



EMI TEST REPORT

Test Report No. : 26HE0192-YK-F2

Applicant : SMART COMMUNICATIONS LIMITED.
Type of Equipment : VHF FM Handheld Transceiver
Model No. : SC-280, SC-281
FCC ID : O78SC280
Test Standard : FCC Part15 Subpart B
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.
5. This test report does not constitute an endorsement by NIST/NVLAP or U.S. Government.

Date of test: March 30 and 31, 2006

Tested by:


Toyokazu Imamura

Approved by:


Osamu Watatani
Site Manager of Yamakita EMC Lab.



NVLAP LAB CODE 200441-0

This laboratory is accredited by the NIST/NVLAP, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.
*As for the range of Accreditation in NVLAP, you may refer to the WEB address, <http://ulapex.jp/emc/nvlap.htm>

UL Apex Co., Ltd.

YAMAKITA EMC LAB.

907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

Telephone: +81 465 77 1011

Facsimile: +81 465 77 2112

MF060b(12.02.06)

Table of Contents	Page
1 Applicant Information	3
2 Product Description	3
3 Test Specification, Procedures and Results	4
4 System Test Configuration	6
5 Radiated Emissions	7
 <u>Contents of Appendixes</u>	 8
APPENDIX 1: Photographs of test setup	9
APPENDIX 2: Test Data	11
APPENDIX 3: Test instruments	23

UL Apex Co., Ltd.

YAMAKITA EMC LAB.

907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

Telephone: +81 465 77 1011

Facsimile: +81 465 77 2112

MF060b(12.02.06)

1 Applicant Information

Company Name : SMART COMMUNICATIONS LIMITED.
Address : Unit B,21/F.,Nathan Commercial Bldg.,430-436 Nathan Road,
Yaumatei Kowloon, Hong Kong
Telephone Number : +852 2735 3008
Facsimile Number : +852 2735 3001
Contact Person : Gerorge Kishikawa

2 Product Description

Type of Equipment : VHF FM Handheld Transceiver
Model No. : SC-280, SC-281
Serial No. : Sample1
Rating : DC7.2V
Country of Manufacture : CHINA
Receipt Date of Sample : March 29, 2006
Condition of EUT : Engineering prototype
(Not for sale: This sample is equivalent to mass-produced items.)

SMART COMMUNICATIONS LIMITED, Model: SC-280, SC-281 (referred to as the EUT in this report) is a VHF FM Handheld Transceiver.

Model SC-280: Full key Type

Model SC-281: Simple key Type

Frequency of operation : 146.0125MHz – 173.9875MHz
Intermediate frequency : 44.95MHz
Other clock frequency : CPU : 4.032MHz, 2nd Local : 44.495MHz, DTMF IC : 4.19MHz,
TCXO : 12.8MHz
Type of receiver : Duple-conversion super heterodyne
Antenna type : 1/4 wave whip
Antenna connector type : STUD
Operation temperature range : -30 ~ +60 deg. C.

UL Apex Co., Ltd.

YAMAKITA EMC LAB.

907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

Telephone: +81 465 77 1011

Facsimile: +81 465 77 2112

MF060b(12.02.06)

3 Test Specification, Procedures and Results

3.1 Test specification

Test Specification : FCC Part 15 Subpart B: 2006
Title : FCC 47CFR Part 15 Radio Frequency Device
Subpart B Unintentional Radiators

3.2 Procedures & Results

Item	Test Procedure	Limits	Deviation	Worst margin	Result
Conducted emission	ANSI C63.4: 2003 7. AC powerline conducted emission measurements	CISPR 22	N/A *1	N/A	N/A
Radiated emission	ANSI C63.4: 2003 8. Radiated emission measurements	FCC §15.109(a)	N/A	13.3dB (819.85MHz, Horizontal, Rx 160.0125MHz)	Complied
Antenna power conduction for receivers	ANSI C63.4: 2003 12.1.5 Antenna-conducted power measurements	FCC §15.111(a)	Excluded *2	N/A	N/A

*1) The test is not applicable since the EUT has no AC mains.

*2) The test was not performed according to the client's request.

Note: UL Apex's EMI Work Procedures No.QPM05.

3.3 Addition to standard

No addition, deviation or exclusion has been made from the standard.

3.4 Uncertainty

Radiated emission

The measurement uncertainty (with 95% confidence level) for this test using Biconical antenna is ± 4.5 dB.

The measurement uncertainty (with 95% confidence level) for this test using Logperiodic antenna is ± 4.3 dB.

The measurement uncertainty (with 95% confidence level) for this test using Horn antenna is ± 5.2 dB.

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

UL Apex Co., Ltd.

YAMAKITA EMC LAB.

907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

Telephone: +81 465 77 1011

Facsimile: +81 465 77 2112

MF060b(12.02.06)

3.5 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		

UL Apex Co., Ltd.

YAMAKITA EMC LAB.

907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

Telephone: +81 465 77 1011

Facsimile: +81 465 77 2112

MF060b(12.02.06)

4 System Test Configuration

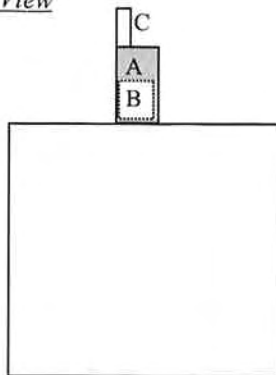
4.1 Justification

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

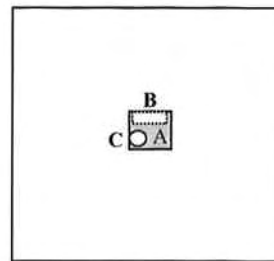
Test mode: Receiving mode
 - Low channel : 146.0125MHz
 - Middle channel : 160.0125MHz
 - High channel : 173.9875MHz

4.2 Configuration of Tested System

Front View



Top View



* 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	Transceiver	SC-280, SC-281	Sample1	SMART COMMUNICATIONS LTD	O78SC580 (EUT)
B	Battery	SCB-2200	Sample1	SMART COMMUNICATIONS LTD	-
C	ANTENNA	SCA-51	Sample1	SMART COMMUNICATIONS LTD	-

UL Apex Co., Ltd.

YAMAKITA EMC LAB.

907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

Telephone: +81 465 77 1011

Facsimile: +81 465 77 2112

MF060b(12.02.06)

5 Radiated Emissions

5.1 Operating environment

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

5.2 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.

5.3 Test conditions

Frequency range : 30MHz – 2000MHz
Test distance : 3m
EUT operation mode : Receiving

5.4 Test procedure

The Radiated Electric Field Strength intensity has been measured on an anechoic chamber with a ground plane and at a distance of 3m. Measurements were performed with quasi-peak, peak and average detector.

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.

The radiated emission measurements were made with the following detector function of the test receiver.

	30-1000MHz	1000-2000MHz
Detector Type	: Quasi-Peak	PK / AV
IF Bandwidth	: 120kHz	RBW:1MHz, VBW:1MHz / RBW:1MHz, VBW:10Hz

When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

The equipment was 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 10.

With the position, the noise levels of all the frequencies were measured.

Frequency	Below 1GHz	Above 1GHz
Antenna: Horizontal	Y	Z
Antenna: Vertical	Z	Z

5.5 Results

Summary of the test results : Pass
Test data : APPENDIX 2 Page 11 - 16 (30 - 1000MHz)
: APPENDIX 2 Page 17 - 22 (1 - 2GHz)

Date : March 30-31, 2006 Test engineer : Toyokazu Imamura

UL Apex Co., Ltd.

YAMAKITA EMC LAB.

907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

Telephone: +81 465 77 1011

Facsimile: +81 465 77 2112

MF060b(12.02.06)

APPENDIX 1: Photographs of test setup

Page 9 : Radiated emission
Page 10 : Pre-check of the worst position

APPENDIX 2: Test Data

Page 11 - 22 : Radiated emission

APPENDIX 3: Test instruments

Page 23 : Test instruments

UL Apex Co., Ltd.

YAMAKITA EMC LAB.

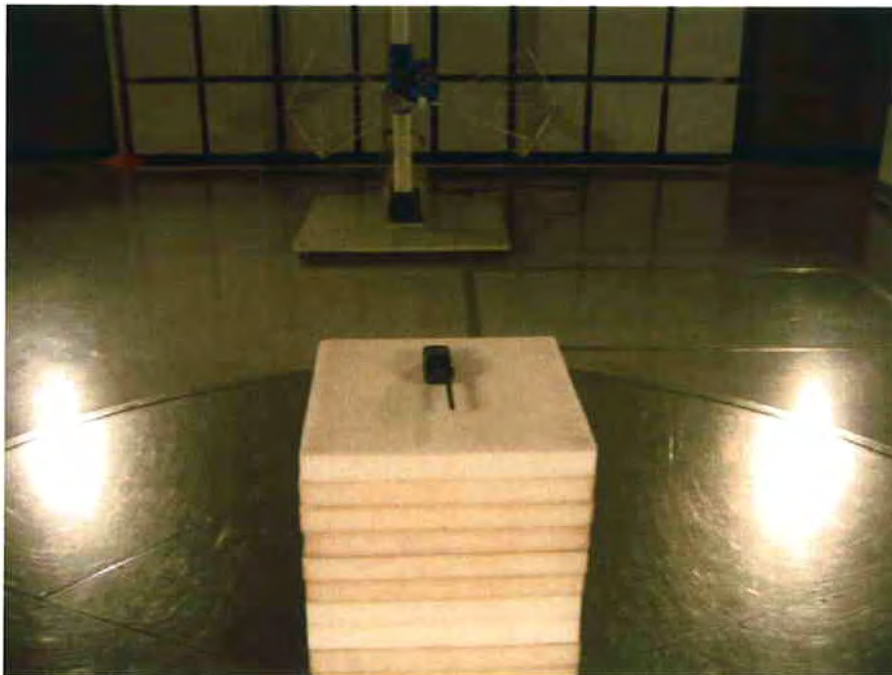
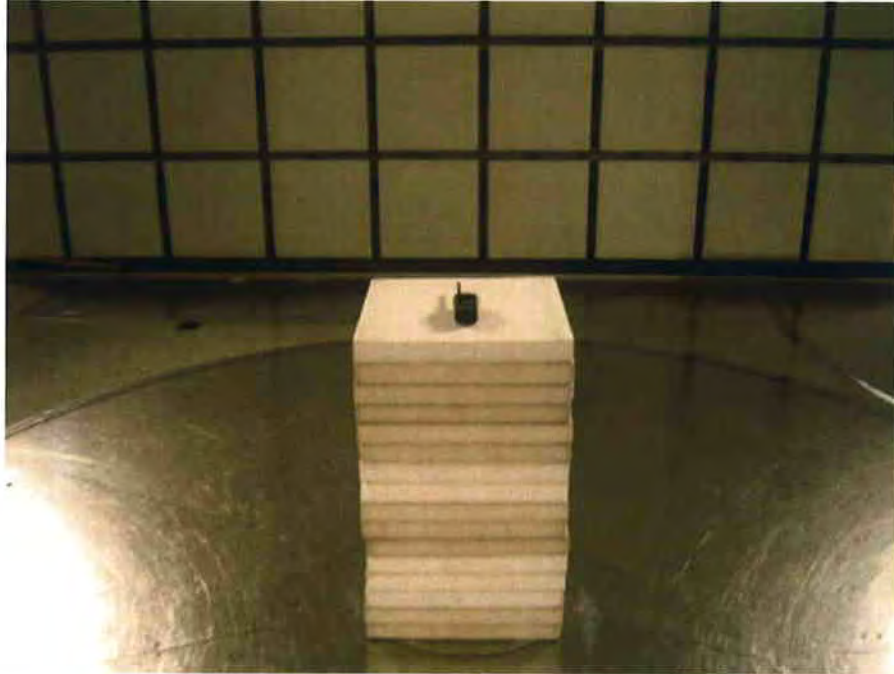
907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

Telephone: +81 465 77 1011

Facsimile: +81 465 77 2112

MF060b(12.02.06)

Radiated emission



UL Apex Co., Ltd.

YAMAKITA EMC LAB.

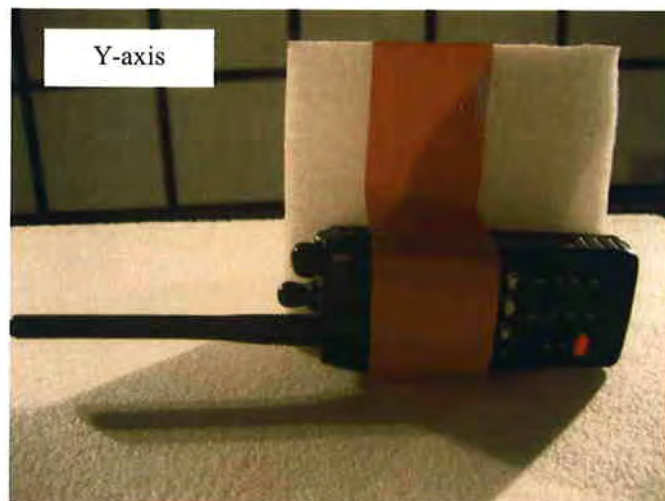
907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

Telephone: +81 465 77 1011

Facsimile: +81 465 77 2112

MF060b(12.02.06)

Pre-check of the worst position



UL Apex Co., Ltd.

YAMAKITA EMC LAB.

907 Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken, 258-0124 JAPAN

Telephone: +81 465 77 1011

Facsimile: +81 465 77 2112

MF060b(12.02.06)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 26HE0192-YK-**F 2**

Applicant : SMART COMMUNICATIONS LIMITED.
Kind of Equipment : VHF FM Handheld Transceiver
Model No. : SC-280, SC-281
Serial No. : Sample1
Power : DC7. 2V
Mode : Receiving(146. 0125MHz)
Remarks :
Date : 3/31/2006
Test Distance : 3 m
Temperature : 20 °C
Humidity : 27 %
Regulation : FCC Part15B § 15. 109 (a)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	190. 97	BB	30. 2	28. 1	16. 9	27. 0	2. 9	6. 0	29. 0	26. 9	43. 5	14. 5	16. 6
2.	381. 93	BB	22. 3	22. 2	17. 4	27. 2	4. 7	6. 0	23. 2	23. 1	46. 0	22. 8	22. 9
3.	572. 89	BB	22. 7	22. 8	19. 4	28. 1	5. 3	6. 0	25. 3	25. 4	46. 0	20. 7	20. 6
4.	763. 85	BB	23. 5	23. 4	21. 3	27. 9	6. 0	6. 1	29. 0	28. 9	46. 0	17. 0	17. 1
5.	954. 81	BB	23. 0	23. 0	23. 4	27. 4	6. 9	6. 1	32. 0	32. 0	46. 0	14. 0	14. 0

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 (ES140) ■ KCC-30_31_32_34 (RE)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 26HE0192-YK- **F 2**

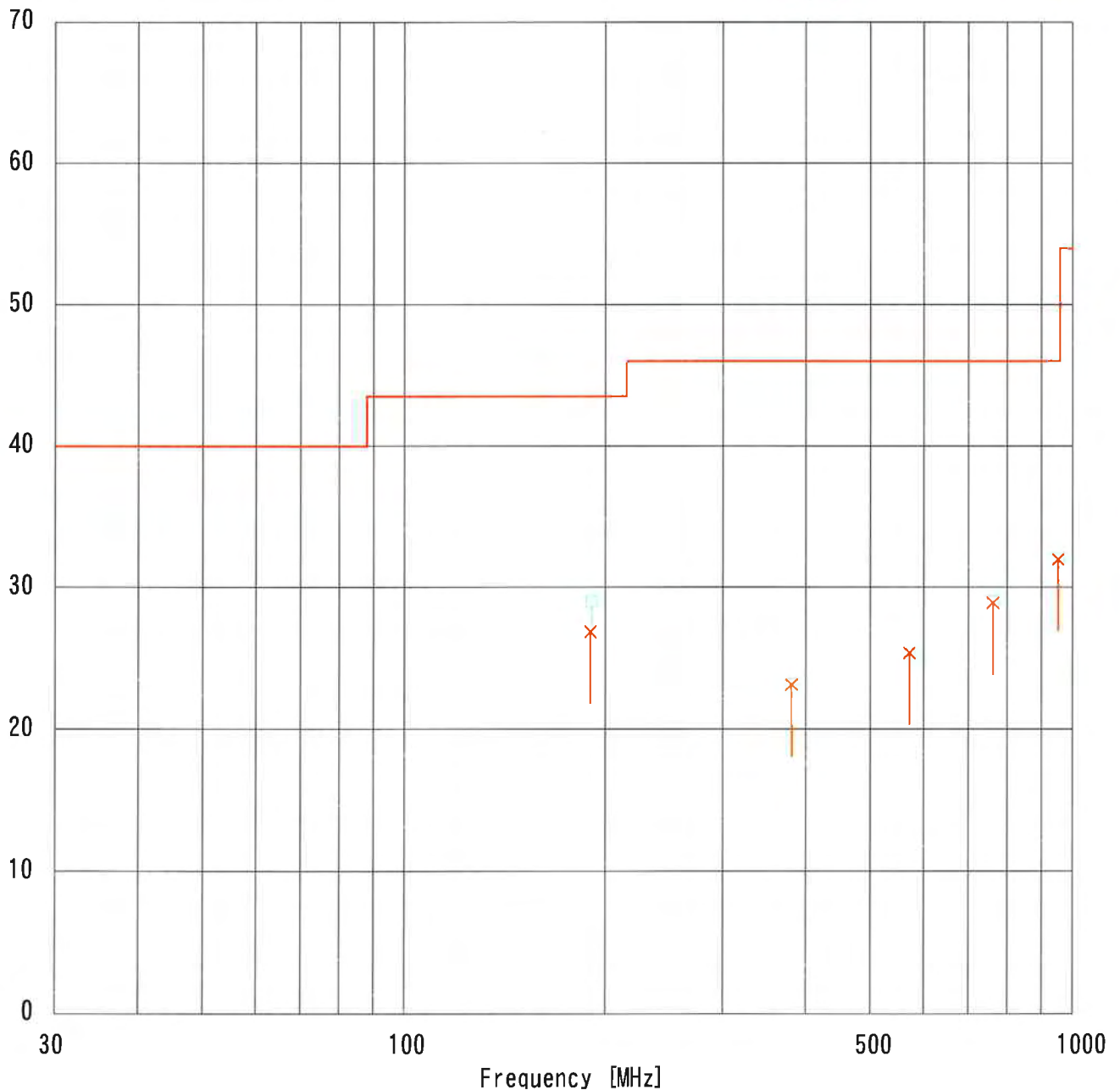
Applicant : SMART COMMUNICATIONS LIMITED.
Kind of Equipment : VHF FM Handheld Transceiver
Model No. : SC-280, SC-281
Serial No. : Sample1
Power : DC7.2V
Mode : Receiving(146.0125MHz)
Remarks :
Date : 3/31/2006
Test Distance : 3 m
Temperature : 20 °C
Humidity : 27 %
Regulation : FCC Part15B § 15.109(a)

Engineer : Toyokazu Imamura

Emission Level [dB μ V/m]

□ Horizontal

× Vertical



DATA OF RADIATION TEST

UL Apex Co.,Ltd.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 26HE0192-YK-**F 2**

Applicant : SMART COMMUNICATIONS LIMITED.
Kind of Equipment : VHF FM Handheld Transceiver
Model No. : SC-280, SC-281
Serial No. : Sample1
Power : DC7. 2V
Mode : Receiving(160. 0125MHz)
Remarks :
Date : 3/31/2006
Test Distance : 3 m
Temperature : 20 °C
Humidity : 27 %
Regulation : FCC Part15B § 15. 109 (a)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	204. 96	BB	25. 4	23. 7	17. 1	27. 0	3. 0	6. 0	24. 5	22. 8	43. 5	19. 0	20. 7
2.	409. 93	BB	23. 2	22. 9	18. 1	27. 4	4. 9	6. 0	24. 8	24. 5	46. 0	21. 2	21. 5
3.	614. 89	BB	23. 0	24. 1	19. 7	28. 1	5. 4	6. 0	26. 0	27. 1	46. 0	20. 0	18. 9
4.	819. 85	BB	26. 0	25. 3	22. 0	27. 7	6. 3	6. 1	32. 7	32. 0	46. 0	13. 3	14. 0

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 (ES140) ■ KCC-30_31_32_34 (RE)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 26HE0192-YK-**F2**

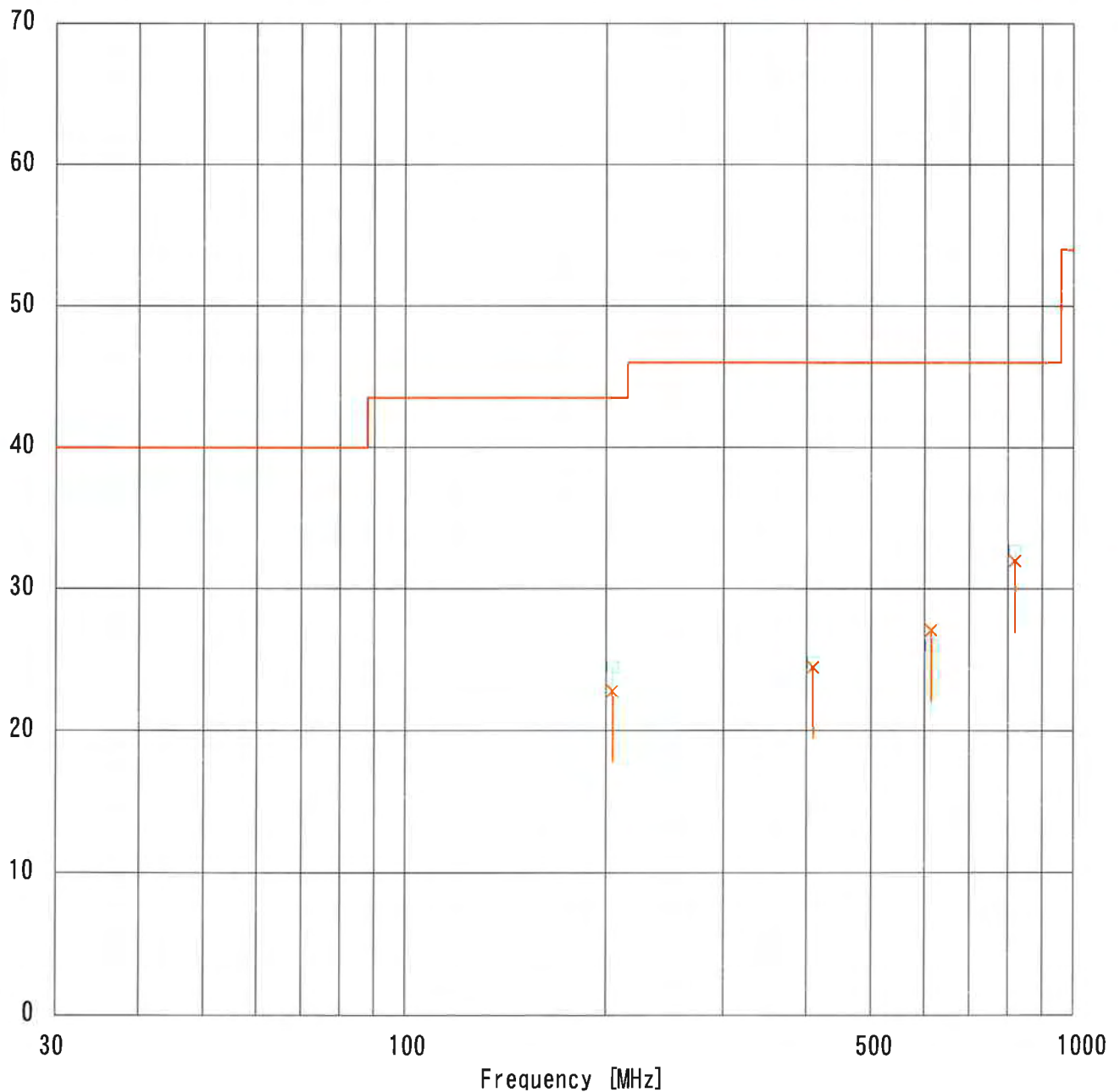
Applicant : SMART COMMUNICATIONS LIMITED.
Kind of Equipment : VHF FM Handheld Transceiver
Model No. : SC-280, SC-281
Serial No. : Sample1
Power : DC7.2V
Mode : Receiving(160.0125MHz)
Remarks :
Date : 3/31/2006
Test Distance : 3 m
Temperature : 20 °C
Humidity : 27 %
Regulation : FCC Part15B § 15.109 (a)

Engineer : Toyokazu Imamura

Emission Level [dB μ V/m]

Horizontal

× Vertical



DATA OF RADIATION TEST

UL Apex Co.,Ltd.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 26HE0192-YK-**F 2**

Applicant : SMART COMMUNICATIONS LIMITED.
 Kind of Equipment : VHF FM Handheld Transceiver
 Model No. : SC-280, SC-281
 Serial No. : Sample1
 Power : DC7.2V
 Mode : Receiving(173.9875MHz)
 Remarks :
 Date : 3/31/2006
 Test Distance : 3 m
 Temperature : 20 °C
 Humidity : 27 %
 Regulation : FCC Part15B § 15.109 (a)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μV/m]	MARGIN	
			HOR [dB μV]	VER [dB μV]					HOR [dB μV/m]	VER [dB μV/m]		HOR [dB]	VER [dB]
1.	218.93	BB	26.2	24.3	17.3	27.0	3.1	6.0	25.6	23.7	46.0	20.4	22.3
2.	437.88	BB	23.8	22.7	18.2	27.7	5.0	6.0	25.3	24.2	46.0	20.7	21.8
3.	656.81	BB	23.4	23.2	19.9	28.1	5.6	6.0	26.8	26.6	46.0	19.2	19.4
4.	875.75	BB	25.4	23.1	22.2	27.6	6.5	6.1	32.6	30.3	46.0	13.4	15.7

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 (ES140) ■ KCC-30_31_32_34 (RE)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.

YAMAKITA No.1 OPEN TEST SITE

Report No. : 26HE0192-YK-F2

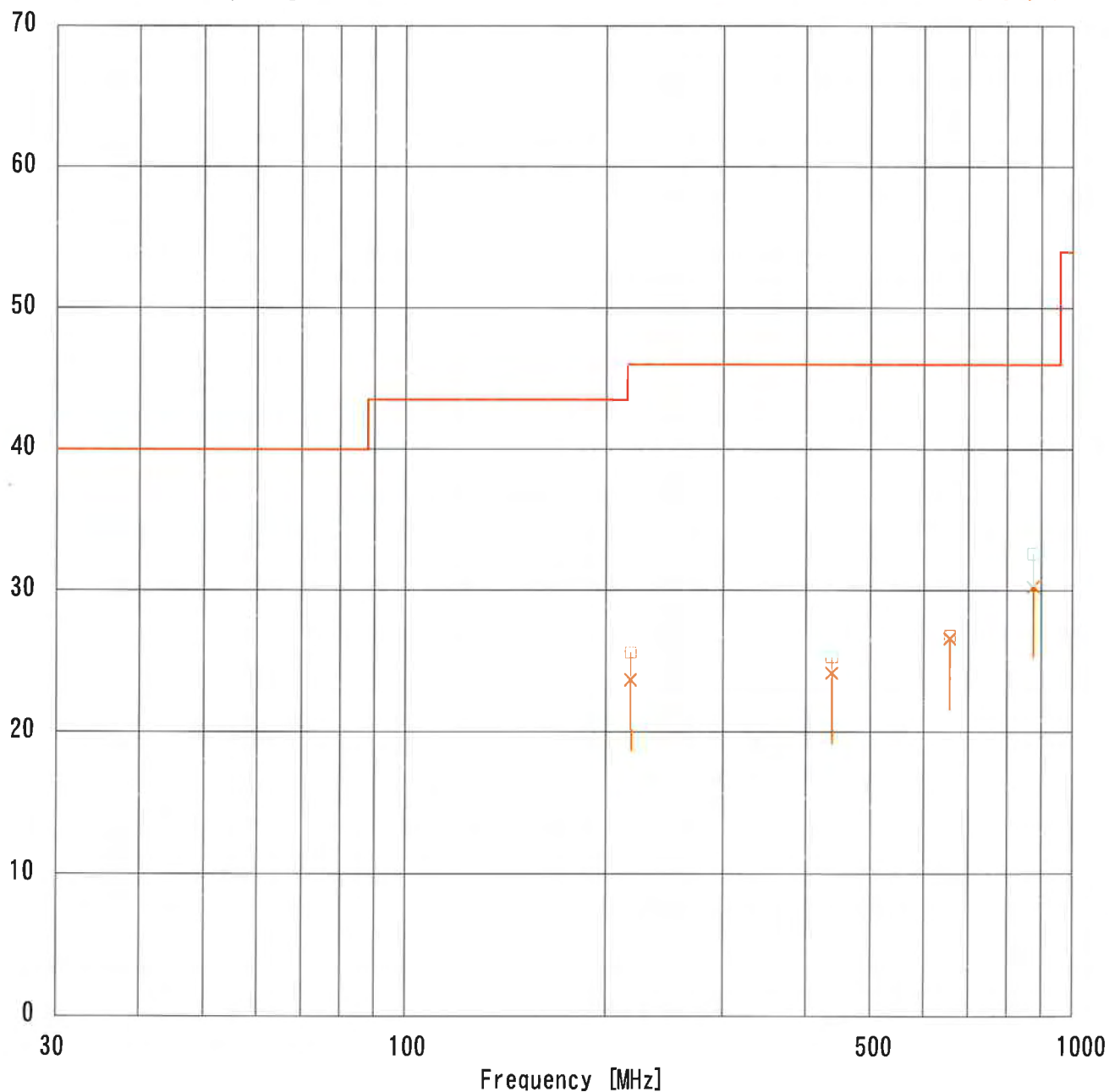
Applicant : SMART COMMUNICATIONS LIMITED.
Kind of Equipment : VHF FM Handheld Transceiver
Model No. : SC-280, SC-281
Serial No. : Sample1
Power : DC7.2V
Mode : Receiving(173.9875MHz)
Remarks :
Date : 3/31/2006
Test Distance : 3 m
Temperature : 20 °C
Humidity : 27 %
Regulation : FCC Part15B § 15.109 (a)

Engineer : Toyokazu Imamura

Emission Level [dB μ V/m]

Horizontal

×Vertical



DATA OF RADIATION TEST

UL Apex Co.,Ltd.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 26HE0192-YK-**F 2**

Applicant : SMART COMMUNICATIONS LIMITED.
Kind of Equipment : VHF FM Handheld Transceiver
Model No. : SC-280, SC-281
Serial No. : Sample1
Power : DC7. 2V
Mode : Receiving (146. 0125MHz)
Remarks :
Date : 3/30/2006
Test Distance : 3 m
Temperature : 20 °C
Humidity : 28 %
Regulation : FCC Part15B § 15. 109 (a)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER					HOR [dB μ V/m]	VER		HOR [dB]	VER
1.	1145. 78	BB	33. 2	33. 2	24. 5	38. 3	2. 9	0. 0	22. 3	22. 3	54. 0	31. 7	31. 7
2.	1336. 74	BB	33. 5	33. 5	24. 7	37. 9	3. 1	0. 0	23. 4	23. 4	54. 0	30. 6	30. 6

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D11/D12 ■ PREAMP:KAF-02 (8449B) ■ SPECTRUMANALYZER:KSA-04 (R3271A)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 26HE0192-YK-**F2**

Applicant : SMART COMMUNICATIONS LIMITED.
Kind of Equipment : VHF FM Handheld Transceiver
Model No. : SC-280, SC-281
Serial No. : Sample1
Power : DC7.2V
Mode : Receiving(146.0125MHz)
Remarks :
Date : 3/30/2006
Test Distance : 3 m
Temperature : 20 °C
Humidity : 28 %
Regulation : FCC Part15B CLASS B (PK)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	1145.78	BB	44.7	45.0	24.5	38.3	2.9	0.0	33.8	34.1	74.0	40.2	39.9
2.	1336.74	BB	45.0	45.1	24.7	37.9	3.1	0.0	34.9	35.0	74.0	39.1	39.0

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D11/D12 ■ PREAMP:KAF-02 (8449B) ■ SPECTRUMANALYZER:KSA-04 (R3271A)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 26HE0192-YK- **F 2**

Applicant : SMART COMMUNICATIONS LIMITED.
Kind of Equipment : VHF FM Handheld Transceiver
Model No. : SC-280, SC-281
Serial No. : Sample1
Power : DC7. 2V
Mode : Receiving (160. 0125MHz)
Remarks :
Date : 3/30/2006
Test Distance : 3 m
Temperature : 20 °C
Humidity : 28 %
Regulation : FCC Part15B § 15. 109 (a)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	1024. 82	BB	34. 4	33. 5	24. 3	38. 5	2. 7	0. 0	22. 9	22. 0	54. 0	31. 1	32. 0
2.	1229. 78	BB	34. 0	34. 1	24. 6	38. 1	3. 0	0. 0	23. 5	23. 6	54. 0	30. 5	30. 4
3.	1434. 74	BB	33. 5	33. 4	24. 8	37. 7	3. 2	0. 0	23. 8	23. 7	54. 0	30. 2	30. 3

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D11/D12 ■ PREAMP:KAF-02 (8449B) ■ SPECTRUMANALYZER:KSA-04 (R3271A)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 26HE0192-YK- **F2**

Applicant : SMART COMMUNICATIONS LIMITED.
Kind of Equipment : VHF FM Handheld Transceiver
Model No. : SC-280, SC-281
Serial No. : Sample1
Power : DC7.2V
Mode : Receiving(160.0125MHz)
Remarks :
Date : 3/30/2006
Test Distance : 3 m
Temperature : 20 °C
Humidity : 28 %
Regulation : FCC Part15B CLASS B (PK)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	1024.82	BB	46.0	45.0	24.3	38.5	2.7	0.0	34.5	33.5	74.0	39.5	40.5
2.	1229.78	BB	44.7	44.0	24.6	38.1	3.0	0.0	34.2	33.5	74.0	39.8	40.5
3.	1434.74	BB	44.5	43.0	24.8	37.7	3.2	0.0	34.8	33.3	74.0	39.2	40.7

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D11/D12 ■ PREAMP:KAF-02 (8449B) ■ SPECTRUMANALYZER:KSA-04 (R3271A)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 26HE0192-YK **F 2**

Applicant : SMART COMMUNICATIONS LIMITED.
Kind of Equipment : VHF FM Handheld Transceiver
Model No. : SC-280, SC-281
Serial No. : Sample1
Power : DC7.2V
Mode : Receiving(173.9875MHz)
Remarks :
Date : 3/30/2006
Test Distance : 3 m
Temperature : 20 °C
Humidity : 28 %
Regulation : FCC Part15B § 15.109 (a)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER					HOR [dB μ V/m]	VER		HOR [dB]	VER
1.	1094.69	BB	34.9	35.2	24.4	38.4	2.8	0.0	23.7	24.0	54.0	30.3	30.0
2.	1313.63	BB	33.2	33.3	24.7	37.9	3.1	0.0	23.1	23.2	54.0	30.9	30.8
3.	1532.57	BB	33.3	32.8	25.1	37.5	3.3	0.0	24.2	23.7	54.0	29.8	30.3

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

■ ANTENNA: KHA-01 (SAS-200 571) 1-18GHz

■ CABLE: KCC-D11/D12 ■ PREAMP: KAF-02 (8449B) ■ SPECTRUMANALYZER: KSA-04 (R3271A)

DATA OF RADIATION TEST

UL Apex Co.,Ltd.

YAMAKITA No.1 ANECHOIC CHAMBER

Report No. : 26HE0192-YK-**F 2**

Applicant : SMART COMMUNICATIONS LIMITED.
Kind of Equipment : VHF FM Handheld Transceiver
Model No. : SC-280, SC-281
Serial No. : Sample1
Power : DC7. 2V
Mode : Receiving(173. 9875MHz)
Remarks :
Date : 3/30/2006
Test Distance : 3 m
Temperature : 20 °C
Humidity : 28 %
Regulation : FCC Part15B CLASS B (PK)

Engineer : Toyokazu Imamura

No.	FREQ. [MHz]	ANT TYPE	READING		ANT FACTOR [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATTEN. [dB]	RESULT		LIMITS [dB μ V/m]	MARGIN	
			HOR [dB μ V]	VER [dB μ V]					HOR [dB μ V/m]	VER [dB μ V/m]		HOR [dB]	VER [dB]
1.	1094. 69	BB	46. 6	46. 4	24. 4	38. 4	2. 8	0. 0	35. 4	35. 2	74. 0	38. 6	38. 8
2.	1313. 63	BB	43. 9	44. 2	24. 7	37. 9	3. 1	0. 0	33. 8	34. 1	74. 0	40. 2	39. 9
3.	1532. 57	BB	43. 8	43. 4	25. 1	37. 5	3. 3	0. 0	34. 7	34. 3	74. 0	39. 3	39. 7

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

■ ANTENNA:KHA-01 (SAS-200 571) 1-18GHz

■ CABLE:KCC-D11/D12 ■ PREAMP:KAF-02 (8449B) ■ SPECTRUMANALYZER:KSA-04 (R3271A)

Test Report No : 26HE0192-YK- F 2

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
KAT6-01	Attenuator	INMET	18N-6dB	RE	2006/03/24 * 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-D11/D12	Coaxial cable	Suhner/storm	SCOFLEX103/ 90-388-020	RE	2005/09/09 * 12
KHA-01	Horn Antenna	A.H.Systems	SAS-200/571	RE	2005/08/20 * 12
KLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2006/01/17 * 12
KSA-04	Spectrum Analyzer	Advantest	R3271A	RE	2005/09/13 * 12
KTR-01	Test Receiver	Rohde & Schwarz	ESI40	RE	2005/08/05 * 12

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

Test Item:

RE: Radiated emission,