FCC ID: CWTUGPZ3Test report No.: 23DE0002-YK-1Page: 1 of 74Issued date: November 29, 2002

# EMI TEST REPORT

# Test Report No. : 23DE0002-YK-1

Applicant:	Alps Electric Co., Ltd.
Type of Equipment:	Bluetooth Transceiver Module
Model No.:	UGPZ3
FCC ID:	CWTUGPZ3
Test standard:	FCC Part15 Subpart C, Section 15.247
Test Result:	Complied

1. This test report shall not be reproduced except in full or partial, without the written approval of A-Pex International Co., Ltd.

2. The results in this report apply only to the sample tested.

Date of test:

November 20, 21, 22 and 26, 2002

Tested by:

Toyokazu Imamura EMC section

Approved by:

Ą MAN Osamu Watatani

Site Assistant Manager of Yamakita Lab.

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### **1 GENERAL 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 3 3726 1211
Facsimile Number	: +81 3 3726 1741
Contact Person	: Masaaki Ueki
Type of Equipment	: Bluetooth Transceiver Module
Model No.	: UGPZ3
Rating	: DC3.3V (1.8V after regulated)
Country of Manufacture	: Japan
Receipt Date of Sample	: November 20, 2002
Condition of EUT	: Production prototype
Regulation(s)	: FCC Part15 Subpart C, Section 15.247
Test Site	: A-Pex Yamakita No.1 Open Test Site

### **1.1 Tested Methodology**

The measurements were performed according to the procedures in ANSI C63.4 (2000). These tests were also referred to FCC Public Notice DA 00-705 "Guidance on Measurement for Frequency Hopping Spread Spectrum Systems".

### **1.2 Test Facility**

This site has been fully described in a report submitted to FCC office, and accepted on September 20, 2002 (Registration No.: 95486). NVLAP Lab. code : 200441-0

### **2 PRODUCT DESCRIPTION**

Alps Electric Co., Ltd. Model: UGPZ3 (referred to as the EUT in this report) is a Bluetooth Transceiver Module. The clock frequency used in EUT is 16MHz (X'tal).

Frequency characteristics	:	2402MHz through 2480MHz
Number of channels/ channel spacing	:	79 channels/ 1MHz channel spacing
Modulation	:	GFSK (Low power Frequency Hopping Spread Spectrum (FHSS))
Antenna type	:	$1/4\lambda$ Monopole
Antenna model	:	YCE-5255, SSW2400 and LDA92
Antenna Gain	:	4.0dBi (Max)
Operating Voltage	:	DC3.3V +/-0.2V (1.8V after regulated)

The Alps, UGPZ3 with Bluetooth wireless technology is a radio device that transmits and receives radio signals in accordance with the spectrum regulations for the 2.4GHz unlicensed frequency range.

- 1. Output power, Bluetooth class 2 (+3.0dBm/ 0.002W max)
- 2. Voltage regulator built in.
- 3. Flash memory and reference oscillator built in.
- 4. Board to board connection through USB interface.
- 5. Three kinds of external antenna provided.

\*FCC Part15.31 (e)

The host device provides the Bluetooth Transceiver Module with stable power supply (DC3.3V), and the power is not changed when voltage of the Bluetooth Transceiver Module is varied. Therefore, the Bluetooth Transceiver Module complies power supply regulation.

\*FCC Part 15.203 Antenna requirement

When Bluetooth Transceiver Module is put up for sale,

only one of the three antennas (YCE-5255, SSW2400 and LDA92) is attached and used with a particular antenna connector.

Therefore, Bluetooth Transceiver Module and its antenna comply with this requirement.

### **3 SYSTEM TEST CONFIGURATION**

### 3.1 Justification

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

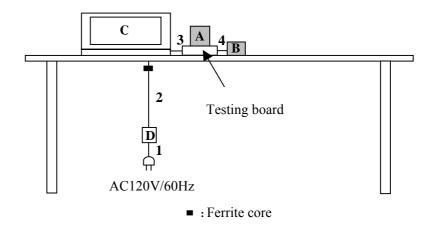
Test mode:

- Transmitting mode (DH5) : Radiated and Antenna Port Conducted tests Performed the test about channels 2402MHz (Low) and 2480MHz (High) channels of all Carrier frequencies.
   Hopping mode : Antenna Port Conducted tests
   Inquiry mode : Antenna Port Conducted tests
- 4. Page mode : Antenna Port Conducted tests

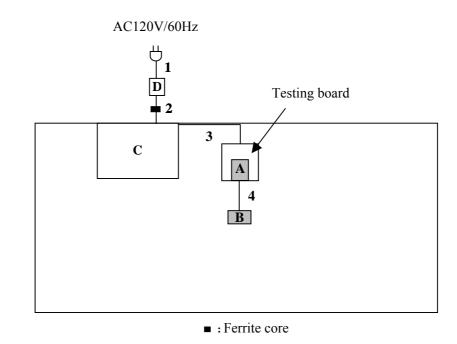
### 3.2 Configuration of Tested System

### Front View

Top View



\*Cabling was taken into consideration and test data was taken under worse case conditions.



\*Cabling was taken into consideration and test data was taken under worse case conditions.

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### **Description of EUT and support equipment**

No.	Item	Model number	Serial number	Manufacturer	FCC ID
Α	Bluetooth Transceiver Module	UGPZ3	11	Alps Electric Co., Ltd.	CWTUGPZ3
В	$1/4\lambda$ Monopole Antenna	YCE-5255	-	YOKOWO	-
	$1/4\lambda$ Monopole Antenna	SSW2400	-	Sony Chemicals	-
	$1/4\lambda$ Monopole Antenna	LDA92	-	Murata	-
С	Personal Computer	PC-PJ120H	69029817	SHARP	-
D	AC Adaptor	EA-J03V	LTD0022031941	SHARP	-

### List of cables used

No.	Name	Length (m)	Shield	Backshell material
1	AC Main Cable	1.8	Unshielded	Polyvinyl chloride
2	DC Cable	1.2	Unshielded	Polyvinyl chloride
3	USB Cable	0.95	Shielded	Polyvinyl chloride
4	Coaxial Cable	0.05	Shielded	Polyvinyl chloride

### 4 MEASUREMENT UNCERTAINTY

#### Conducted emission test

The measurement uncertainty (with a 95% confidence level) for this test was  $\pm 1.3$ dB.

The data listed in this test report has enough margin, more than site margin.

#### Radiated emission test

The measurement uncertainty (with 95% confidence level) for this test using Biconical antenna is  $\pm 4.8$ dB. The measurement uncertainty (with 95% confidence level) for this test using Logperiodic antenna is  $\pm 5.2$ dB. The measurement uncertainty (with 95% confidence level) for this test using Horn antenna is  $\pm 6.6$ dB.

The data listed in this test report may exceed the test limit because it does not have enough margin.

### **5 SUMMARY OF TESTS**

### 5.1 §15.207 Conducted Emissions (Limits by CISPR Pub.22 Class B)

### **Test Procedure**

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane.

The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals 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 LISN and excess AC cable was bundled in center.

Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT on a shielded room.

The EUT was connected to a Line Impedance Stabilization Network (LISN).

An overview sweep with peak detection has been performed.

The measurements have been performed with a CISPR quasi-peak detector (IF BW 9kHz). (Measurement range : 150kHz to 30MHz)

Test data	: APPENDIX Page 18 to 24
Photographs of test setu	p: Page 13
Test result	: Pass
Test instruments	: KCC-14/15/16/18/KPL-01, KLS-01, KSA-01, KTR-01

### 5.2 §15.247 (a)(1) Frequency Hopping Systems

Bluetooth Transceiver Module uses 79channels, each 1MHz wide. On Average, each channel is used equally.

Test data	: APPENDIX Page 25
Test result	: Pass
Test instruments	: KTR-01, KCC-D5

FCC ID : CWTUGPZ3 Test report No. : 23DE0002-YK-1 : 10 of 74 Page Issued date : November 29, 2002

#### 5.3 §15.247 (a)(1)(ii) Channel Utilization

The total number of channel is 79.

Test data	: APPENDIX Page 26 to 29
Test result	: Pass
Test instruments	: KTR-01, KCC-D5

20dB Band Width

1. 2402MHz (Low) : 0.9499MHz < 1MHz 2. 2480MHz (High): 0.9499MHz < 1MHz

Test data	: APPENDIX Page 30
Test result	: Pass
Test instruments	: KTR-01, KCC-D5

Dwell Time

Spectrum analyzer was set as center frequency 2402MHz, dwell time 30sec. (Hopping mode) Spectrum analyzer was set as center frequency 2402MHz, dwell time 1sec. (Inquiry and page mode)

1. Hopping mode

As a result of observation with Bluetooth Transceiver Module was on hopping condition, 101.6 Average times Hopping were appeared per 1channel. Maximum transmit ON time per appeared hopping is 2.90ms (DH5) 101.6\*2.90ms = 294.64ms < 400ms

2. Inquiry mode

As a result of observation with Bluetooth Transceiver Module was on hopping condition, 100 Average times Inquiry were appeared per 1channel. Maximum transmit ON time per appeared hopping is 120µs (Inquiry mode: 32ch)  $100^{(0.4*32)} = 153.6 \text{ms} < 400 \text{ms}$ 

3. Page mode

As a result of observation with Bluetooth Transceiver Module was on hopping condition, 100 Average times Page were appeared per 1channel. Maximum transmit ON time per appeared hopping is 121µs (Page mode: 32ch)

 $100^{(0.4*32)} \times 121 \mu s = 154.88 m s < 400 m s$ 

Test data	: APPENDIX Page 31 to 36
Test result	: Pass
Test instruments	: KTR-01, KCC-D5, KST-01

#### § 15.247(b)(3) Maximum Peak Out Put Power (Antenna Port Conducted) 5.4

#### **Test Procedure**

The Maximum Peak Output power was measured with a power meter connected to the antenna port. \* Antenna Gain dose not exceed 6dBi.

Test data	: APPENDIX Page 37
Test result	: Pass
<b>Test instruments</b>	: KPM-05, KPSS-01

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### 5.5 § 15.247(c) Out of Band Emissions (Radiated)

#### **Test Procedure**

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane.

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization.

The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength. The Radiated Electric Field Strength intensity has been measured on an open test site 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.

EUT emission levels were compared when the EUT antenna position was vertical polarization and horizontal polarization. The equipment was also previously checked at each position of three axes X, Y and Z.

In 30-1000MHz, Y axis of all antenna types was worst under both vertical and horizontal polarization.

In above 1GHz, Y axis of all antenna types was worst under the vertical antenna polarization.

Under the horizontal antenna polarization, Z axis was worst (YCE-5255) and X axis was worst (SSW2400 and LDA92).

The positions in which the maximum noise occurred were chosen to put into measurement.

See the photographs in page 15 to 17.

### **Radiated spurious emissions**

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.

The result was also satisfied the general limits specified in Sec.15.209 (a).

Measurement range : 30MHz to 1000MHz CISPR QP Detector, IF BW 120kHz

: 1GHz to 26GHz PK and AV Detector Test data:

YCE-5255	SSW2400	LDA92	
38 to 39	48 to 49	58 to 59	(30-1000MHz)
40 to 43	50 to 53	60 to 63	(1 – 26GHz)
44 to 47	54 to 57	64 to 67	(Band Edges:2390MHz/2483.5MHz, Restricted band Charts)
	38 to 39 40 to 43	38 to 3948 to 4940 to 4350 to 53	38 to 3948 to 4958 to 5940 to 4350 to 5360 to 63

Photographs of test set	tup : Page 14
Test result	: Pass
<b>Test instruments</b>	: KAF-01, KAF-02, KAT6-1, KBA-01, KCC-10/11/12/13/18, KCC-D3,
	KHA-01, KHA-03, KLA-01, KOTS-01, KSA-01, KTR-01

#### 5.6 § 15.247(c) Out of Band Emissions (Antenna Port Conducted)

#### **Test Procedure**

The Out of Band Emissions was measured with a spectrum analyzer connected to the antenna port.

Test data	: APPENDIX Page 68 to 73
Test result	: Pass
Test instruments	: KTR-01, KCC-D5

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### **APPENDIX 1: Photographs of test setup**

1.Page 13	:	Conducted emission
2.Page 14	:	Radiated emission
3.Page 15 - 17	:	Pre check of worse-case position

### **APPENDIX 2: Test Data**

1.Page 18 - 24	:	Conducted emission
2.Page 25	:	Channel Separation (Antenna Port Conducted)
3.Page 26 - 29	:	Channel Utilization (Antenna Port Conducted)
4.Page 30	:	20dB Bandwidth (Antenna Port Conducted)
5.Page 31 - 36	:	Dwell Time (Antenna Port Conducted)
6.Page 37	:	Maximum Peak Power (Antenna Port Conducted)
7.Page 38 - 67	:	Out of Band Emissions (Radiated)
8.Page 68 - 73	:	Out of Band Emissions (Antenna Port Conducted)

### **APPENDIX 3:** Test instruments

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#### **Conducted emission**





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MF060b(23.04.02)

FCC ID : CWTUGPZ3 Test report No. : 23DE0002-YK-1 Page : 14 of 74 Issued date : November 29, 2002

#### **Radiated emission**



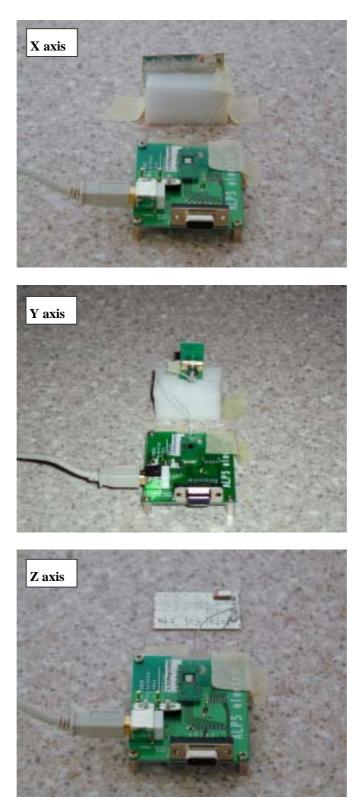


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Pre check of worse-case position (YCE-5255)

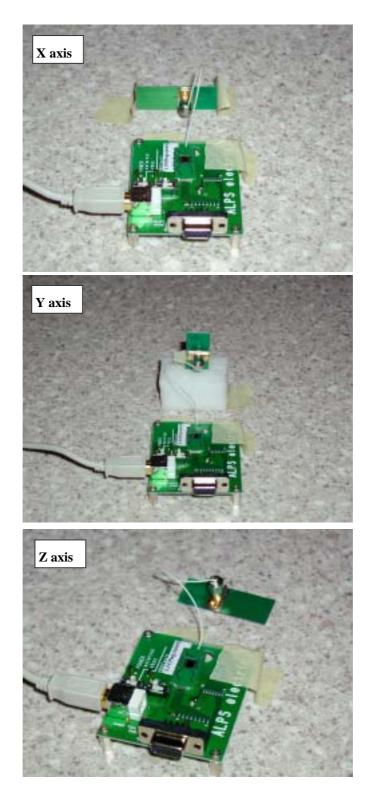


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+81 465 77 1011 +81 465 77 2112 Telephone: Facsimile:

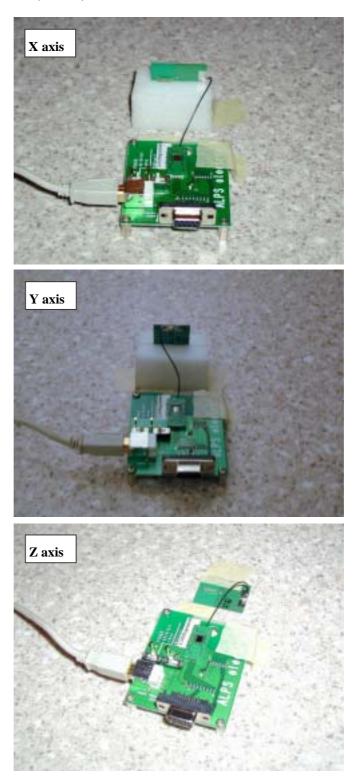
Pre check of worse-case position (SSW2400)



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Telephone: Facsimile: +81 465 77 1011 +81 465 77 2112 Pre check of worse-case position (LDA92)



### A-Pex International Co., Ltd. YAMAKITA LAB. 907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

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# **DATA OF CONDUCTION TEST**

A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Shielded Room Report No. : 23DE0002-YK-1

Kind Mode Seri Powe Mode Rema Date Phas Temp Humi	irks	UPGZ3 11 DC3.3V (PC:AC120V/60Hz) Transmitting(2402MHz) Tx Antenna Type: YCE-5255 11/22/2002 Single Phase 25 °C 41 %							ineer	<u>).</u> : †	<u>Incm</u> oyokaz	<i>under</i> u Imam	ura	_
No.	FREQ. [MHz]	READI QP [dB	NG (N) AV uV]	QP	NG(L1 AV uV]	) LISN FACTOR [dB]		ATTEN [dB]	. RES QP [dBu	ULT AV V]	LIM QP [dBu	ITS AV V]	QP	GIN AV B]
1. 2. 3. 4. 5. 6.	$\begin{array}{c} 0.\ 1500\\ 0.\ 2050\\ 0.\ 2740\\ 0.\ 3415\\ 1.\ 6260\\ 12.\ 2930 \end{array}$	43. 7 44. 2 33. 2 27. 8 17. 6 17. 4	31.2	43. 9 44. 8 33. 2 29. 3 24. 3 16. 9	31.2	$\begin{array}{c} 0. \ 0 \\ 0. \ 0 \\ 0. \ 0 \\ 0. \ 0 \\ 0. \ 1 \\ 0. \ 3 \end{array}$	0. 1 0. 1 0. 1 0. 1 0. 3 1. 2	$\begin{array}{c} 0. \ 0 \\ 0. \ 0 \\ 0. \ 0 \\ 0. \ 0 \\ 0. \ 0 \\ 0. \ 0 \end{array}$	44. 0 44. 9 33. 3 29. 4 24. 7 18. 9	31.3	66. 0 63. 4 61. 0 59. 2 56. 0 60. 0	56. 0  53. 4  51. 0  49. 2  46. 0  50. 0	22. 0 18. 5 27. 7 29. 8 31. 3 41. 1	22.1

CALCULATION: READING[dB $\mu$ V] + LISN FACTOR[dB] + CABLE LOSS[dB] + ATTEN[dB].

•

■LISN :KLS-02 (NSLK8127) ■COAXIAL CABLE:KCC-14/15/16/18 ■EMI RECEIVER:KTR-01 (ESI40) ■PULSE LIMITER:KPL-01 (PL01)

Page: 18

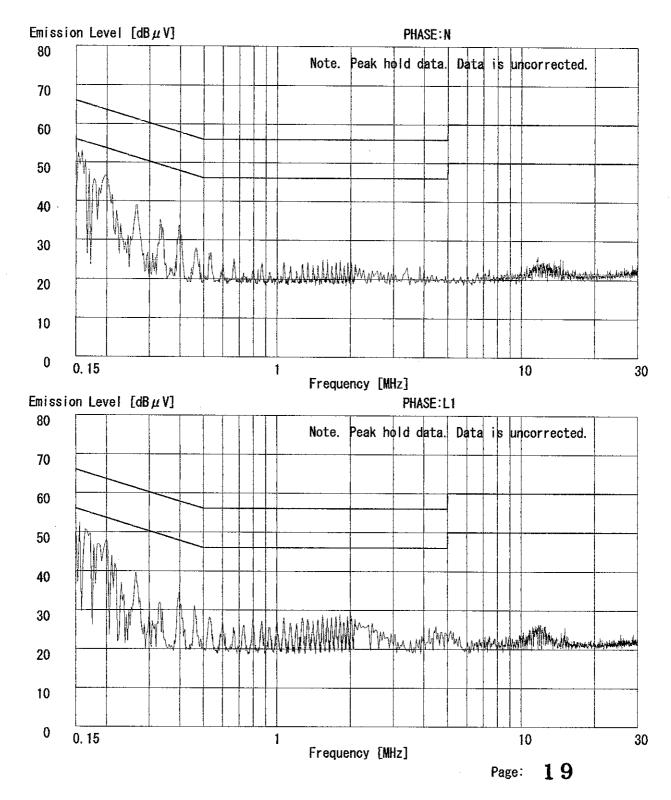
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A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Shielded Room Report No.: 23DE0002-YK-1

Toyokazu Imamura

Applicant	: ALPS Electric Co., Ltd	
Kind of Equipment	: Bluetooth Transceiver module	
Model No.	: UPGZ3	
Serial No.	: 11	
Power	: DC3.3V (PC:AC120V/60Hz)	
Mode	: Transmitting(2402MHz)	
Remarks	: Tx Antenna Type: YCE-5255	~
Date	: 11/22/2002	$/\gamma$
Phase	Single Phase	· /.
Temperature	: 25 °C	Engineer
Humidity	: 41 %	
Regulation 1	: FCC Part15C § 15. 207. (CISPR I	Pub. 22
Regulation 2	: FCC Part15C § 15. 207. (CISPR )	Pub. 22 )

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A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Shielded Room Report No. : 23DE0002-YK-1

Applic Kind o Model Serial Power Mode Remark Date Phase Temper Humidi Regula	No. No. s ature ty tion 1	Ι		PGZ3 1 C3.3 rans x Ar 1/22 ingl 5 °C	3 Smit Smit Ster 2/20 E F	(PC tti na )02 Pha	: A( ng Ty se	012 (24 7pe	Co.,Ltd sceiver m 20V/60Hz) 480MHz) 9: YCE-52 15.207.(C 15.207.(C	55	Engir	l	$\sum$	/	In	E0002-YK-1 <i>Communa</i> zu Imamura	
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0	0.15		·				••••• <b>•</b> ••		1 Freq	uency	[MHz]		·	<u> </u>		10 : <b>20</b>	30

Page: 20

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A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Shielded Room Report No. : 23DE0002-YK-1

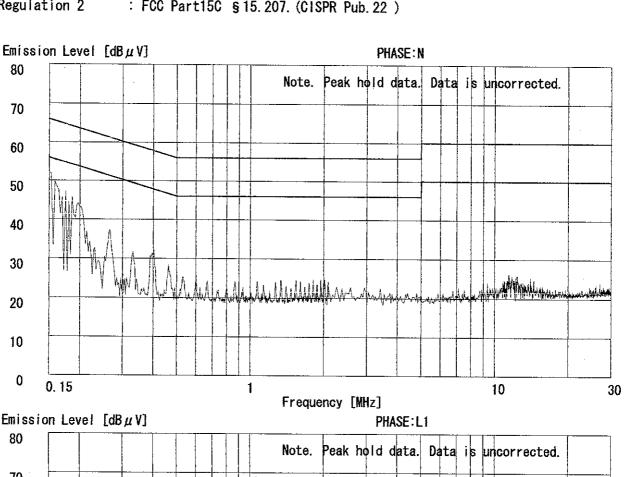
Power Mode Remarks Date Phase Temperature	: UPGZ: : 11 : DC3.: : Tran: : Tx An : 11/2: : Sing : 25 °C : 41 96	3 3V ( smit nten 2/20 le P	(PC: tin na )02 Phas	AC1 g (2 Typ e	20V, 2402  3e: 1	/60Hz) MHz) SSW2400	Ī	Engi ub. 2 ub. 2	nee	2 or		У.			0002-YK-1 <i>Cumuna</i> u Imamura	
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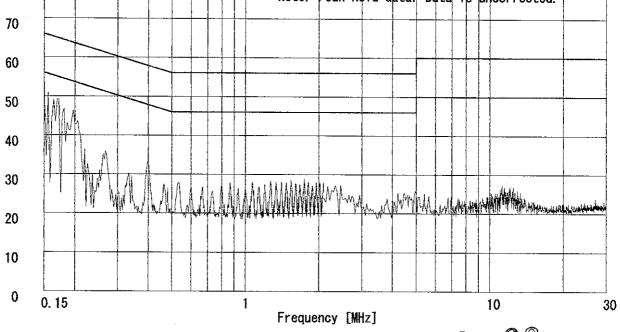


A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Shielded Room Report No.: 23DE0002-YK-1

Toyokazu Imamura

Applicant Kind of Equipment Model No. Serial No. Power Mode Remarks Date Phase	** ** ** ** ** ** **	ALPS Electric Co., Ltd Bluetooth Transceiver module UPGZ3 11 DC3.3V (PC:AC120V/60Hz) Transmitting(2480MHz) Tx Antenna Type: SSW2400 11/22/2002 Single Phase	, ,
Temperature Humidity Regulation 1 Regulation 2		25 °C 41 % FCC Part15C § 15. 207. (CISPR FCC Part15C § 15. 207. (CISPR	Engineer Pub.22 ) Pub.22 )



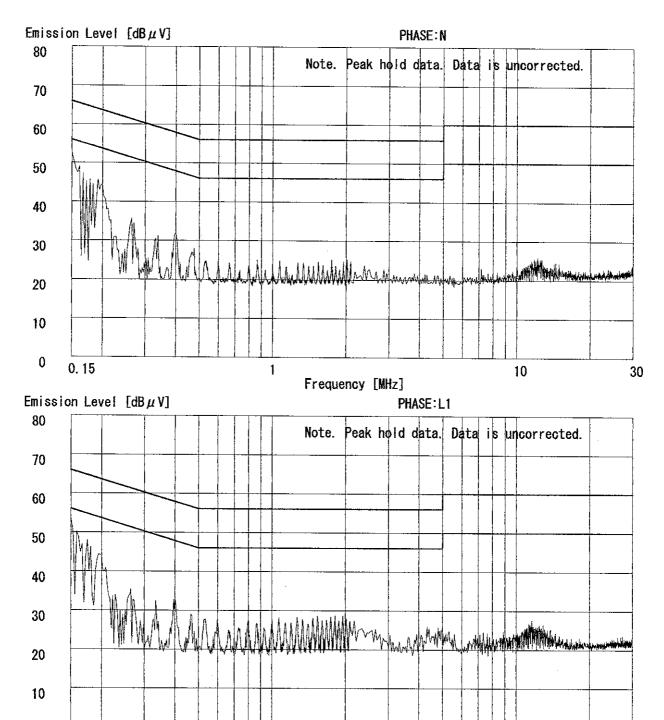


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A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Shielded Room Report No.: 23DE0002-YK-1

Toyokazu Imamura

Applicant	:	ALPS Electric Co.,Ltd	•
Kind of Equipment	1	Bluetooth Transceiver module	
Model No.		UPGZ3	
Serial No.	1	11	
Power	:	DC3. 3V (PC: AC120V/60Hz)	
Mode	;	Transmitting(2402MHz)	
Remarks		Tx Antenna Type: LDA92	
Date	:	11/22/2002	
Phase	:	Single Phase	1
Temperature		25 °C	Engineer
Humidity	:	41 %	
Regulation 1	:	FCC Part15C § 15. 207. (CISPR	Pub. 22 )
Regulation 2	:	FCC Part15C § 15. 207. (CISPR )	Pub. 22 )



Frequency [MHz]

1

0

0.15



30

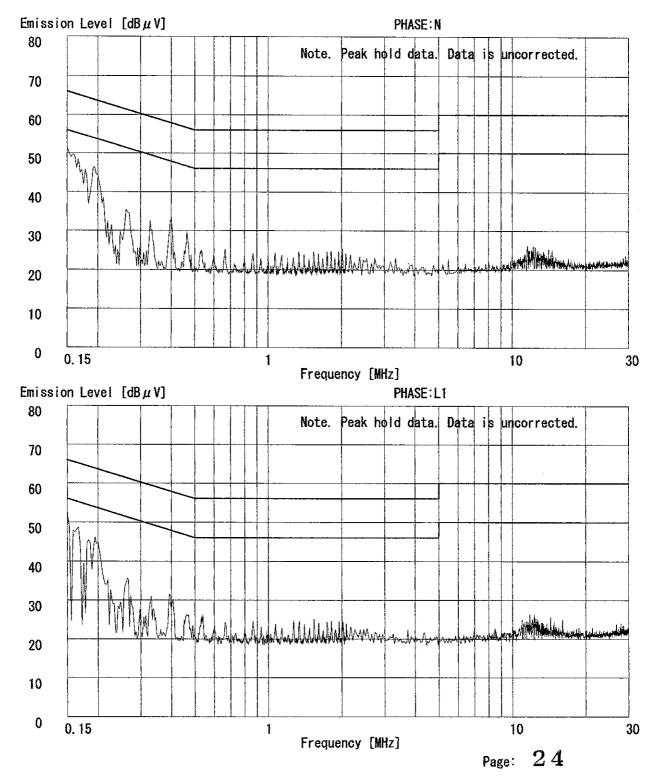
10

A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Shielded Room Report No.: 23DE0002-YK-1

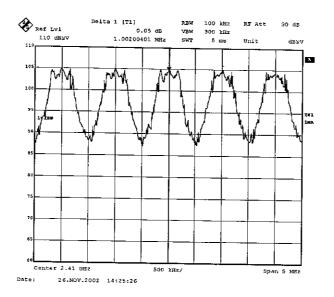
Applicant	:	ALPS Electric Co.,Ltd	l
		Bluetooth Transceiver module	)
Model No. Serial No.	:	UPGZ3 11	
Power		DC3. 3V (PC: AC120V/60Hz)	
Mode	:	Transmitting(2480MHz)	
Remarks	:	Tx Antenna Type: LDA92	
Date	1	11/22/2002	
Phase		Single Phase	
Temperature	:	25 °C	Engi
Humidity	:	41 %	
Regulation 1	:	FCC Part15C § 15. 207. (CISPR	Pub. 22
Regulation 2	:	FCC Part15C § 15. 207. (CISPR	Pub. 2

neer Toyókazu Imamura

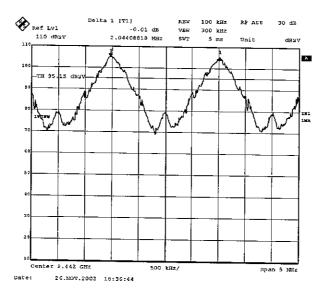
Engineer : Toyokazu Imamura .207. (CISPR Pub.22 ) .207. (CISPR Pub.22 )



**Hopping** 

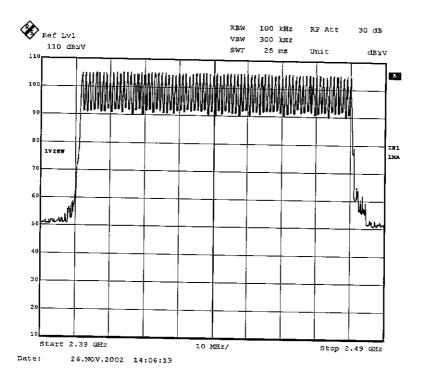


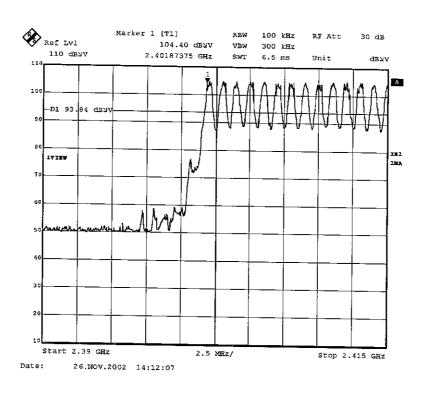
Inquiry

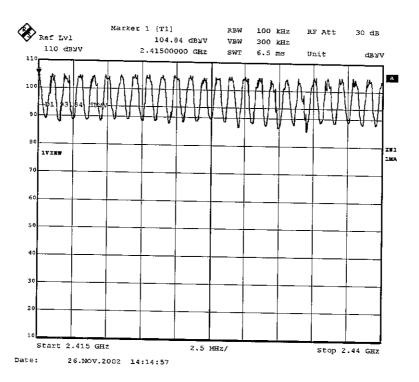


Ref Lvl 110 dEVV Delta 1 (T1) 0.03 dB 1.99398798 MHz 100 kHz 300 kHz 5 ms RBW RF Att 30 dB V3W SWT Unit dena 10 95 ZN1 1MA LVIER 10 Center 2.442 GHz 500 kHz/ Span 5 HHz Date: 26.NOV.2002 18:32:25

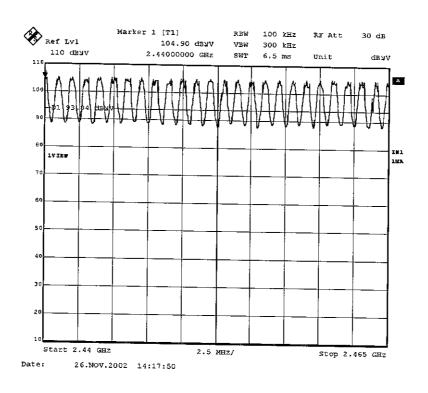
Page 1

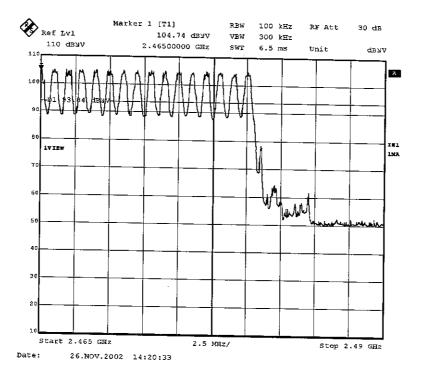






4.



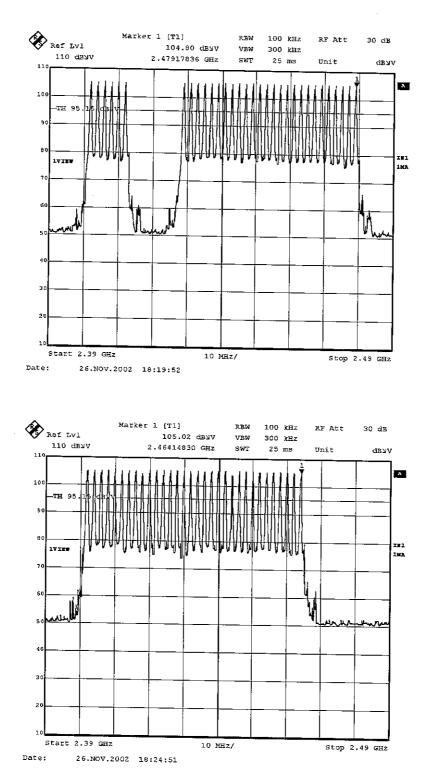


### Channel Utilization: FCC 15.247(a)

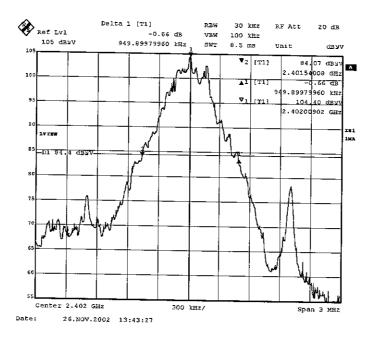
### FCC ID: CWTUGPZ3 Job No: 23DE0002-YK-1

### Inquiry

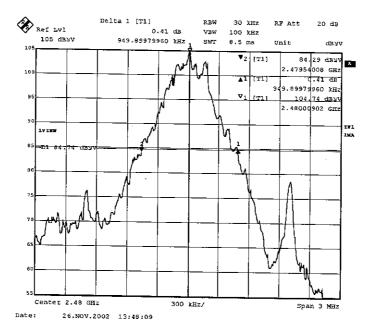
Page



### 1. ch Low: 2402MHz

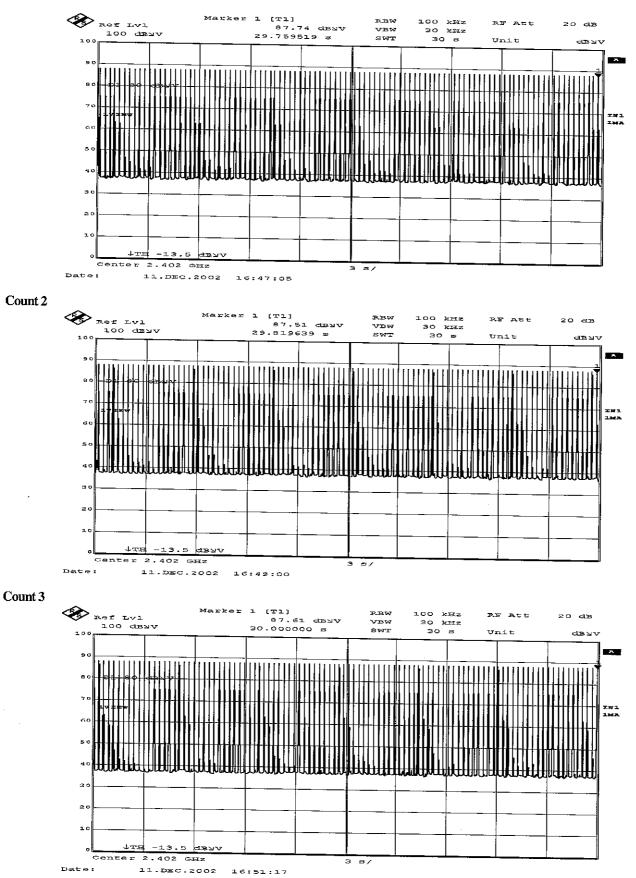


### 2. ch High: 2480MHz



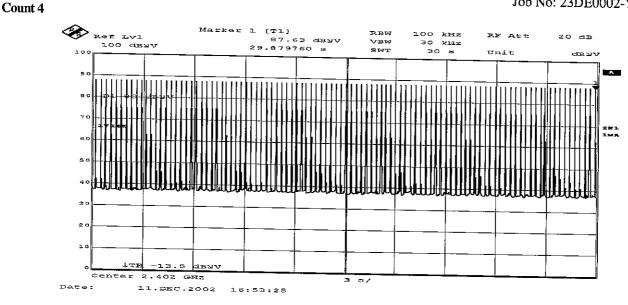
### FCC ID: CWTUGPZ3 Job No: 23DE0002-YK-1

#### Dwell Time(Hopping) Count 1

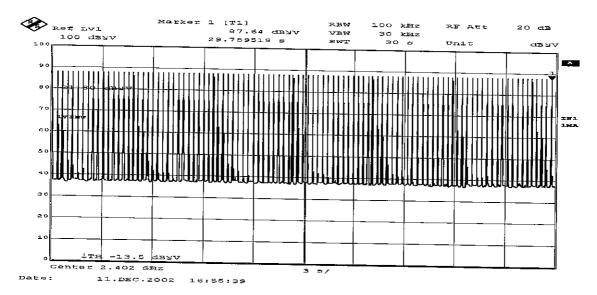


### FCC ID: CWTUGPZ3 Job No: 23DE0002-YK-1

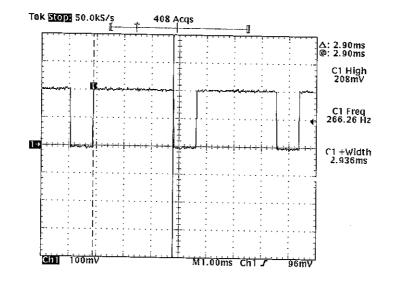
.



#### Count 5



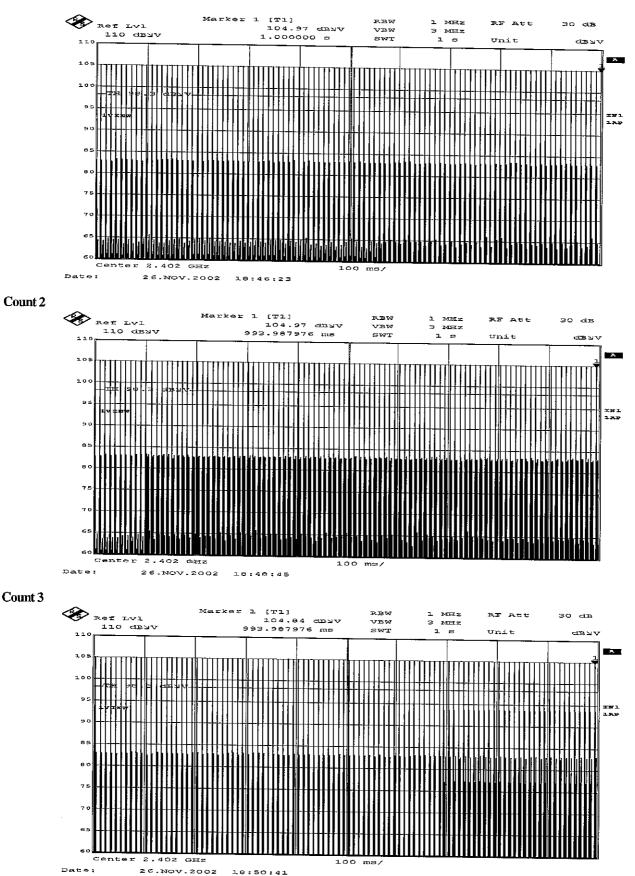
### Duty cycle(Hopping)



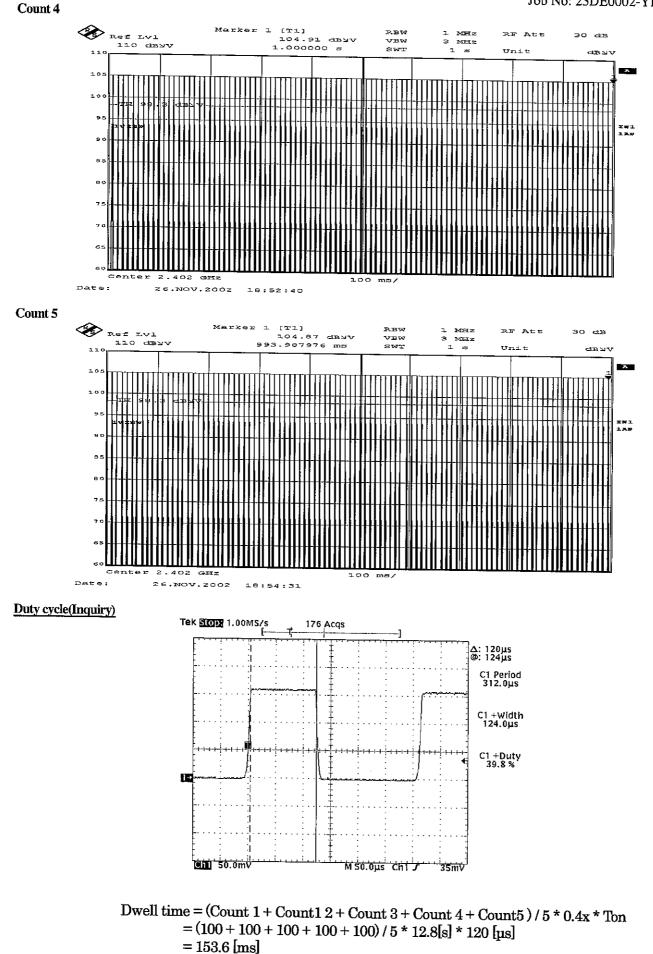
Dwell time = (Count 1 + Count 1 2 + Count 3 + Count 4 + Count 5)/5\*Ton = (102 + 102 + 102 + 101 + 101)/5\*2.90[ms] = 294.64 [ms]

### FCC ID: CWTUGPZ3 Job No: 23DE0002-YK-1

#### Dwell Time(Inquiry) Count 1



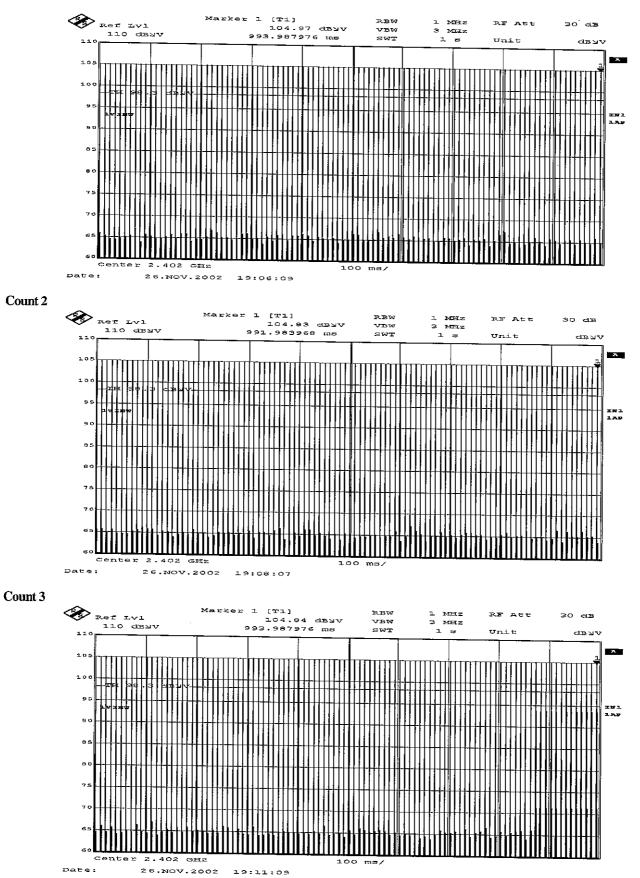
### FCC ID: CWTUGPZ3 Job No: 23DE0002-YK-1



Note.0.4x = 0.4 \* 32ch = 12.8[s]

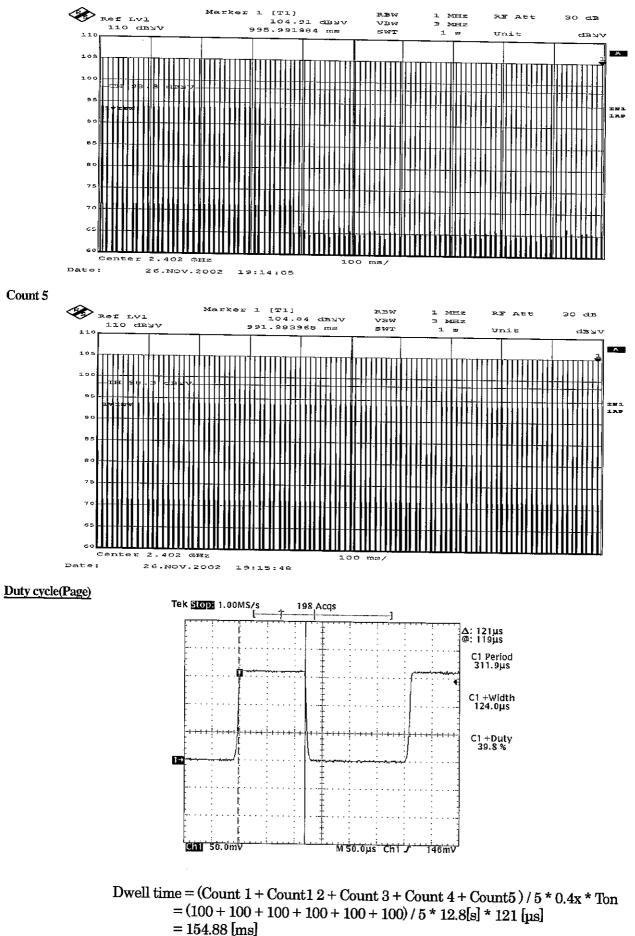
### FCC ID: CWTUGPZ3 Job No: 23DE0002-YK-1

#### Dwell Time(Page) Count 1



Count 4

### FCC ID: CWTUGPZ3 Job No: 23DE0002-YK-1



## <u>Peak Out Put Power (Conducted)</u>

A-PEX INTERNATIONAL CO., LTD. YAMAKITA NO. 1 OPEN SITE

COMPANY	:	Alps Electric Co Ltd.
EQUIPMENT	:	Bluetooth Transceiver Module
MODEL		UGPZ3
FCC ID	:	CWTUGPZ3
POWER	:	DC3. 3V (PC: AC120V/60Hz)
Mode		Transmitting

REPORT NO REGULATION DATE Temp./Humi.

: 23DE0002-YK-1 : Fcc Part15SubpartC 247 (b) (1) : 2002/ 11/26 : 20℃/51%

ENGINEER

Smanuna/ : Toyokazu Imamura

CH or Mode	FREQ [GHz]	PM Reading [dBm]	Limit [dBm]	MARGIN [dB]
Low	2402.00	1.64	30.0	28.36
High	2480.00	1. 62	30.0	28.38
Inquiry	-	1. 97	30.0	28.03
Page	-	1.83	30.0	28.17
Hopping	—	1. 89	20.96	19.07

Limit:1W=30dBm

Limit (Hopping) :125mW=20.96dBm

A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No. : 23DE0002-YK-1

Kind Mode Seri Powe Mode Rema Date Test Temp Humi	rks Distan erature	ce	ıt	: Blu : UPG : 11 : DC3 : Tra : Tra : Tx : 11/ : 3 m : 23 : 37	.3V(PC: nsmitti Antenna 20/2002 ℃	AC120 ng (240 Type	ceiver //60Hz) )2MHz) : YCE-5		Enginee	<u> </u>	In ann Toyoka	<u>una</u> zu İma	mura
No.	FREQ. [MHz]	ANT TYPE	REAL HOR [dB]		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESU HOR [dB µ V	ILT   VER //m] [dl	LIMITS BµV/m]	HOR	RGIN VER HB]
1. 2. 3. 4. 5. 6. 7.	$\begin{array}{c} 66.\ 75\\ 70.\ 93\\ 250.\ 01\\ 497.\ 84\\ 500.\ 25\\ 522.\ 25\\ 528.\ 02\\ \end{array}$	BB BB BB BB BB BB BB	36. 6 27. 4 29. 9 33. 9 28. 4 35. 0 31. 2	28. 0 35. 0 26. 4 36. 0 33. 3 32. 7 31. 8	7.2 6.6 16.8 19.0 19.0 19.2 19.2	28.6 28.5 27.8 29.1 29.1 29.5 29.5	2.0 2.1 4.2 6.2 6.2 6.4 6.4	$\begin{array}{c} 6. \ 1 \\ 6. \ 1 \\ 6. \ 1 \\ 6. \ 1 \\ 6. \ 1 \\ 6. \ 1 \\ 6. \ 1 \\ 6. \ 1 \\ 6. \ 1 \end{array}$	13.7 29.2 36.1 30.6 37.2	14.7 $21.3$ $25.7$ $38.2$ $35.5$ $34.9$ $34.0$	40.0 40.0 46.0 46.0 46.0 46.0 46.0	16.7 26.3 16.8 9.9 15.4 8.8 12.6	25. 3 18. 7 20. 3 7. 8 10. 5 11. 1 12. 0

CALCULATION: READING [dB  $\mu$  V] + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

■ANTENNA:KBA-01 (BBA9106) 30-299. 99MHz/KLA-01 (USLP9143) 300-1000MHz ■CABLE:KCC-10/11/12/13/18 ■PREAMP:KAF-01 (8447D) ■ENI RECEIVER:KTR-01 (ESI40)

A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No. : 23DE0002-YK-1

Kind Mode Seri Powe Mode Rema Date Test Temp Humi	rks Distan erature	ce	ıt	: Blu : UPG : 11 : DC3 : Tra : Tx : 11/ : 3 m : 23 : 37	.3V(PC: nsmitti Antenna 20/2002 °C	Transo AC120\ ng (248 Type:	ceiver //60Hz) 80MHz) : YCE-5	255	<i>(</i> Enginee	<u>).</u> r	Imm. Toyoka	runa. zu Ima	mura
No.	FREQ. [MHz]	ANT TYPE	REAL HOR [dB]		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESI HOR [dB µ V	JLT I VER V/m] [di	LIMITS 3µV/m]	HOR	RGIN VER HB]
1. 2. 3. 4. 5. 6. 7.	$\begin{array}{c} 66.\ 75\\ 70.\ 89\\ 250.\ 01\\ 497.\ 67\\ 500.\ 34\\ 522.\ 25\\ 528.\ 06\\ \end{array}$	BB BB BB BB BB BB BB	35. 1 38. 4 29. 4 33. 8 29. 3 36. 9 29. 8	32. 2 38. 8 26. 8 34. 4 33. 4 32. 8 31. 0	7.2 6.6 16.8 19.0 19.0 19.2 19.2	28. 6 28. 5 27. 8 29. 1 29. 1 29. 5 29. 5	$\begin{array}{c} 2.\ 0\\ 2.\ 1\\ 4.\ 2\\ 6.\ 2\\ 6.\ 2\\ 6.\ 4\\ 6.\ 4\end{array}$	$\begin{array}{c} 6.1\\ 6.1\\ 6.1\\ 6.1\\ 6.1\\ 6.1\\ 6.1\\ 6.1\\$	21. 8 24. 7 28. 7 36. 0 31. 5 39. 1 32. 0	18. 9 25. 1 26. 1 36. 6 35. 6 35. 0 33. 2	$\begin{array}{c} 40.\ 0\\ 40.\ 0\\ 46.\ 0\\ 46.\ 0\\ 46.\ 0\\ 46.\ 0\\ 46.\ 0\\ 46.\ 0\end{array}$	$18.2 \\ 15.3 \\ 17.3 \\ 10.0 \\ 14.5 \\ 6.9 \\ 14.0$	21. 1 14. 9 19. 9 9. 4 10. 4 11. 0 12. 8

CALCULATION: READING [dB  $\mu$  V] + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

■ ANTENNA: KBA-01 (BBA9106) 30-299. 99MHz/KLA-01 (USLP9143) 300-1000MHz ■ CABLE: KCC-10/11/12/13/18 ■ PREAMP: KAF-01 (8447D) ■ ENI RECEIVER: KTR-01 (ESI40)

A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No.: 23DE0002-YK-1

Kir Moc Ser Pow Moc Ren Dat Tes Ten Hun	le narks	ce	t	Blue UPG 11 DC3 Trai Trai 11/3 3 m 26 32	.3V(PC: nsmitti Antenna 21/2002 °C %	AC120V ng (240 Type:	ceiver (/60Hz) )2MHz) YCE-5	255	ngineer tion)	<u>).</u> r	Ancom Toyoka	<u>uur</u> zu Ima	mura
No.	FREQ. [MHz]	ANT TYPE	HOR	DING VER µV]	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESU HOR [dB µ V	VER	LIMITS BµV/m]	HOR	RGIN VER HB]
	[MHz]	TYPE	HOR [dB	VER μV]	FACTOR [dB/m]	GAIN [dB]	LOSS [dB]	[dB]	HOR [dB µ V	VER //m] [d	BμV/m]	HOR [	VER fB]
No.	[MHz] 2390.00		HOR	VER μV] 36.9	FACTOR [dB/m] 30.6	GAIN [dB] 36.7	LOSS [dB] 2.4	[dB] 0.0	HOR [dB µ V 32. 4	VER //m] [d 33.2	BμV/m] 54.0	HOR [6	VER [B] 20.8
 1.	[MHz]	TYPE BB	HOR [dB 36. 1	VER μV]	FACTOR [dB/m]	GAIN [dB] 36.7 37.1	LOSS [dB] 2.4 3.5	[dB]	HOR [dB μ V 32. 4 34. 8	VER //m] [d 33.2 43.4	BμV/m] 54.0 54.0	HOR [0 21.6 19.2	VER [B] 20.8 10.6
1. 2. 3. 4.	[MHz] 2390.00 4804.00	TYPE BB BB	HOR [dB 36. 1 33. 8 32. 2 32. 1	VER μ V] 36. 9 42. 4 32. 3 32. 1	FACTOR [dB/m] 30.6 34.6	GAIN [dB] 36.7	LOSS [dB] 2.4	[dB] 0.0 0.0	HOR [dB µ V 32. 4	VER //m] [d 33.2	BμV/m] 54.0	HOR [6 21.6 19.2 17.0	VER IB] 20.8 10.6 16.9
1. 2. 3. 4. 5.	[MHz] 2390.00 4804.00 7206.00 9608.00 12010.00	TYPE BB BB BB	HOR [dB 36. 1 33. 8 32. 2 32. 1 32. 3	VER µ V] 36. 9 42. 4 32. 3 32. 1 32. 4	FACTOR [dB/m] 30.6 34.6 37.6 39.0 42.0	GAIN [dB] 36. 7 37. 1 37. 0 37. 0 37. 0 36. 1	LOSS [dB] 2.4 3.5 4.2 5.2 5.6	[dB] 0.0 0.0 0.0	HOR [dB μ V 32. 4 34. 8 37. 0	VER //m] [d 33.2 43.4 37.1	BμV/m] 54.0 54.0 54.0	HOR [0 21.6 19.2	VER IB] 20.8 10.6 16.9 14.7
1. 2. 3. 4. 5. 6.	[MHz] 2390.00 4804.00 7206.00 9608.00 12010.00 14412.00	TYPE BB BB BB BB BB BB BB	HOR [dB 36. 1 33. 8 32. 2 32. 1 32. 3 31. 5	VER µV] 36.9 42.4 32.3 32.1 32.4 31.6	FACTOR [dB/m] 30.6 34.6 37.6 39.0 42.0 41.1	GAIN [dB] 36. 7 37. 1 37. 0 37. 0 37. 0 36. 1 35. 1	LOSS [dB] 2.4 3.5 4.2 5.2 5.6 6.3	[dB] 0.0 0.0 0.0 0.0	HOR [dB $\mu$ V 32. 4 34. 8 37. 0 39. 3 43. 8 43. 8	VER //m] [d 33.2 43.4 37.1 39.3	$\frac{B \mu V/m]}{54.0} \\ 54.0 \\ 5$	HOR 21.6 19.2 17.0 14.7	VER IB] 20.8 10.6 16.9
1. 2. 3. 4. 5. 6. 7.	[MHz] 2390.00 4804.00 7206.00 9608.00 12010.00 14412.00 16814.00	TYPE BB BB BB BB BB BB BB BB	HOR [dB 36. 1 33. 8 32. 2 32. 1 32. 3 31. 5 32. 0	VER µV] 36.9 42.4 32.3 32.1 32.4 31.6 32.1	FACTOR [dB/m] 30.6 34.6 37.6 39.0 42.0 41.1 41.6	GAIN [dB] 36. 7 37. 1 37. 0 37. 0 37. 0 36. 1 35. 1 34. 9	LOSS [dB] 2.4 3.5 4.2 5.2 5.6 6.3 6.5	[dB] 0.0 0.0 0.0 0.0 0.0 0.0	HOR [dB $\mu$ V 32. 4 34. 8 37. 0 39. 3 43. 8 43. 8 43. 8 45. 2	VER //m] [d 33. 2 43. 4 37. 1 39. 3 43. 9 43. 9 43. 9 45. 3	$     \begin{array}{r} B \mu V/m] \\             54.0 \\          $	HOR 21.6 19.2 17.0 14.7 10.2 10.2 8.8	VER HB] 20.8 10.6 16.9 14.7 10.1 10.1 8.7
1. 2. 3. 4. 5. 6. 7. 8.	[MHz] 2390.00 4804.00 7206.00 9608.00 12010.00 14412.00 16814.00 19216.00	TYPE BB BB BB BB BB BB BB BB BB BB	HOR [dB 36. 1 33. 8 32. 2 32. 1 32. 3 31. 5 32. 0 32. 0	VER µ V] 36. 9 42. 4 32. 3 32. 1 32. 4 31. 6 32. 1 32. 4	FACTOR [dB/m] 30.6 34.6 37.6 39.0 42.0 41.1 41.6 41.3	GAIN [dB] 36. 7 37. 1 37. 0 37. 0 37. 0 36. 1 35. 1 34. 9 34. 8	LOSS [dB] 2.4 3.5 4.2 5.2 5.6 6.3 6.5 7.2	[dB] 0.0 0.0 0.0 0.0 0.0 0.0 0.0	HOR [dB $\mu$ V 32. 4 34. 8 37. 0 39. 3 43. 8 43. 8 43. 8 45. 2 45. 7	VER //m] [d 33. 2 43. 4 37. 1 39. 3 43. 9 43. 9 43. 9 45. 3 46. 1	$ \begin{array}{c} B \ \mu \ V/m] \\ 54. \ 0 \\ 54.$	HOR 21. 6 19. 2 17. 0 14. 7 10. 2 10. 2 8. 8 8. 3	VER IB] 20.8 10.6 16.9 14.7 10.1 10.1 8.7 7.9
1. 2. 3. 4. 5. 6. 7.	[MHz] 2390.00 4804.00 7206.00 9608.00 12010.00 14412.00 16814.00 19216.00	TYPE BB BB BB BB BB BB BB BB	HOR [dB 36. 1 33. 8 32. 2 32. 1 32. 3 31. 5 32. 0	VER µV] 36.9 42.4 32.3 32.1 32.4 31.6 32.1	FACTOR [dB/m] 30.6 34.6 37.6 39.0 42.0 41.1 41.6	GAIN [dB] 36. 7 37. 1 37. 0 37. 0 37. 0 36. 1 35. 1 34. 9	LOSS [dB] 2.4 3.5 4.2 5.2 5.6 6.3 6.5	[dB] 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	HOR [dB $\mu$ V 32. 4 34. 8 37. 0 39. 3 43. 8 43. 8 43. 8 45. 2	VER //m] [d 33. 2 43. 4 37. 1 39. 3 43. 9 43. 9 43. 9 45. 3	$ \begin{array}{c} B \ \mu \ V/m] \\ 54. \ 0 \\ 54.$	HOR 21.6 19.2 17.0 14.7 10.2 10.2 8.8	VER HB] 20.8 10.6 16.9 14.7 10.1 10.1 8.7

CALCULATION: READING [dB  $\mu$  V] + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

■ANTENNA:KHA-01 (SAS-200 571)1-18GHz/KHA-03 (3160-09) 18-26, 5GHz ■CABLE:KCC-D3■PREAMP:KAF-02 (8449B) ■EM1 RECEIVER:KTR-01 (ES140)

A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No.: 23DE0002-YK-1

Kin Mod Ser Pow Mod Rem Dat Tes Tem Hum	le Iarks		ıt	: Blu : UPG : 11 : DC3 : Tra : Tra : Tx : 11/ : 3 m : 26 : 32	.3V(PC: nsmitti Antenna 21/2002 °C %	AC120V ng (248 Type:	ceiver //60Hz) 80MHz) YCE-5	255	nginee tion)	<u></u>	<u>Umm</u> Toyoka	<u>muna</u> zu Ima	mura
No.	FREQ.	ANT TYPE	REAI HOR		ANT FACTOR	AMP GAIN	CABLE LOSS	ATTEN.	RESU		LIMITS		RGIN
	[MHz]	IIIE		μV]	[dB/m]	[dB]	[dB]	[dB]	HOR [dBµV	VER V/m] [d]	BμV/m]	HOR [c	VER £B]
1.	2483.50	BB	50.3	50.1	30.6	36.7	2.4	0.0	46.6	46.4	54. 0	7.4	7.6
2.	2484.06	BB	50.7	50.8	30.6	36.7	2.4	0.0	47.0	47.1	54.0	7.0	6.9
3.	4960.00	BB	39.1	43.4	35.6	36.8	3.5	0.0	41.4	45.7	54.0	12.6	8.3
4. 5.	7440.00 9920.00	BB BB	32.1 32.3	32.1 32.3	38.0	36.9	4.3	0.0	37.5	37.5	54.0	16.5	16.5
5. 6.	12400,00	BB	32.5 31.4	32. 3 31. 3	39.0 42.6	36. 8 35. 6	5.4 5.7	0.0	39.9	39.9	54.0	14.1	14.1
7.	14880.00	BB	31.4 32.5	31. 5 32. 5	42.6	35. 6 35. 5	5.7 6.5	0.0 0.0	44. 1 46. 1	44.0 46.1	54.0	9.9 7.0	10.0
. 8.	17360.00	BB	32.3	32.3 32.4	42.0	33. 9 34. 9	6.7	0.0	46.8	46.9	54. 0 54. 0	$7.9 \\ 7.2$	7.9 7.1
9.	19840.00	BB	32.0	32.2	40.9	35.3	7.5	0.0	45.1	45.3	54.0 54.0	8.9	8.7
10.	22320.00	BB	33.1	33.1	41.4	35.3	7.2	0.0	46.4	46.4	54.0 54.0	7.6	7.6
11.	24800.00	BB	32.0	32.1	40.8	34.2	8.3	0.0	46.9	47.0	54.0	7.1	7.0
<u> </u>													

CALCULATION: READING[dB $\mu$ V] + ANT. FACTOR[dB/m] + CABLE LOSS[dB] - AMP. GAIN[dB] + ATTEN[dB].

■ ANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26. 5GHz ■ CABLE: KCC-D3 ■ PREAMP: KAF-02 (8449B) ■ EM1 RECEIVER: KTR-01 (ES140)

A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No. : 23DE0002-YK-1

Kind of EquipmentBluetooth TransceiverModel No.UPGZ3Serial No.11PowerDC3. 3V (PC:AC120V/60Hz)ModeTransmitting (2402MHz)RemarksTx Antenna Type: YCE-Date11/21/2002Test Distance3 mTemperature26 °CHumidity32 %RegulationFCC Part15C § 15. 209	-5255 Engineer : Toyokazu Imamura
No. FREQ. ANT READING ANT AMP CABLE TYPE HOR VER FACTOR GAIN LOSS	
TYPEHORVERFACTORGAINLOSS $[MHz]$ $[dB \mu V]$ $[dB/m]$ $[dB]$ $[dB]$	
1. 2390.00 BB 49.4 50.5 30.6 36.7 2.	
2.         4804.00         BB         47.4         49.7         34.6         37.1         3.           3.         7206.00         BB         44.8         45.2         37.6         37.0         4.	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
5. 12010.00 BB 45.2 44.9 42.0 36.1 5.	
6. 14412.00 BB 44.2 44.4 41.1 35.1 6.	
7. 16814.00 BB 44.7 44.7 41.6 34.9 6.	5 0.0 57.9 57.9 74.0 16.1 16.1
8. 19216.00 BB 44.7 45.5 41.3 34.8 7.	2 0.0 58.4 59.2 74.0 15.6 14.8
9. 21618.00 BB 45.4 45.6 41.3 34.9 7.	
10. 24020. 00 BB 44. 4 45. 2 40. 5 34. 6 8.	1 0.0 58.4 59.2 74.0 15.6 14.8

CALCULATION: READING  $[dB \mu V]$  + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

■ANTENNA:KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26. 5GHz ■CABLE:KCC-D3 ■ PREAMP:KAF-02 (8449B) ■ EMI RECEIVER:KTR-01 (ESI40)

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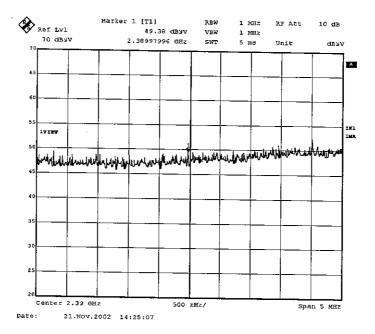
Kin Mod Ser Pow Mod Rem Dat Tes Tem Hum	le Iarks		t	<ul> <li>Blue</li> <li>UPG:</li> <li>11</li> <li>DC3:</li> <li>Trai</li> <li>Trai</li> <li>Tx //</li> <li>3 m</li> <li>26</li> <li>32</li> </ul>	.3V(PC: nsmitti Antenna 21/2002 °C %	Transc AC120V ng (248 Type:	ceiver //60Hz) 80MHz) YCE-5	255	nginee tion)	<u> </u>	<u>Inc</u> Toyoka	<i>u<u>mu</u>u</i> zu Ima	<u>122/</u> mura
No.	FREQ. AL		REAL		ANT	AMP	CABLE	ATTEN.	RESU		LIMITS		RGIN
	[MHz]	YPE	HOR [dB]	νεκ μ V]	FACTOR [dB/m]	GAIN [dB]	LOSS [dB]	[dB]	HOR [dB µ V	VER //m] [d	BμV/m]	HOR [c	VER 1B]
1.		BB	62.8	62.3	30.6	36.7	2.4	0.0	59.1	58.6	74.0	14.9	15.4
2.		BB	62.9	62.5	30.6	36.7	2.4	0.0	59.2	58.8	74.0	14.8	15.2
3. 4.		BB BB	47.8 44.7	50.7 44.4	35.6 38.0	36.8	3.5	0.0	50.1	53.0	74.0	23.9	21.0
4. 5.		BB	44. 7 45. 6	44.4 45.2	38.0 39.0	36.9 36.8	4.3 5.4	0.0 0.0	$50.1 \\ 53.2$	49. 8 52. 8	74.0 74.0	23. 9 20. 8	24.2 21.2
6.		BB	44.4	44.2	42.6	35.6	5.7	0.0	53.2 57.1	52, 8 56, 9	74.0 74.0	20.8 16.9	17.1
7.		BB	45.2	45.1	42.6	35.5	6.5	0.0	58.8	58.7	74.0	15.2	15.3
8.		BB	44.8	45.5	42.7	34.9	6.7	0.0	59.3	60.0	74.0	14.7	14.0
9.		BB	44.6	45.2	40.9	35.3	7.5	0.0	57.7	58.3	74.0	16.3	15.7
10.		BB	45, 8	45.6	41.4	35.3	7.2	0.0	59.1	58.9	74.0	14.9	15.1
11.	24800.00 I	BB	44.7	44.7	40.8	34.2	8, 3	0.0	59.6	59.6	74.0	14.4	14.4
											<b>-</b>		

CALCULATION: READING [dB $\mu$ V] + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

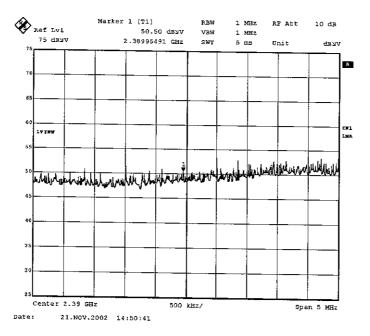
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■ANTENNA: KHA-01 (SAS-200 571) 1~18GHz/KHA-03 (3160-09) 18-26. 5GHz ■CABLE: KCC-D3 ■ PREAMP: KAF-02 (8449B) ■ENI RECEIVER: KTR-01 (ESI40) Antenna Type:YCE-5255

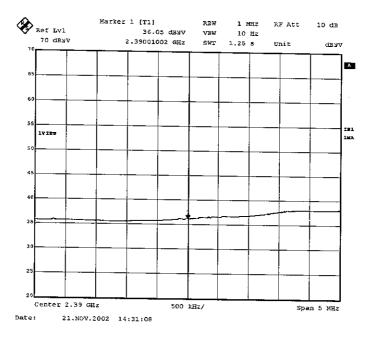
## 2.39GHz (Ch :2402MHz) 1. Horizontal/PK



#### 2. Vertical/PK



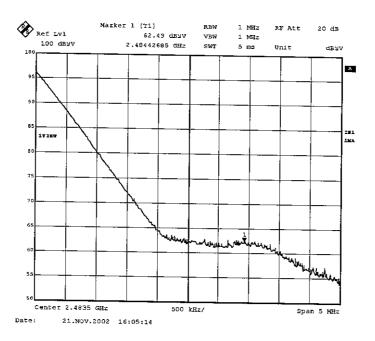
### 3. Horizontal/ AV



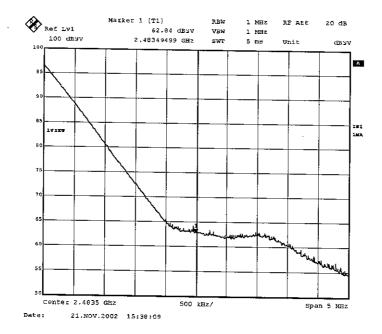
### 4. Vertical/ AV

Ref LV1 75 dBNV	Mark		] .92 dBNV 5491 GRZ		10	HZ	RF Att	
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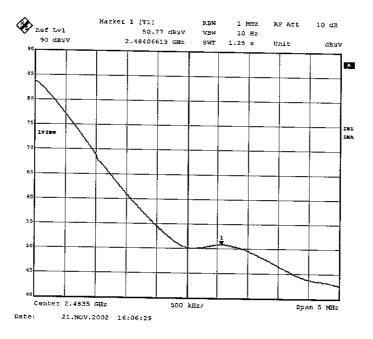
## 2.4835GHz (Ch :2480MHz) 1. Horizontal/PK



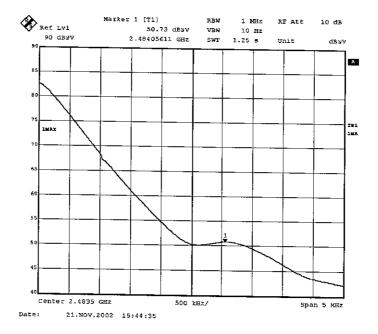
### 2. Vertical/PK



### 3. Horizontal/ AV



### 4. Vertical/ AV



A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No. : 23DE0002-YK-1

Kind Mode Seri Powe Rema Date Test Temp Humi	e Irks	ce		Blu UPG 11 DC3 Tra Tra 11/ 3 m 23 37	.3V(PC: nsmitti Antenna 20/2002 °C	AC120 ng (240 Type:	ceiver //60Hz) D2NHz) SSW24	00	Enginee	<u></u> r :	Imo Toyoka	zu Ima	<i>e</i> mura
No.	FREQ. [MHz]	ANT TYPE	HOR	DING VER µV]	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESI HOR [dB µ V	ULT ! VER V/m] [d]	LIMITS 3µV/m]	HOR	RGIN VER HB]
1. 2. 3. 4. 5. 6. 7.	$\begin{array}{c} 66.\ 75\\ 70.\ 89\\ 250.\ 01\\ 497.\ 67\\ 500.\ 43\\ 522.\ 24\\ 528.\ 03\\ \end{array}$	BB BB BB BB BB BB BB	33. 4 38. 9 29. 1 33. 8 30. 7 37. 7 29. 3	30. 8 39. 4 26. 9 34. 7 31. 8 33. 4 29. 3	7.2 6.6 16.8 19.0 19.0 19.2 19.2	28. 6 28. 5 27. 8 29. 1 29. 1 29. 5 29. 5	$\begin{array}{c} 2.0\\ 2.1\\ 4.2\\ 6.2\\ 6.2\\ 6.4\\ 6.4\\ 6.4 \end{array}$	$\begin{array}{c} 6.1\\ 6.1\\ 6.1\\ 6.1\\ 6.1\\ 6.1\\ 6.1\\ 6.1\\$	$\begin{array}{c} 20.\ 1\\ 25.\ 2\\ 28.\ 4\\ 36.\ 0\\ 32.\ 9\\ 39.\ 9\\ 31.\ 5\end{array}$	17.525.726.236.934.035.631.5	$\begin{array}{c} 40.\ 0\\ 40.\ 0\\ 46.\ 0\\ 46.\ 0\\ 46.\ 0\\ 46.\ 0\\ 46.\ 0\end{array}$	19.9 14.8 17.6 10.0 13.1 6.1 14.5	22. 5 14. 3 19. 8 9. 1 12. 0 10. 4 14. 5

CALCULATION: READING [dB  $\mu$  V] + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

ANTENNA: KBA-01 (BBA9106) 30-299. 99MHz/KLA-01 (USLP9143) 300-1000MHz CABLE: KCC-10/11/12/13/18 PREAMP: KAF-01 (8447D) EMI RECEIVER: KTR-01 (ESI40)

A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No.: 23DE0002-YK-1

Kind Mode Seri Powe Mode Rema Date Test Temp Humi	rks	Ce	t .	: Blu : UPG : 11 : DC3 : Tra : Tx : 11/ : 3 m : 23 : 37	.3V(PC: nsmitti Antenna 20/2002 °C	Transo AC120 ng (24 Type)	ceiver V/60Hz) BOMHz) SSW24		e Enginee	<u>)</u> r	<u>Inom</u> Toyoka	2 <u>11-6</u> zu Ima	mura
No.	FREQ.	ANT TYPE	HOR	DING VER µV]	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESU HOR [dB µ V	VER	LIMITS BµV/m]	HOR	RGIN VER dB]
1. 2. 3. 4. 5. 6. 7.	$\begin{array}{c} 66.\ 75\\ 71.\ 00\\ 250.\ 02\\ 497.\ 80\\ 500.\ 23\\ 522.\ 26\\ 528.\ 06\\ \end{array}$	BB BB BB BB BB BB BB	29. 8 40. 1 29. 0 35. 6 29. 3 36. 8 29. 3	31. 7 35. 2 26. 4 37. 4 32. 0 32. 6 30. 0	16.8 19.0 19.0	28.6 28.5 27.8 29.1 29.1 29.5 29.5	2.1 4.2 6.2 6.2	6. 1 6. 1 6. 1 6. 1 6. 1 6. 1 6. 1	26. 4 28. 3 37. 8 31. 5 39. 0	18. 4 21. 5 25. 7 39. 6 34. 2 34. 8 32. 2	40.0 40.0 46.0 46.0 46.0 46.0 46.0	$23.5 \\ 13.6 \\ 17.7 \\ 8.2 \\ 14.5 \\ 7.0 \\ 14.5$	21.6 18.5 20.3 6.4 11.8 11.2 13.8

CALCULATION: READING[dB $\mu$ V] + ANT. FACTOR[dB/m] + CABLE LOSS[dB] - AMP. GAIN[dB] + ATTEN[dB].

ANTENNA: KBA-01 (BBA9106) 30-299. 99MHz/KLA-01 (USLP9143) 300-1000MHz CABLE: KCC-10/11/12/13/18 PREAMP: KAF-01 (8447D) ENI RECEIVER: KTR-01 (ESI40)

A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No.: 23DE0002-YK-1

Moc Ser Pow Moc Ren Dat Tes Ten Hun	le Iarks		ιt	<ul> <li>Blue</li> <li>UPG:</li> <li>11</li> <li>DC3:</li> <li>Trai</li> <li>Tx /</li> <li>11/3</li> <li>3 m</li> <li>23 °</li> <li>36 °</li> </ul>	.3V(PC: nsmitti Antenna 22/2002 °C %	AC120 ng (240 Type	ceiver //60Hz) D2MHz) SSW24	00	nginee tion)	<b>r</b> :	T <u>. Inn</u> Toyoka	<u>r/m.//</u> zu Ima	mura
	FREQ.	ANT	REAI	DING	ANT	AMP	CABLE	ATTEN.	RESI	ULT	LIMITS	MA	RGIN
No.		min			DIAMOD	A 1 T 11	1000						
No.		TYPE	HOR		FACTOR [dB/m]	GAIN [dB]	LOSS [dB]	[dB]	HOR	VER	lBμV/m]	HOR	VER dB]
1.	[MHz] 2390.00	BB	HOR [dB] 36.5	VER μ V] 37.0	[dB/m] 	[dB] 	[dB] 2.4	[dB] 0.0	HOR [dB µ ] 32.8	VER V/m] [d 33.3	54.0	HOR [4 21.2	VER dB]  20.7
1. 2.	[MHz] 2390.00 4804.00	BB BB	HOR [dB] 36.5 46.5	VER μV] 37.0 44.6	[dB/m] 30.6 34.6	[dB] 36. 7 37. 1	[dB] 2.4 3.5	[dB] 0.0 0.0	HOR [dB μ V 32.8 47.5	VER V/m] [d 33.3 45.6	54. 0 54. 0	HOR 21.2 6.5	VER dB] 20.7 8.4
1. 2. 3.	[MHz] 2390.00 4804.00 7206.00	BB BB BB	HOR [dB] 36.5 46.5 32.5	VER μV] 37.0 44.6 32.4	[dB/m] 30.6 34.6 37.6	[dB] 36. 7 37. 1 37. 0	[dB] 2.4 3.5 4.2	[dB] 0.0 0.0 0.0	HOR [dB μ ] 32. 8 47. 5 37. 3	VER V/m] [d 33.3 45.6 37.2	54. 0 54. 0 54. 0	HOR 21.2 6.5 16.7	VER dB] 20.7 8.4 16.8
1. 2. 3. 4.	[MHz] 2390.00 4804.00 7206.00 9608.00	BB BB BB BB	HOR [dB] 36. 5 46. 5 32. 5 32. 4	VER μ V] 37. 0 44. 6 32. 4 32. 3	[dB/m] 30.6 34.6 37.6 39.0	[dB] 36.7 37.1 37.0 37.0	[dB] 2.4 3.5 4.2 5.2	[dB] 0.0 0.0 0.0 0.0	HOR [dB μ 32. 8 47. 5 37. 3 39. 6	VER [d] 33.3 45.6 37.2 39.5	54. 0 54. 0 54. 0 54. 0 54. 0	HOR 21. 2 6. 5 16. 7 14. 4	VER dB] 20. 7 8. 4 16. 8 14. 5
1. 2. 3. 4. 5.	[MHz] 2390.00 4804.00 7206.00 9608.00 12010.00	BB BB BB BB BB BB	HOR [dB] 36. 5 46. 5 32. 5 32. 4 32. 5	VER μ V] 37. 0 44. 6 32. 4 32. 3 32. 6	[dB/m] 30.6 34.6 37.6 39.0 42.0	[dB] 36.7 37.1 37.0 37.0 36.1	[dB] 2.4 3.5 4.2 5.2 5.6	[dB] 0.0 0.0 0.0 0.0 0.0 0.0	HOR [dB $\mu$ V 32. 8 47. 5 37. 3 39. 6 44. 0	VER V/m] [d 33.3 45.6 37.2 39.5 44.1	$54.0 \\ 54.0 \\ 54.0 \\ 54.0 \\ 54.0 \\ 54.0 \\ 54.0 \\ 54.0 \\ $	HOR 21. 2 6. 5 16. 7 14. 4 10. 0	VER dB] 20.7 8.4 16.8 14.5 9.9
1. 2. 3. 4. 5. 6.	[MHz] 2390.00 4804.00 7206.00 9608.00 12010.00 14412.00	BB BB BB BB BB BB BB	HOR [dB] 36. 5 46. 5 32. 5 32. 4 32. 5 31. 7	VER μ V] 37. 0 44. 6 32. 4 32. 3 32. 6 31. 8	[dB/m] 30.6 34.6 37.6 39.0 42.0 41.1	[dB] 36. 7 37. 1 37. 0 37. 0 36. 1 35. 1	[dB] 2.4 3.5 4.2 5.2 5.6 6.3	[dB] 0.0 0.0 0.0 0.0 0.0 0.0 0.0	HOR [dB $\mu$ V 32. 8 47. 5 37. 3 39. 6 44. 0 44. 0	VER V/m] [d 33.3 45.6 37.2 39.5 44.1 44.1	$54. 0 \\ 54. $	HOR 21. 2 6. 5 16. 7 14. 4 10. 0 10. 0	VER dB] 20.7 8.4 16.8 14.5 9.9 9.9
1. 2. 3. 4. 5. 6. 7.	[MHz] 2390.00 4804.00 7206.00 9608.00 12010.00 14412.00 16814.00	BB BB BB BB BB BB BB BB	HOR [dB] 36. 5 46. 5 32. 5 32. 4 32. 5 31. 7 32. 2	VER μ V] 37. 0 44. 6 32. 4 32. 3 32. 6 31. 8 32. 3	[dB/m] 30.6 34.6 37.6 39.0 42.0 41.1 41.6	[dB] 36. 7 37. 1 37. 0 37. 0 36. 1 35. 1 34. 9	[dB] 2.4 3.5 4.2 5.2 5.6 6.3 6.5	[dB] 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	HOR $[dB \mu] V$ 32. 8 47. 5 37. 3 39. 6 44. 0 44. 0 45. 4	VER V/m] [d 33.3 45.6 37.2 39.5 44.1 44.1 45.5	$54. 0 \\ 54. $	HOR 21. 2 6. 5 16. 7 14. 4 10. 0 10. 0 8. 6	VER dB] 20.7 8.4 16.8 14.5 9.9 9.9 9.9 8.5
1. 2. 3. 4. 5. 6.	[MHz] 2390.00 4804.00 7206.00 9608.00 12010.00 14412.00	BB BB BB BB BB BB BB	HOR [dB] 36. 5 46. 5 32. 5 32. 4 32. 5 31. 7	VER μ V] 37. 0 44. 6 32. 4 32. 3 32. 6 31. 8	[dB/m] 30.6 34.6 37.6 39.0 42.0 41.1	[dB] 36. 7 37. 1 37. 0 37. 0 36. 1 35. 1	[dB] 2.4 3.5 4.2 5.2 5.6 6.3	[dB] 0.0 0.0 0.0 0.0 0.0 0.0 0.0	HOR [dB $\mu$ V 32. 8 47. 5 37. 3 39. 6 44. 0 44. 0	VER V/m] [d 33.3 45.6 37.2 39.5 44.1 44.1	$54. 0 \\ 54. $	HOR 21. 2 6. 5 16. 7 14. 4 10. 0 10. 0	VER dB] 20.7 8.4 16.8 14.5 9.9 9.9

CALCULATION: READING [dB  $\mu$  V] + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

MANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26. 5GHz CABLE: KCC-D3 PREAMP: KAF-02 (8449B) EMI RECEIVER: KTR-01 (ESI40)

A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No. : 23DE0002-YK-1

Mod Ser Pow Mod Rem Dat Tes Tem Hum	le Iarks			: Blue UPG: 11 DC3 : Trai Trai 11/2 3 m : 23 ° : 36	Z3 . 3V (PC: nsmitti Antenna 22/2002 °C %	Transo AC120\ ng (248 Type:	ceiver //60Hz) 30MHz) SSW24		nginee tion)	r :	Y. Toyoka	<u>Incin</u> zu Ima	<u>una</u> mura
No.	FREQ.	ANT TYPE	REAL HOR		ANT FACTOR	AMP GAIN	CABLE LOSS	ATTEN.	RESI HOR	ULT VER	LIMITS	MAI HOR	RGIN VER
		1111		V 1 5 IX	PAUMUN	17411	LU33			VPR			
	[MHz]			μV]	[dB/m]	[dB]	[dB]	[dB]			lBμV/m]		dB]
1.	2483.50	BB	[dB] 51.2	μV]  50.9	[dB/m] 30.6	[dB] 	[dB] 	[dB] 0.0		V/m] [d 	lBμV/m] 54.0		dB]  6.8
2.	2483. 50 2484. 10	BB BB	[dB] 51.2 51.7	μV] 50.9 51.6	[dB/m] 30.6 30.6	[dB] 36. 7 36. 7	[dB] 2.4 2.4	0. 0 0. 0	[dB μ ] 47. 5 48. 0	V/m] [d 47.2 47.9	54. 0 54. 0	6.5 6.0	dB]  6. 8 6. 1
2. 3.	2483.50 2484.10 4960.00	BB BB BB	[dB, 51.2 51.7 45.0	μV] 50.9 51.6 43.3	[dB/m] 30.6 30.6 35.6	[dB] 36.7 36.7 36.8	[dB] 2.4 2.4 3.5	0.0 0.0 0.0	[dB μ ] 47.5 48.0 47.3	V/m] [d 47.2 47.9 45.6	54. 0 54. 0 54. 0	6.5 6.0 6.7	dB] 6. 8 6. 1 8. 4
2. 3. 4.	2483.50 2484.10 4960.00 7440.00	BB BB BB BB	[dB, 51.2 51.7 45.0 32.1	μ V] 50.9 51.6 43.3 32.2	[dB/m] 30.6 30.6 35.6 38.0	[dB] 36.7 36.7 36.8 36.9	[dB] 2.4 2.4 3.5 4.3	0.0 0.0 0.0 0.0	[dB µ ] 47.5 48.0 47.3 37.5	V/m] [d 47.2 47.9 45.6 37.6	54. 0 54. 0 54. 0 54. 0 54. 0	6.5 6.0 6.7 16.5	dB] 6.8 6.1 8.4 16.4
2. 3. 4. 5.	2483.50 2484.10 4960.00 7440.00 9920.00	BB BB BB BB BB	[dB, 51. 2 51. 7 45. 0 32. 1 32. 6	μ V] 50. 9 51. 6 43. 3 32. 2 32. 9	[dB/m] 30.6 30.6 35.6 38.0 39.0	[dB] 36.7 36.7 36.8 36.9 36.8	[dB] 2.4 2.4 3.5 4.3 5.4	0.0 0.0 0.0 0.0 0.0 0.0	$\begin{bmatrix} dB \mu \\ 47.5 \\ 48.0 \\ 47.3 \\ 37.5 \\ 40.2 \end{bmatrix}$	V/m] [d 47.2 47.9 45.6 37.6 40.5	54.0 54.0 54.0 54.0 54.0 54.0	6.5 6.0 6.7 16.5 13.8	dB] 6.8 6.1 8.4 16.4 13.5
2. 3. 4. 5. 6.	2483.50 2484.10 4960.00 7440.00 9920.00 12400.00	BB BB BB BB BB BB	[dB] 51. 2 51. 7 45. 0 32. 1 32. 6 31. 5	μV] 50.9 51.6 43.3 32.2 32.9 31.6	[dB/m] 30.6 30.6 35.6 38.0 39.0 42.6	[dB] 36. 7 36. 7 36. 8 36. 9 36. 8 35. 6	[dB] 2.4 2.4 3.5 4.3 5.4 5.7	0.0 0.0 0.0 0.0 0.0 0.0 0.0	[dB µ ] 47.5 48.0 47.3 37.5 40.2 44.2	V/m] [d 47.2 47.9 45.6 37.6 40.5 44.3	54.0 54.0 54.0 54.0 54.0 54.0 54.0	6.5 6.0 6.7 16.5 13.8 9.8	dB] 6. 8 6. 1 8. 4 16. 4 13. 5 9. 7
2. 3. 4. 5. 6. 7.	2483.50 2484.10 4960.00 7440.00 9920.00 12400.00 14880.00	BB BB BB BB BB BB BB BB	[dB] 51. 2 51. 7 45. 0 32. 1 32. 6 31. 5 32. 6	$\mu$ V] 50. 9 51. 6 43. 3 32. 2 32. 9 31. 6 32. 7	[dB/m] 30.6 35.6 38.0 39.0 42.6 42.6	[dB] 36. 7 36. 7 36. 8 36. 9 36. 8 35. 6 35. 5	[dB] 2.4 2.4 3.5 4.3 5.4 5.7 6.5	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	$\begin{bmatrix} dB \mu \\ 47.5 \\ 48.0 \\ 47.3 \\ 37.5 \\ 40.2 \\ 44.2 \\ 46.2 \end{bmatrix}$	V/m] [d 47.2 47.9 45.6 37.6 40.5 44.3 46.3	$54.0 \\ $	6.5 6.0 6.7 16.5 13.8 9.8 7.8	dB] 6. 8 6. 1 8. 4 16. 4 13. 5 9. 7 7. 7
2. 3. 4. 5. 6. 7. 8.	$\begin{array}{c} 2483.50\\ 2484.10\\ 4960.00\\ 7440.00\\ 9920.00\\ 12400.00\\ 14880.00\\ 17360.00 \end{array}$	BB BB BB BB BB BB BB BB	[dB] 51. 2 51. 7 45. 0 32. 1 32. 6 31. 5 32. 6 32. 6	$\mu$ V] 50. 9 51. 6 43. 3 32. 2 32. 9 31. 6 32. 7 32. 9	[dB/m] 30.6 35.6 38.0 39.0 42.6 42.6 42.7	[dB] 36. 7 36. 7 36. 8 36. 9 36. 8 35. 6 35. 5 34. 9	[dB] 2.4 2.4 3.5 4.3 5.4 5.7 6.5 6.7	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	$\begin{bmatrix} dB \mu \\ 47.5 \\ 48.0 \\ 47.3 \\ 37.5 \\ 40.2 \\ 44.2 \\ 46.2 \\ 47.1 \end{bmatrix}$	V/m] [d 47.2 47.9 45.6 37.6 40.5 44.3 46.3 47.4	54. 0 54. 0 54. 0 54. 0 54. 0 54. 0 54. 0 54. 0 54. 0	6.5 6.0 6.7 16.5 13.8 9.8 7.8 6.9	dB]           6.8           6.1           8.4           16.4           13.5           9.7           7.7           6.6
2. 3. 4. 5. 6. 7.	2483.50 2484.10 4960.00 7440.00 9920.00 12400.00 14880.00	BB BB BB BB BB BB BB BB	[dB] 51. 2 51. 7 45. 0 32. 1 32. 6 31. 5 32. 6	$\mu$ V] 50. 9 51. 6 43. 3 32. 2 32. 9 31. 6 32. 7	[dB/m] 30.6 35.6 38.0 39.0 42.6 42.6	[dB] 36. 7 36. 7 36. 8 36. 9 36. 8 35. 6 35. 5	[dB] 2.4 2.4 3.5 4.3 5.4 5.7 6.5	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	$\begin{bmatrix} dB \mu \\ 47.5 \\ 48.0 \\ 47.3 \\ 37.5 \\ 40.2 \\ 44.2 \\ 46.2 \end{bmatrix}$	V/m] [d 47.2 47.9 45.6 37.6 40.5 44.3 46.3	$54.0 \\ $	6.5 6.0 6.7 16.5 13.8 9.8 7.8	dB] 6. 8 6. 1 8. 4 16. 4 13. 5 9. 7 7. 7

CALCULATION: READING[dB $\mu$ V] + ANT. FACTOR[dB/m] + CABLE LOSS[dB] - AMP. GAIN[dB] + ATTEN[dB].

■ ANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26. 5GHz ■ CABLE: KCC-D3 ■ PREAMP: KAF-02 (8449B) ■ ENI RECEIVER: KTR-01 (ESI40)

A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No.: 23DE0002-YK-1

Mod Ser Pow Mod Rem Dat Tes Tem Hum	le Iarks	ce	t	Blu UPG 11 DC3 Tra Tx 11/ 3 m 23 36	.3V(PC: nsmitti Antenna 22/2002 °C %	Transc AC120V ng (240 Type:	eiver //60Hz) )2MHz) SSW24	00	nginee tion)	; r :	. Jm. Toyoka	<u>Ømu</u> zu Ima	Wr mura
													÷
No.	FREQ.	ANT		DING	ANT	AMP	CABLE	ATTEN.	RESU		LIMITS		RGIN
No.	FREQ. [MHz]	ANT TYPE	HOR		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	HOR	VER	LIMITS  BµV/m]	HOR	RGIN VER 1B]
1.	[MHz] 2390.00	TYPE BB	HOR [dB] 47.3	VER μ V] 48.8	FACTOR [dB/m] 30.6	GAIN [dB] 36.7	LOSS [dB] 2.4	[dB] 0.0	HOR [dB µ ] 43. 6	VER V/m] [d 	lBμV/m] 74.0	HOR [0 30. 4	VER 1B] 28.9
1. 2.	[MHz] 2390.00 4804.00	TYPE BB BB	HOR [dB] 47.3 53.5	VER μV] 48.8 52.8	FACTOR [dB/m] 30.6 34.6	GAIN [dB] 36. 7 37, 1	LOSS [dB] 2.4 3.5	[dB] 0.0 0.0	HOR $[dB \mu]$ 43. 6 54. 5	VER V/m] [d 45.1 53.8	BμV/m] 74.0 74.0	HOR [4 30. 4 19. 5	VER 1B] 28.9 20.2
1. 2. 3.	[MHz] 2390.00 4804.00 7206.00	TYPE BB BB BB	HOR [dB] 47.3 53.5 44.8	VER μ V] 48.8 52.8 45.3	FACTOR [dB/m] 30.6 34.6 37.6	GAIN [dB] 36. 7 37. 1 37. 0	LOSS [dB] 2.4 3.5 4.2	[dB] 0.0 0.0 0.0	HOR $[dB \mu]$ 43. 6 54. 5 49. 6	VER V/m] [d 45.1 53.8 50.1	lBμV/m] 74.0 74.0 74.0 74.0	HOR [4 30. 4 19. 5 24. 4	VER 1B] 28.9 20.2 23.9
1. 2. 3. 4.	[MHz] 2390.00 4804.00 7206.00 9608.00	TYPE BB BB BB BB BB	HOR [dB] 47. 3 53. 5 44. 8 45. 4	VER μ V] 48. 8 52. 8 45. 3 44. 7	FACTOR [dB/m] 30.6 34.6 37.6 39.0	GAIN [dB] 36.7 37.1 37.0 37.0	LOSS [dB] 2.4 3.5 4.2 5.2	[dB] 0.0 0.0 0.0 0.0 0.0	HOR $[dB \mu]$ 43. 6 54. 5 49. 6 52. 6	VER V/m] [d 45.1 53.8 50.1 51.9	lBμV/m] 74.0 74.0 74.0 74.0 74.0	HOR 30. 4 19. 5 24. 4 21. 4	VER 1B] 28.9 20.2 23.9 22.1
1. 2. 3. 4. 5.	[MHz] 2390.00 4804.00 7206.00 9608.00 12010.00	TYPE BB BB BB BB BB BB	HOR [dB] 47. 3 53. 5 44. 8 45. 4 45. 0	VER μ V] 48. 8 52. 8 45. 3 44. 7 45. 4	FACTOR [dB/m] 30.6 34.6 37.6 39.0 42.0	GAIN [dB] 36. 7 37. 1 37. 0 37. 0 36. 1	LOSS [dB] 2.4 3.5 4.2 5.2 5.6	[dB] 0.0 0.0 0.0 0.0 0.0 0.0	HOR $[dB \mu]$ 43. 6 54. 5 49. 6 52. 6 56. 5	VER V/m] [d 45.1 53.8 50.1 51.9 56.9	BμV/m] 74.0 74.0 74.0 74.0 74.0 74.0	HOR [0 30. 4 19. 5 24. 4 21. 4 17. 5	VER iB] 28.9 20.2 23.9 22.1 17.1
1. 2. 3. 4. 5. 6.	[MHz] 2390.00 4804.00 7206.00 9608.00 12010.00 14412.00	TYPE BB BB BB BB BB BB BB	HOR [dB] 47. 3 53. 5 44. 8 45. 4 45. 0 44. 7	VER μ V] 48. 8 52. 8 45. 3 44. 7 45. 4 44. 3	FACTOR [dB/m] 30.6 34.6 37.6 39.0 42.0 41.1	GAIN [dB] 36. 7 37. 1 37. 0 37. 0 37. 0 36. 1 35. 1	LOSS [dB] 2.4 3.5 4.2 5.2 5.6 6.3	[dB] 0.0 0.0 0.0 0.0 0.0 0.0 0.0	HOR $[dB \mu]$ 43. 6 54. 5 49. 6 52. 6 56. 5 57. 0	VER V/m] [d 45. 1 53. 8 50. 1 51. 9 56. 9 56. 6	$\frac{[B \ \mu \ V/m]}{74.0}$ 74.0 74.0 74.0 74.0 74.0 74.0 74.0 74.0	HOR 30. 4 19. 5 24. 4 21. 4 17. 5 17. 0	VER iB] 28.9 20.2 23.9 22.1 17.1 17.4
1. 2. 3. 4. 5.	[MHz] 2390.00 4804.00 7206.00 9608.00 12010.00 14412.00 16814.00	TYPE BB BB BB BB BB BB	HOR [dB] 47. 3 53. 5 44. 8 45. 4 45. 0 44. 7 45. 2	VER μ V] 48. 8 52. 8 45. 3 44. 7 45. 4 44. 3 45. 5	FACTOR [dB/m] 30.6 34.6 37.6 39.0 42.0 41.1 41.6	GAIN [dB] 36. 7 37. 1 37. 0 37. 0 36. 1 35. 1 34. 9	LOSS [dB] 2.4 3.5 4.2 5.2 5.6 6.3 6.5	[dB] 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	HOR $[dB \mu]$ 43. 6 54. 5 49. 6 52. 6 56. 5 57. 0 58. 4	VER V/m] [d 45.1 53.8 50.1 51.9 56.9 56.6 58.7	$\frac{18 \ \mu \ V/m]}{74.0}$ 74.0 74.0 74.0 74.0 74.0 74.0 74.0 74.0	HOR 30. 4 19. 5 24. 4 21. 4 17. 5 17. 0 15. 6	VER [B] 28.9 20.2 23.9 22.1 17.1 17.4 15.3
1. 2. 3. 4. 5. 6. 7.	[MHz] 2390.00 4804.00 7206.00 9608.00 12010.00 14412.00	TYPE BB BB BB BB BB BB BB BB	HOR [dB] 47. 3 53. 5 44. 8 45. 4 45. 0 44. 7	VER μ V] 48. 8 52. 8 45. 3 44. 7 45. 4 44. 3	FACTOR [dB/m] 30.6 34.6 37.6 39.0 42.0 41.1	GAIN [dB] 36. 7 37. 1 37. 0 37. 0 37. 0 36. 1 35. 1	LOSS [dB] 2.4 3.5 4.2 5.2 5.6 6.3	[dB] 0.0 0.0 0.0 0.0 0.0 0.0 0.0	HOR $[dB \mu]$ 43. 6 54. 5 49. 6 52. 6 56. 5 57. 0	VER V/m] [d 45. 1 53. 8 50. 1 51. 9 56. 9 56. 6	$\frac{[B \ \mu \ V/m]}{74.0}$ 74.0 74.0 74.0 74.0 74.0 74.0 74.0 74.0	HOR 30. 4 19. 5 24. 4 21. 4 17. 5 17. 0	VER iB] 28.9 20.2 23.9 22.1 17.1 17.4

CALCULATION: READING [dB  $\mu$  V] + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

■ ANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26. 5GHz ■ CABLE: KCC-D3 ■ PREAMP: KAF-02 (8449B) ■ EMI RECEIVER: KTR-01 (ESI40)

A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No.: 23DE0002-YK-1

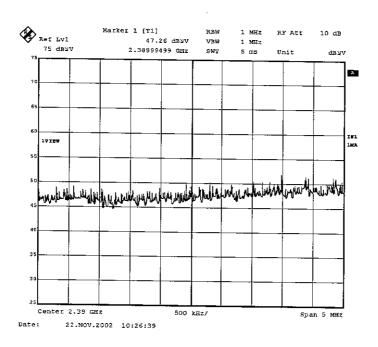
Kin Mod Ser Pow Mod Rem Dat Tes Tem Hum	le Iarks		t	: Blu : UPG : 11 : DC3 : Tra : Tra : Tx : 11/ : 3 m : 23 : 36	.3V(PC: nsmitti Antenna 22/2002 °C %	Transc AC120\ ng (248 Type:	ceiver //60Hz) 80MHz) SSW24	00	nginee tion)	r r	Toyoka	<i>Olfru (</i> zu ima	mura
No.	FREQ.	ANT	REAL		ANT	AMP	CABLE	ATTEN.	RESI		LIMITS		RGIN
	[MHz]	TYPE	HOR [dB]		FACTOR [dB/m]	GAIN [dB]	LOSS [dB]	[dB]	HOR $[dB \mu]$	VER V/m] [d]	3μV/m]	HOR [o	VER 1B]
1.	2483.50	BB	63.1	63.9	30.6	36.7	2.4	0.0	59.4	60.2	74.0	14.6	13.8
2.	2484.10	BB	62.7	61.9	30.6	36.7	2.4	0.0	59.0	58.2	74.0	15.0	15.8
3.	4960.00	BB	52. 1	50.7	35.6	36.8	3.5	0.0	54.4	53.0	74.0	19.6	21.0
4. 5.	7440.00 9920.00	BB BB	44.6 45.2	44.8	38.0	36.9	4.3	0.0	50.0	50.2	74.0	24.0	23.8
э. 6.	9920.00 12400.00	BB	45. 2 44. 6	45.6 44.2	39.0 42.6	36, 8 35, 6	5.4 5.7	0.0 0.0	52.8	53.2	74.0	21.2	20.8
7.	14880.00	BB	44.0	44.2	42.6	35. 0 35. 5	5.7 6.5	0.0	57.3 58.8	56.9 59.8	74.0	16.7	17.1
	10000.00		TU, 4								74.0	15.2	14.2
	17360.00	RR	45 6	45 5	427	34 U	n /						
8. 9.	17360.00 19840.00	BB BB	45.6 44.6	45.5 45.4	42, 7 40, 9	34. 9 35. 3	6.7 7.5	0.0	60.1 57.7	60.0 58.5	74.0 74.0	13.9 16.3	14.0 15.5
8.	17360.00 19840.00 22320.00	BB BB BB	45.6 44.6 46.5	45.5 45.4 46.3	42.7 40.9 41.4	34. 9 35. 3 35. 3	6.7 7.5 7.2	0.0 0.0 0.0	57.7 59.8	58.5 59.6	74.0 74.0 74.0	13.9 16.3 14.2	14.0 15.5 14.4

CALCULATION: READING [dB $\mu$ V] + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

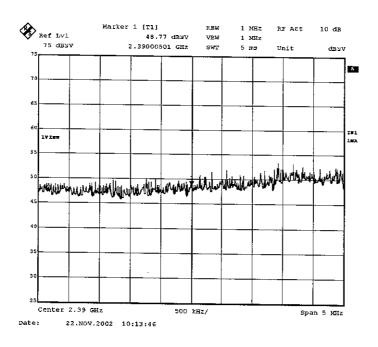
ANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26. 5GHz CABLE: KCC-D3 PREAMP: KAF-02 (8449B) ENI RECEIVER: KTR-01 (ESI40) Antenna Type:SSW2400

### 2.39GHz (Ch :2402MHz)

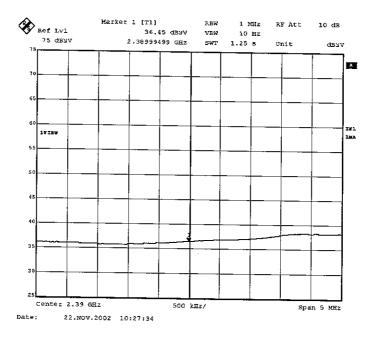
1. Horizontal/PK



2. Vertical/PK



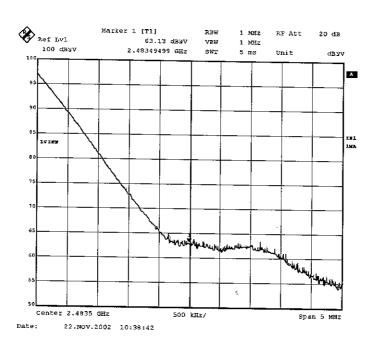
### 3. Horizontal/AV



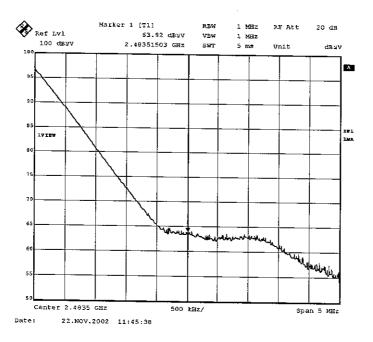
### 4. Vertical/ AV

Ref Lvl 75 dBVV	Marker 1 [T1] 36.90 dBy		10 Hz	RF Att	
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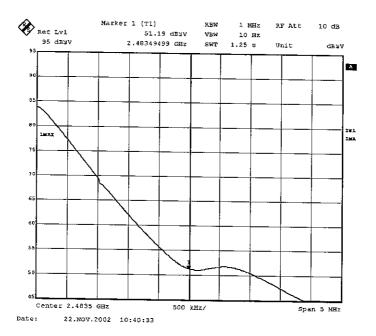
# 2.4835GHz (Ch :2480MHz) 1. Horizontal/PK



2. Vertical/PK

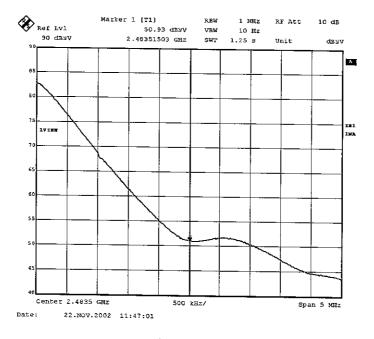


### 3. Horizontal/ AV



.

### 4. Vertical/ AV



A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No.: 23DE0002-YK-1

Kind Mode Seri Powe Mode Rema Date Test Temp Humi	ı ırks	Ce	t	Blue UPG 11 DC3 Trai Tx 11/2 3 m 23 37	.3V(PC: nsmitti Antenna 20/2002 ℃	AC120 ng (240 Type	ceiver //60Hz) )2MHz) : LDA92		, Enginee	<u>~</u> r :	Toyoka	200 Uma	mura
No.	FREQ. [MHz]	ANT TYPE	HOR	DING VER µV]	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESI HOR [dBµ]	VER	LIMITS BµV/m]	HOR	RGIN VER HB]
$ \begin{array}{c} 1.\\ 2.\\ 3.\\ 4.\\ 5.\\ 6.\\ 7.\\ \end{array} $	$\begin{array}{c} 66.\ 68\\ 71.\ 00\\ 250.\ 01\\ 497.\ 67\\ 500.\ 32\\ 522.\ 23\\ 528.\ 06\end{array}$	BB BB BB BB BB BB BB	34. 0 35. 2 29. 1 36. 3 30. 2 37. 1 29. 4	31. 0 36. 2 26. 4 36. 5 31. 9 33. 6 26. 8	7.2 6.6 16.8 19.0 19.0 19.2 19.2	28.6 28.5 27.8 29.1 29.1 29.5 29.5	$\begin{array}{c} 2.0\\ 2.1\\ 4.2\\ 6.2\\ 6.2\\ 6.4\\ 6.4 \end{array}$	6. 1 6. 1 6. 1 6. 1 6. 1 6. 1 6. 1	21.5 28.4 38.5 32.4 39.3	17.7 $22.5$ $25.7$ $38.7$ $34.1$ $35.8$ $29.0$	$\begin{array}{c} 40.\ 0\\ 40.\ 0\\ 46.\ 0\\ 46.\ 0\\ 46.\ 0\\ 46.\ 0\\ 46.\ 0\end{array}$	19.3 18.5 17.6 7.5 13.6 6.7 14.4	22. 3 17. 5 20. 3 7. 3 11. 9 10. 2 17. 0

CALCULATION: READING[dB $\mu$ V] + ANT. FACTOR[dB/m] + CABLE LOSS[dB] - AMP. GAIN[dB] + ATTEN[dB].

ANTENNA: KBA-01 (BBA9106) 30-299. 99MHz/KLA-01 (USLP9143) 300-1000MHz CABLE: KCC-10/11/12/13/18 PREAMP: KAF-01 (8447D) EMI RECEIVER: KTR-01 (ESI40)

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A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No. : 23DE0002-YK-1

Kind Mode Seri Powe Mode Rema Date Test Temp Humi	rks			: Blue : UPG : 11 : DC3. : Trai : Tx / : 11/2 : 3 m : 23 ° : 37 °	3V (PC: nsmitti Antenna 20/2002 °C	AC120 ng (248 Type:	ceiver //60Hz) 30MHz) : LDA92		e Enginee	<u></u> r	<u>Anami</u> Toyoka	2 <u>111∕</u> zu Ima	mura
No.		ANT FYPE	REAI HOR [dB,	VER	ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESU HOR [dB µ V	VER	LIMITS BµV/m]	HOR	RGIN VER IB]
1. 2. 3. 4. 5. 6. 7.	$\begin{array}{c} 66.\ 75\\ 71.\ 00\\ 250.\ 00\\ 497.\ 67\\ 500.\ 32\\ 522.\ 24\\ 528.\ 10\\ \end{array}$	BB BB BB BB BB BB BB	29. 4 38. 3 29. 3 35. 6 29. 3 35. 9 29. 9	29. 1 36. 5 27. 4 33. 7 32. 0 32. 4 29. 8	7.2 6.6 16.8 19.0 19.0 19.2 19.2	28. 6 28. 5 27. 8 29. 1 29. 1 29. 5 29. 5	2.1 4.2 6.2 6.2	6. 1 6. 1 6. 1 6. 1 6. 1 6. 1 6. 1	$\begin{array}{c} 24.\ 6\\ 28.\ 6\\ 37.\ 8\\ 31.\ 5\\ 38.\ 1\end{array}$	15.822.826.735.934.234.632.0	$\begin{array}{c} 40.\ 0\\ 40.\ 0\\ 46.\ 0\\ 46.\ 0\\ 46.\ 0\\ 46.\ 0\\ 46.\ 0\\ 46.\ 0\end{array}$	23.9 15.4 17.4 8.2 14.5 7.9 13.9	24. 2 17. 2 19. 3 10. 1 11. 8 11. 4 14. 0

CALCULATION: READING[dB $\mu$ V] + ANT. FACTOR[dB/m] + CABLE LOSS[dB] - AMP. GAIN[dB] + ATTEN[dB].

ANTENNA: KBA-01 (BBA9106) 30-299. 99MHz/KLA-01 (USLP9143) 300-1000NHz CABLE: KCC-10/11/12/13/18 PREAMP: KAF-01 (8447D) ENI RECEIVER: KTR-01 (ESI40)

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A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No. : 23DE0002-YK-1

Kin Moo Sen Pov Moo Rer Dat Ter Ter Hur	de narks	ce	ıt	: Blu : UPG : 11 : DC3 : Tra : Tx : 11/ : 3 m : 23 : 36	.3V(PC: nsmitti Antenna 22/2002 ℃ %	AC120V ng (240 Type:	ceiver (/60Hz) )2MHz) LDA92	<u> </u>	nginee tion)	r r	Jin/ Toyoka	<u>//////</u> zu Ima	<i>a</i> mura
No.	FREQ.	ANT	REAL		ANT	AMP	CABLE	ATTEN.	RESI		LIMITS		RGIN
	[MHz]	TYPE	HOR [dB]		FACTOR [dB/m]	GAIN [dB]	LOSS [dB]	[dB]	HOR [dB $\mu$ V	VER V/m] [c	iBμV/m]	HOR [c	VER ib]
1.	2390.00	BB	35.1	36.5	30.6	36.7	2.4	0.0	31.4	32.8	54.0	22.6	21.2
2. 3.	4804.00 7206.00	BB BB	40.4 32.4	42.9 32.1	34.6 37.6	37. 1 37. 0	3.5 4.2	0.0 0.0	41.4 37.2	43.9 36.9	54.0	12.6	10.1
4.	9608.00	BB	32.4 32.4	32.1 32.3	39.0	37.0	4. 2 5. 2	0.0	39.6	30.9 39.5	54. 0 54. 0	16.8 14.4	17.1 14.5
5.	12010.00	BB	32.6	32.5	42.0	36.1	5.6	0.0	<b>44.</b> 1	44.0	54.0	9,9	10.0
6.	14412.00	BB	31.7	31.7	41.1	35.1	6.3	0.0	44.0	44.0	54.0	10.0	10.0
7.	16814.00	BB	32.2	32.2	41.6	34.9	6.5	0.0	45.4	45.4	54.0	8.6	8.6
8.	19216.00	BB	32.3	33.1	41.3	34.8	7.2	0.0	46.0	46.8	54.0	8.0	7.2
9.	21618.00	BB	32.7	33.1	41.3	34. 9 34. 6	7.5	0.0	46.6	47.0	54 <i>.</i> 0	7.4	7.0
	24020.00	BB	32.8	32.8	40.5		8.1	0.0	46.8	46.8	54.0	7.2	7,2

CALCULATION: READING  $[dB \mu V]$  + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

MANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26. 5GHz CABLE: KCC-D3 PREAMP: KAF-02 (8449B) EMI RECEIVER: KTR-01 (ESI40)

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A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No.: 23DE0002-YK-1

Mod Ser Pow Mod Rem Dat Tes Tem Hum	le Iarks		t	: Blu : UPG : 11 : DC3 : Tra : Tra : Tx : 11/ : 3 m : 23 : 36	.3V(PC: nsmitti Antenna 22/2002 °C %	AC120 ng (248 Type	ceiver //60Hz) 30MHz) : LDA92	<u>'</u>	nginee tion)	<u>,</u> r :		<u>Cumu</u> zu Ima	mur a
No.		ANT	REAI		ANT	AMP	CABLE	ATTEN.	RESU		LIMITS		RGIN
	[MHz]	TYPE	HOR [dB]		FACTOR [dB/m]	GAIN [dB]	LOSS [dB]	[dB]	HOR [dBµ \	VER //m] [d	BμV/m]	HOR [c	VER 1B]
1.	2483.50	BB	48.0	50.3	30.6	36.7	2.4		44.3	46.6	54.0	9.7	7.4
$\overline{2}$ .	2484.06	BB	48.7	50.9	30.6	36.7	2.4	0.0	45.0	47.2	54.0	9.0	6.8
2. 3.	2484.06 4960.00	BB BB	48. 7 34. 2	50.9 40.2	30. 6 35. 6	36. 7 36. 8	2.4 3.5	0.0 0.0	45. 0 36. 5	$47.2 \\ 42.5$	54. 0 54. 0	9.0 17.5	$6.8 \\ 11.5$
2. 3. 4.	$\begin{array}{c} 2484.\ 06\\ 4960.\ 00\\ 7440.\ 00\end{array}$	BB BB BB	48. 7 34. 2 32. 0	50, 9 40, 2 32, 0	30.6 35.6 38.0	36.7 36.8 36.9	2.4 3.5 4.3	0.0 0.0 0.0	45.0 36.5 37.4	47.2 42.5 37.4	54. 0 54. 0 54. 0	9.0 17.5 16.6	6.8 11.5 16.6
2. 3. 4. 5.	2484.06 4960.00 7440.00 9920.00	BB BB BB BB	48. 7 34. 2 32. 0 32. 8	50.9 40.2 32.0 32.9	30.6 35.6 38.0 39.0	36.7 36.8 36.9 36.8	2.4 3.5 4.3 5.4	0.0 0.0 0.0 0.0	45. 0 36. 5 37. 4 40. 4	47.2 42.5 37.4 40.5	54. 0 54. 0 54. 0 54. 0	9.0 17.5 16.6 13.6	6.8 11.5 16.6 13.5
2. 3. 4. 5. 6.	2484.06 4960.00 7440.00 9920.00 12400.00	BB BB BB BB BB	48.7 34.2 32.0 32.8 31.6	50.9 40.2 32.0 32.9 31.6	30. 6 35. 6 38. 0 39. 0 42. 6	36. 7 36. 8 36. 9 36. 8 35. 6	2.4 3.5 4.3 5.4 5.7	0.0 0.0 0.0 0.0 0.0	45. 0 36. 5 37. 4 40. 4 44. 3	47. 2 42. 5 37. 4 40. 5 44. 3	54. 0 54. 0 54. 0 54. 0 54. 0	9.0 17.5 16.6 13.6 9.7	6.8 11.5 16.6 13.5 9.7
2. 3. 4. 5.	2484.06 4960.00 7440.00 9920.00	BB BB BB BB	48.7 34.2 32.0 32.8 31.6 32.8	50.9 40.2 32.0 32.9 31.6 32.8	30. 6 35. 6 38. 0 39. 0 42. 6 42. 6	36.7 36.8 36.9 36.8 35.6 35.5	2.4 3.5 4.3 5.4 5.7 6.5	0.0 0.0 0.0 0.0 0.0 0.0	45. 0 36. 5 37. 4 40. 4 44. 3 46. 4	47. 2 42. 5 37. 4 40. 5 44. 3 46. 4	$54.0 \\ $	9.0 17.5 16.6 13.6 9.7 7.6	6.8 11.5 16.6 13.5 9.7 7.6
2. 3. 4. 5. 6. 7.	$\begin{array}{c} 2484.\ 06\\ 4960.\ 00\\ 7440.\ 00\\ 9920.\ 00\\ 12400.\ 00\\ 14880.\ 00\\ 17360.\ 00\\ 19840.\ 00 \end{array}$	BB BB BB BB BB BB	48. 7 34. 2 32. 0 32. 8 31. 6 32. 8 32. 9 32. 1	50. 9 40. 2 32. 0 32. 9 31. 6 32. 8 32. 9 32. 3	30. 6 35. 6 38. 0 39. 0 42. 6	36. 7 36. 8 36. 9 36. 8 35. 6	2.4 3.5 4.3 5.4 5.7	0.0 0.0 0.0 0.0 0.0 0.0 0.0	45. 0 36. 5 37. 4 40. 4 44. 3	47. 2 42. 5 37. 4 40. 5 44. 3	54. 0 54. 0 54. 0 54. 0 54. 0	9.0 17.5 16.6 13.6 9.7 7.6 6.6	$\begin{array}{c} 6.8\\ 11.5\\ 16.6\\ 13.5\\ 9.7\\ 7.6\\ 6.6\end{array}$
2. 3. 4. 5. 6. 7. 8.	$\begin{array}{c} 2484.\ 06\\ 4960.\ 00\\ 7440.\ 00\\ 9920.\ 00\\ 12400.\ 00\\ 14880.\ 00\\ 17360.\ 00\\ \end{array}$	BB BB BB BB BB BB BB	48. 7 34. 2 32. 0 32. 8 31. 6 32. 8 32. 9	50. 9 40. 2 32. 0 32. 9 31. 6 32. 8 32. 9	30. 6 35. 6 38. 0 39. 0 42. 6 42. 6 42. 7	36. 7 36. 8 36. 9 36. 8 35. 6 35. 5 34. 9	2.4 3.5 4.3 5.4 5.7 6.5 6.7 7.5	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	45.0 36.5 37.4 40.4 44.3 46.4 47.4	47. 2 42. 5 37. 4 40. 5 44. 3 46. 4 47. 4	54. 054. 054. 054. 054. 054. 054. 054. 0	9.0 17.5 16.6 13.6 9.7 7.6	6.8 11.5 16.6 13.5 9.7 7.6

CALCULATION: READING [dB  $\mu$  V] + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

■ANTENNA:KHA-01 (SAS-200 571) 1~18GHz/KHA-03 (3160-09) 18-26. 5GHz ■CABLE:KCC-D3 ■ PREAMP:KAF-02 (8449B) ■ EMI RECEIVER:KTR-01 (ESI40)

A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No. : 23DE0002-YK-1

Kin Mod Ser Pow Mod Rem Dat Tes Ten Hum	le 1arks	ent	: UPGZ : 11 : DC3 : Tran : Tx A : 11/2 : 3 m : 23 °C : 36 9	tooth 3 3V(PC: smitti ntenna 2/2002 C	AC120V ng (240 Type:	eiver 7/60Hz) 2MHz) LDA92		nginee tion)	<u>,</u> r :	Toyoka	<u>amu</u> zu Ima	ua∕ mura
No.	FREQ. ANT TYP		DING VER H	ANT FACTOR	AMP GAIN	CABLE LOSS	ATTEN.	RESI HOR	JLT I VER	LIMITS	MAI HOR	GIN VER
	[MHz]			[dB/m]	[dB]	[dB]	[dB]			BμV/m]		IB]
1.	2390.00 BB		47.7	30.6	36.7	2.4		42.5	44.0	74.0	31.5	30.0
2. 3.	4804.00 BB 7206.00 BB	·· - · _	50.2 45.1	34.6 37.6	37.1 37.0	3, 5 4, 2	0.0 0.0	50.2 50.2	$51.2 \\ 49.9$	74.0 74.0	$23.8 \\ 23.8$	22. 8 24. 1
4.	9608.00 BB		44.7	39.0	37.0	5.2	0.0	53.3	51.9	74.0	20.7	24.1 22.1
5.	12010.00 BB		45.2	42.0	36.1	5.6	0.0	56.9	56.7	74.0	17.1	17.3
6.	14412.00 BB		44.7	41.1	35.1	6.3	0.0	57.0	57.0	74.0	17.0	17.0
7.	16814.00 BB		44.7	41.6	34.9	6.5	0.0	58.5	57.9	74.0	15.5	16.1
8.	19216.00 BB		45.2	41.3	34.8	7.2	0.0	58.9	58.9	74.0	15.1	15.1
9.	21618.00 BB		46.1	41.3	34.9	7.5		60.3	60.0	74.0	13.7	14.0
10.	24020,00 BB	45.7	45.5	40.5	34.6	8.1	0.0	59.7	59.5	74.0	14.3	1 <b>4.</b> 5

CALCULATION: READING  $[dB \mu V]$  + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

MANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26. 5GHz CABLE: KCC-D3 PREAMP: KAF-02 (8449B) EMI RECEIVER: KTR-01 (ES 140)

A-PEX INTERNATIONAL CO., LTD. Yamakita No.1 Open Test Site Report No.: 23DE0002-YK-1

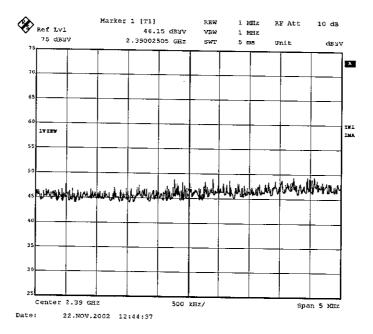
Kin Mod Ser Pow Mod Rem Dat Tes Tem Hum	le Iarks	-	t	: Blu : UPG : 11 : DC3 : Tra : Tx : 11/ : 3 m : 23 : 36	.3V(PC: nsmitti Antenna 22/2002 °C %	AC120 ng (24 Type	ceiver //60Hz) 30MHz) LDA92		Enginee stion)	<u></u>	Toyoka	<u>2111111</u> zu ima	nura
No.	FREQ.	ANT	REAI	DING	ANT	AMP	CABLE	ATTEN.	RESU	JLT	LIMITS	MA	RGIN
	[MHz]	TYPE	HOR [dB]	VER µV]	FACTOR [dB/m]	GAIN [dB]	LOSS [dB]	[dB]	HOR [dBµ \	VER	BμV/m]	HOR	VER {B]
1.	2483.50	BB	59.6	60.0	30.6	36.7	2.4	0.0	55.9	56.3	74.0	18.1	17.7
2.	2484.06	BB	58.8	61.4		36.7	2.4	0.0	55.1	57.7	74.0	18.9	16.3
3.	4960.00	BB	49.0	48.2	35.6	36.8	3.5	0.0	51.3	50.5	74.0	22.7	23.5
4. 5.	7440.00 9920.00	BB BB	45. 0 45. 2	45.1 45.2	38.0 39.0	36.9 36.8	4.3	0.0	50.4	50.5	74.0	23.6	23.5
6.	12400.00	BB	45. Z 44. 2	40, Z 44, 7	39.0 42.6	30. o 35. 6	5.4 5.7	0.0 0.0	52.8 56.9	$52.8 \\ 57.4$	74.0 74.0	$21.2 \\ 17.1$	21.2 16.6
7.	14880.00	BB	45.6	45.6	42.6	35.5	6.5	0.0	59.2	57.4 59.2	74.0	17.1 14.8	14.8
8.	17360.00	BB	45.5	45.9	42.7	34.9	6.7	0.0	60.0	60.4	74.0	14.0	14.0
9.	19840.00	BB	44.6	45.3		35.3	7.5	0.0	57.7	58.4	74.0	16.3	15.6
		ĎЛ		46.3	41.4	35.3	7.2	0.0	59.5	59.6	74.0	14.5	14.4
10. 11.	22320.00	BB	46.2	40. 3 46. 4	41,4	00.0	1.4	0.0	00.0	05.0	1 <b>1</b> . U	14.0	14.4

CALCULATION: READING [dB $\mu$ V] + ANT. FACTOR [dB/m] + CABLE LOSS [dB] - AMP. GAIN [dB] + ATTEN [dB].

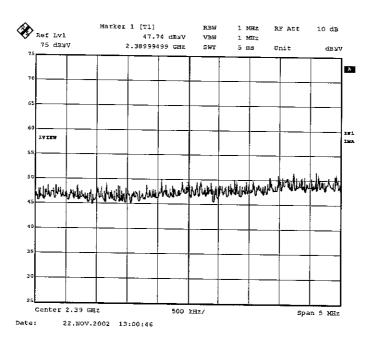
■ ANTENNA: KHA-01 (SAS-200 571) 1-18GHz/KHA-03 (3160-09) 18-26. 5GHz ■ CABLE: KCC-D3 ■ PREAMP: KAF-02 (8449B) ■ EMI RECEIVER: KTR-01 (ESI40)

### 2.39GHz (Ch :2402MHz)

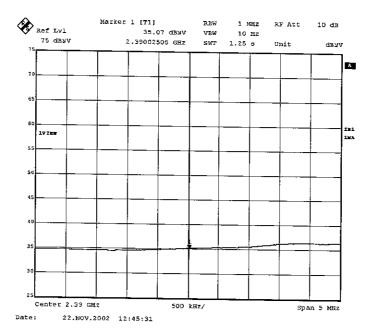
1. Horizontal/PK



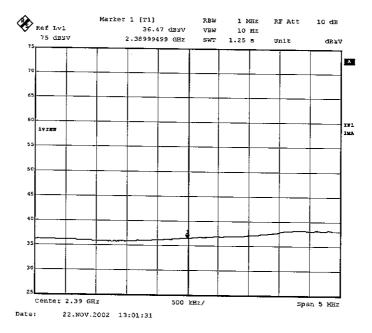
2. Vertical/PK



### 3. Horizontal/ AV

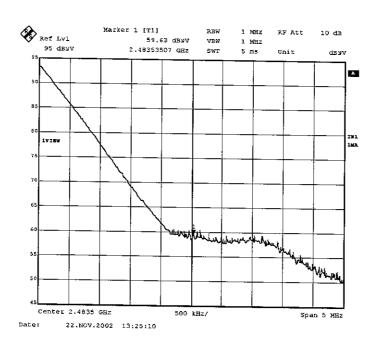


#### 4. Vertical/ AV



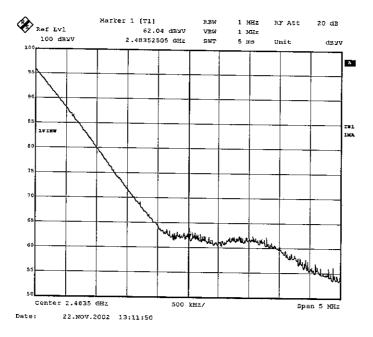
### 2.4835GHz (Ch :2480MHz)

1. Horizontal/PK

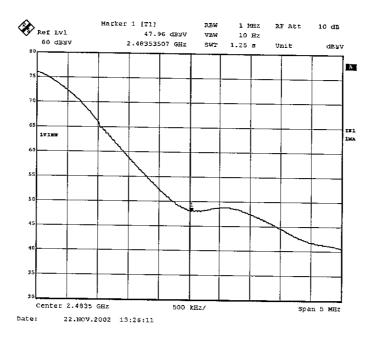


### 2. Vertical/PK

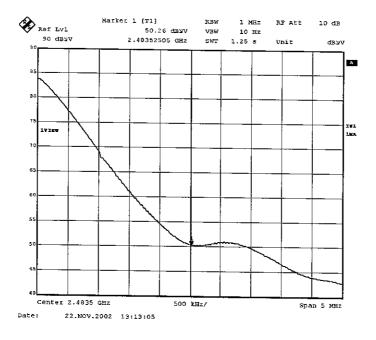
.,



### 3. Horizontal/ AV

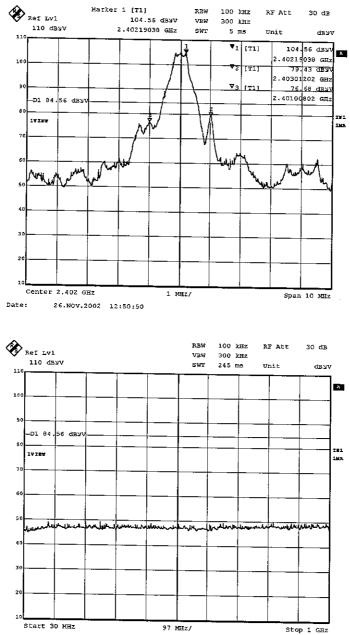


### 4. Vertical/ AV

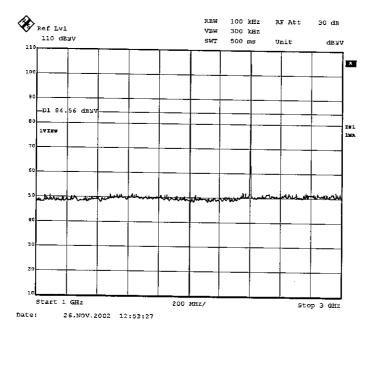


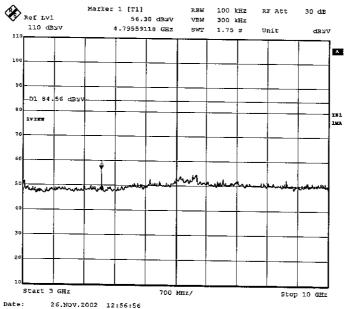
## <u>Ch Low: 2402MHz</u> 1.

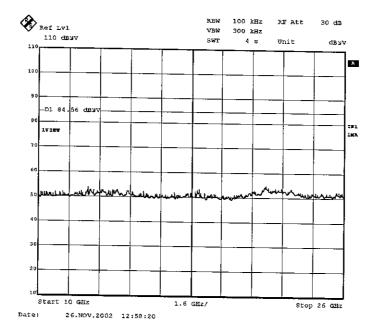
2.



26.NOV.2002 12:52:13 Date:

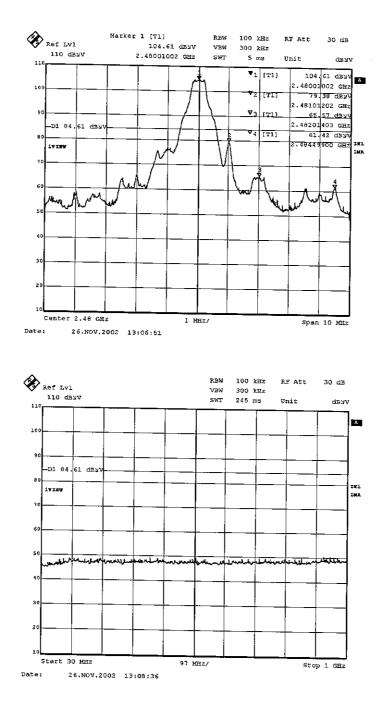


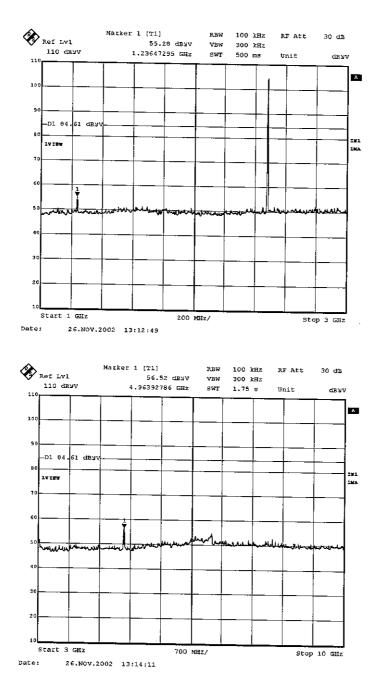




### Ch High: 2480MHz

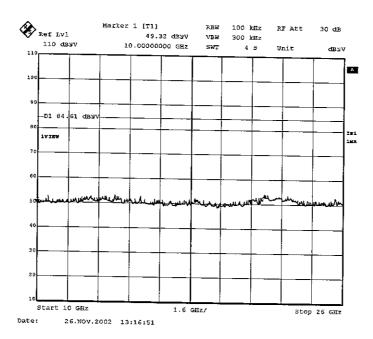
1.











### Test Report No : 23DE0002-YK-1

#### APPENDIX 3

Test Instruments

#### EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date *
					Interval(month)
KAF-01	Pre Amplifier	Hewlett Packard	8447D	RE	2002/08/03 * 12
KAF-02	Pre Amplifier	Hewlett Packard	8449B	RE	2002/05/07 * 12
KAT6-01	Attenuator	INMET	18N-6dB	RE	2002/06/20 * 12
KBA-01	Biconical Antenna	Schwarzbeck	BBA9106	RE	2002/08/17 * 12
3/18	Coaxial Cable	Fujikura/Suhner	8D-2W/12D-SF A/S04272B/S0 4272B/S04272B	RE	2002/08/17 * 12
8/KPL-01	Coaxial Cable/Pulse Limitter	Fujikura/Suhner/PMM	5D-2W/8D-2W/ S04272B/S0427 2B/PL01	CE	2002/08/17 * 12
KCC-D3	Coaxial Cable	Rosenberger	2201	RE	2002/06/28 * 12
KCC-D5	Coaxial Cable	Storm	421-011(2m)	AT	2002/04/16 * 12
KDT-01	Coaxial Crystal Detector	Agilent	8573C	AT	2002/04/22 * 12
KHA-01	Horn Antenna	A.H.Systems	SAS-200/571	RE	2002/07/14 * 12
KHA~03	Horn Antenna	EMCO	3160-09	RE	2002/04/27 * 12
KLA-01	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2002/03/08 * 12
KLS-01	LISN	Schwarzbeck	NSLK8126	CE	2002/08/16 * 12
KOTS-01	Open Test Site	JSE	30m	RE	2002/08/18 * 12
KPM-05	Power meter	Agilent	E4417A	AT	2002/02/15 * 12
KPSS-01	Power sensor	Agilent	E9327A	AT	2002/02/13 + 12
KSA-01	Spectrum Analyzer	Advantest	R3365	CE/RE	2002/06/20 * 12
KTR-01	Test Receiver	Rohde & Schwarz	ESI40	CE/RE/AT	2002/07/22 * 12
KST-01	Digitizing Oscilloscope	Tektronix	TDS420A	AT	2002/08/21 * 12

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

Test Item:

CE: Conducted emission test,

RE: Radiated emission test,

AT: Antenna terminal conducted test