

Test Report

TEST PROCEDURES AND TEST SITE DESCRIPTION

FCC ID: AMWUC003

MODEL: EXAI5180(XX)

EQUIPMENT: 900MHz ISM BAND ANALOG TRANSMITTER

MEASUREMENT ITEMS

Section No.

5-1 Field Strength of Radiated Emissions

15.249(a)(b)

15.205 / 15.209

5-2 Power Line Conducted Emissions

15.207

SUPPLEMENT DATA - BAND EDGE EMISSIONS



5-1 Field Strength of Radiated Emissions

15.249(a)(b)
15.205 / 15.209

The measurements were performed in accordance with the ANSI C63.4-1992. Field Strength measurements of radiated spurious emissions were made at the open test site of a 3 meter range maintained by Uniden Corporation in Japan. Complete description and measurement data of this test site have been placed on file with the Commission.

The radio frequency spectrum was scanned in the range of 30 MHz to the 10th harmonic in accordance with the section 15.33(a) of the FCC Rules. The frequency below 1 GHz, the measurement was carried out by using CISPR quasi-peak detector, AGILENT E7400A the Spectrum Analyzer in accordance with the sections 15.33(a) and 15.35(a). The frequency above 1 GHz, using the AGILENT E7400A Spectrum Analyzer in accordance with the section 15.35(b) carried out the measurement.

A bilog antenna CBL6112A was used to cover the range from 30 MHz to 1000 MHz. Narrowband tuned dipole antennas were used over the entire 30 to 1000 MHz range for precision measurements of field strength. Above 1000 MHz, a horn antenna EMCO 3115 was used.

For each spurious or harmonic frequency, the antenna was raised and lowered to obtain a maximum reading on the Spectrum Analyzer with antenna horizontally polarized. Then the turntable, on which the equipment under test was placed, was rotated a minimum of 360 degrees to further increase the reading on the Spectrum Analyzer.

For testing small and/or handheld product, the measurement was performed in 3 orthogonal planes(X, Y, Z). This procedure was repeated with the antenna vertically polarized. The equipment under test was placed in its normal operating position on a turntable approximately 1 meter in height.

In order to convert the measured emission levels into field strength in dBuV/m, the actual field strength (Ef) is determined by algebraically adding the measured emission level (Em) and the antenna correction factor (ACF) including the cable loss at the appropriate frequency. $E_f [\text{dBuV/m}] = E_m [\text{dBuV/m}] + \text{ACF} [\text{dB}]$

FCC Limits:

- a) Fundamental emission: 94 dBuV/m (50,000 uV/m)
- b) Spurious emissions:

30 - 88 MHz	40 dBuV/m	(100 uV/m)
88 - 216 MHz	43.5 dBuV/m	(150 uV/m)
216 - 960 MHz	46 dBuV/m	(200 uV/m)
Above 960 MHz	54 dBuV/m	(500 uV/m)

Test Results: Refer to the attached test reports. All emissions

not reported were more than 20 dB below the limits.

NOTE:

For measurement of the handset, all of the testing were made with the internal battery that is fully charged.

For measurement of base unit, all of the testing were made with the AC Adapter which connected to a standard voltage source.

5-2 Power Line Conducted Emissions

15.207

Test Procedure:

The measurements were performed in accordance with the ANSI C63.4-1992. During the measurements, a standard voltage source is fed into the unit under test through a power line impedance stabilization network.

FCC Limit:

The radio frequency voltage that is conducted back into the AC power line on any frequencies within the band from 150kHz to 30MHz shall not exceed the following limitation.

REQUIREMENTS:

FREQUENCY(MHz)	LEVEL (dBuV)	
0.150-0.50	66 to 56 QP	56 to 46 Ave
0.50-5.0	56 QP	46 Ave
5.0-30.0	60 QP	50 Ave

Test Results: Refer to the attached test reports. All emissions not reported were more than 20 dB below the limits.

NOTE:

Regarding the Handset, this FCC requirement is not applicable to it since the Handset is intended to use the battery only.

SUPPLEMENT DATA - BAND EDGE EMISSION

Attached data show the handset's transmission on lowest channel and base unit's transmission on highest channel.

At the outside of emission bands, those emissions are well reduced against the operational channel frequency of the units.

TEST CONDITIONS:

Modulation : 1000 Hz

5-1 Field Strength of Radiated Emissions (Test Result)

a) Base unit: Fundamental Emissions

Emission (MHz)	FSM Reading (dBuV)	Amplifier Gain (dB)	Measured Level		ACF (dB)	Field Strength (dBuV/m)	FCC Limit (dBuV/m)	Margin (dB)
			(dBuV)	(V/H)				
925.181424	56.9	0.0	56.9	V	34.6	91.5	94.0	2.5
927.451379	57.3	0.0	57.3	V	34.6	91.9	94.0	2.1

b) Base unit: Spurious Emissions

Transmitting Frequency: 926.316402MHz								
Emission (MHz)	FSM Reading (dBuV)	Amplifier Gain (dB)	Measured Level		ACF (dB)	Field Strength (dBuV/m)	FCC Limit (dBuV/m)	Margin (dB)
			(dBuV)	(V/H)				
1911.2151	47.1	28.9	18.2	V	26.9	45.1	54.0	8.9
3822.4302	42.2	28.5	13.7	V	32.1	45.8	54.0	8.2
5733.6453	33.1	25.6	7.5	H	35.0	42.5	54.0	11.5
7644.8604	37.1	26.6	10.5	V	37.7	48.2	54.0	5.8

NOTE: All emissions not reported were more than 20 dB below the FCC limit.

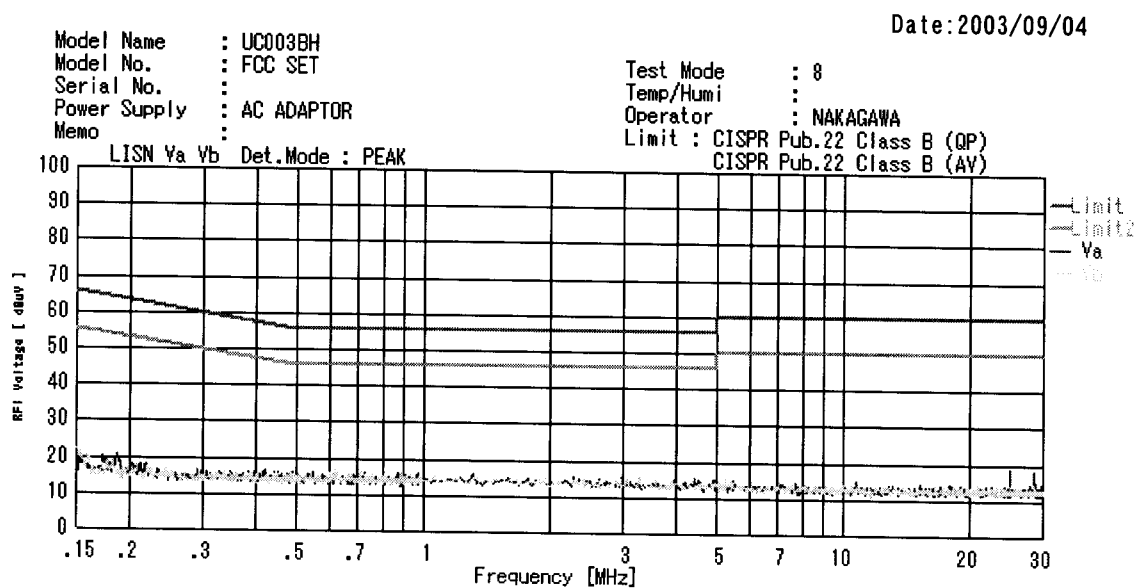
5-2 Power Line Conducted Emissions

15.207

Test Result

<u>Transmitting frequency</u>	<u>Emissions Frequency</u>	<u>Measured Level</u>
926.316402MHz	NO EMISSIONS EXCEEDS 20dB BELOW THE FCC LIMIT.	

All emissions not reported were more than 20 dB below the FCC limit.
(See attached graphs as an example.)



BASE 1CH Band Edge Emissions

UC003 TX 1CH

MAX Dev. : 1kHz±90kHzdev.

Sat Sep 6 21:25:06 2003

REF -3.5 dBm
10dB/

ATT 10 dB

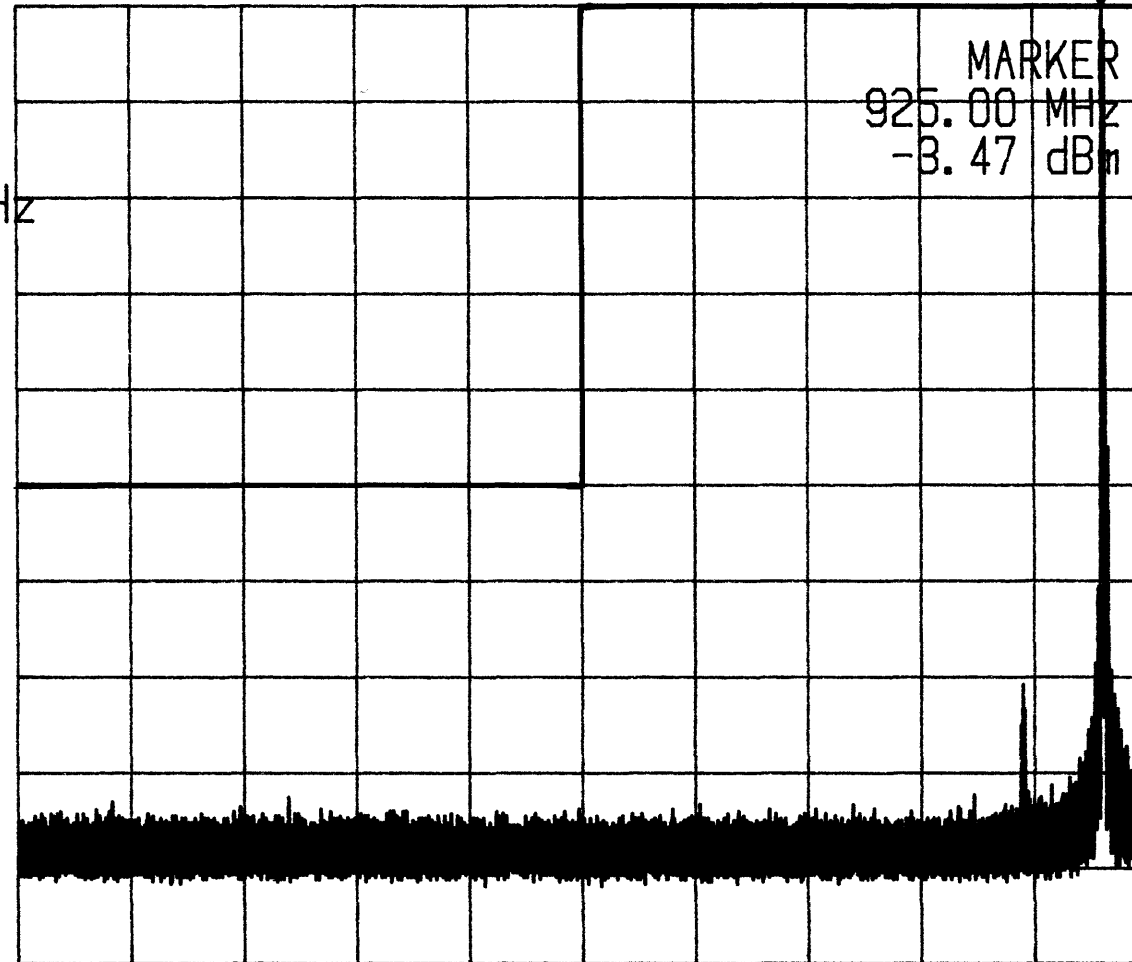
A_view B_view

MKR
925.00 MHz

MARKER
925.00 MHz
-3.47 dBm

-50dBc

RBW
10 kHz
VBW
10 kHz
SWP
1.0 s



CENTER 902.00 MHz

SPAN 50.0 MHz

BASE 20CH Band Edge Emissions

UC003 TX 20CH

MAX Dev. : 1kHz±90kHzdev.

Sat Sep 6 21:13:49 2003

REF -3.5 dBm
10dB/

ATT 10 dB

A_view B_view

MKR
927.457 MHz

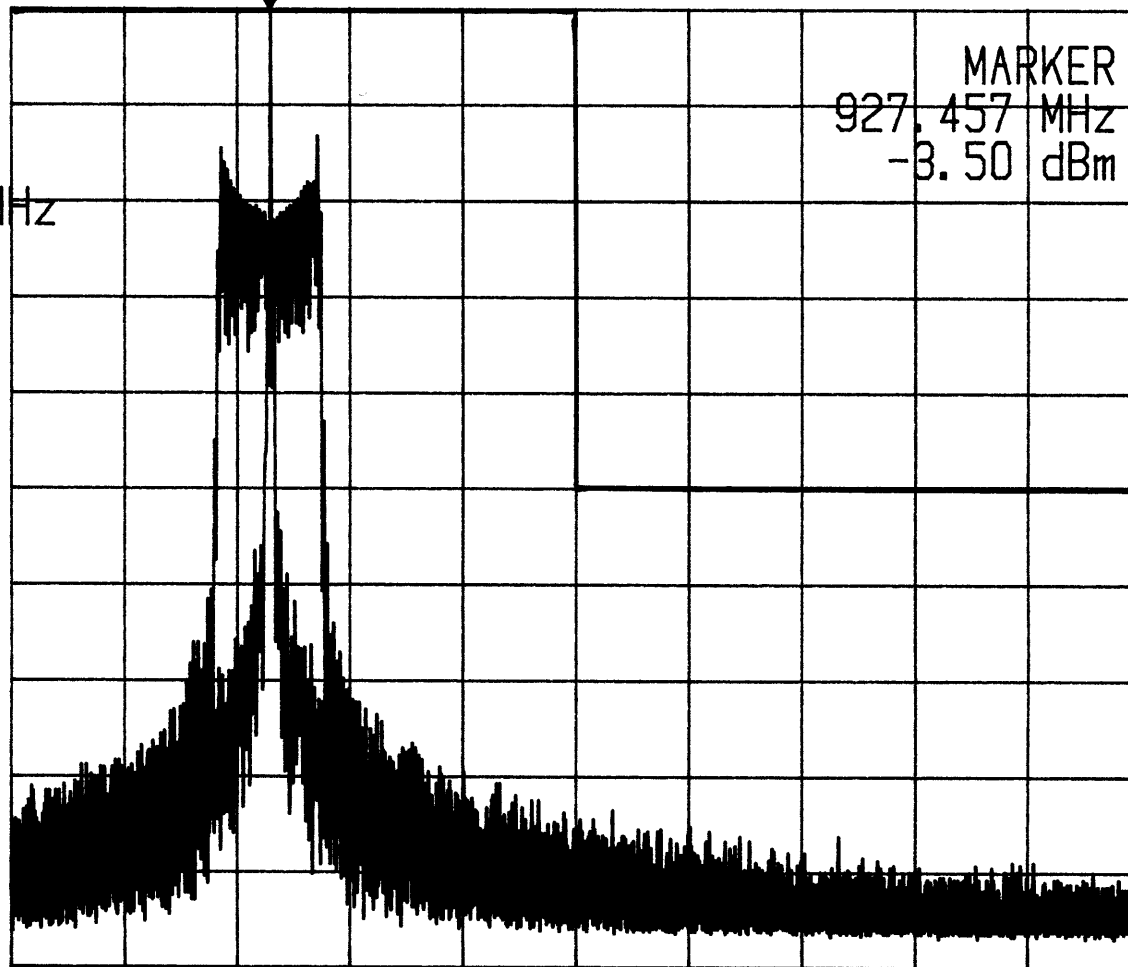
MARKER
927.457 MHz
-3.50 dBm

RBW
1 kHz
VBW
1 kHz
SWP
4.0 s

-50dBc

CENTER 928.000 MHz

SPAN 2.000 MHz



LIST OF MEASUREMENT EQUIPMENTS

ENG-NO	TEST EQUIPMENT	TYPE	MFR	SERIAL NO.	Last Calibratation
1287	AMPLIFIER	AFS30010040020	MITEQ	138315	N/A
2022	MICROWAVE PREAMPLIFIER	8349B	ADVANTEST	3205A04450	N/A
1294	ANTENNA (BILOG)	CBL6112A	CHASE	2350	N/A
1602	ANTENNA (DIPOLE)	3120-B1	EMCO	0075	11-Jul-03
1603	ANTENNA (DIPOLE)	3120-B2	EMCO	0076	11-Jul-03
1604	ANTENNA (DIPOLE)	3120-B3	EMCO	0076	11-Jul-03
1560	ANTENNA (HORN) (18GHz)	3115	EMCO	2167	N/A
N/A	ANTENNA (HORN) (24GHz)	94287.24	NIPPON KOSYUHA	60.1	N/A
1388	LISN	KNW407	KYOURITSU	8-833-21	N/A
0682	POWER SUPPLY	AA300	TAKASAGO	31783013	N/A
0857	SPECTRUM ANALYZER (13GHz)	E7400A	AGILENT	US40240145	18-Apr-03
0205	SPECTRUM ANALYZER (8.4GHz)	R3265	ADVANTEST	25060158	N/A
1008	SPECTRUM ANALYZER (40GHz)	8564E	ADVANTEST	3425A00182	Apr-03