on Measurement for Frequency Hopping Spread Spectrum Systems".

*1) Results for these test items are described in the test report 25JE0028-YK-1. The Module has been certificated with other type antennas.
*2) These tests were performed without any deviations from test procedure except for additions or exclusions.

3.3 Uncertainty

Conducted emission
The measurement uncertainty (with 95% confidence level) for this test is ±2.7dB.
The data listed in this test report has enough margin, more than site margin.

Radiated emission
The measurement uncertainty (with 95% confidence level) for this test using Biconical antenna is ±4.5dB.
The measurement uncertainty (with 95% confidence level) for this test using Logperiodic antenna is ±4.3dB.
The measurement uncertainty (with 95% confidence level) for this test using Horn antenna is ±5.2dB.
The data listed in this report meets the limits unless the uncertainty is taken into consideration.

3.4 Test Location

UL Apex Co., Ltd. Yamakita EMC Lab.
907, Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken 258-0124 JAPAN
Telephone number : +81 465 77 1011
Facsimile number : +81 465 77 2112
NVLAP Lab. code : 200441-0

No. 1 test site has been fully described in a report submitted to FCC office, and accepted on August 26, 2005 (Registration No.: 95486).
IC Registration No. : IC3489A

No. 2 test site has been fully described in a report submitted to FCC office, and accepted on April 4, 2005 (Registration No.: 466226).
IC Registration No. : IC3489A-2

No. 1 anechoic chamber has been fully described in a report submitted to FCC office, and accepted on November 2, 2005 (Registration No.: 95967).
IC Registration No. : IC3489A-B

Test room	Width x Depth x Height (m)	Test room	Width x Depth x Height (m)
No.1 shielded room	8.0 x 5.0 x 2.5	No.1 EMS lab. (Semi-anechoic chamber)	10.0 x 7.5 x 5.7
No.2 shielded room	5.0 x 4.0 x 2.5		
No.3 shielded room	4.0 x 5.0 x 2.7		

4 System Test Configuration

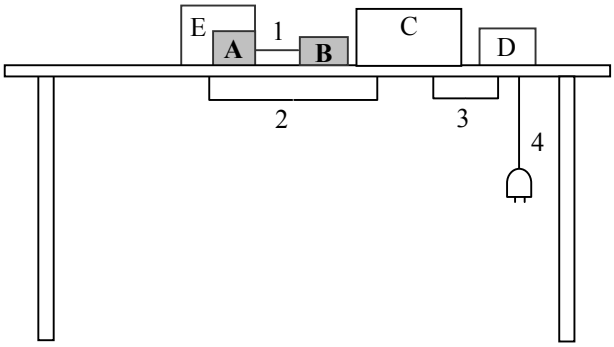
4.1 Justification

The system was configured in typical fashion (as a customer would normally use it) for testing.

Test mode: Transmitting mode (Packet size: DH5)
- Low channel : 2402MHz
- Middle channel : 2441MHz
- High channel : 2480MHz

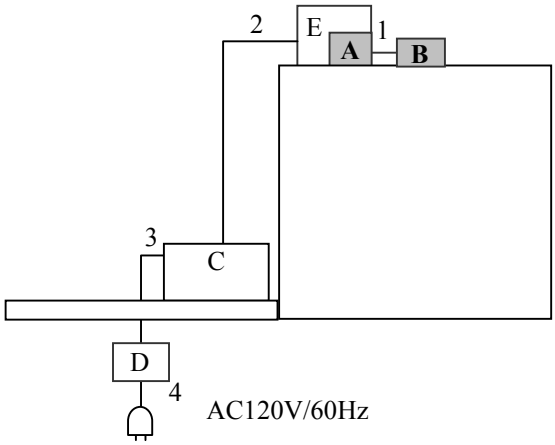
4.2 Configuration of Tested System

Front View (Conducted emission)



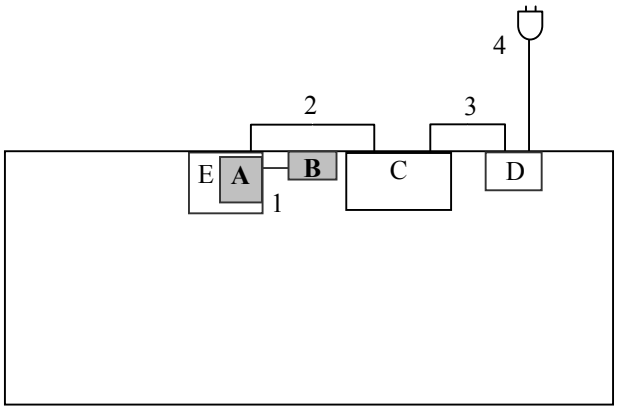
AC120V/60Hz

Front View (Radiated emission)

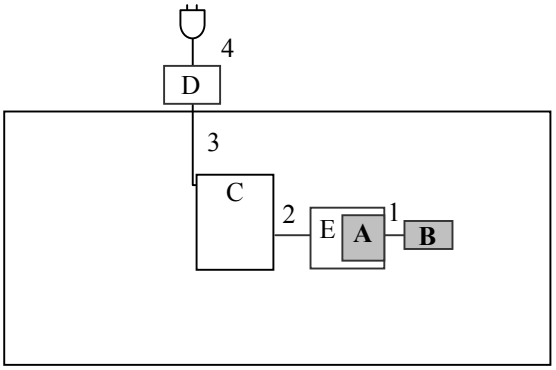


AC120V/60Hz

Top View (Conducted emission)



Top View (Radiated emission)



* Test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID (Remarks)
A	Bluetooth Transceiver Module	UGPZ6	UGPZ6-001	ALPS	CWTUGPZ6 (EUT)
B	PIFA Antenna	WDAN-SCMS2003-1F	-	FOXCONN Co., LTD.	(EUT)
C	Notebook PC	PAS252JF	59017317	TOSHIBA	-
D	AC Adapter	PA3049U-1ACA	0003A0210057G	TOSHIBA	-
E	Testing Board	-	-	-	(Test jig)

List of cables used

No.	Name	Length (m)	Shield	Remark
1	Antenna cable	0.18	Shielded	-
2	USB cable	1.0	Shielded	-
3	DC cable	1.8	Unshielded	-
4	AC cable	2.0	Unshielded	-

5 Conducted Emissions

5.1 Operating environment

The test was carried out in No.2 shielded room.

5.2 Test configuration

EUT was placed on a platform of nominal size, 1m by 1.8m, raised 80cm above the conducting ground plane.
The rear of tabletop was located 40cm to the vertical conducting plane. The rear of peripherals was aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from a Line Impedance Stabilization Network (LISN) and excess AC cable was bundled in center. I/O cable were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane.

5.3 Test conditions

Frequency range : 0.15 - 30MHz
EUT operation mode : Transmitting

5.4 Test procedure

The EUT was connected to a LISN.
An overview sweep with peak detection has been performed.
The Conducted emission measurements were made with the following detector function of the test receiver.
Detector: QP/AV
IF Bandwidth: 9kHz

5.5 Results

Summary of the test results : Pass
Test data : APPENDIX 2 Page 17 - 21

Date : March 5, 2006 Test engineer : Toyokazu Imamura

6 Out of Band Emissions (Radiated)

6.1 Operating environment

The test was carried out in No.1 anechoic chamber.

6.2 Test configuration

EUT was placed on a platform of nominal size, 0.5m by 0.5m, raised 80cm above the conducting ground plane.
A drawing of the set up is shown in the photos of Appendix 1.

6.3 Test conditions

Frequency range : 30MHz - 26GHz
Test distance : 3m
EUT operation mode : Transmitting

6.4 Test procedure

The Radiated Electric Field Strength intensity has been measured with a ground plane and at a distance of 3m.
The measuring antenna height was varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.
The measurements were performed for both vertical and horizontal antenna polarization.

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

Measurements were performed with QP, PK, and AV detector.
The radiated emission measurements were made with the following detector function of the test receiver.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Spectrum Analyzer
Detector IF Bandwidth	QP: BW 120kHz	PK: RBW: 1MHz/VBW: 1MHz AV: RBW: 1MHz/VBW: 10Hz

The equipment and its antenna were previously checked at each position of three axes X, Y and Z. The position in which the maximum noise occurred was chosen to put into measurement. See the table below and photographs in page 15 to 16. With the position, the noise levels of all the frequencies were measured.

Combinations of the worst case

	Module	Antenna
Below 1GHz		
Horizontal	Z	Z
Vertical	X	Z
Above 1GHz		
Horizontal	X	X
Vertical	Z	Z

6.5 Results

Summary of the test results : Pass

Test data : APPENDIX 2 Page 22 - 24 (30 - 1000MHz)
: APPENDIX 2 Page 25 - 30 (1 - 26GHz)

Date : March 4 and 5, 2006 Test engineer : Toyokazu Imamura

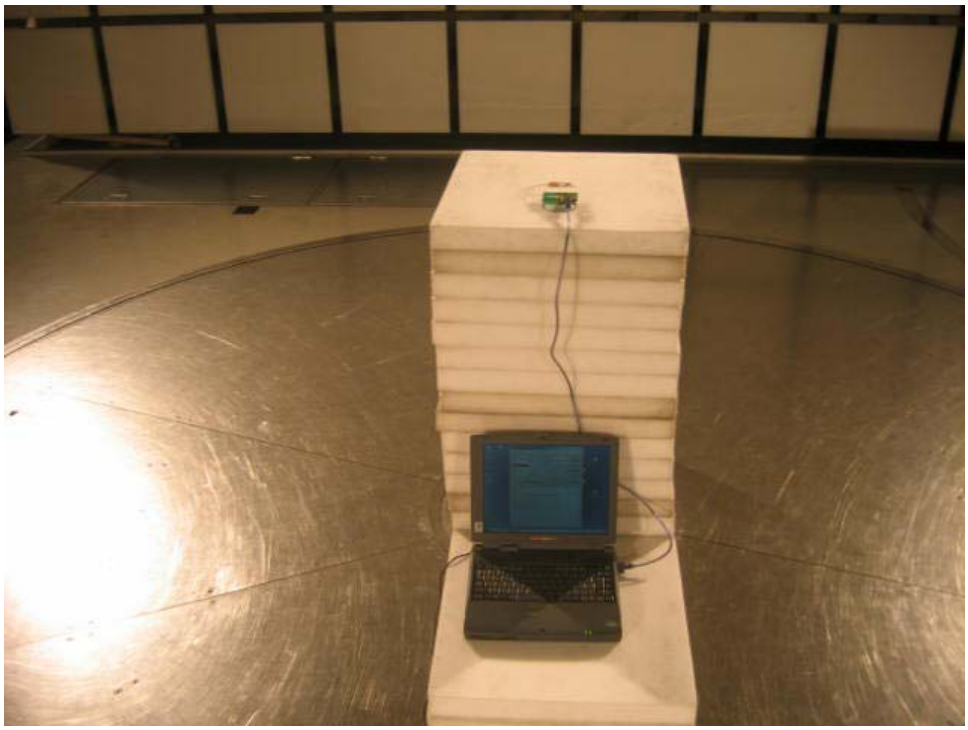
APPENDIX 1: Photographs of test setup

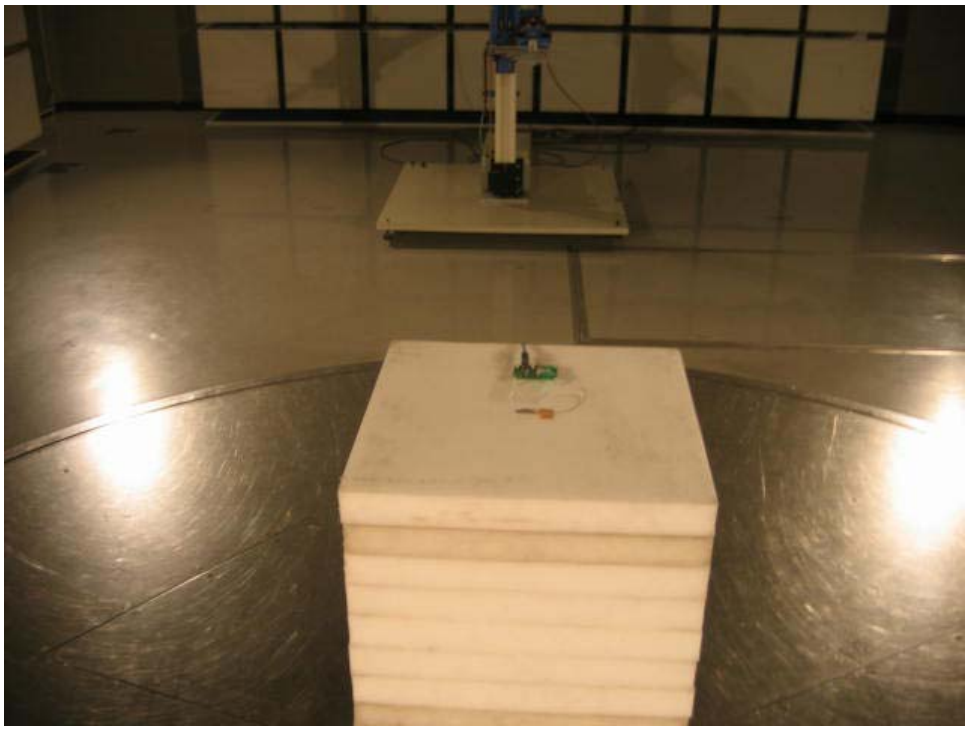
APPENDIX 2: Test Data

APPENDIX 3: Test instruments

Conducted emission

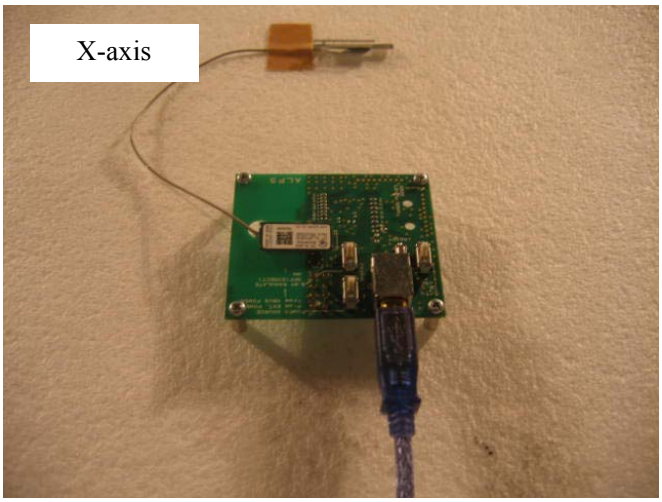
Radiated emission



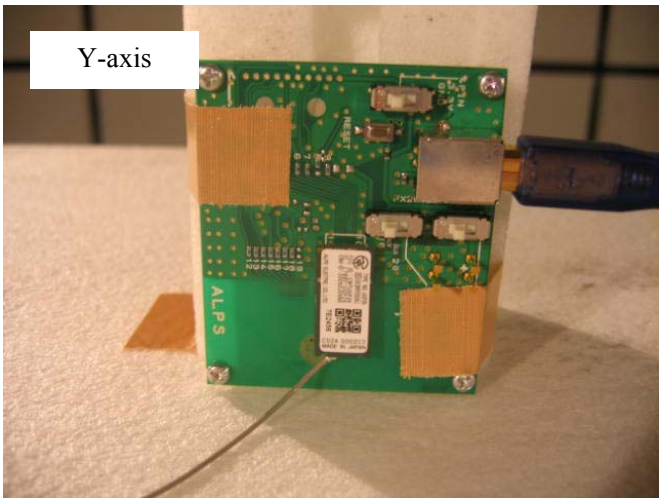


Pre check of worse-case position (Module)

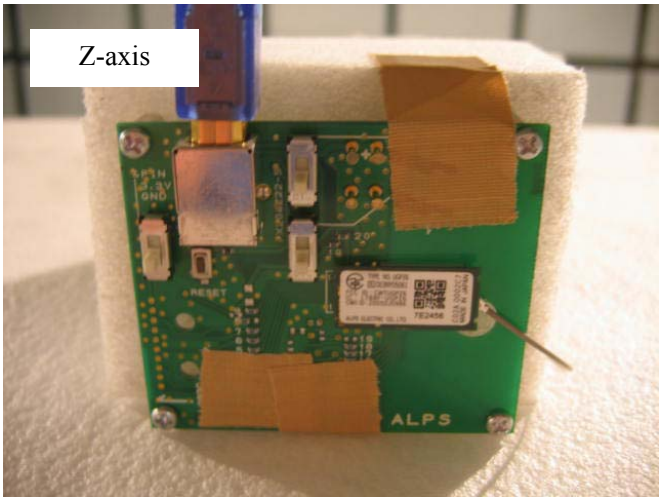
X-axis



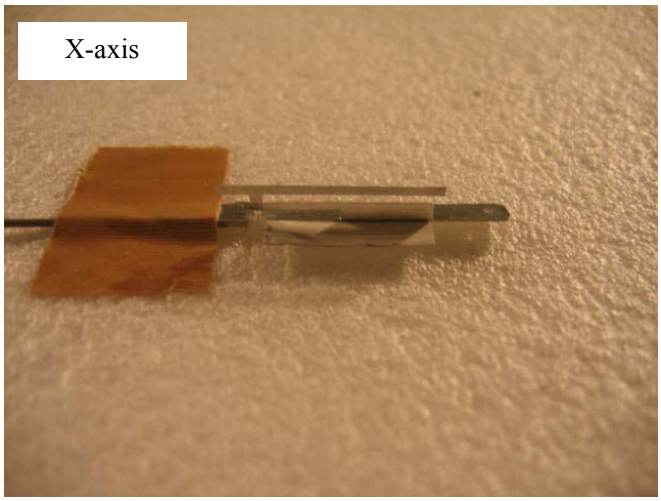
Y-axis

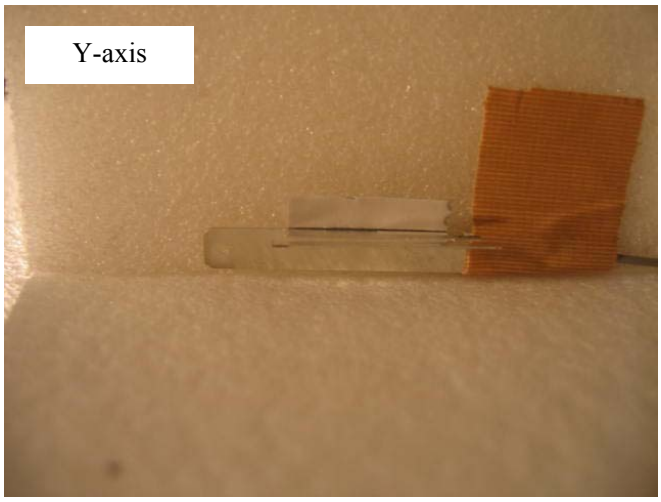


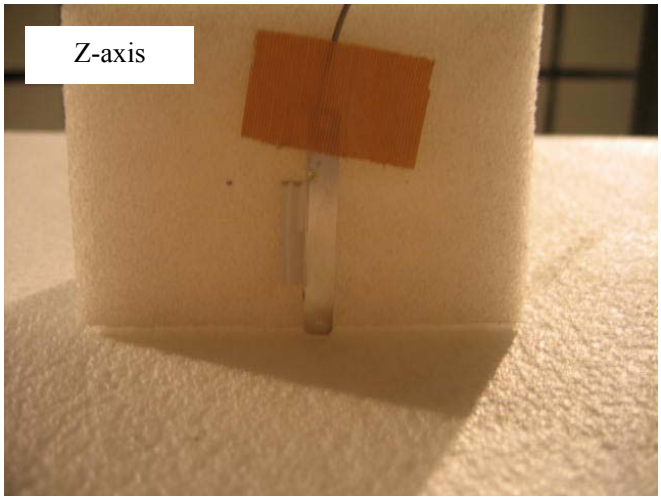
Z-axis



Pre check of worse-case position (Antenna)







DATA OF CONDUCTION TEST

UL Apex Co.,Ltd.
YAMAKITA No.2 SHIELD ROOM
Report No. : 26GE0136-YK - **F1**

Applicant	: Alps Electric Co., Ltd.		
Kind of Equipment	: Bluetooth Transceiver Module		
Model No.	: UGPZ6		
Serial No.	: UGPZ6-001		
Power	: DC3.3V (AC120V/60Hz)		
Mode	: Transmitting (2402MHz)		
Remarks	: antenna type: WDAN-SCMS2003-1F		
Date	: 3/5/2006		
Phase	: Single Phase		
Temperature	: 22 ℃	Engineer	: Toyokazu Imamura
Humidity	: 34 %		
Regulation	: FCC Part15C §15.207. (CISPR Pub.22)		

No.	FREQ.	READING (N)		READING (L1)		LISN	CABLE	ATTEN.	RESULT		LIMITS		MARGIN	
		QP	AV	QP	AV	FACTOR	LOSS		QP	AV	QP	AV	QP	AV
	[MHz]	[dBμV]		[dBμV]		[dB]	[dB]	[dB]	[dB]		[dBμV]		[dBμV]	[dB]
1.	0.2093	46.9	41.4	45.2	39.2	0.1	0.1	0.0	47.1	41.6	63.2	53.2	16.1	11.6
2.	0.3162	36.4	30.9	38.1	32.9	0.1	0.1	0.0	38.3	33.1	59.8	49.8	21.5	16.7
3.	0.4207	36.5	28.6	35.6	27.7	0.0	0.1	0.0	36.6	28.7	57.4	47.4	20.8	18.7
4.	0.5257	33.2	25.2	35.1	27.9	0.0	0.1	0.0	35.2	28.0	56.0	46.0	20.8	18.0
5.	0.6280	36.3	28.4	35.2	27.1	0.0	0.1	0.0	36.4	28.5	56.0	46.0	19.6	17.5
6.	1.0509	27.5	20.1	25.5	19.1	0.1	0.1	0.0	27.7	20.3	56.0	46.0	28.3	25.7

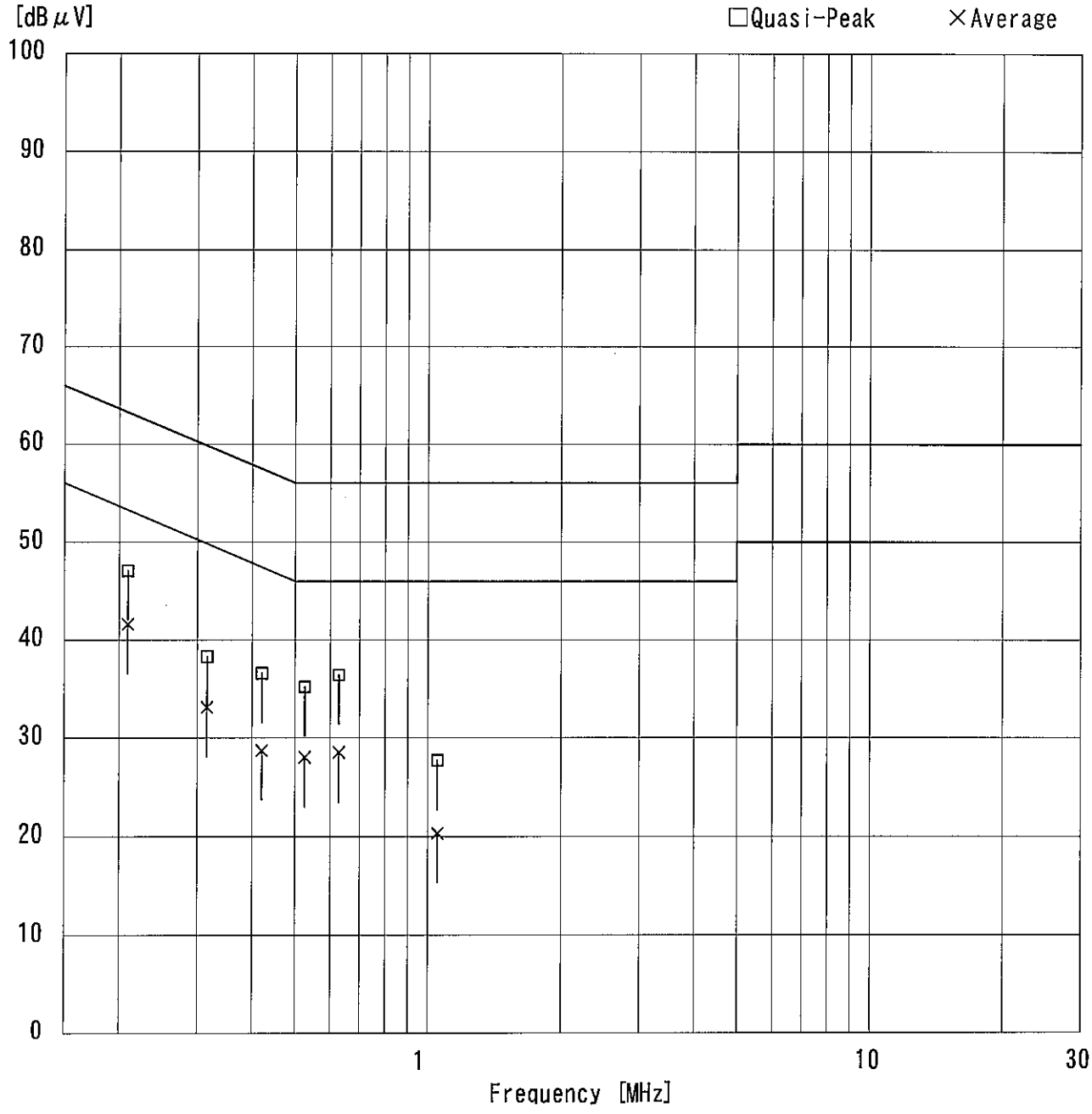
CALCULATION: READING + LISN FACTOR + CABLE LOSS + ATTEN.

■LISN :KLS-01 (NSLK8126) ■COAXIAL CABLE:KCC-33/34
■RECEIVER:KTR-01 (ES140)

DATA OF CONDUCTION TEST

UL Apex Co.,Ltd.
YAMAKITA No.2 SHIELD ROOM
Report No. : 26GE0136-YK - F1

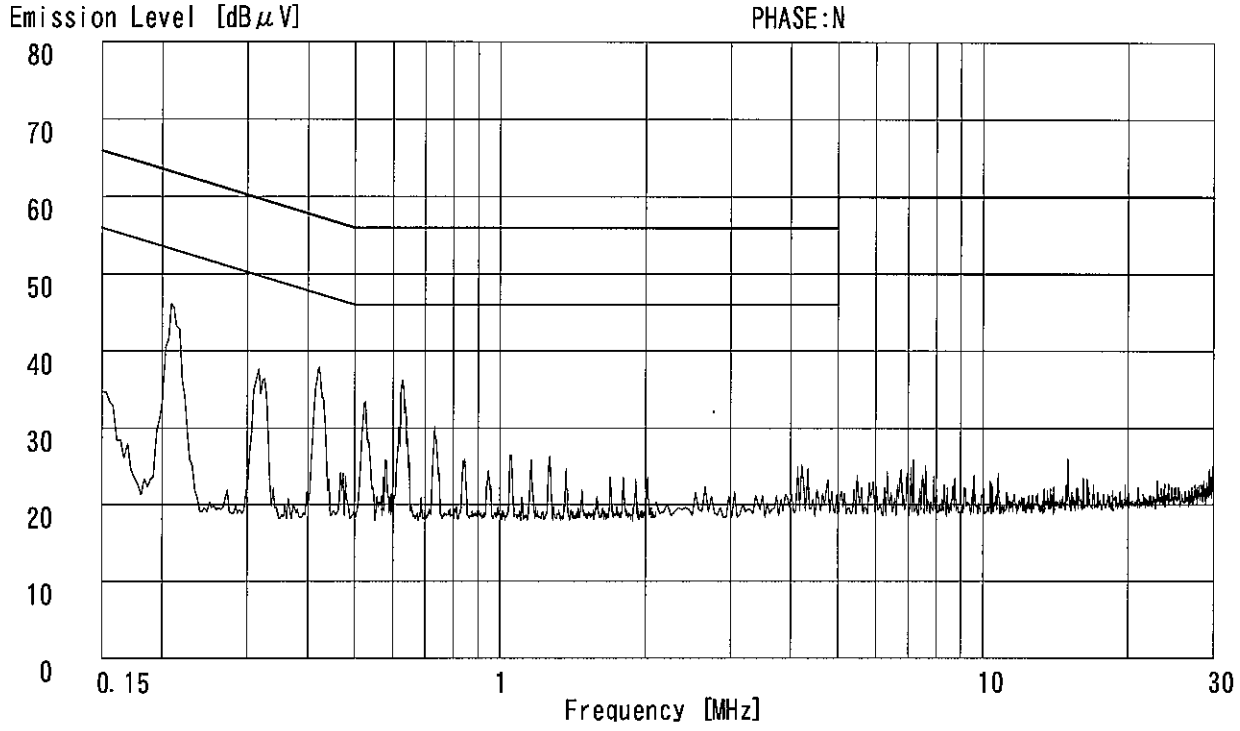
Applicant	: Alps Electric Co., Ltd.		
Kind of Equipment	: Bluetooth Transceiver Module		
Model No.	: UGPZ6		
Serial No.	: UGPZ6-001		
Power	: DC3.3V (AC120V/60Hz)		
Mode	: Transmitting (2402MHz)		
Remarks	: antenna type: WDAN-SCMS2003-1F		
Date	: 3/5/2006		
Phase	: Single Phase		
Temperature	: 22 ℃	Engineer	: Toyokazu Imamura
Humidity	: 34 %		
Regulation	: FCC Part15C §15.207. (CISPR Pub.22)		

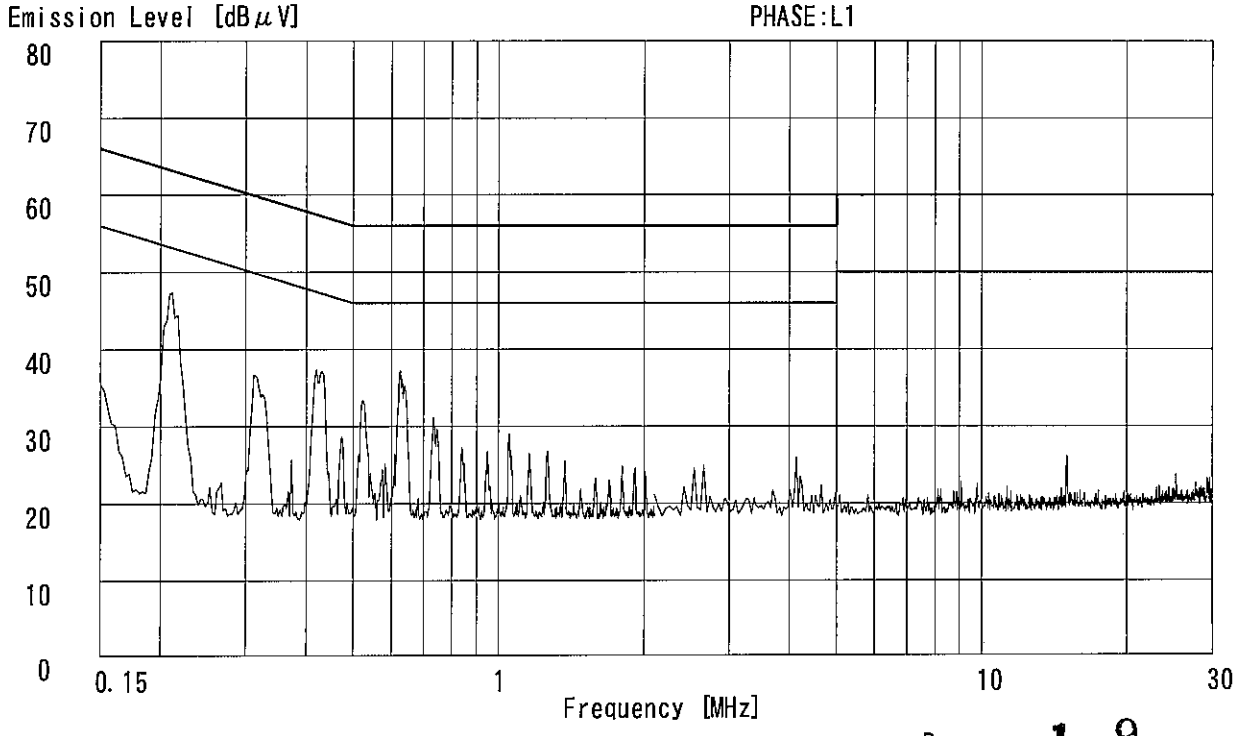


DATA OF CONDUCTION TEST CHART

UL Apex Co.,Ltd.
YAMAKITA No.2 SHIELD ROOM
Report No. : 26GE0136-YK - F1

Applicant	: Alps Electric Co., Ltd.		
Kind of Equipment	: Bluetooth Transceiver Module		
Model No.	: UGPZ6		
Serial No.	: UGPZ6-001		
Power	: DC3.3V (AC120V/60Hz)		
Mode	: Transmitting (2402MHz)		
Remarks	: antenna type: WDAN-SCMS2003-1F		
Date	: 3/5/2006		
Phase	: Single Phase		
Temperature	: 22 ℃	Engineer	: Toyokazu Imamura
Humidity	: 34 %		
Regulation 1	: FCC Part15C §15.207. (CISPR Pub.22)		
Regulation 2	: None		

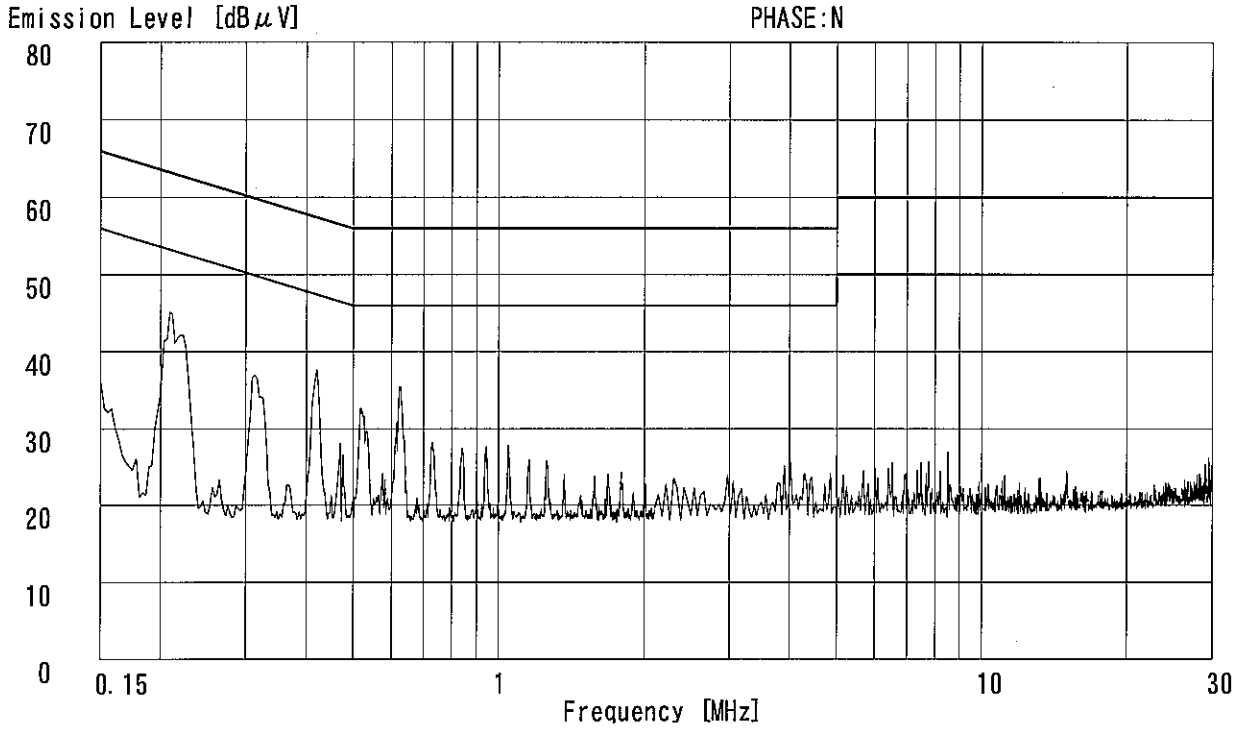


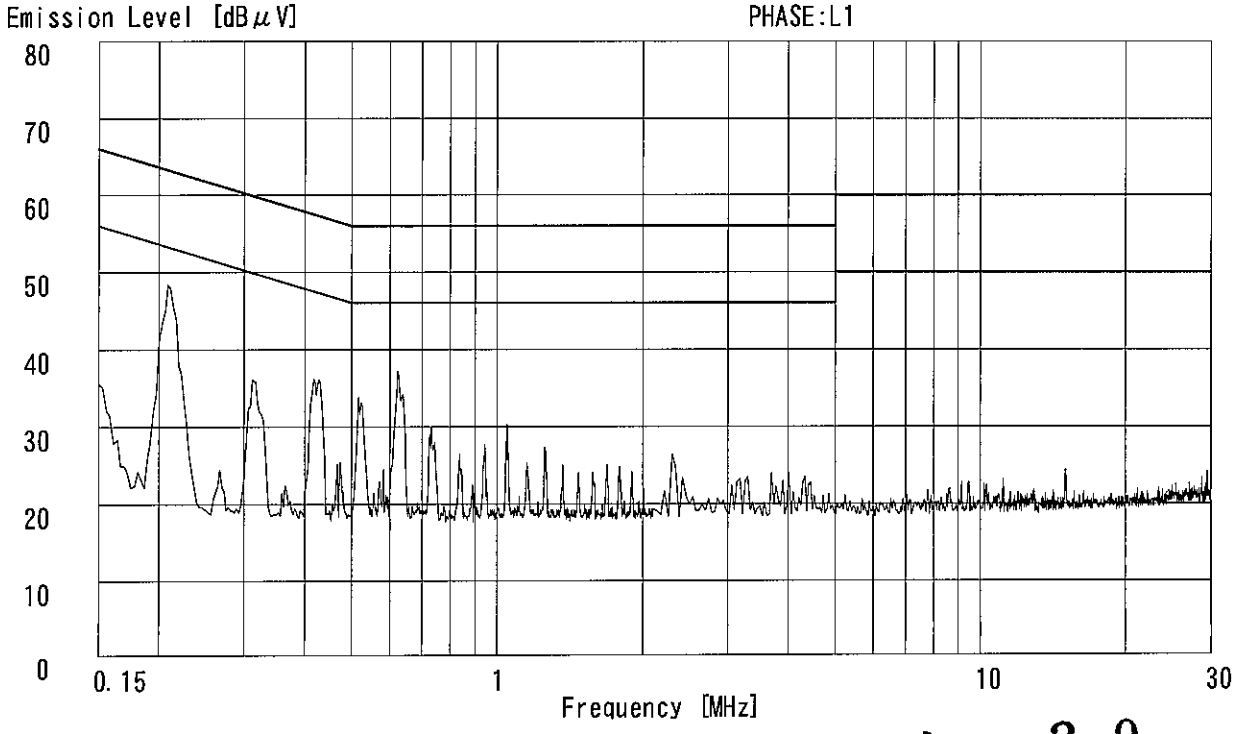


DATA OF CONDUCTION TEST CHART

UL Apex Co.,Ltd.
YAMAKITA No.2 SHIELD ROOM
Report No. : 26GE0136-YK－F1

Applicant	: Alps Electric Co., Ltd.		
Kind of Equipment	: Bluetooth Transceiver Module		
Model No.	: UGPZ6		
Serial No.	: UGPZ6-001		
Power	: DC3.3V (AC120V/60Hz)		
Mode	: Transmitting (2441MHz)		
Remarks	: antenna type: WDAN-SCMS2003-1F		
Date	: 3/5/2006		
Phase	: Single Phase		
Temperature	: 22 ℃	Engineer	: Toyokazu Imamura
Humidity	: 34 %		
Regulation 1	: FCC Part15C §15.207. (CISPR Pub.22)		
Regulation 2	: None		

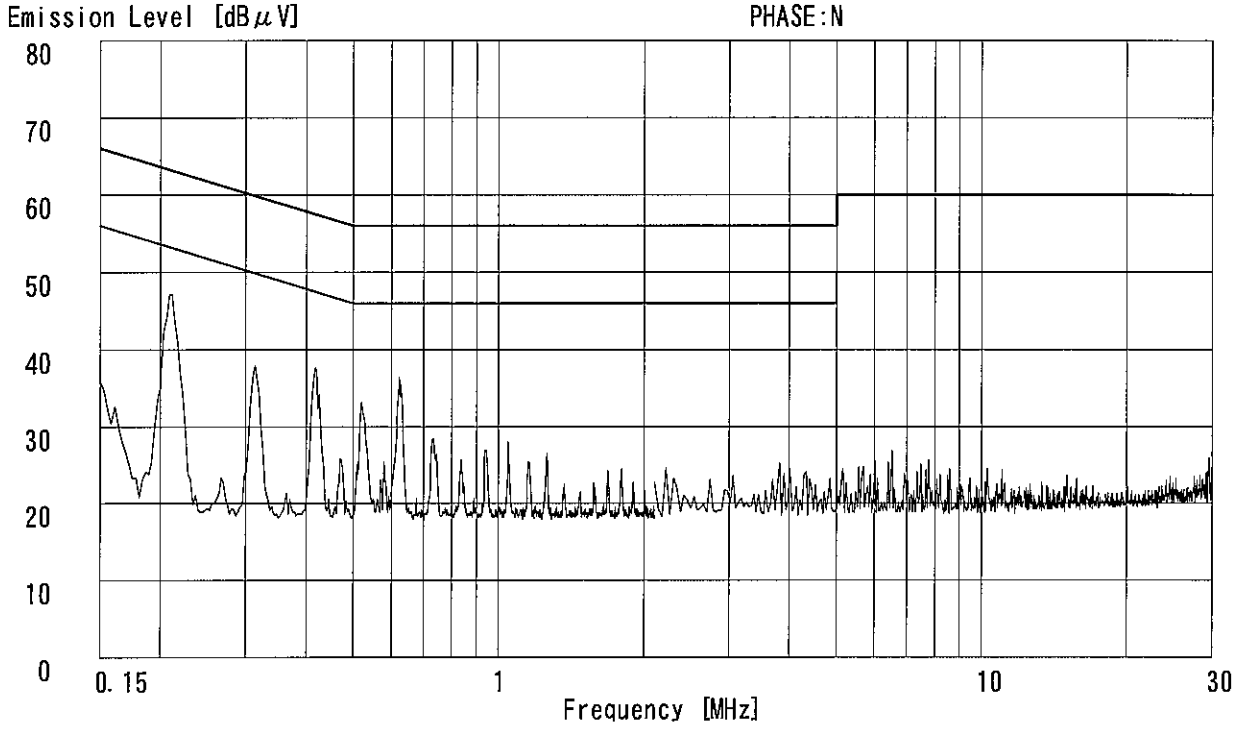


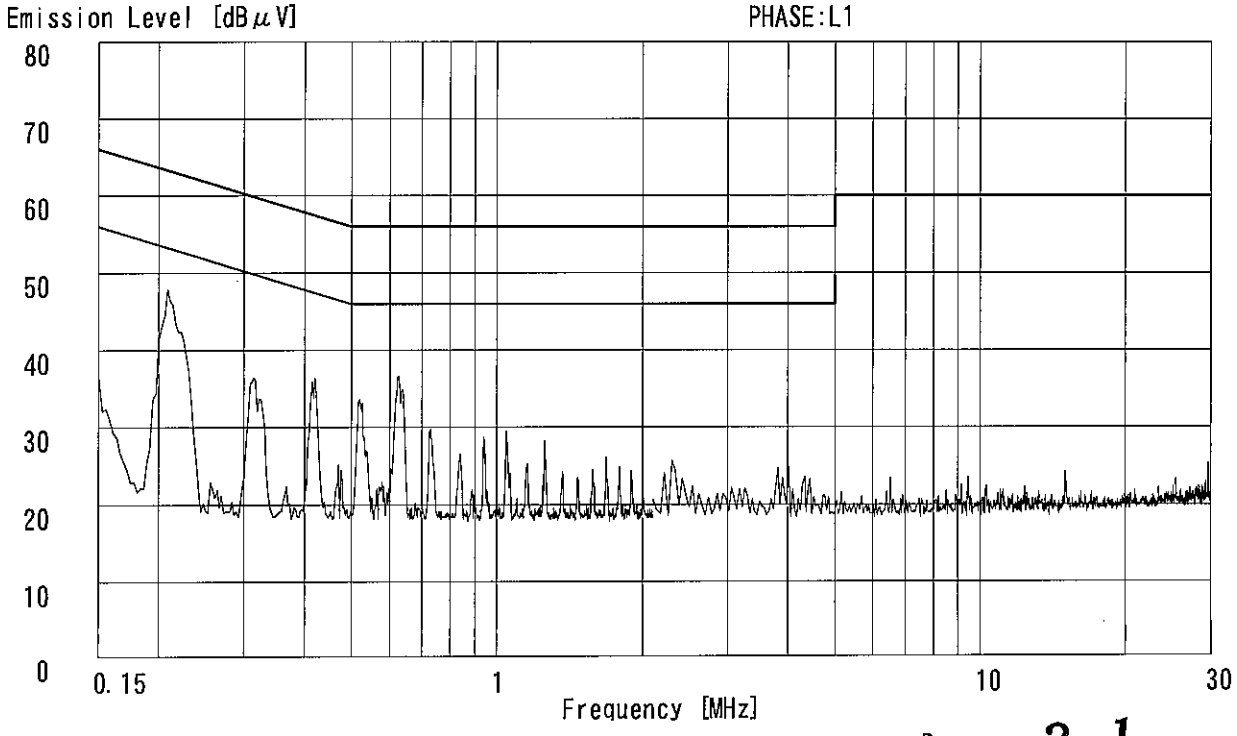


DATA OF CONDUCTION TEST CHART

UL Apex Co.,Ltd.
YAMAKITA No.2 SHIELD ROOM
Report No. : 26GE0136-YK - F 1

Applicant	: Alps Electric Co., Ltd.		
Kind of Equipment	: Bluetooth Transceiver Module		
Model No.	: UGPZ6		
Serial No.	: UGPZ6-001		
Power	: DC3.3V (AC120V/60Hz)		
Mode	: Transmitting (2480MHz)		
Remarks	: antenna type: WDAN-SCMS2003-1F		
Date	: 3/5/2006		
Phase	: Single Phase		
Temperature	: 22 ℃	Engineer	: Toyokazu Imamura
Humidity	: 34 %		
Regulation 1	: FCC Part15C §15.207. (CISPR Pub.22)		
Regulation 2	: None		





DATA OF RADIATION TEST

UL Apex Co.,Ltd.
YAMAKITA No.1 ANECHOIC CHAMBER
Report No. : 26GE0136-YK-F1

Applicant	: Alps Electric Co., Ltd.		
Kind of Equipment	: Bluetooth Transceiver Module		
Model No.	: UGPZ6		
Serial No.	: UGPZ6-001		
Power	: DC3.3V (AC120V/60Hz)		
Mode	: Transmitting (2402MHz)		
Remarks	: antenna type: WDAN-SCMS2003-1F		
Date	: 3/4/2006		
Test Distance	: 3 m		
Temperature	: 21 ℃	Engineer	: Toyokazu Imamura
Humidity	: 30 %		
Regulation	: FCC Part15C §15.209		

No.	FREQ. [MHz]	ANT TYPE	READING HOR [dBμV]	READING VER [dBμV]	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT HOR [dBμV/m]	RESULT VER [dBμV/m]	LIMITS [dBμV/m]	MARGIN HOR [dB]	MARGIN VER [dB]
1.	66.65	BB	33.6	41.7	8.0	27.6	1.6	6.0	21.6	29.7	40.0	18.4	10.3
2.	99.98	BB	30.5	39.2	11.1	27.6	2.0	6.0	22.0	30.7	43.5	21.5	12.8
3.	166.63	BB	38.4	40.4	16.0	27.2	2.7	6.0	35.9	37.9	43.5	7.6	5.6
4.	199.96	BB	32.3	32.5	17.1	27.0	2.9	6.0	31.3	31.5	43.5	12.2	12.0
5.	299.94	BB	33.8	33.9	20.6	27.0	3.7	6.0	37.1	37.2	46.0	8.9	8.8
6.	333.26	BB	42.2	39.5	15.8	26.9	4.1	6.0	41.2	38.5	46.0	4.8	7.5
7.	399.92	BB	32.2	33.3	18.0	27.3	4.9	6.0	33.8	34.9	46.0	12.2	11.1
8.	466.57	BB	29.8	32.7	18.4	27.7	5.1	6.0	31.6	34.5	46.0	14.4	11.5
9.	533.22	BB	32.1	36.2	18.9	28.0	5.2	6.0	34.2	38.3	46.0	11.8	7.7
10.	699.85	BB	28.0	29.9	20.1	28.0	5.8	6.0	31.9	33.8	46.0	14.1	12.2

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

■ANTENNA:KBA-03 (BBA9106) 30-299MHz/KLA-03 (USLP9143) 300-1000MHz
■AMP:KAF-05 (8447D) ■RECEIVER:KTR-01 (ESI40) ■KCC-30_31_32_34 (RE)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.
YAMAKITA No.1 ANECHOIC CHAMBER
Report No. : 26GE0136-YK - F1

Applicant	: Alps Electric Co., Ltd.		
Kind of Equipment	: Bluetooth Transceiver Module		
Model No.	: UGPZ6		
Serial No.	: UGPZ6-001		
Power	: DC3.3V (AC120V/60Hz)		
Mode	: Transmitting (2441MHz)		
Remarks	: antenna type: WDAN-SCMS2003-1F		
Date	: 3/4/2006		
Test Distance	: 3 m		
Temperature	: 21 ℃	Engineer	: Toyokazu Imamura
Humidity	: 30 %		
Regulation	: FCC Part15C §15.209		

No.	FREQ. [MHz]	ANT TYPE	READING HOR [dBμV]	READING VER [dBμV]	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT HOR [dBμV/m]	RESULT VER [dBμV/m]	LIMITS [dBμV/m]	MARGIN HOR [dB]	MARGIN VER [dB]
1.	66.65	BB	41.9	42.1	8.0	27.6	1.6	6.0	29.9	30.1	40.0	10.1	9.9
2.	99.98	BB	31.5	35.2	11.1	27.6	2.0	6.0	23.0	26.7	43.5	20.5	16.8
3.	166.63	BB	38.0	40.5	16.0	27.2	2.7	6.0	35.5	38.0	43.5	8.0	5.5
4.	199.96	BB	32.9	31.9	17.1	27.0	2.9	6.0	31.9	30.9	43.5	11.6	12.6
5.	299.94	BB	33.1	34.2	20.6	27.0	3.7	6.0	36.4	37.5	46.0	9.6	8.5
6.	333.26	BB	38.6	39.4	15.8	26.9	4.1	6.0	37.6	38.4	46.0	8.4	7.6
7.	399.92	BB	33.0	32.6	18.0	27.3	4.9	6.0	34.6	34.2	46.0	11.4	11.8
8.	466.57	BB	30.5	32.3	18.4	27.7	5.1	6.0	32.3	34.1	46.0	13.7	11.9
9.	533.22	BB	32.1	35.5	18.9	28.0	5.2	6.0	34.2	37.6	46.0	11.8	8.4
10.	699.85	BB	30.8	31.3	20.1	28.0	5.8	6.0	34.7	35.2	46.0	11.3	10.8

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

■ANTENNA:KBA-03 (BBA9106) 30-299MHz/KLA-03 (USLP9143) 300-1000MHz
■AMP:KAF-05 (8447D) ■RECEIVER:KTR-01 (ESI40) ■KCC-30_31_32_34 (RE)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.
YAMAKITA No.1 ANECHOIC CHAMBER
Report No.: 26GE0136-YK-F1

Applicant	: Alps Electric Co.,Ltd.		
Kind of Equipment	: Bluetooth Transceiver Module		
Model No.	: UGPZ6		
Serial No.	: UGPZ6-001		
Power	: DC3.3V(AC120V/60Hz)		
Mode	: Transmitting(2480MHz)		
Remarks	: antenna type: WDAN-SCMS2003-1F		
Date	: 3/4/2006		
Test Distance	: 3 m		
Temperature	: 21 ℃	Engineer	: Toyokazu Imamura
Humidity	: 30 %		
Regulation	: FCC Part15C §15.209		

No.	FREQ.	ANT TYPE	READING HOR	READING VER	ANT FACTOR	AMP GAIN	CABLE LOSS	ATTEN.	RESULT HOR	RESULT VER	LIMITS	MARGIN HOR	MARGIN VER
	[MHz]		[dBμV]		[dB/m]	[dB]	[dB]	[dB]	[dBμV/m]		[dBμV/m]	[dB]	
1.	66.65	BB	41.5	41.3	8.0	27.6	1.6	6.0	29.5	29.3	40.0	10.5	10.7
2.	99.98	BB	31.1	38.5	11.1	27.6	2.0	6.0	22.6	30.0	43.5	20.9	13.5
3.	166.63	BB	37.9	40.8	16.0	27.2	2.7	6.0	35.4	38.3	43.5	8.1	5.2
4.	199.96	BB	31.9	33.4	17.1	27.0	2.9	6.0	30.9	32.4	43.5	12.6	11.1
5.	299.94	BB	33.2	34.1	20.6	27.0	3.7	6.0	36.5	37.4	46.0	9.5	8.6
6.	333.26	BB	40.0	38.6	15.8	26.9	4.1	6.0	39.0	37.6	46.0	7.0	8.4
7.	399.92	BB	33.2	32.0	18.0	27.3	4.9	6.0	34.8	33.6	46.0	11.2	12.4
8.	466.57	BB	31.5	33.3	18.4	27.7	5.1	6.0	33.3	35.1	46.0	12.7	10.9
9.	533.22	BB	30.0	34.9	18.9	28.0	5.2	6.0	32.1	37.0	46.0	13.9	9.0
10.	699.85	BB	28.2	30.5	20.1	28.0	5.8	6.0	32.1	34.4	46.0	13.9	11.6

CALCULATION: READING + ANT.FACTOR + CABLE LOSS - AMP.GAIN + ATTEN.

■ANTENNA:KBA-03(BBA9106)30-299MHz/KLA-03(USLP9143)300-1000MHz
■AMP:KAF-05(8447D) ■RECEIVER:KTR-01(ESI40) ■KCC-30_31_32_34(RE)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.
YAMAKITA No.1 ANECHOIC CHAMBER
Report No. : 26GE0136-YK - F 1

Applicant	:	Alps Electric Co., Ltd.	
Kind of Equipment	:	Bluetooth Transceiver Module	
Model No.	:	UGPZ6	
Serial No.	:	UGPZ6-001	
Power	:	DC3.3V (AC120V/60Hz)	
Mode	:	Transmitting (2402MHz)	
Remarks	:	antenna type: WDAN-SCMS2003-1F PK (RBW:1MHz, VBW:1MHz)	
Date	:	3/5/2006	
Test Distance	:	3 m	
Temperature	:	22 ℃	Engineer : Toyokazu Imamura
Humidity	:	34 %	
Regulation	:	FCC Part15C §15.209 (PK Detection) 1-26GHz:3m/26-40GHz:1m	

No.	FREQ. [MHz]	ANT TYPE	READING HOR [dBμV]	READING VER [dBμV]	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT HOR [dBμV/m]	RESULT VER [dBμV/m]	LIMITS [dBμV/m]	MARGIN HOR [dB]	MARGIN VER [dB]
1.	2390.00	BB	44.3	44.8	28.7	37.0	4.2	10.0	50.2	50.7	74.0	23.8	23.3
2.	4804.00	BB	52.1	54.6	32.9	36.5	6.1	0.5	55.1	57.6	74.0	18.9	16.4
3.	7206.00	BB	44.2	46.5	36.4	36.8	7.6	0.2	51.6	53.9	74.0	22.4	20.1
4.	9608.00	BB	43.0	43.5	38.4	37.1	8.8	0.5	53.6	54.1	74.0	20.4	19.9
5.	12010.00	BB	43.2	42.7	40.6	36.2	10.0	0.0	57.6	57.1	74.0	16.4	16.9
6.	14412.00	BB	43.4	42.4	43.0	35.0	11.0	0.3	62.7	61.7	74.0	11.3	12.3
7.	16814.00	BB	44.0	44.0	42.1	35.7	12.1	0.6	63.1	63.1	74.0	10.9	10.9
8.	19216.00	BB	44.5	43.4	38.4	34.7	13.2	0.0	61.4	60.3	74.0	12.6	13.7
9.	21618.00	BB	43.9	43.3	38.8	35.7	13.7	0.0	60.7	60.1	74.0	13.3	13.9
10.	24020.00	BB	44.2	44.9	39.1	34.9	15.0	0.0	63.4	64.1	74.0	10.6	9.9

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

■ANTENNA:KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz
■CABLE:KCC-D7/D13■PREAMP:KAF-02 (8449B) ■SPECTRUMANALYZER:KTR-01 (ESI40)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.
YAMAKITA No.1 ANECHOIC CHAMBER
Report No. : 26GE0136-YK - F1

Applicant	: Alps Electric Co., Ltd.		
Kind of Equipment	: Bluetooth Transceiver Module		
Model No.	: UGPZ6		
Serial No.	: UGPZ6-001		
Power	: DC3.3V (AC120V/60Hz)		
Mode	: Transmitting (2402MHz)		
Remarks	: antenna type: WDAN-SCMS2003-1F AV (RBW:1MHz, VBW:10Hz)		
Date	: 3/5/2006		
Test Distance	: 3 m		
Temperature	: 22 ℃	Engineer	: Toyokazu Imamura
Humidity	: 34 %		
Regulation	: FCC Part15C §15.209 (AV Detection) 1-26GHz:3m/26-40GHz:1m		

No.	FREQ. [MHz]	ANT TYPE	READING HOR [dBμV]	READING VER [dBμV]	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT HOR [dBμV/m]	RESULT VER [dBμV/m]	LIMITS [dBμV/m]	MARGIN HOR [dB]	MARGIN VER [dB]
1.	2390.00	BB	33.1	33.0	28.7	37.0	4.2	10.0	39.0	38.9	54.0	15.0	15.1
2.	4804.00	BB	44.8	46.7	32.9	36.5	6.1	0.5	47.8	49.7	54.0	6.2	4.3
3.	7206.00	BB	32.9	34.7	36.4	36.8	7.6	0.2	40.3	42.1	54.0	13.7	11.9
4.	9608.00	BB	32.0	32.3	38.4	37.1	8.8	0.5	42.6	42.9	54.0	11.4	11.1
5.	12010.00	BB	32.1	32.3	40.6	36.2	10.0	0.0	46.5	46.7	54.0	7.5	7.3
6.	14412.00	BB	32.3	32.2	43.0	35.0	11.0	0.3	51.6	51.5	54.0	2.4	2.5
7.	16814.00	BB	32.2	32.3	42.1	35.7	12.1	0.6	51.3	51.4	54.0	2.7	2.6
8.	19216.00	BB	33.3	32.2	38.4	34.7	13.2	0.0	50.2	49.1	54.0	3.8	4.9
9.	21618.00	BB	33.4	32.4	38.8	35.7	13.7	0.0	50.2	49.2	54.0	3.8	4.8
10.	24020.00	BB	33.4	33.3	39.1	34.9	15.0	0.0	52.6	52.5	54.0	1.4	1.5

CALCULATION: READING + ANT.FACTOR + CABLE LOSS - AMP.GAIN + ATTEN.

■ANTENNA:KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz
■CABLE:KCC-D7/D13■PREAMP:KAF-02 (8449B) ■SPECTRUMANALYZER:KTR-01 (ESI40)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.
YAMAKITA No.1 ANECHOIC CHAMBER
Report No. : 26GE0136-YK - F1

Applicant	:	Alps Electric Co., Ltd.	
Kind of Equipment	:	Bluetooth Transceiver Module	
Model No.	:	UGPZ6	
Serial No.	:	UGPZ6-001	
Power	:	DC3.3V (AC120V/60Hz)	
Mode	:	Transmitting (2441MHz)	
Remarks	:	antenna type: WDAN-SCMS2003-1F PK (RBW:1MHz, VBW:1MHz)	
Date	:	3/5/2006	
Test Distance	:	3 m	
Temperature	:	22 ℃	Engineer : Toyokazu Imamura
Humidity	:	34 %	
Regulation	:	FCC Part15C §15.209 (PK Detection) 1-26GHz:3m/26-40GHz:1m	

No.	FREQ. [MHz]	ANT TYPE	READING HOR [dBμV]	READING VER [dBμV]	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT HOR [dBμV/m]	RESULT VER [dBμV/m]	LIMITS [dBμV/m]	MARGIN HOR [dB]	MARGIN VER [dB]
1.	4882.00	BB	46.3	48.6	33.1	36.5	6.1	0.5	49.5	51.8	74.0	24.5	22.2
2.	7323.00	BB	43.8	44.3	36.6	36.8	7.7	0.2	51.5	52.0	74.0	22.5	22.0
3.	9764.00	BB	44.0	46.0	38.5	37.1	8.8	0.3	54.5	56.5	74.0	19.5	17.5
4.	12205.00	BB	43.9	44.0	40.5	36.0	10.0	0.0	58.4	58.5	74.0	15.6	15.5
5.	14646.00	BB	44.1	42.9	43.0	35.3	11.1	0.5	63.4	62.2	74.0	10.6	11.8
6.	17087.00	BB	44.2	44.8	43.2	35.6	12.3	0.5	64.6	65.2	74.0	9.4	8.8
7.	19528.00	BB	44.1	44.4	37.9	35.2	13.4	0.0	60.2	60.5	74.0	13.8	13.5
8.	21969.00	BB	44.5	44.5	38.8	35.1	13.7	0.0	61.9	61.9	74.0	12.1	12.1
9.	24410.00	BB	45.1	45.0	39.2	35.0	15.1	0.0	64.4	64.3	74.0	9.6	9.7

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

■ANTENNA:KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz
■CABLE:KCC-D7/D13■PREAMP:KAF-02 (8449B) ■SPECTRUMANALYZER:KTR-01 (ESI40)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.
YAMAKITA No.1 ANECHOIC CHAMBER
Report No. : 26GE0136-YK ← F I

Applicant	: Alps Electric Co., Ltd.		
Kind of Equipment	: Bluetooth Transceiver Module		
Model No.	: UGPZ6		
Serial No.	: UGPZ6-001		
Power	: DC3.3V (AC120V/60Hz)		
Mode	: Transmitting (2441MHz)		
Remarks	: antenna type: WDAN-SCMS2003-1F AV (RBW:1MHz, VBW:10Hz)		
Date	: 3/5/2006		
Test Distance	: 3 m		
Temperature	: 22 ℃	Engineer	: Toyokazu Imamura
Humidity	: 34 %		
Regulation	: FCC Part15C §15.209 (AV Detection) 1-26GHz:3m/26-40GHz:1m		

No.	FREQ. [MHz]	ANT TYPE	READING HOR [dBμV]	READING VER [dBμV]	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT HOR [dBμV/m]	RESULT VER [dBμV/m]	LIMITS [dBμV/m]	MARGIN HOR [dB]	MARGIN VER [dB]
1.	4882.00	BB	37.1	38.4	33.1	36.5	6.1	0.5	40.3	41.6	54.0	13.7	12.4
2.	7323.00	BB	32.0	33.2	36.6	36.8	7.7	0.2	39.7	40.9	54.0	14.3	13.1
3.	9764.00	BB	31.9	36.3	38.5	37.1	8.8	0.3	42.4	46.8	54.0	11.6	7.2
4.	12205.00	BB	32.7	32.6	40.5	36.0	10.0	0.0	47.2	47.1	54.0	6.8	6.9
5.	14646.00	BB	32.5	32.4	43.0	35.3	11.1	0.5	51.8	51.7	54.0	2.2	2.3
6.	17087.00	BB	32.4	32.3	43.2	35.6	12.3	0.5	52.8	52.7	54.0	1.2	1.3
7.	19528.00	BB	33.2	32.2	37.9	35.2	13.4	0.0	49.3	48.3	54.0	4.7	5.7
8.	21969.00	BB	33.5	33.7	38.8	35.1	13.7	0.0	50.9	51.1	54.0	3.1	2.9
9.	24410.00	BB	33.4	33.0	39.2	35.0	15.1	0.0	52.7	52.3	54.0	1.3	1.7

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

■ANTENNA:KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz
■CABLE:KCC-D7/D13■PREAMP:KAF-02 (8449B) ■SPECTRUMANALYZER:KTR-01 (ES140)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.
YAMAKITA No.1 ANECHOIC CHAMBER
Report No. : 26GE0136-YK-F1

Applicant : Alps Electric Co., Ltd.
Kind of Equipment : Bluetooth Transceiver Module
Model No. : UGPZ6
Serial No. : UGPZ6-001
Power : DC3.3V (AC120V/60Hz)
Mode : Transmitting (2480MHz)
Remarks : antenna type: WDAN-SCMS2003-1F PK (RBW:1MHz, VBW:1MHz)
Date : 3/5/2006
Test Distance : 3 m
Temperature : 22 ℃ Engineer : Toyokazu Imamura
Humidity : 34 %
Regulation : FCC Part15C §15.209 (PK Detection) 1-26GHz:3m/26-40GHz:1m

No.	FREQ. [MHz]	ANT TYPE	READING HOR [dBμV]	READING VER [dBμV]	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT HOR [dBμV/m]	RESULT VER [dBμV/m]	LIMITS [dBμV/m]	MARGIN HOR [dB]	MARGIN VER [dB]
1.	2483.50	BB	44.8	45.1	28.8	37.1	4.3	10.0	50.8	51.1	74.0	23.2	22.9
2.	4960.00	BB	46.2	48.0	33.3	36.4	6.2	0.5	49.8	51.6	74.0	24.2	22.4
3.	7440.00	BB	43.4	44.0	36.9	36.8	7.7	0.2	51.4	52.0	74.0	22.6	22.0
4.	9920.00	BB	43.0	43.1	38.6	37.0	8.9	0.2	53.7	53.8	74.0	20.3	20.2
5.	12400.00	BB	45.1	43.4	40.4	35.7	10.0	0.0	59.8	58.1	74.0	14.2	15.9
6.	14880.00	BB	43.8	44.3	42.3	35.7	11.1	0.7	62.2	62.7	74.0	11.8	11.3
7.	17360.00	BB	44.4	42.8	44.5	35.7	12.3	0.2	65.7	64.1	74.0	8.3	9.9
8.	19840.00	BB	43.4	43.8	38.2	35.0	13.6	0.0	60.2	60.6	74.0	13.8	13.4
9.	22320.00	BB	45.3	45.0	39.1	35.0	13.6	0.0	63.0	62.7	74.0	11.0	11.3
10.	24800.00	BB	45.2	43.9	39.4	34.7	15.4	0.0	65.3	64.0	74.0	8.7	10.0

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

■ANTENNA:KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz
■CABLE:KCC-D7/D13■PREAMP:KAF-02 (8449B) ■SPECTRUMANALYZER:KTR-01 (ESI40)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.
YAMAKITA No.1 ANECHOIC CHAMBER
Report No. : 26GE0136-YK - F1

Applicant : Alps Electric Co., Ltd.
Kind of Equipment : Bluetooth Transceiver Module
Model No. : UGPZ6
Serial No. : UGPZ6-001
Power : DC3.3V (AC120V/60Hz)
Mode : Transmitting (2480MHz)
Remarks : antenna type: WDAN-SCMS2003-1F AV (RBW:1MHz, VBW:10Hz)
Date : 3/5/2006
Test Distance : 3 m
Temperature : 22 ℃ Engineer : Toyokazu Imamura
Humidity : 34 %
Regulation : FCC Part15C § 15.209 (AV Detection) 1-26GHz:3m/26-40GHz:1m

No.	FREQ. [MHz]	ANT TYPE	READING HOR [dBμV]	READING VER [dBμV]	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT HOR [dBμV/m]	RESULT VER [dBμV/m]	LIMITS [dBμV/m]	MARGIN HOR [dB]	MARGIN VER [dB]
1.	2483.50	BB	33.1	33.2	28.8	37.1	4.3	10.0	39.1	39.2	54.0	14.9	14.8
2.	4960.00	BB	36.5	36.9	33.3	36.4	6.2	0.5	40.1	40.5	54.0	13.9	13.5
3.	7440.00	BB	32.1	32.2	36.9	36.8	7.7	0.2	40.1	40.2	54.0	13.9	13.8
4.	9920.00	BB	31.8	32.2	38.6	37.0	8.9	0.2	42.5	42.9	54.0	11.5	11.1
5.	12400.00	BB	32.5	32.4	40.4	35.7	10.0	0.0	47.2	47.1	54.0	6.8	6.9
6.	14880.00	BB	32.6	32.6	42.3	35.7	11.1	0.7	51.0	51.0	54.0	3.0	3.0
7.	17360.00	BB	32.4	32.4	44.5	35.7	12.3	0.2	53.7	53.7	54.0	0.3	0.3
8.	19840.00	BB	32.4	32.4	38.2	35.0	13.6	0.0	49.2	49.2	54.0	4.8	4.8
9.	22320.00	BB	33.4	32.4	39.1	35.0	13.6	0.0	51.1	50.1	54.0	2.9	3.9
10.	24800.00	BB	33.6	33.3	39.4	34.7	15.4	0.0	53.7	53.4	54.0	0.3	0.6

CALCULATION: READING + ANT. FACTOR + CABLE LOSS - AMP. GAIN + ATTEN.

■ANTENNA:KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26GHz
■CABLE:KCC-D7/D13■PREAMP:KAF-02 (8449B) ■SPECTRUMANALYZER:KTR-01 (ESI40)

Test Report No :26GE0136-YK-F1

APPENDIX 3
Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No.	Test Item	Calibration Date * Interval(month)
KAEC-01(NSA)	Anechoic Chamber	JSE	Semi 3m	RE	2005/09/03 * 12
KAF-02	Pre Amplifier	Hewlett Packard	8449B	RE	2005/04/28 * 12
KAF-05	Pre Amplifier	Agilent	8447D	RE	2005/05/11 * 12
KAT10-S1	Attenuator	Agilent	8449D 010	RE	2005/04/12 * 12
KAT6-01	Attenuator	INMET	18N-6dB	RE	2005/04/07 * 12
KBA-03	Biconical Antenna	Schwarzbeck	BBA9106	RE	2006/01/17 * 12
KCC-30/31/32 /34	Coaxial Cable	Fujikura/Suhner	5D-2W/S04272B	RE	2005/12/22 * 12
KCC-33/34	Coaxial Cable	Fujikura/Suhner	5D-2W/S04272B	CE	2005/12/22 * 12
KFL-01	Highpass Filter	Hewlett Packard	84300 80038	RE	2005/04/12 * 12
KHA-01	Horn Antenna	A.H.Systems	SAS-200/571	RE	2005/08/20 * 12
KHA-03	Horn Antenna	EMCO	3160-09	RE	2005/05/14 * 12
KLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2006/01/17 * 12
KLS-01	LISN(AMN)	Schwarzbeck	NSLK8126	CE (EUT)	2005/05/10 * 12
KSA-04	Spectrum Analyzer	Advantest	R3271A	RE	2005/09/13 * 12
KTR-01	Test Receiver	Rohde & Schwarz	ESI40	CE/RE	2005/08/05 * 12
KCC-D7/D13	Coaxial cable	Advantest/Suhuner	A01002/SUCOFLEX104	RE	2005/04/12 * 12

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
Test Item:
CE: Conducted emission,
RE: Radiated emission