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Report On

EMC Testing of the
TCM Mobile Ltd
y Phone Handset

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FCC ID: VN9YP1

Document 75902890 Report 02 Issue 2

March 2008



Product Service

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COMMERCIAL-IN-CONFIDENCE

REPORT ON

EMC Testing of the
TCM Mobile Ltd
y Phone Handset


Document 75902890 Report 02 Issue 2

March 2008


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DATED

26 March 2008


26 March 2008


This report has been up-issued to Issue 2 to correct the FCC ID and typographical errors.


ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47: Part 15 B. The sample tested was found to comply with the requirements defined in the applied rules.

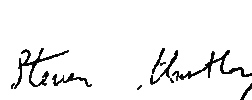
Test Engineer(s);



J Holcombe


A R Hubbard


A Guy




S C Hartley


B Airs



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SECTION 1

REPORT SUMMARY

EMC Testing of the
TCM Mobile Ltd
y Phone Handset



1.1 INTRODUCTION

The information contained in this report is intended to show verification of the TCM Mobile Ltd y Phone Handset to the requirements of CFR 47 FCC Part 15C: 2006.

Objective	To perform Electromagnetic Compatibility (EMC) Qualification Approval Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	TCM Mobile Ltd
Part Number(s)	TCM-yPhone-01
Serial Number(s)	009
Software Version	Rev - C
Hardware Version	Rev - 1.10
Number of Samples Tested	1
Test Specification/Issue/Date	CFR 47 FCC Part 15C: 2006
Incoming Release Date	Declaration of Build Status February 2008
Disposal	Held in bonded store
Start of Test	15 February 2008
Finish of Test	21 February 2008
Name of Engineer(s)	J Holcombe A R Hubbard A Guy S C Hartley B Airs



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results for each configuration, in accordance with CFR 47 FCC Part 15C: 2006, is shown below.

Configuration 1 - EUT & Battery				
Section	Spec Clause	Test Description	Mode	Result
2.4	15.247(d)	Spurious Conducted Emissions	2412MHz Tx	Pass
			2437MHz Tx	Pass
			2462MHz Tx	Pass
2.5	15.247 (a) (2)	6dB Bandwidth	2412MHz Tx	Pass
			2437MHz Tx	Pass
			2462MHz Tx	Pass
2.6	15.247(b) (3)	Maximum Peak Output Power	2412MHz Tx	Pass
			2437MHz Tx	Pass
			2462MHz Tx	Pass
2.7	15.247(e)	Peak Power Spectral Density	2412MHz Tx	Pass
			2437MHz Tx	Pass
			2462MHz Tx	Pass



Configuration 2 - EUT & AC Adaptor				
Section	Spec Clause	Test Description	Mode	Result
2.1	15.207,	Conducted Emissions (AC Power Port)	2412MHz Tx	Pass
			2437MHz Tx	Pass
			2462MHz Tx	Pass
2.2	15.209, 15.247(d), 15.205	Radiated Emissions (Enclosure Port)	2412MHz Tx	Pass
			2437MHz Tx	Pass
			2462MHz Tx	Pass
2.3	15.209, 15.247(d), 15.205	Maximum Peak Output Power	2412MHz Tx	Pass
			2437MHz Tx	Pass
			2462MHz Tx	Pass



1.3 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Handset for voice over IP
MANUFACTURER	TCM Mobile Ltd. ("TCM")
TYPE	y PHONE Handset Model – B
PART NUMBER	TCM-yPhone-01
SERIAL NUMBER	009
HARDWARE VERSION	Rev – C
SOFTWARE VERSION	Rev – 1.10
TRANSMITTER OPERATING RANGE	2412MHz-2462MHz
RECEIVER OPERATING RANGE	2412MHz-2462MHz
COUNTRY OF ORIGIN	ISRAEL
INTERMEDIATE FREQUENCIES	Not applicable
ITU DESIGNATION OF EMISSION	Not supplied
HIGHEST INTERNALLY GENERATED FREQUENCY	2485 MHz.
OUTPUT POWER (W or dBm)	0.170W (Conducted)
FCC ID	VN9YP1
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	Handset for voice over IP using WIFI protocol.
BATTERY/POWER SUPPLY	
MANUFACTURING DESCRIPTION	Rechargeable LI-ION Polymer Battery
MANUFACTURER	Kingpower Technology
TYPE	Rechargeable LI-ION Polymer Battery
PART NUMBER	TCM-Y-I-2-0122
VOLTAGE	3.7 Volts
COUNTRY OF ORIGIN	China
AC ADAPTOR	
MANUFACTURING DESCRIPTION	Switching Adaptor 100-240volts
MANUFACTURER	Sunny
TYPE	SYS1306-0305-W2
PART NUMBER	SYS1306-0305
VOLTAGE	5.0 Volts
COUNTRY OF ORIGIN	China


 Signature

Date 25 February 2008



1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a TCM Mobile Ltd y Phone Handset for voice over IP using WIFI protocol as shown in the photograph below. A full technical description can be found in the Manufacturers documentation.



Equipment Under Test



Product Service

1.4.2 Test Configuration

Configuration 1: EUT & Battery

The EUT was configured in accordance with CFR 47 FCC Part 15C: 2006.

Configuration 2: EUT & AC Adaptor

The EUT was configured in accordance with CFR 47 FCC Part 15C: 2006.

1.4.3 Modes of Operation

Modes of operation of each EUT during testing were as follows:

Mode 1 - 2412MHz Tx

Mode 2 - 2437MHz Tx

Mode 3 - 2462MHz Tx

Mode 4 - Standby

Information on the specific test modes utilised are detailed in the test procedure for each individual test.



Product Service

1.5 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure, test laboratories or an open test area as appropriate.

The EUT was powered from its own intended battery for Configuration 1 or from its own internal battery, whilst connected to a SYS1306-0305-W2 100-240 volt AC Adaptor for Configuration 2.

1.6 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

1.7 MODIFICATION RECORD

No modifications were made to the EUT during testing.



Product Service

SECTION 2

TEST DETAILS

EMC Testing of the
TCM Mobile Ltd
y Phone Handset



Product Service

2.1 CONDUCTED EMISSIONS (AC POWER PORT)

2.1.1 Specification Reference

CFR 47 FCC Part 15C: 2006, Clause 15.207

2.1.2 Equipment Under Test

y Phone Handset, S/N: 009

2.1.3 Date of Test

20 February 2008

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of CFR 47 FCC Part 15: 2006.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 2 - Mode 1
- Mode 2
- Mode 3

2.1.6 Environmental Conditions

	20 February 2008
Ambient Temperature	18.1°C
Relative Humidity	32%
Atmospheric Pressure	1015mbar



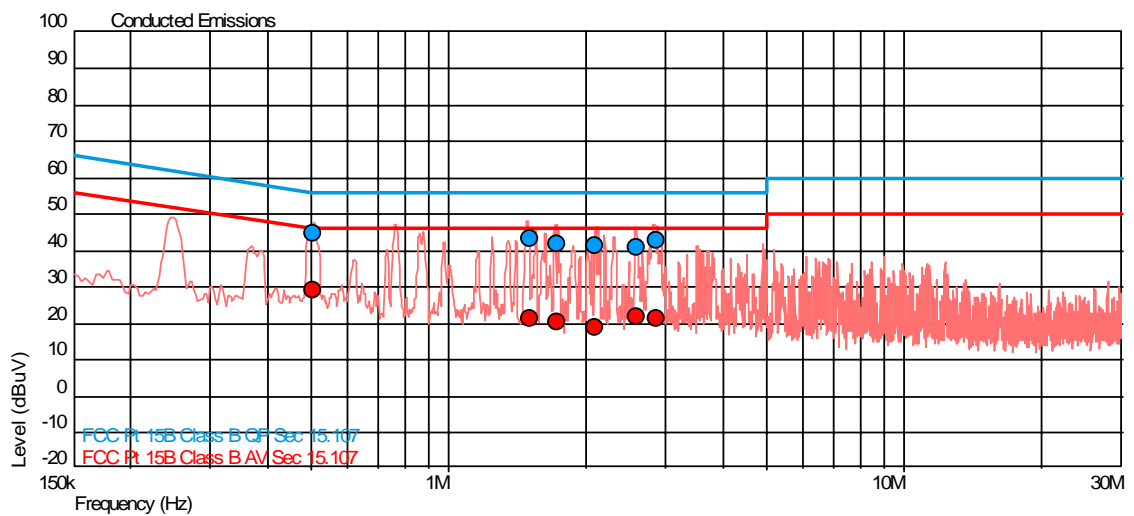
2.1.7 Test Results

For the period of test the EUT met the requirements of CFR 47 FCC Part 15C: 2006 for Conducted Emissions (AC Power Port).

The test results are shown below.

Configuration 2 - Mode 1

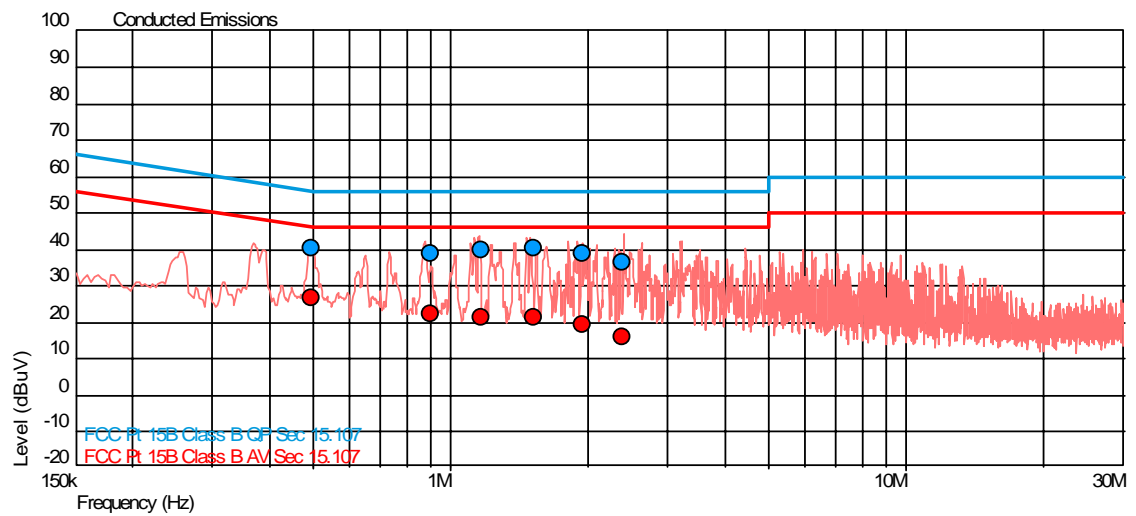
Live Line Results



Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.505	44.5	56.0	-11.5	28.9	46.0	-17.1
1.505	43.4	56.0	-12.6	21.2	46.0	-24.8
1.727	41.8	56.0	-14.2	20.1	46.0	-25.9
2.098	41.4	56.0	-14.6	19.0	46.0	-27.0
2.578	40.7	56.0	-15.3	21.7	46.0	-24.3
2.848	42.7	56.0	-13.3	21.2	46.0	-24.8



Neutral Line Results

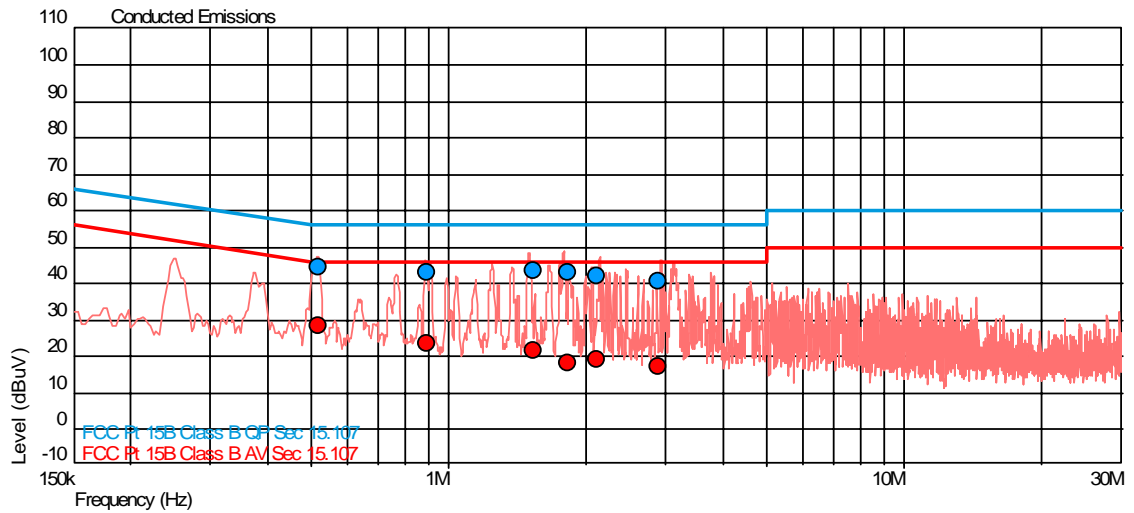


Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.494	40.1	56.1	-16.0	26.4	46.1	-19.7
0.902	38.9	56.0	-17.1	22.0	46.0	-24.0
1.161	39.9	56.0	-16.1	21.0	46.0	-25.0
1.518	40.0	56.0	-16.0	21.1	46.0	-24.9
1.937	38.9	56.0	-17.1	19.3	46.0	-26.7
2.385	36.6	56.0	-19.4	16.0	46.0	-30.0



Configuration 2 - Mode 2

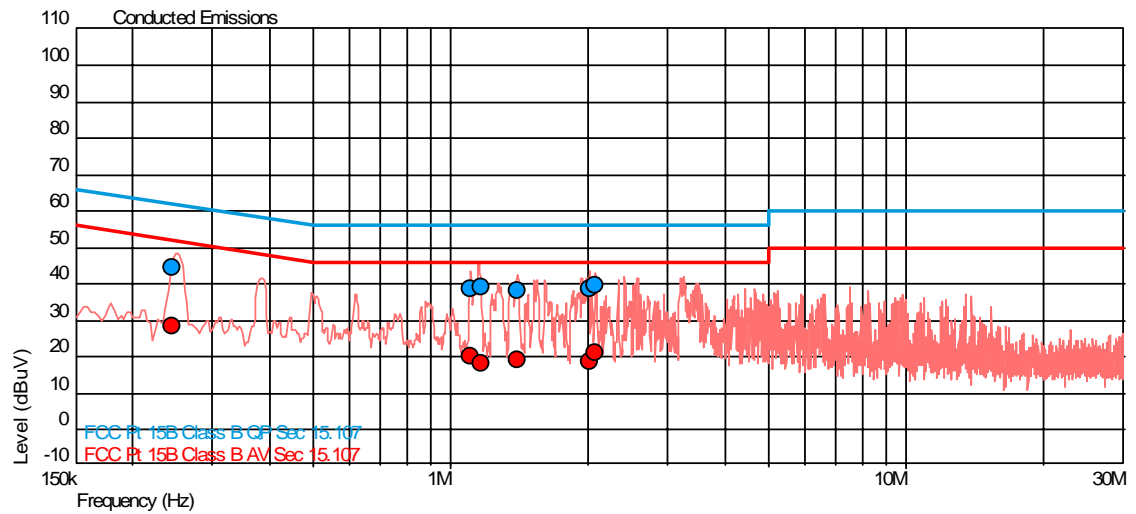
Live Line Results



Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.516	44.5	56.0	-11.5	28.3	46.0	-17.7
0.892	42.7	56.0	-13.3	23.6	46.0	-22.4
1.540	43.4	56.0	-12.6	21.4	46.0	-24.6
1.821	43.0	56.0	-13.0	18.0	46.0	-28.0
2.104	41.7	56.0	-14.3	19.2	46.0	-26.8
2.880	40.5	56.0	-15.5	17.0	46.0	-29.0



Neutral Line Results

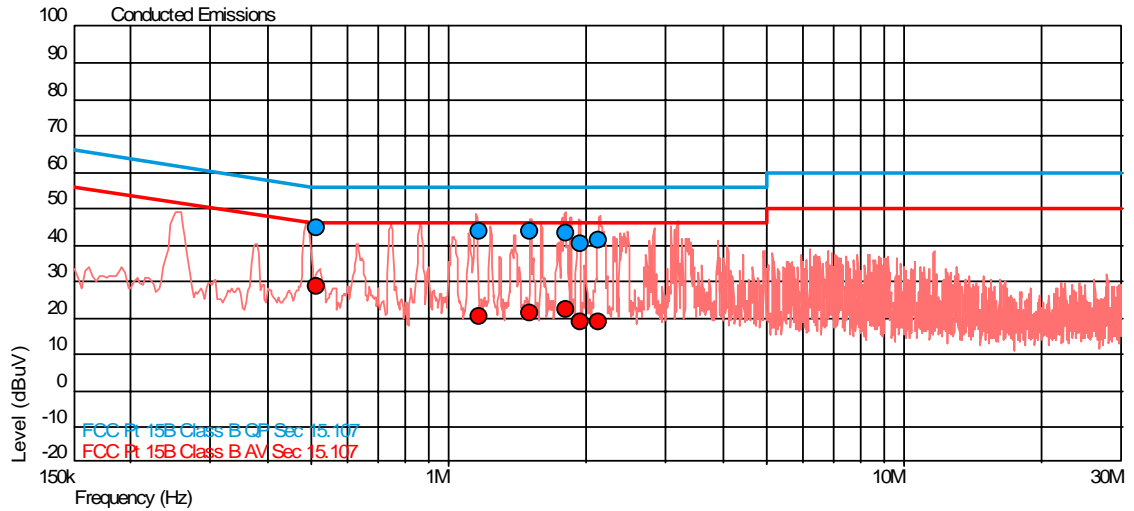


Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.245	44.3	61.9	-17.7	28.1	51.9	-23.8
1.105	38.4	56.0	-17.6	20.1	46.0	-25.9
1.168	39.2	56.0	-16.8	18.2	46.0	-27.8
1.403	37.9	56.0	-18.1	19.1	46.0	-26.9
2.022	38.7	56.0	-17.3	18.6	46.0	-27.4
2.071	39.5	56.0	-16.5	21.0	46.0	-25.0



Configuration 2 - Mode 3

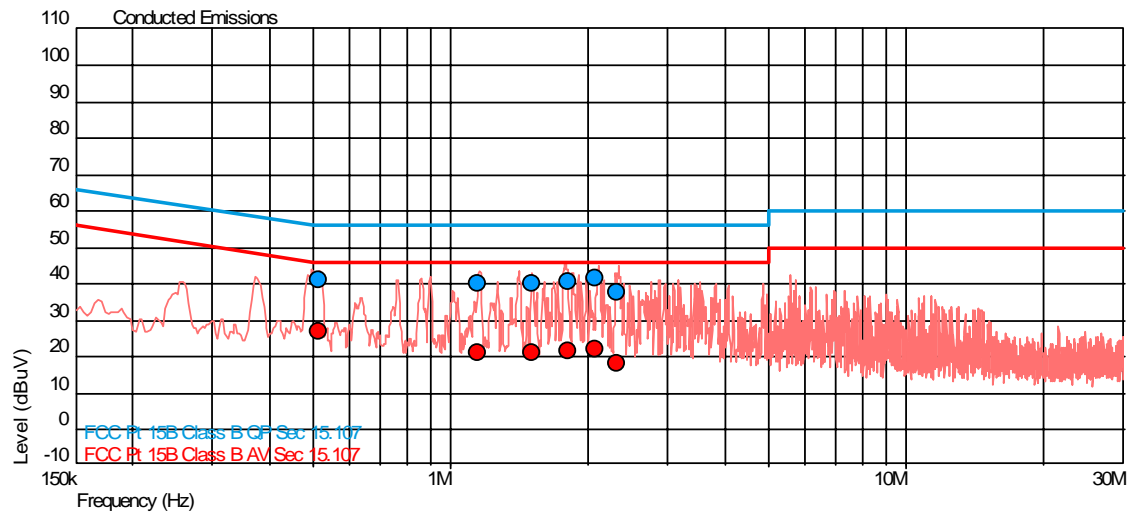
Live Line Results



Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.514	44.6	56.0	-11.4	28.7	46.0	-17.3
1.169	43.8	56.0	-12.2	20.4	46.0	-25.6
1.508	43.6	56.0	-12.4	21.4	46.0	-24.6
1.802	43.4	56.0	-12.6	22.2	46.0	-23.8
1.937	40.4	56.0	-15.6	18.9	46.0	-27.1
2.135	41.4	56.0	-14.6	18.9	46.0	-27.1



Neutral Line Results



Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.511	40.9	56.0	-15.1	26.6	46.0	-19.4
1.140	40.2	56.0	-15.8	21.1	46.0	-24.9
1.505	40.2	56.0	-15.8	21.0	46.0	-25.0
1.800	40.3	56.0	-15.7	21.7	46.0	-24.3
2.073	41.6	56.0	-14.4	22.0	46.0	-24.0
2.313	37.7	56.0	-18.3	18.0	46.0	-28.0



Product Service

2.2 RADIATED EMISSIONS (ENCLOSURE PORT)

2.2.1 Specification Reference

CFR 47 FCC Part 15C: 2006, Clause 15.209, 15.247(d), 15.205

2.2.2 Equipment Under Test

y Phone Handset, S/N: 009

2.2.3 Date of Test

15 to 21 February 2008

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of CFR 47 FCC Part 15: 2006.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1
 - Mode 2
 - Mode 3

2.2.6 Environmental Conditions

	15 February 2008	16 February 2008	17 February 2008
Ambient Temperature	20.1°C	19°C	18°C
Relative Humidity	36%	27%	27%
Atmospheric Pressure	1032mbar	1037mbar	1034mbar
	21 February 2008		
Ambient Temperature	21°C		
Relative Humidity	38%		
Atmospheric Pressure	1004mbar		



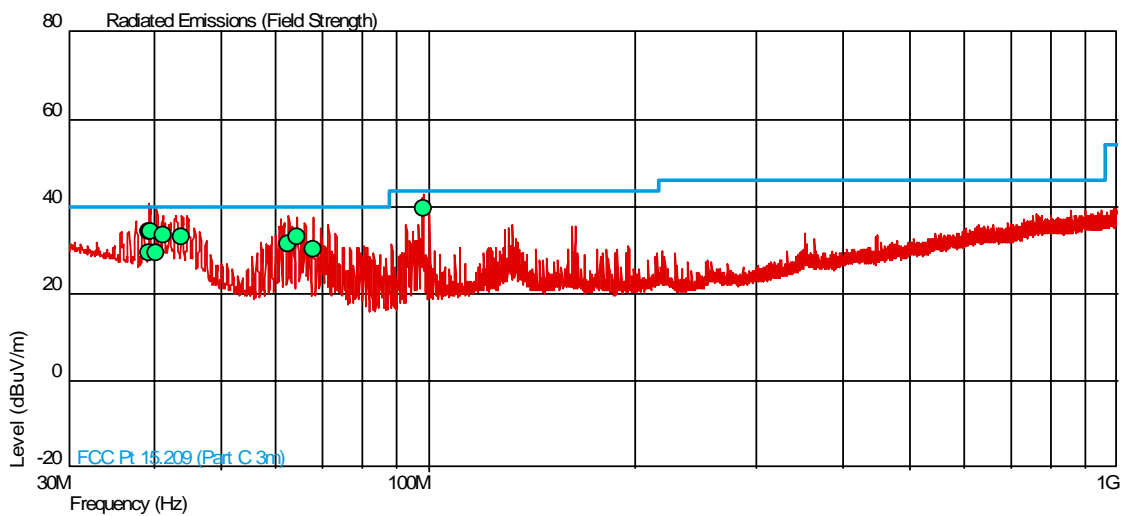
2.2.7 Test Results

For the period of test the EUT met the requirements of CFR 47 FCC Part 15C: 2006 for Radiated Emissions (Enclosure Port).

The test results are shown below.

Configuration 2 - Mode 1

30MHz – 1GHz



Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dBuV/m)	QP Level (uV/m)	QP Limit (uV/m)	QP Margin (uV/m)	Angle (Deg)	Height (m)	Polarity
39.291	29.4	40.0	-10.6	29.5	100.0	-70.5	95	1.00	Vertical
39.361	34.4	40.0	-5.6	52.4	100.0	-47.6	60	1.00	Vertical
39.401	34.1	40.0	-5.9	50.7	100.0	-49.3	94	1.00	Vertical
40.211	29.3	40.0	-10.7	29.2	100.0	-70.8	143	1.00	Vertical
41.143	33.3	40.0	-6.7	46.2	100.0	-53.8	354	1.31	Vertical
43.855	33.1	40.0	-6.9	45.2	100.0	-54.8	109	1.00	Vertical
62.690	31.5	40.0	-8.5	37.6	100.0	-62.4	248	1.00	Vertical
64.428	32.9	40.0	-7.1	44.2	100.0	-55.8	123	1.00	Vertical
68.137	30.2	40.0	-9.8	32.6	100.0	-67.4	218	100	Vertical
98.267*	39.6	43.5	-3.9	95.5	150.0	-54.5	187	1.00	Vertical

*Note: Emission at 98.267MHz was a proven Ambient, entering the chamber via the wave guide, which had an external cable carrying 120V, 60Hz AC Mains supply to EUT.

Configuration 2 - Mode 11GHz – 26GHz

Measured carrier to obtain Out of Restriction Band Limit for the Middle Channel

(-20dB down on Carrier).

Freq. GHz	Ant Pol V/H	Ant Hgt cm	EUT Arc Deg	Final Peak dBμV/m	Final Average dBμV/m	Calculated Peak Limit dBμV/m	Average Limit dBμV/m
2.412	V	110	26	105.0	N/A	85.0	N/A

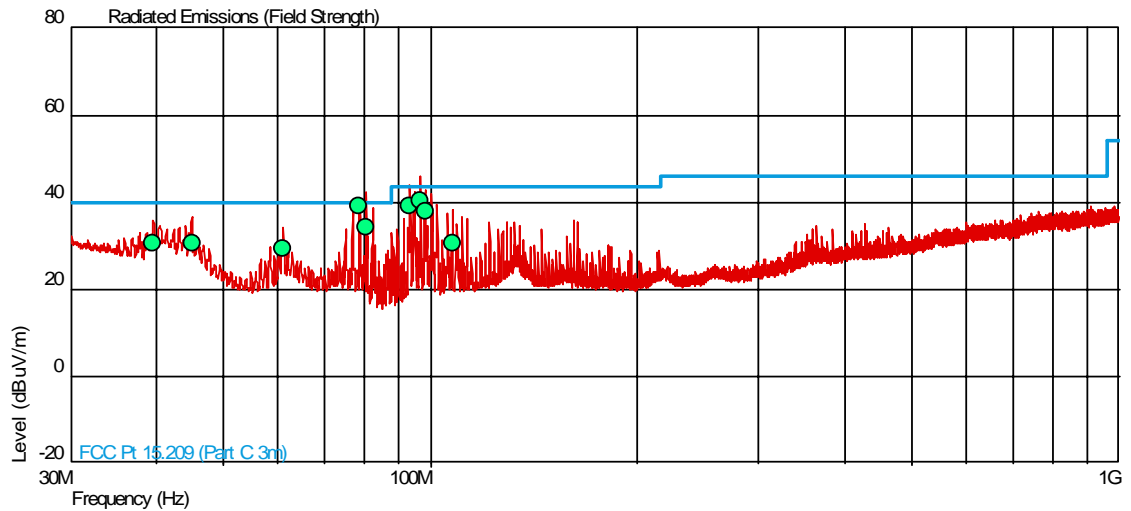
1GHz – 26GHz Final Measurements below:-

Freq GHz	Antenna Pol V/H	Antenna Height cm	EUT Arc degree	Final Peak		Final Average		Peak Limit		Average Limit	
				dBμV/m	μV/m	dBμV/m	μV/m	dBμV/m	μV/m	dBμV/m	μV/m
1.608	H	100	213	57.2	724.4	49.8	309.0	74.0	5011.0	54.0	500.0
4.824	V	100	37	59.6	955.0	37.5	75.0	74.0	5011.0	54.0	500.0
7.236	V	100	66	71.0	3548.0	N/A	N/A	85.0	17780.0	N/A	N/A
9.648	V	102	332	78.9	8810.5	N/A	N/A	85.0	17780.0	N/A	N/A
12.061	V	100	66	65.8	1949.8	47.4	234.4	74.0	5011.0	54.0	500.0
14.472	V	100	187	71.5	3758.4	52.6	426.6	74.0	5011.0	54.0	500.0



Configuration 2 - Mode 2

30MHz – 1GHz



Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dBuV/m)	QP Level (uV/m)	QP Limit (uV/m)	QP Margin (uV/m)	Angle (Deg)	Height (m)	Polarity
39.594	30.7	40.0	-9.3	34.3	100.0	-65.7	76	1.00	Vertical
45.005	30.7	40.0	-9.3	34.3	100.0	-65.7	337	1.00	Vertical
60.974	29.3	40.0	-10.7	29.2	100.0	-70.8	282	1.00	Vertical
78.901	39.1	40.0	-0.9	90.2	100.0	-9.8	360	1.00	Vertical
80.686	34.2	40.0	-5.8	51.3	100.0	-48.7	117	1.00	Vertical
93.270	39.0	43.5	-4.5	89.1	150.0	-60.9	359	1.00	Vertical
96.823	40.4	43.5	-3.1	104.7	150.0	-45.3	51	1.00	Vertical
*98.626	38.0	43.5	-5.5	79.4	150.0	-70.6	172	1.00	Vertical
107.591	30.6	43.5	-12.9	33.9	150.0	-116.1	346	1.00	Vertical

*Note: Emission at 98.267MHz was a proven Ambient, entering the chamber via the wave guide, which had an external cable carrying 120V, 60Hz AC Mains supply to EUT.

Configuration 2 - Mode 21GHz – 26GHz

Measured carrier to obtain Out of Restriction Band Limit for the Middle Channel

(-20dB down on Carrier).

Freq. GHz	Ant Pol V/H	Ant Hgt cm	EUT Arc Deg	Final Peak dBμV/m	Final Average dBμV/m	Calculated Peak Limit dBμV/m	Average Limit dBμV/m
2.437	V	107	25	101.9	N/A	81.9	N/A

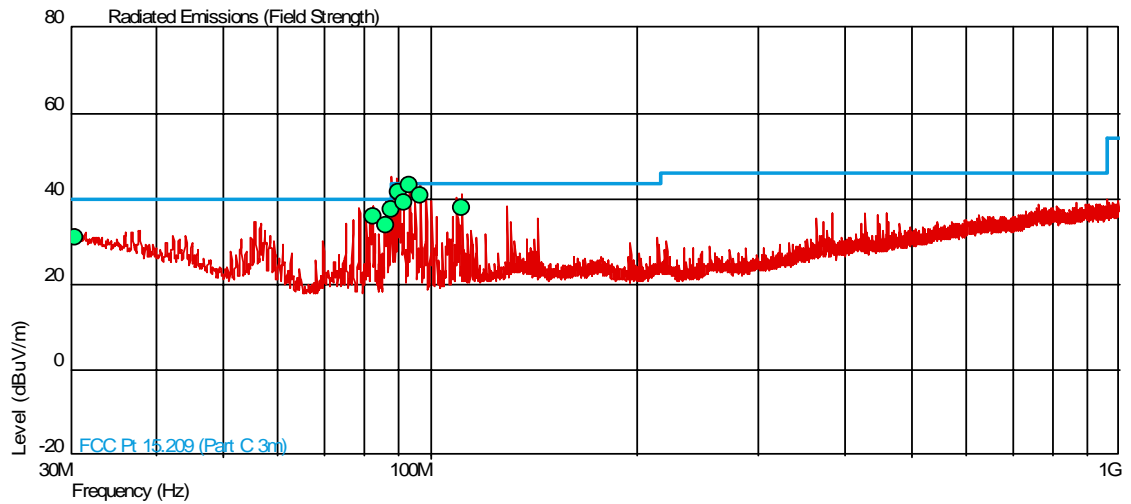
1GHz – 26GHz Final Measurements below:-

Freq. GHz	Antenna Pol V/H	Antenna Height cm	EUT Arc degree	Final Peak		Final Average		Peak Limit		Average Limit	
				dBμV/m	μV/m	dBμV/m	μV/m	dBμV/m	μV/m	dBμV/m	μV/m
1.625	H	100	230	57.0	707.9	50.5	335.0	74.0	5011.0	54.0	500.0
4.874	V	100	322	57.3	732.8	37.7	76.7	74.0	5011.0	54.0	500.0
7.311	V	100	52	73.0	4466.8	49.4	295.1	74.0	5011.0	54.0	500.0
9.748	V	100	332	74.1	5070.0	N/A	N/A	81.9	12445.0	N/A	N/A
12.186	V	100	329	65.4	1862.0	47.5	237.1	74.0	5011.0	54.0	500.0
14.622	V	100	191	72.0	3981.1	N/A	N/A	81.9	12445.0	N/A	N/A



Configuration 2 - Mode 3

30MHz – 1GHz



Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dBuV/m)	QP Level (uV/m)	QP Limit (uV/m)	QP Margin (uV/m)	Angle (Deg)	Height (m)	Polarity
30.534	31.1	40.0	-8.9	35.9	100.0	-64.1	297	2.34	Horizontal
82.466	36.1	40.0	-3.9	63.8	100.0	-36.2	346	1.00	Vertical
86.071	33.9	40.0	-6.1	49.5	100.0	-50.5	163	1.00	Vertical
87.853	37.4	40.0	-2.6	74.1	100.0	-25.9	280	1.00	Vertical
89.655	41.4	43.5	-2.1	117.5	150.0	-32.5	27	1.00	Vertical
91.452	39.2	43.5	-4.3	91.2	150.0	-58.8	21	1.22	Vertical
93.244	43.2	43.5	-0.3	144.5	150.0	-5.5	333	1.00	Vertical
96.830	40.9	43.5	-2.6	110.9	150.0	-39.1	0	1.00	Vertical
111.173	38.0	43.5	-5.5	79.4	150.0	-70.6	187	1.00	Vertical

Configuration 2 - Mode 31GHz – 26GHz

Measured carrier to obtain Out of Restriction Band Limit for the Middle Channel

(-20dB down on Carrier).

Freq. GHz	Ant Pol V/H	Ant Hgt cm	EUT Arc Deg	Final Peak dBμV/m	Final Average dBμV/m	Calculated Peak Limit dBμV/m	Average Limit dBμV/m
2.462	V	109	24	102.0	N/A	82.0	N/A

1GHz – 26GHz Final Measurements below:-

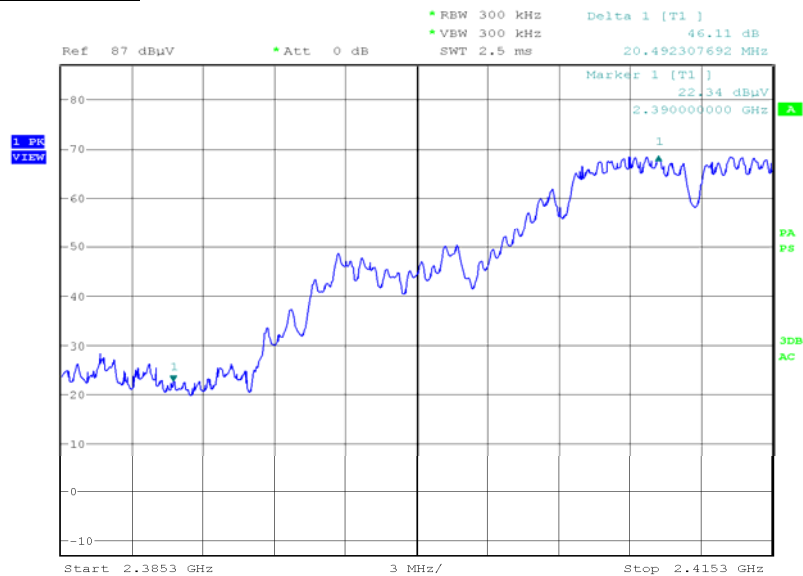
Freq. GHz	Ant Pol V/H	Ant Hgt cm	EUT Arc Deg	Final Peak		Final Average		Peak Limit		Average Limit	
				dBμV/m	μV/m	dBμV/m	μV/m	dBμV/m	μV/m	dBμV/m	μV/m
1.642	H	100	142	55.2	575.4	45.4	186.2	74.0	5011.0	54.0	500.0
4.924	V	100	73	64.2	1621.8	42.3	130.3	74.0	5011.0	54.0	500.0
7.386	V	100	64	71.9	3935.5	47.1	226.5	74.0	5011.0	54.0	500.0
9.848	V	100	332	71.2	3630.8	N/A	N/A	82.0	12589.0	N/A	N/A
12.310	V	100	330	64.7	1717.9	46.9	221.3	74.0	5011.0	54.0	500.0
14.772	V	100	331	71.9	3935.5	N/A	N/A	82.0	12589.0	N/A	N/A



Measurement at Band Edge Results

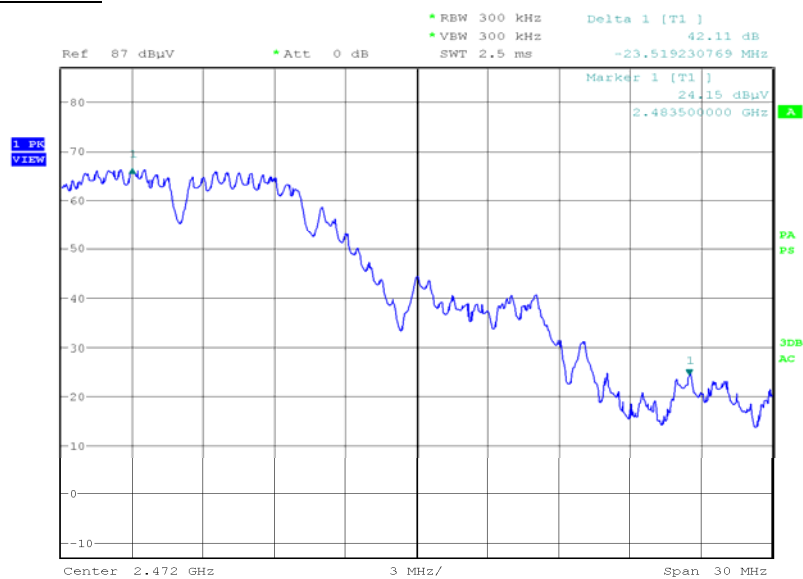
Freq.(GHz)	Ant Pol	Ant Hgt cm	EUT Arc Deg	Final Peak dBμV/m	Final Average dBμV/m	Limit Peak dBμV/m	Limit Average dBμV/m
2.412	V	110	26	63.8	36.1	74.0	54.0
2.462	V	109	24	64.7	39.4	74.0	54.0

Bottom Channel Plot



Date: 16.FEB.2008 13:15:57

Top Channel Plot



Date: 16.FEB.2008 12:51:43



Product Service

2.3 MAXIMUM PEAK OUTPUT POWER (RADIATED)**2.3.1 Specification Reference**

CFR 47 FCC Part 15C: 2006, Clause 15.209, 15.247(d), 15.205

2.3.2 Equipment Under Test

y Phone Handset, S/N: 009

2.3.3 Date of Test

15 February 2008

2.3.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of CFR 47 FCC Part 15: 2006.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1
- Mode 2
- Mode 3

2.3.6 Environmental Conditions

15 February 2008

Ambient Temperature 20.1°C

Relative Humidity 36%

2.3.7 Test Procedure

Test Performed in accordance with 15.247.



2.3.8 Test Results

For the period of test the EUT met the requirements of CFR 47 FCC Part 15C: 2006 for Maximum Peak Output Power.

The test results are shown below.

Frequency (MHz)	EIRP Result (dBm)	Limit (dBm)	EIRP Result (W)	Limit (W)
2412	17.18	30.0	0.05224	1.00
2437	17.04	30.0	0.05058	1.00
2462	17.22	30.0	0.05272	1.00

Limit	<1W or <+30dBm
-------	----------------



Product Service

2.4 SPURIOUS CONDUCTED EMISSIONS

2.4.1 Specification Reference

CFR 47 FCC Part 15C: 2006, Clause 15.247(d)

2.4.2 Equipment Under Test

y Phone Handset, S/N: 009

2.4.3 Date of Test

18 February 2008

2.4.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of CFR 47 FCCPart 15: 2006.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1
 - Mode 2
 - Mode 3

2.4.6 Environmental Conditions

18 February 2008

Ambient Temperature 23°C

Relative Humidity 22%

2.4.7 Test Procedure

In accordance with Part 15.247(d), the Spurious Conducted Emissions from the antenna terminal were measured. The transmitter output power was attenuated using a combination of filters and attenuators and the frequency spectrum investigated from 9kHz to 25 GHz. The EUT was set to transmit on full power and frequency hopping on all channels. The resolution and video bandwidths were set to 100kHz in accordance with Part 15.247. The spectrum analyser detector was set to Max Hold.

With the EUT transmitting at maximum power, the Spectrum Analyser was set to Max Hold and the fundamental peak measured in a RBW and VBW of 100kHz. This level was used to determine the limit line as displayed on the plots of -20dBc.

The maximum path loss across each measurement band was used as the reference level offset to ensure worst case results.



2.4.8 Test Results

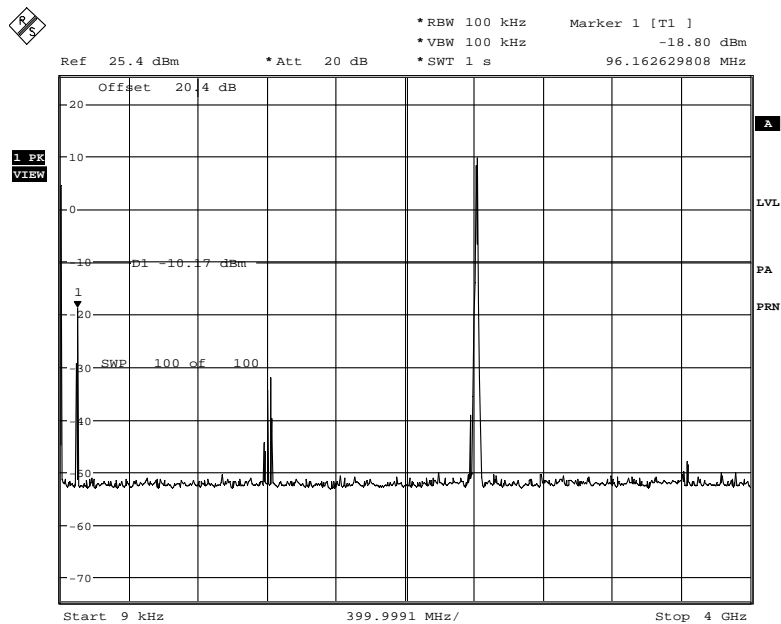
For the period of test the EUT met the requirements of CFR 47 FCC Part 15C: 2006 for Spurious Conducted Emissions.

The test results are shown below.

Spurious Conducted Emissions (9kHz – 4GHz)

Frequency Hopping On All Channels – Maximum Power

Configuration 1 - Mode 1



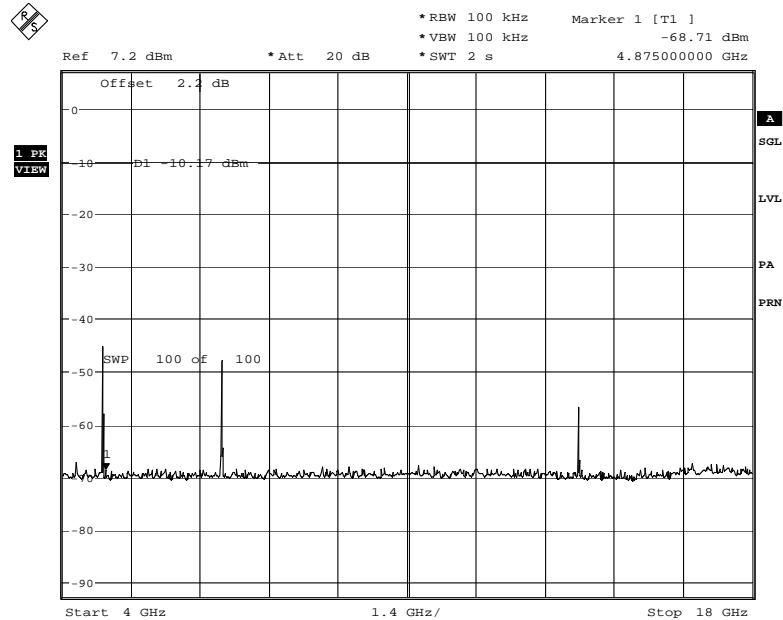
Date: 18.FEB.2008 17:38:42



Spurious Conducted Emissions (4GHz – 18GHz)

Frequency Hopping On All Channels – Maximum Power

Configuration 1 - Mode 1

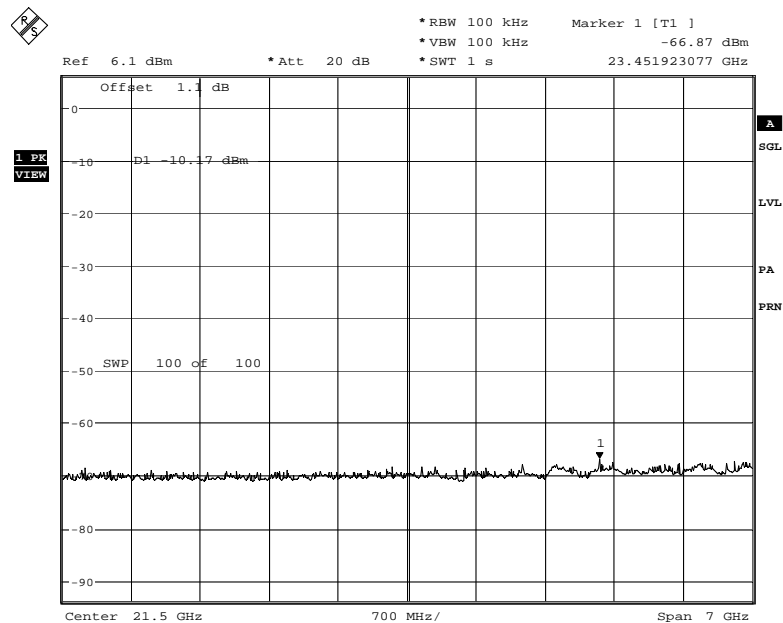


Date: 18.FEB.2008 19:11:07

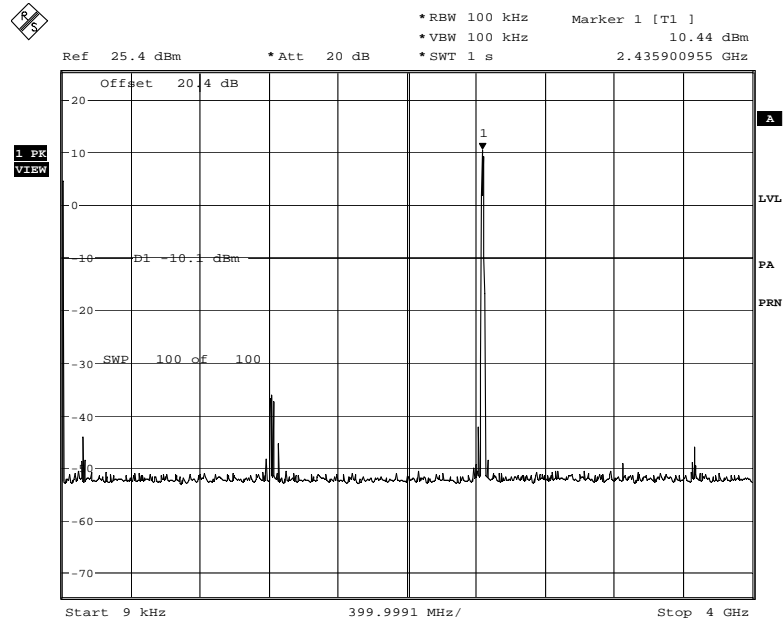
Spurious Conducted Emissions (18GHz – 25GHz)

Frequency Hopping On All Channels – Maximum Power

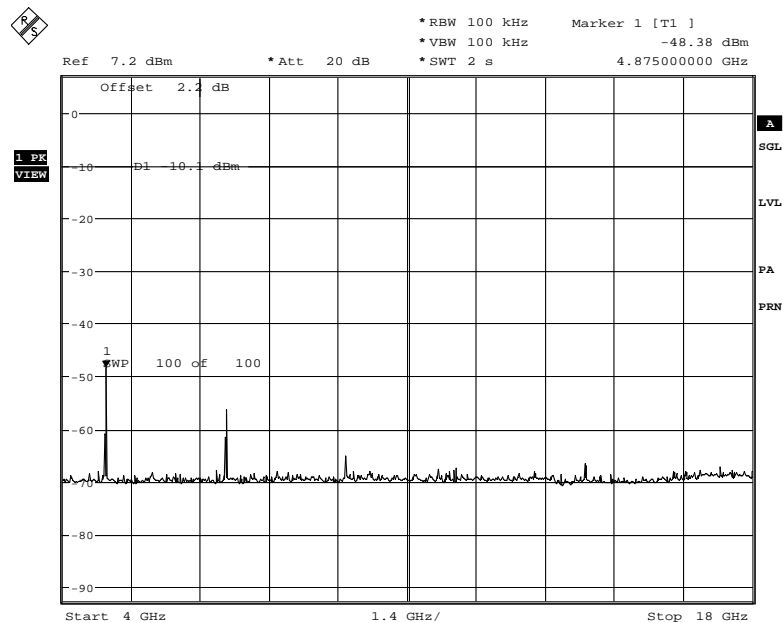
Configuration 1 - Mode 1



Date: 18.FEB.2008 19:36:17

Spurious Conducted Emissions (9kHz – 4GHz)Frequency Hopping On All Channels – Maximum PowerConfiguration 1 - Mode 2

Date: 18.FEB.2008 17:43:05

Spurious Conducted Emissions (4GHz – 18GHz)Frequency Hopping On All Channels – Maximum PowerConfiguration 1 - Mode 2

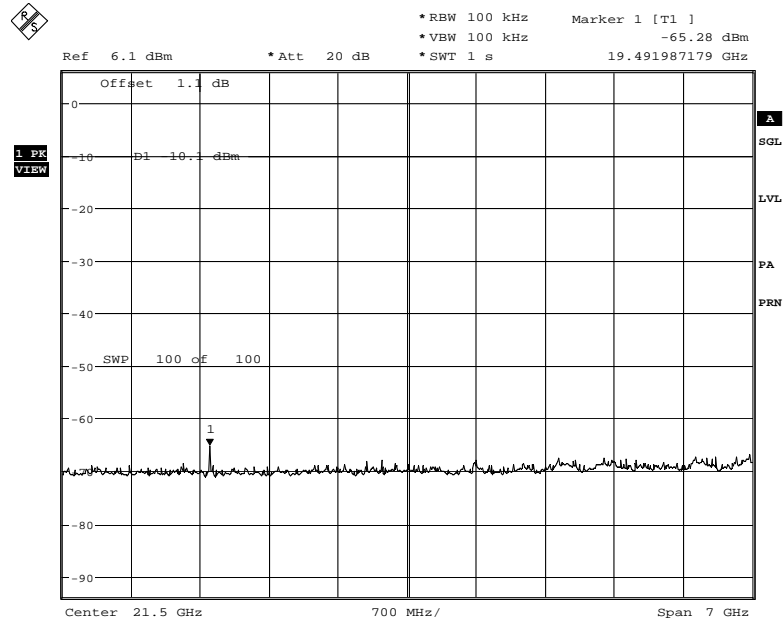
Date: 18.FEB.2008 18:54:51



Spurious Conducted Emissions (18GHz – 25GHz)

Frequency Hopping On All Channels – Maximum Power

Configuration 1 - Mode 2

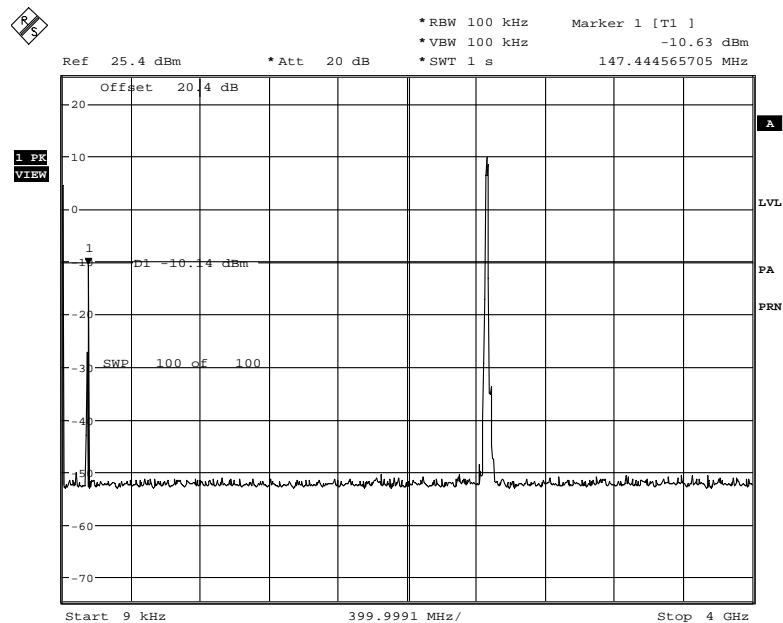


Date: 18.FEB.2008 19:30:19

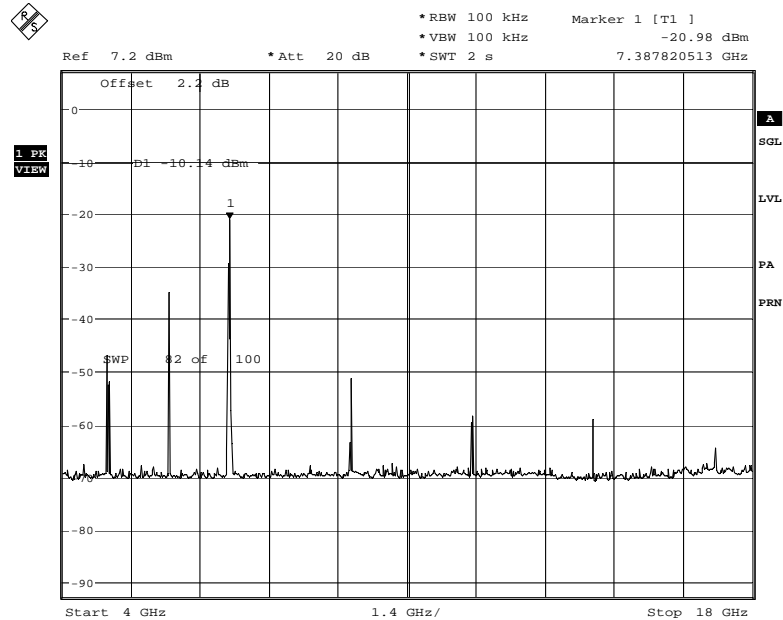
Spurious Conducted Emissions (9kHz – 4GHz)

Frequency Hopping On All Channels – Maximum Power

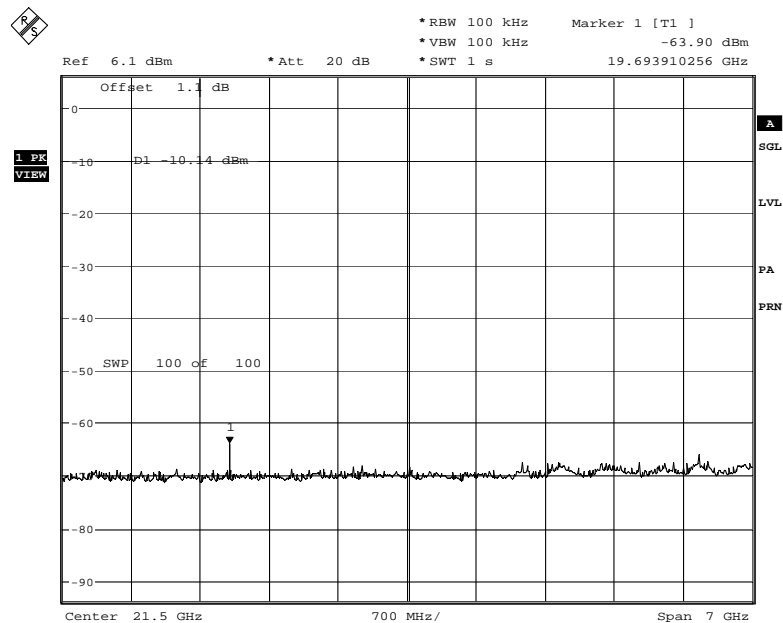
Configuration 1 - Mode 3



Date: 18.FEB.2008 18:02:43

Spurious Conducted Emissions (4GHz – 18GHz)Frequency Hopping On All Channels – Maximum PowerConfiguration 1 - Mode 3

Date: 18.FEB.2008 18:34:45

Spurious Conducted Emissions (18GHz – 25GHz)Frequency Hopping On All Channels – Maximum PowerConfiguration 1 - Mode 3

Date: 18.FEB.2008 19:42:43



Product Service

2.5 6DB BANDWIDTH

2.5.1 Specification Reference

CFR 47 FCC Part 15C: 2006, Clause 15.247(a)(2)

2.5.2 Equipment Under Test

y Phone Handset, S/N: 009

2.5.3 Date of Test

18 February 2008

2.5.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.5.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of CFR 47 FCC Part 15: 2006.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1
 - Mode 2
 - Mode 3

2.5.6 Environmental Conditions

18 February 2008

Ambient Temperature 23°C

Relative Humidity 26%

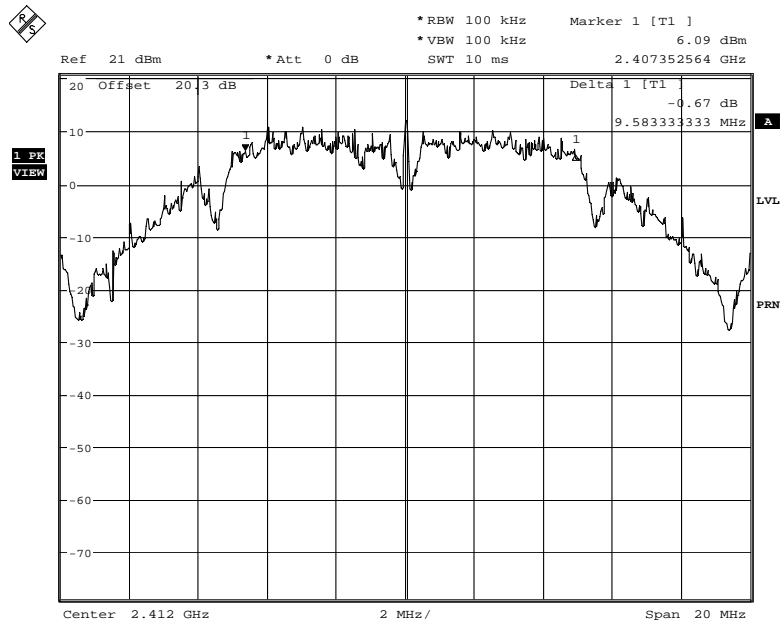
2.5.7 Test Results

For the period of test the EUT met the requirements of CFR 47 FCC Part 15C: 2006 for 6dB Bandwidth.

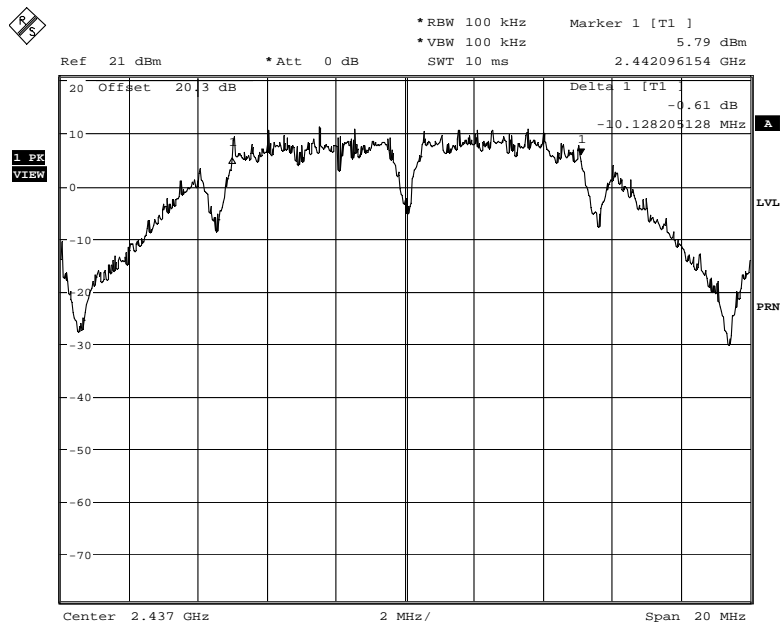
The test results are shown below.

Configuration 1 - Modes 1, 2 & 3

Frequency (MHz)	Data Rate (Mbps)	6dB Bandwidth (MHz)
2412	DH1	9.583
2437	DH1	10.128
2482	DH1	9.840

Configuration 1 – Mode 1 – Maximum Power DH1

Date: 15.FEB.2008 16:01:27

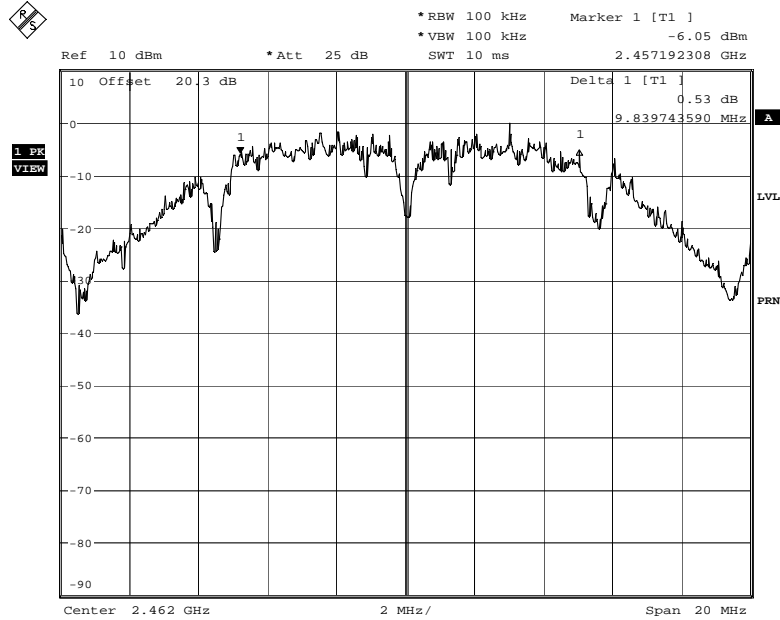
Configuration 1 – Mode 2 – Maximum Power DH1

Date: 15.FEB.2008 15:52:54



Product Service

Configuration 1 – Mode 3 – Maximum Power DH1



Date: 15.FEB.2008 14:28:48



Product Service

2.6 MAXIMUM PEAK OUTPUT POWER (CONDUCTED)**2.6.1 Specification Reference**

CFR 47 FCC Part 15C: 2006, Clause 15.247(b)(3)

2.6.2 Equipment Under Test

y Phone Handset, S/N: 009

2.6.3 Date of Test

18 February 2008

2.6.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.6.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of CFR 47 FCCPart 15: 2006.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1
 - Mode 2
 - Mode 3

2.6.6 Environmental Conditions

18 February2008

Ambient Temperature 23°C

Relative Humidity 26%

2.6.7 Test Procedure

Test Performed in accordance with 15.247.

The EUT was connected to a Peak Power Analyser, (8990A), via an RF cable. Using a Signal Generator and the 8990A, the path loss of the cable was measured and entered as an offset adjustment into the 8990A. The peak level was recorded and compared with the test limits.



2.6.8 Test Results

For the period of test the EUT met the requirements of CFR 47 FCC Part 15C: 2006 for Maximum Peak Output Power.

The test results are shown below.

Configuration 1 - Modes 1, 2 & 3

Frequency (MHz)	Path Loss (dB)	Output Power (dBm)	Result (mW)
2412	20.32	+24.40	275.42
2437	20.28	+24.40	275.42
2462	20.30	+24.30	269.15

Limit	<1W or <+30dBm
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Product Service

2.7 PEAK POWER SPECTRAL DENSITY

2.7.1 Specification Reference

CFR 47 FCC Part 15C: 2006, Clause 15.247(e)

2.7.2 Equipment Under Test

y Phone Handset, S/N: 009

2.7.3 Date of Test

19 February 2008

2.7.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.7.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of CFR 47 FCCPart 15: 2006.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1
 - Mode 2
 - Mode 3

2.7.6 Environmental Conditions

19 February 2008

Ambient Temperature 23°C

Relative Humidity 24%

2.7.7 Test Results

For the period of test the EUT met the requirements of CFR 47 FCC Part 15C: 2006 for Peak Power Spectral Density.

The test results are shown below.

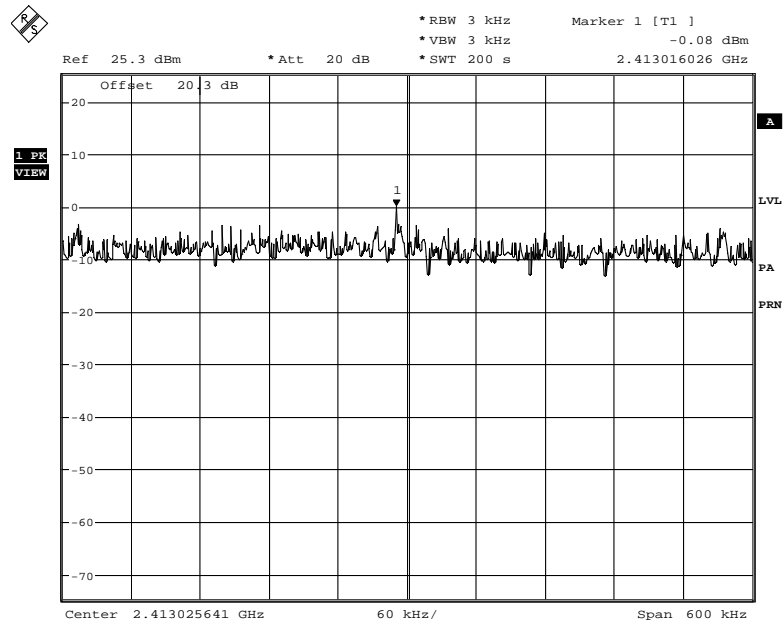
Configuration 1 - Modes 1, 2 & 3

Frequency	Data Rate	Measurement Bandwidth	Result
2412 MHz	2 Mbps	3 kHz	-0.08 dBm
2437 MHz	2 Mbps	3 kHz	+0.42 dBm
2462 MHz	2 Mbps	3 kHz	-0.32 dBm



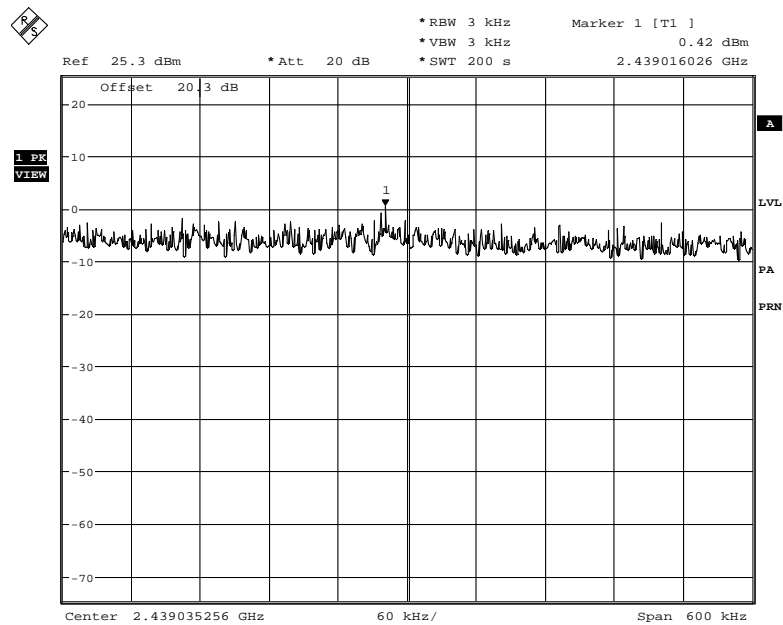
Product Service

Configuration 1 - Mode 1



Date: 19.FEB.2008 14:42:56

Configuration 1 – Mode 2

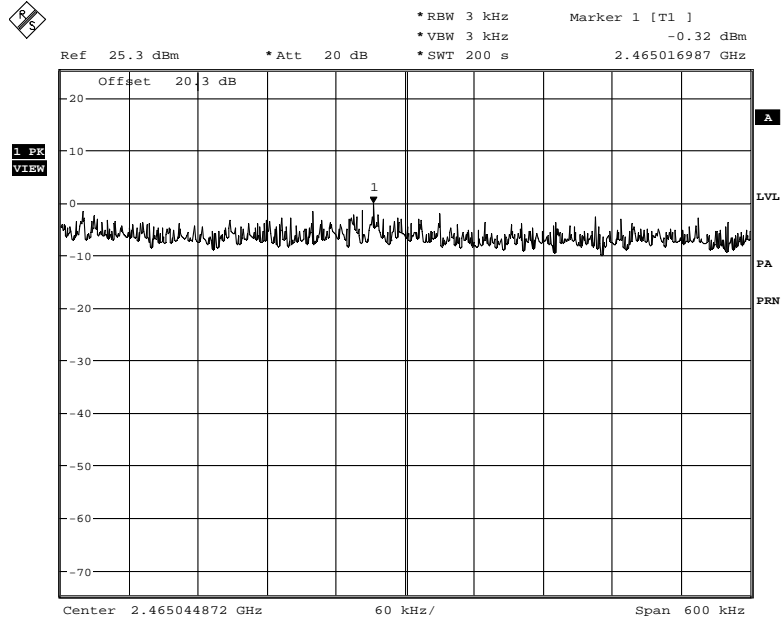


Date: 19.FEB.2008 12:16:07



Product Service

Configuration 1 - Modes 3



Date: 18.FEB.2008 20:10:39



Product Service

SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No	TE Number	Calibration Due
Section 2.1 EMC - Conducted Emissions				
Transient Limiter	Hewlett Packard	11947A	15	29-Sep-2008
3 phase LISN	Rohde & Schwarz	ESH2-Z5	323	18-Dec-2008
Amplifier (Power)	Spitzenberger	EP 4500/B	328	TU
Screened Room (5)	Rainford	Rainford	1545	1-Mar-2008
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	28-Jan-2009
Section 2.3 EMC - Maximum Output Power				
Signal Generator 10kHz to 2.7GHz	Marconi	2031	19	17-Jan-2009
Peak Power Analyser	Hewlett Packard	8990A	107	24-Jan-2009
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	29-Jun-2008
DRG	EMCO	3115	794	27-Jul-2008
Screened Room (5)	Rainford	Rainford	1545	1-Mar-2008
Mast Controller	Inn-Co GmbH	CO 1000	1606	TU
Turntable/Mast Controller	EMCO	2090	1607	TU
EMI Test Receiver	Rohde & Schwarz	ESIB26	2028	25-Jun-2008
Power Sensor	Hewlett Packard	84812A	2743	24-Jan-2009
Antenna (DRG Horn)	ETS-LINDGREN	3115	3125	21-Apr-2008
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	28-Jan-2009
Section 2.2 EMC - Radiated Emissions				
Signal Generator	Hewlett Packard	8672A	223	22-Feb-2008
Antenna (Double Ridge Guide)	Link Microtek Ltd	AM180HA-K-TU2	230	22-Jun-2008
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	29-Jun-2008
Amplifier (Low Noise, 18GHz-40GHz)	Narda	NARDA DB02-0447	237	28-Jun-2008
Amplifier (Low Noise, 18GHz-40GHz)	Narda	NARDA DB02-0447	240	28-Jun-2008
Amplifier (Power)	Spitzenberger	EP 4500/B	328	TU
Inrush Current Source	Spitzenberger	PHE4500/B	329	O/P MON
Pre-Amplifier	Phase One	PS04-0085	1532	O/P MON
Pre-Amplifier	Phase One	PS04-0086	1533	O/P MON
Screened Room (5)	Rainford	Rainford	1545	1-Mar-2008
Mast Controller	Inn-Co GmbH	CO 1000	1606	TU
Turntable/Mast Controller	EMCO	2090	1607	TU
RCI Network	Erika -Fiedler	RCI	1769	TU
High Pass Filter (4GHz)	RLC Electronics	F-100-4000-5-R	2773	21-May-2008
Antenna (Bilog)	Chase	CBL6143	2904	28-Nov-2009
Comb Generator	Schaffner	RSG1000	3034	TU
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	28-Jan-2009
Section 2.5 Radio (Tx) - 6dB Bandwidth				
Attenuator 20dB/2W	Weinschel	Model 2	379	29-Nov-2008
Cable (1m, sma(m) - sma(m))	Reynolds	262-0248-1000	2408	17-Sep-2008
Spectrum Analyser	Rohde & Schwarz	FSU26	2747	24-Jul-2008
Hygrometer	Rotronic	A1	2760	4-Jun-2008



Instrument	Manufacturer	Type No	TE Number	Calibration Due
Section 2.4 Radio (Tx) - Conducted Spurious Emissions				
Signal Generator	Hewlett Packard	ESG4000A	38	12-Mar-2008
Attenuator 20dB/2W	Weinschel	Model 2	379	29-Nov-2008
Filter (High Pass, 4GHz)	RLC Electronics	F-100-4000-5-R	564	21-May-2008
Signal Generator	Rohde & Schwarz	SMR40	1589	22-Oct-2008
Cable (1m, sma(m) - sma(m))	Reynolds	262-0248-1000	2408	17-Sep-2008
Spectrum Analyser	Rohde & Schwarz	FSU26	2747	24-Jul-2008
Hygrometer	Rotronic	A1	2760	4-Jun-2008
Section 2.6 Radio (Tx) - Maximum Peak Output Power				
Peak Power Analyser	Hewlett Packard	8990A	107	24-Jan-2009
Attenuator 20dB/2W	Weinschel	Model 2	379	29-Nov-2008
Cable (1m, sma(m) - sma(m))	Reynolds	262-0248-1000	2408	17-Sep-2008
Power Sensor	Hewlett Packard	84812A	2743	24-Jan-2009
Spectrum Analyser	Rohde & Schwarz	FSU26	2747	24-Jul-2008
Hygrometer	Rotronic	A1	2760	4-Jun-2008
Section 2.7 Radio (Tx) - Peak Power Spectral Density				
Signal Generator	Hewlett Packard	ESG4000A	38	12-Mar-2008
Attenuator 20dB/2W	Weinschel	Model 2	379	29-Nov-2008
Cable (1m, sma(m) - sma(m))	Reynolds	262-0248-1000	2408	17-Sep-2008
Spectrum Analyser	Rohde & Schwarz	FSU26	2747	24-Jul-2008
Hygrometer	Rotronic	A1	2760	4-Jun-2008

TU – Traceability Unscheduled

OP MON – Output Monitored with Calibrated Equipment



3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter	MU
Radiated Emissions, Bilog Antenna, AOATS	30MHz to 1GHz Amplitude	5.1dB*
Radiated Emissions, Horn Antenna, AOATS	1GHz to 40GHz Amplitude	6.3dB*
Conducted Emissions, LISN	150kHz to 30MHz Amplitude	3.2dB*
Conducted Emissions, ISN	150kHz to 30MHz Amplitude	2.1dB
Substitution Antenna, Radiated Field	30MHz to 18GHz Amplitude	2.6dB
Discontinuous Interference	150kHz to 30MHz Amplitude	3.0dB*
Interference Power	30MHz to 300MHz Amplitude	3.0dB*
Radiated E-Field Susceptibility	26MHz to 2.5GHz Test Amplitude	1.4dB†
Conducted Susceptibility	100kHz to 250MHz Amplitude	1.8dB†
Power Frequency Magnetic Field	50Hz/60Hz Amplitude	0.45%
Magnetic Emissions	9kHz to 30MHz Amplitude	3.4dB*
Magnetic Field/Flux iaw EN 50366	10Hz to 400kHz	2.64%
Harmonics and Flicker	The test was applied using proprietary equipment that meets the requirements of EN 61000-3-2 and EN 61000-3-3	—
Mains Voltage Variations and Interrupts	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-11	—
Fast Transient Burst	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-4	—
Electrostatic Discharge	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-2	—
Surge	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-5	—
Vehicle Transients	The test was applied using proprietary equipment that meets the requirements of ISO 7637-1 and 2	—
Compass Safe Distance	Azimuth Accuracy	0.10°

Worst case error for both Time and Frequency measurement 12 parts in 10^6 .

* In accordance with CISPR 16-4

† In accordance with UKAS Lab 34



Product Service

SECTION 4

PHOTOGRAPHS



Product Service

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)



Front



Open



Product Service



Back



Battery Exposed



Product Service

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



Product Service

5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



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