REPORT ON

Limited FCC CFR 47: Parts 15, 22 and 24
and Industry Canada RSS-132, RSS-133 and RSS-Gen
Testing of the Sagem DC2006a

COMMERCIAL-IN-CONFIDENCE

FCC ID: M9HDC2006A

Report No OR615361/02 Issue 3 **September 2006**

Product Service

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REPORT ON Limited FCC CFR 47: Parts 15, 22 and 24 and Industry Canada RSS-132, RSS-133 and RSS-Gen Testing of the Sagem DC2006a

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Report No OR615361/02 Issue 3

September 2006

PREPARED FOR Sagem Communications
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DATED 11th September 2006

Issue 3 of Report OR615361/02 has been reissued due to 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: Parts 15, 22 and 24. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineers;

S Hartley A Guy R Henley

UKAS TESTING 0141 Group

Product Service

CONTENTS

SECTION 1

REPORT SUMMARY

Limited FCC CFR 47: Parts 15, 22 and 24
and Industry Canada RSS-132, RSS-133 and RSS-Gen Testing
of the Sagem DC2006a

1.1 STATUS

Equipment Under Test	DC2006a
Objective	To undertake measurements to determine the Equipment Under Test's (EUT's) compliance with the specification.
Name and Address of Client	Sagem Communications 2, rue du Petit Albi BP 28250 95801 Cergy Pontoise Cedex France
Type Number	DC2006a
Serial Number	IMEI 01094900950061-8 IMEI 01094900950083-2
Hardware Version	V0x
Software Version	L 5,IF
Declared Variants	DC2006La
Test Specification/Issue/Date	FCC CFR 47: Part 15, Subparts B and C, August 2002 FCC CFR 47: Part 22, Subpart H, January 2001 FCC CFR 47: Part 24, Subpart D, January 2001 RSS-Gen: Issue 1: 2005 RSS-132: Issue 1: 2002 RSS-133: Issue 3: 2005
Number of Items Tested	Two
Security Classification of EUT	Commercial In Confidence
Incoming Release **Date**	Declaration of Build Status 16th August 2006
Disposal	Held pending disposal
Order Number **Date**	PTP 23rd June2005
Start of Test **Finish of Test**	20th July 2006 28th July 2006
Related Documents	ANSI C63.4: 2001 RSS-212, Issue 1: 1999

1.2 INTRODUCTION

The information contained within this report is intended to show limited verification of compliance of the Sagem DC2006a to the requirements of FCC Specification Parts 15, 22 and 24 and Industry Canada Radio Specifications RSS-132, RSS-133 and RSS-Gen.

Testing has been performed under the following site accreditations

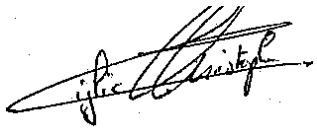
FCC Accreditation
90987 Octagon House, Fareham Test Laboratory

Industry Canada Accreditation
IC5208 Octagon House, Fareham Test Laboratory

1.2 INTRODUCTION

1.2.1 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Dual Band Handset
MANUFACTURER	Sagem Communications
TYPE	DC2006a
PART NUMBER	-
SERIAL NUMBER(S)	IMEI 01094900950061-8 IMEI 01094900950083-2
HARDWARE VERSION	V0x
SOFTWARE VERSION	L 5,IF
TRANSMITTER OPERATING RANGE	GSM850: 842 to 848.8 GSM1900: 1930.2 to 1989.8
RECEIVER OPERATING RANGE	GSM850: 869.2 to 893.8 GSM1900: 1930.2 to 1989.8
COUNTRY OF ORIGIN	France
INTERMEDIATE FREQUENCIES	None
ITU DESIGNATION OF EMISSION	GSM 850 band PCS 1900 band
HIGHEST INTERNALLY GENERATED FREQUENCY	GSM 850 band: 1737.8-1797.8MHz PCS 1900 band: 1929.9-1989.9MHz
OUTPUT POWER (W or dBm)	GSM 850 band: Class 4 (PCL 5) 2W or 33dBm PCS 1900 band: Class 0 (PCL 0) 1W or 30dBm
FCC ID	M9HDC2006A
INDUSTRY CANADA ID	N/A
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	Dual Band Handset
BATTERY/POWER SUPPLY	
MANUFACTURING DESCRIPTION	Battery: Li-ION 750mAh Power Supply: Dual Voltage 110-220V / 5V output
MANUFACTURER	Battery: Desay Power Supply: Astec
TYPE	
PART NUMBER	Battery: 28 707 953 0 / Power supply CE(18 919 498 8), UK(18 919 500 0), US (18 919 522 9), AU(18 919 496 7), ARG(18 931 620 8)
VOLTAGE	3.7V nominal
COUNTRY OF ORIGIN	China
MODULES (not applicable)	
ANCILLARIES (not applicable)	



Signature
Date 16/08/2006

TUV Product Service Limited formally certifies that the manufacturer's declaration as reproduced in this report is a true and accurate record of the original received from the applicant.

1.3 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out is shown below.

Configuration 1: DC2006a with EU Charger and BT Handsfree Kit				
Section	Spec Clause		Test Description	Result
	FCC	Industry Canada		
2.1	15.109	RSS-132, 6.6 RSS-133, 6.7 RSS-Gen, 6	Spurious Radiated Emissions	Pass
2.2	15.107	RSS-Gen, 7.2.2	Conducted Emissions on Power Ports	Pass
	15.205		Measurement at Band Edge (Marker Delta Method)	N/A
	15.207		Conducted Emissions on Power Ports	N/A
	15.247(b)(1)		Maximum Peak Output Power (EIRP Method)	N/A
	15.247(b)(3)		Maximum Peak Output Power (Conducted Method)	N/A
	15.247(c)		Spurious Conducted Emissions on Antenna Port	N/A
	15.247(c)		Spurious Radiated Emissions	N/A
2.3	Part 22.913 (a)	RSS-132, 4.4	Effective Radiated Power – Conducted	Pass
2.4	Part 22.913 (a)	RSS-132, 4.4	Effective Radiated Power - Radiated	Pass
2.5	Part 2.1047(d)	RSS-132, 4.2	Modulation Characteristics	Pass
2.6	Part 22.1049, Part 22.917 (b)	RSS-132, 4.5	Occupied Bandwidth	Pass
2.7	Part 2.1051, Part 22.905 Part 22.917	RSS-132, 4.5	Spurious Emissions at Antenna Terminals (+/- 1MHz)	Pass
2.8	Part 2.1053, Part 22.917	RSS-132, 4.5	Radiated Spurious Emissions	Pass
2.9	Part 2.1051, Part 22.917(a)	RSS-132, 4.5	Conducted Spurious Emissions	Pass
2.10	Part 2.1055, Part 22.355	RSS-132, 4.3	Frequency Stability Under Temperature Variations	Pass
2.11	Part 2.1055, Part 22.355	RSS-132, 4.3	Frequency Stability Under Voltage Variations	Pass

1.3 BRIEF SUMMARY OF RESULTS

Configuration 1: DC2006a with EU Charger and BT Handsfree Kit				
Section	Spec Clause		Test Description	Result
	FCC	Industry Canada		
2.12	Part 2.1046 Part 24.232 (b)	RSS-133, 4.3/6.4	Maximum Peak Output Power - Radiated	Pass
2.13	Part 2.1046 Part 24.232 (a)	RSS-133, 4.3/6.4	Maximum Peak Output Power - Conducted	Pass
2.14	Part 2.1047(d)	RSS-133,6.2	Modulation Characteristics	Pass
2.15	Part 2.1049, Part 24.238 (b)	RSS-133, 2.6/6.5 RSS-Gen 4.4	Occupied Bandwidth	Pass
2.16	Part 2.1051, Part 24.229 Part 24.238	RSS-133, 4.4/6.5	Spurious Emissions at Antenna Terminals (+/- 1MHz)	Pass
2.17	Part 2.1053, Part 24.238	RSS-133, 4.4/6.5	Radiated Spurious Emissions	Pass
2.18	Part 2.1051, Part 24.238 (a)	RSS-133, 4.4/6.5	Conducted Spurious Emissions	Pass
2.19	Part 2.1055, Part 24.235	RSS-133, 4.2/6.3	Frequency Stability Under Temperature Variations	Pass
2.20	Part 2.1055, Part 24.235	RSS-133, 4.2/6.3	Frequency Stability Under Voltage Variations	Pass

Configuration 2: DC2006a with UK Charger				
Section	Spec Clause		Test Description	Result
	FCC	Industry Canada		
2.1	15.109	RSS-132, 6.6 RSS-133, 6.7 RSS-Gen, 6	Spurious Radiated Emissions	Pass
2.2	15.107	RSS-Gen, 7.2.2	Conducted Emissions on Power Ports	Pass
2.4	Part 22.913 (a)	RSS-132, 4.4	Effective Radiated Power - Radiated	Pass
2.8	Part 2.1053, Part 22.917	RSS-132, 4.5	Radiated Spurious Emissions	Pass
2.12	Part 2.1046 Part 24.232 (b)	RSS-133, 4.3/6.4	Maximum Peak Output Power - Radiated	Pass
2.17	Part 2.1053, Part 24.238	RSS-133, 4.4/6.5	Radiated Spurious Emissions	Pass

1.3 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out is shown below.

Configuration 3: DC2006a with US Charger and Simple Handsfree Kite				
Section	Spec Clause		Test Description	Result
	FCC	Industry Canada		
2.1	15.109	RSS-132, 6.6 RSS-133, 6.7 RSS-Gen, 6	Spurious Radiated Emissions	Pass
2.2	15.107	RSS-Gen, 7.2.2	Conducted Emissions on Power Ports	Pass
2.4	Part 22.913 (a)	RSS-132, 4.4	Effective Radiated Power - Radiated	Pass
2.8	Part 2.1053, Part 22.917	RSS-132, 4.5	Radiated Spurious Emissions	Pass
2.12	Part 2.1046 Part 24.232 (b)	RSS-133, 4.3/6.4	Maximum Peak Output Power - Radiated	Pass
2.17	Part 2.1053, Part 24.238	RSS-133, 4.4/6.5	Radiated Spurious Emissions	Pass

Configuration 4: DC2006a with AU Charger				
Section	Spec Clause		Test Description	Result
	FCC	Industry Canada		
2.1	15.109	RSS-132, 6.6 RSS-133, 6.7 RSS-Gen, 6	Spurious Radiated Emissions	Pass
2.2	15.107	RSS-Gen, 7.2.2	Conducted Emissions on Power Ports	Pass
2.4	Part 22.913 (a)	RSS-132, 4.4	Effective Radiated Power - Radiated	Pass
2.8	Part 2.1053, Part 22.917	RSS-132, 4.5	Radiated Spurious Emissions	Pass
2.12	Part 2.1046 Part 24.232 (b)	RSS-133, 4.3/6.4	Maximum Peak Output Power - Radiated	Pass
2.17	Part 2.1053, Part 24.238	RSS-133, 4.4/6.5	Radiated Spurious Emissions	Pass

1.3 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out is shown below.

Configuration 5: DC2006a with ARG Charger				
Section	Spec Clause		Test Description	Result
	FCC	Industry Canada		
2.1	15.109	RSS-132, 6.6 RSS-133, 6.7 RSS-Gen, 6	Spurious Radiated Emissions	Pass
2.2	15.107	RSS-Gen, 7.2.2	Conducted Emissions on Power Ports	Pass
	Part 22.913 (a)	RSS-132, 4.4	Effective Radiated Power - Radiated	N/R
	Part 2.1053, Part 22.917	RSS-132, 4.5	Radiated Spurious Emissions	N/R
	Part 2.1046 Part 24.232 (b)	RSS-133, 4.3/6.4	Maximum Peak Output Power - Radiated	N/R
	Part 2.1053, Part 24.238	RSS-133, 4.4/6.5	Radiated Spurious Emissions	N/R

Configuration 6: DC2006a with Data Cable				
Section	Spec Clause		Test Description	Result
	FCC	Industry Canada		
2.1	15.109	RSS-132, 6.6 RSS-133, 6.7 RSS-Gen, 6	Spurious Radiated Emissions	Pass
	15.107	RSS-Gen, 7.2.2	Conducted Emissions on Power Ports	N/R
2.4	Part 22.913 (a)	RSS-132, 4.4	Effective Radiated Power - Radiated	Pass
2.8	Part 2.1053, Part 22.917	RSS-132, 4.5	Radiated Spurious Emissions	Pass
2.12	Part 2.1046 Part 24.232 (b)	RSS-133, 4.3/6.4	Maximum Peak Output Power - Radiated	Pass
2.17	Part 2.1053, Part 24.238	RSS-133, 4.4/6.5	Radiated Spurious Emissions	Pass

N/R Not Requested

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

A handheld PCS terminal is made of two physical parts :

- the mobile equipment (casing, electronics, display)
- the Subscriber Identity Module, that holds all the subscriber-specific information on a memory card.

It must be completely autonomous, with power supplied by a battery, compact, very lightweight and have a display for the information related to the network and to communications.

The terminal may be broken down in 5 functional components :

- the radio module(include bluetooth module)
- the signal processing module
- the battery module
- the control module
- the user interface module

1.4.2 Modes of Operation

Modes of operation of the EUT during testing were as given in section 1.4.3:

Applicable testing was carried out with the EUT transmitting at maximum power or receiving as detailed in section 1.4.3.

Maximum Output Powers and Classes were;

GSM (Class 4) GSM 850 = 32.0dBm
GSM (Class 1) PCS 1900 = 29.3dBm

1.4.3 Test Configuration

The nine Configurations of the SAGEM DC2006a, detailed below were set up, in turn, for all tests in a Semi-Anechoic Chamber, Screened Enclosure or Test Hall as appropriate and tested in accordance with the specification.

Configuration	Hardware Configuration	Ancillary reference numbers		Operation Mode
			Reference	
1	DC2006a with EU Charger and Bluetooth Headset	BT Headset: M4P-A05051MB-XX	18 903 374-7	GSM
		EU Charger: DCH3-050EU	18 919 498 8	
2	DC2006a with UK Charger	UK Charger: DCH3-050UK	18 919 500 0	GSM
3	DC2006a with US Charger and simple handsfree kit	US Charger: DCH3-050US	18 919 522 9	GSM
		Stereo headset	18 916 164 5	
4	DC2006a with AU Charger	AU Charger: DCH3-050AU	18 919 496 7	GSM
5	DC2006a with ARG Charger	ARG Charger	18 931 620 8	GSM
6	DC2006a with Data Cable	Data Cable: mini USB cable	18 924 221 8	GSM

Product information

For all tests Battery Type number: Li-Ion and reference number: 28 707 953-0 was used.

1.5 TEST CONDITIONS

The EUT was set-up simulating a typical user installation on the Alternative Open Field Test Site and tested in accordance with the applicable specification.

FCC Registration Number: 90987
Industry Canada Registration Number: 4270

For all tests, the Sagem DC2006a was powered either by its own internal battery or via an AC or DC charger as described in each test configuration.

1.6 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standards were made.

1.7 MODIFICATION RECORD

No modifications were made to the EUT during testing.

SECTION 2

TEST DETAILS

Limited FCC CFR 47: Parts 15, 22 and 24
and Industry Canada RSS-132, RSS-133 and RSS-Gen Testing
of the Sagem DC2006a

2.1 SPURIOUS RADIATED EMISSIONS

2.1.1 Specification Reference

FCC CFR 47: Part 15 Subpart B, Section 15.109 and Industry Canada RSS-132, 6.6, RSS-133, 6.7 and RSS-Gen 6

2.1.2 Equipment Under Test

DC2006a: IMEI 01094900950061-8

2.1.3 Date of Test

26th and 27th July 2006 (Configuration 1)
20th and 21st July 2006 (Configuration 2, 3, 4, 5 and 6)

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 Procedure

Test Performed in accordance with ANSI C63.4.

A preliminary profile of the Spurious Radiated Emissions was obtained by operating the EUT on a remotely controlled turntable within a semi-anechoic chamber. Measurements of emissions from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations. The profiling produced a list of the worst-case emissions together with the EUT azimuth and antenna polarisation.

Using the information from the preliminary profiling of the EUT. The list of emissions was then confirmed or updated under Alternative Open Site conditions. Emission levels were maximised by adjusting the antenna height, antenna polarisation and turntable azimuth.

Emissions identified within the range 30MHz – 1GHz were then formally measured using a CISPR Quasi-Peak detector.

All measurements were performed at a 3m distance unless otherwise stated.

2.1 SPURIOUS RADIATED EMISSIONS

2.1.6 Test Results

Equipment Designation: Unintentional Radiator.

The EUT met the requirements of FCC CFR 47: Part 15 Subpart B, Section 15.109 and Industry Canada RSS-132, 6.6, RSS-133, 6.7 and RSS-Gen 6 for Spurious Radiated Emissions (30MHz – 1GHz).

Configuration 1

The levels of the six highest emissions measured in accordance with the specification are presented below: -

EUT Receiving on 850 Middle Channel (881.4)

Frequency	Polarisation	Height	Azimuth	Field Strength		Limit	
MHz		cm	degree	dBµV/m	µV/m	dBµV/m	µV/m
40.2	Vertical	100	0	33.7	48.4	40.0	100.0
41.7	Vertical	100	0	31.4	37.2	40.0	100.0
42.5	Vertical	100	0	30.6	33.9	40.0	100.0
53.9	Vertical	100	276	30.6	33.9	40.0	100.0
55.7	Vertical	100	276	29.1	28.5	40.0	100.0
59.2	Vertical	100	292	24.0	15.8	40.0	100.0

EUT Receiving on 1900 Middle Channel (1960.0MHz)

Frequency	Polarisation	Height	Azimuth	Field Strength		Limit	
MHz		cm	degree	dBµV/m	µV/m	dBµV/m	µV/m
35.9	Vertical	100	0	26.4	20.9	40.0	100.0
40.9	Vertical	100	0	34.3	51.9	40.0	100.0
42.4	Vertical	100	0	32.0	39.8	40.0	100.0
52.9	Vertical	100	0	30.5	33.5	40.0	100.0
58.5	Vertical	100	0	27.3	23.2	40.0	100.0
60.1	Vertical	100	0	23.5	15.0	40.0	100.0

2.1 SPURIOUS RADIATED EMISSIONS

2.1.6 Test Results

Configuration 2

The levels of the six highest emissions measured in accordance with the specification are presented below: -

EUT Receiving on Middle 850 Channel (881.4MHz)

Frequency	Polarisation	Height	Azimuth	Field Strength		Limit	
MHz		cm	degree	dBµV/m	µV/m	dBµV/m	µV/m
37.31	Vertical	100	0	26.3	20.7	40.0	100.0
40.70	Vertical	100	0	25.1	18.0	40.0	100.0
45.60	Vertical	100	0	28.5	26.6	40.0	100.0
49.02	Vertical	100	0	29.1	28.5	40.0	100.0
52.90	Vertical	100	0	32.6	42.7	40.0	100.0
55.65	Vertical	100	0	27.4	23.4	40.0	100.0

EUT Receiving on Middle 1900 Channel (1960.0MHz)

Frequency	Polarisation	Height	Azimuth	Field Strength		Limit	
MHz		cm	degree	dBµV/m	µV/m	dBµV/m	µV/m
39.33	Vertical	100	0	27.2	22.9	40.0	100.0
44.78	Vertical	100	0	27.4	23.4	40.0	100.0
47.27	Vertical	100	0	26.7	21.6	40.0	100.0
51.94	Vertical	100	0	32.1	40.3	40.0	100.0
52.50	Vertical	100	0	32.7	43.2	40.0	100.0
54.37	Vertical	100	0	30.3	32.7	40.0	100.0

2.1 SPURIOUS RADIATED EMISSIONS

2.1.6 Test Results

Configuration 3

The levels of the six highest emissions measured in accordance with the specification are presented below: -

EUT Receiving on Middle 850 Channel (881.4MHz)

Frequency	Polarisation	Height	Azimuth	Field Strength		Limit	
MHz		cm	degree	dBµV/m	µV/m	dBµV/m	µV/m
35.01	Vertical	100	0	33.7	48.4	40.0	100.0
36.42	Vertical	100	0	32.8	43.7	40.0	100.0
37.10	Vertical	100	0	32.8	43.7	40.0	100.0
38.55	Vertical	100	0	32.1	40.3	40.0	100.0
40.13	Vertical	100	0	29.9	31.3	40.0	100.0
45.81	Vertical	100	0	24.8	17.4	40.0	100.0

EUT Receiving on Middle 1900 Channel (1960.0MHz)

Frequency	Polarisation	Height	Azimuth	Field Strength		Limit	
MHz		cm	degree	dBµV/m	µV/m	dBµV/m	µV/m
34.50	Vertical	100	0	33.5	47.3	40.0	100.0
35.31	Vertical	100	0	34.0	50.1	40.0	100.0
36.81	Vertical	100	0	33.6	47.9	40.0	100.0
38.62	Vertical	100	0	32.6	42.7	40.0	100.0
39.53	Vertical	100	0	30.6	33.9	40.0	100.0
46.23	Vertical	100	0	25.4	18.6	40.0	100.0

2.1 SPURIOUS RADIATED EMISSIONS

2.1.6 Test Results

Configuration 4

The levels of the six highest emissions measured in accordance with the specification are presented below: -

EUT Receiving on Middle 850 Channel (881.4MHz)

Frequency	Polarisation	Height	Azimuth	Field Strength		Limit	
MHz		cm	degree	dBµV/m	µV/m	dBµV/m	µV/m
40.72	Vertical	100	138	28.1	25.4	40.0	100.0
44.91	Vertical	100	100	27.3	23.2	40.0	100.0
52.84	Vertical	100	0	29.3	29.2	40.0	100.0
53.04	Vertical	100	0	30.4	33.1	40.0	100.0
54.27	Vertical	100	0	28.3	26.0	40.0	100.0
58.06	Vertical	100	138	29.1	28.5	40.0	100.0

EUT Receiving on Middle 1900 Channel (1960.0MHz)

Frequency	Polarisation	Height	Azimuth	Field Strength		Limit	
MHz		cm	degree	dBµV/m	µV/m	dBµV/m	µV/m
40.21	Vertical	100	158	28.0	25.1	40.0	100.0
40.89	Vertical	100	158	26.0	20.0	40.0	100.0
47.26	Vertical	100	6	22.9	14.0	40.0	100.0
51.60	Vertical	100	0	28.9	27.9	40.0	100.0
52.24	Vertical	100	0	30.7	34.3	40.0	100.0
53.74	Vertical	100	0	30.4	33.1	40.0	100.0

2.1 SPURIOUS RADIATED EMISSIONS

2.1.6 Test Results

Configuration 5

The levels of the six highest emissions measured in accordance with the specification are presented below: -

EUT Receiving on Middle 850 Channel (881.4MHz)

Frequency	Polarisation	Height	Azimuth	Field Strength		Limit	
MHz		cm	degree	dBµV/m	µV/m	dBµV/m	µV/m
40.46	Vertical	100	0	23.0	14.1	40.0	100.0
44.67	Vertical	100	0	26.3	20.7	40.0	100.0
52.09	Vertical	100	0	30.4	33.1	40.0	100.0
53.71	Vertical	100	0	32.5	42.2	40.0	100.0
54.08	Vertical	100	0	31.1	35.9	40.0	100.0
56.93	Vertical	100	0	31.0	35.5	40.0	100.0

EUT Receiving on Middle 1900 Channel (1960.0MHz)

Frequency	Polarisation	Height	Azimuth	Field Strength		Limit	
MHz		cm	degree	dBµV/m	µV/m	dBµV/m	µV/m
40.04	Vertical	100	0	24.8	17.4	40.0	100.0
45.55	Vertical	100	0	25.0	17.8	40.0	100.0
50.30	Vertical	100	0	33.2	45.7	40.0	100.0
52.49	Vertical	100	0	33.5	47.3	40.0	100.0
55.71	Vertical	100	0	31.5	37.6	40.0	100.0
56.54	Vertical	100	0	31.7	38.5	40.0	100.0

2.1 SPURIOUS RADIATED EMISSIONS

2.1.6 Test Results

Configuration 6

EUT Receiving on Middle 850 Channel (881.4MHz)
EUT Receiving on Middle 1900 Channel (1960.0MHz)

As no emissions were detected below 1GHz only Noise floor measurements were recorded.

Frequency	Polarisation	Height	Azimuth	Field Strength		Limit	
MHz		cm	degree	dBµV/m	µV/m	dBµV/m	µV/m
35.0	Vertical	100	0	17.6	7.6	40.0	100.0
515.0	Vertical	100	0	17.8	7.8	40.0	100.0
995.0	Vertical	100	0	25.6	19.1	40.0	100.0
35.0	Horizontal	100	0	16.8	6.9	40.0	100.0
515.0	Horizontal	100	0	17.2	7.2	43.0	150.0
995.0	Horizontal	100	0	25.8	19.5	46.0	200.0

2.1 SPURIOUS RADIATED EMISSIONS

2.1.6 Test Results

Equipment Designation: Unintentional Radiator.

The EUT met the requirements of FCC CFR 47: Part 15 Subpart B, Section 15.109 and Industry Canada RSS-132, 6.6, RSS-133, 6.7 and RSS-Gen 6 for Spurious Radiated Emissions (1GHz – 9.8GHz).

As no emissions were detected above 1GHz only Noise floor measurements were recorded.

Frequency	Polarisation	Height	Azimuth	Field Strength		Limit	
GHz		cm	degree	dBµV/m	µV/m	dBµV/m	µV/m
1.200	Vertical	100	0	33.4	46.8	46.0	200.0
1.200	Horizontal	100	0	32.7	43.2	46.0	200.0
4.000	Vertical	100	0	29.2	28.8	46.0	200.0
4.000	Horizontal	100	0	28.9	27.9	46.0	200.0
6.000	Vertical	100	0	32.5	42.2	46.0	200.0
6.000	Horizontal	100	0	32.1	40.3	46.0	200.0
9.800	Horizontal	100	0	30.6	33.9	46.0	200.0
9.800	Vertical	100	0	31.4	37.2	46.0	200.0

The following configurations and frequencies were tested.

Configuration 1
EUT Receiving on Middle 850 Channel (881.4MHz)
EUT Receiving on Middle 1900 Channel (1960.0MHz)

Configuration 2
EUT Receiving on Middle 850 Channel (881.4MHz)
EUT Receiving on Middle 1900 Channel (1960.0MHz)

Configuration 3
EUT Receiving on Middle 850 Channel (881.4MHz)
EUT Receiving on Middle 1900 Channel (1960.0MHz)

Configuration 4
EUT Receiving on Middle 850 Channel (881.4MHz)
EUT Receiving on Middle 1900 Channel (1960.0MHz)

Configuration 5
EUT Receiving on Middle 850 Channel (881.4MHz)
EUT Receiving on Middle 1900 Channel (1960.0MHz)

Configuration 6
EUT Receiving on Middle 850 Channel (881.4MHz)
EUT Receiving on Middle 1900 Channel (1960.0MHz)

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.1 Specification Reference

FCC CFR 47: Part 15 Subpart C, Section 15.107 and Industry Canada RSS-Gen 7.2.2

2.2.2 Equipment Under Test

DC2006a: IMEI 01094900950061-8

2.2.3 Date of Test

28th July 2006 (Configuration 1, 2, 3 and 4)
30th July 2006 (Configuration 5)

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 Procedure

Test performed in accordance with ANSI C63.4.

Conducted Emission Measurements were undertaken within the semi-anechoic chamber. Emissions were measured on the Live and Neutral Lines in turn.

Emissions were formally measured using a Quasi-Peak and Average Detectors, which meet the CISPR requirements. The details of the worst-case emissions for the Live and Neutral Lines are presented in the tables below.

The EUT was supplied from a 120V, 60Hz supply.

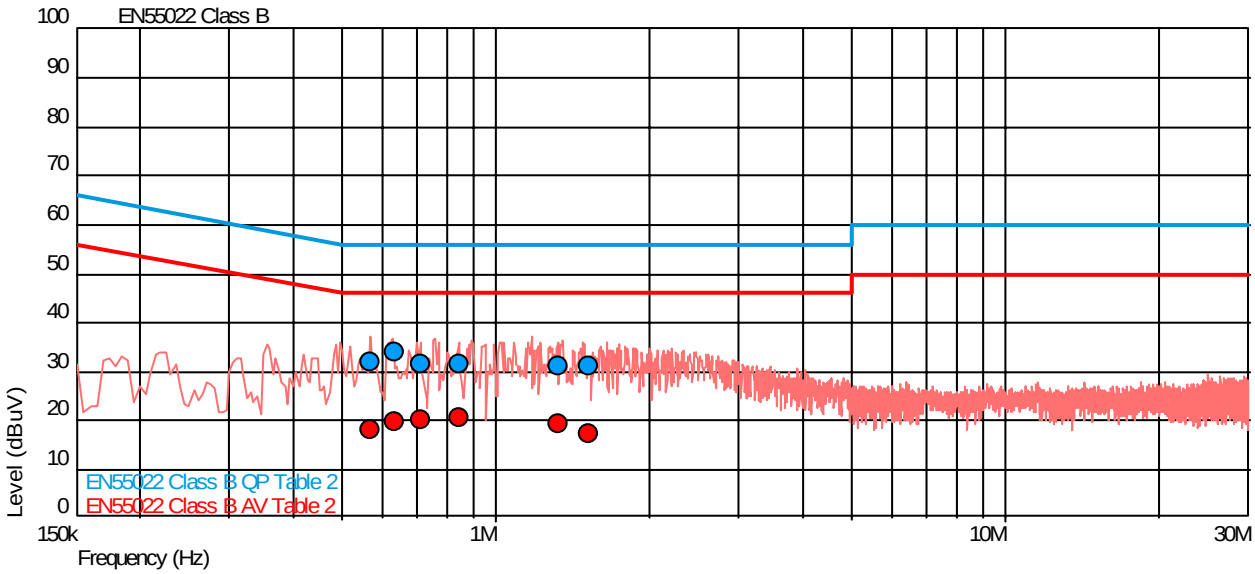
2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

The EUT met the Class B requirements of FCC CFR 47: Part 15 Subpart C, Section 15.107 and Industry Canada RSS-Gen 7.2.2 for Conducted Emissions on the Live and Neutral Lines.

Configuration 1

EUT Receiving on Middle 850 Channel (881.4MHz) – Live Line



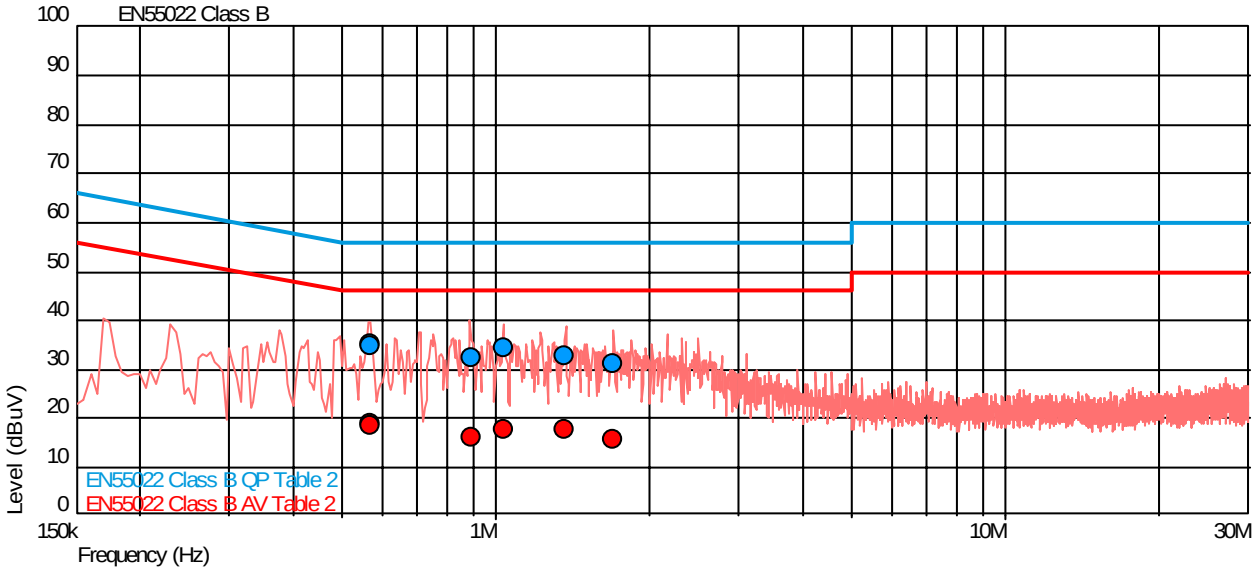
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.568	31.8	56.0	-24.2	18.2	46.0	-27.8
0.634	34.0	56.0	-22.0	19.8	46.0	-26.2
0.712	31.5	56.0	-24.5	20.3	46.0	-25.7
0.849	31.6	56.0	-24.4	20.6	46.0	-25.4
1.323	31.2	56.0	-24.8	19.2	46.0	-26.8
1.517	31.0	56.0	-25.0	17.3	46.0	-28.7

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 1

EUT Receiving on Middle 850 Channel (881.4MHz) – Neutral Line



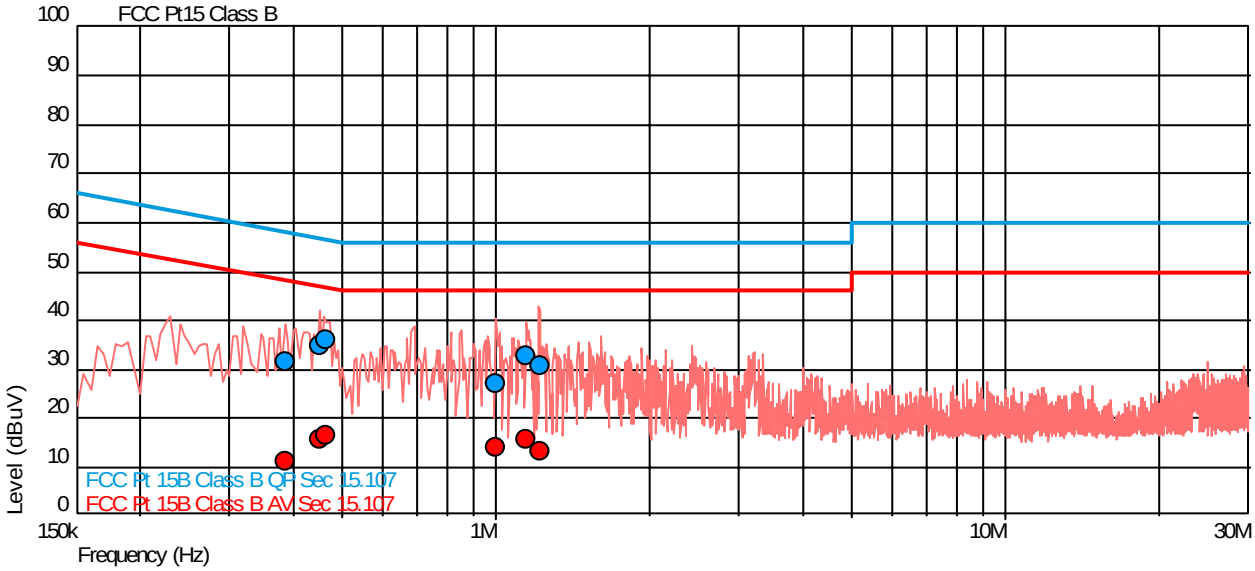
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.565	35.1	56.0	-20.9	18.9	46.0	-27.1
0.566	34.6	56.0	-21.4	18.6	46.0	-27.4
0.897	32.3	56.0	-23.7	16.2	46.0	-29.8
1.036	34.2	56.0	-21.8	17.7	46.0	-28.3
1.365	32.8	56.0	-23.2	17.7	46.0	-28.3
1.697	31.1	56.0	-24.9	15.6	46.0	-30.4

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 1

EUT Receiving on Middle 1900 Channel (1960.0MHz) – Live Line



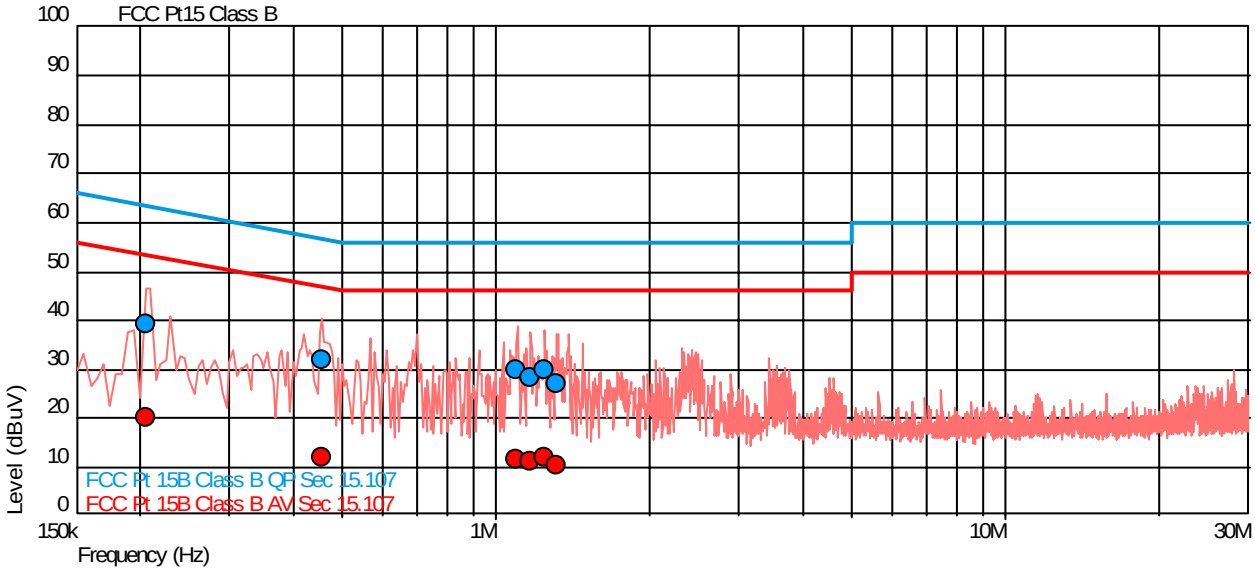
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.385	31.7	58.2	-26.5	11.0	48.2	-37.2
0.450	34.8	56.9	-22.1	15.5	46.9	-31.4
0.465	36.0	56.6	-20.6	16.4	46.6	-30.2
0.995	27.2	56.0	-28.8	14.1	46.0	-31.9
1.145	32.6	56.0	-23.4	15.5	46.0	-30.5
1.215	30.7	56.0	-25.3	13.3	46.0	-32.7

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 1

EUT Receiving on Middle 1900 Channel (1960.0MHz) – Neutral Line



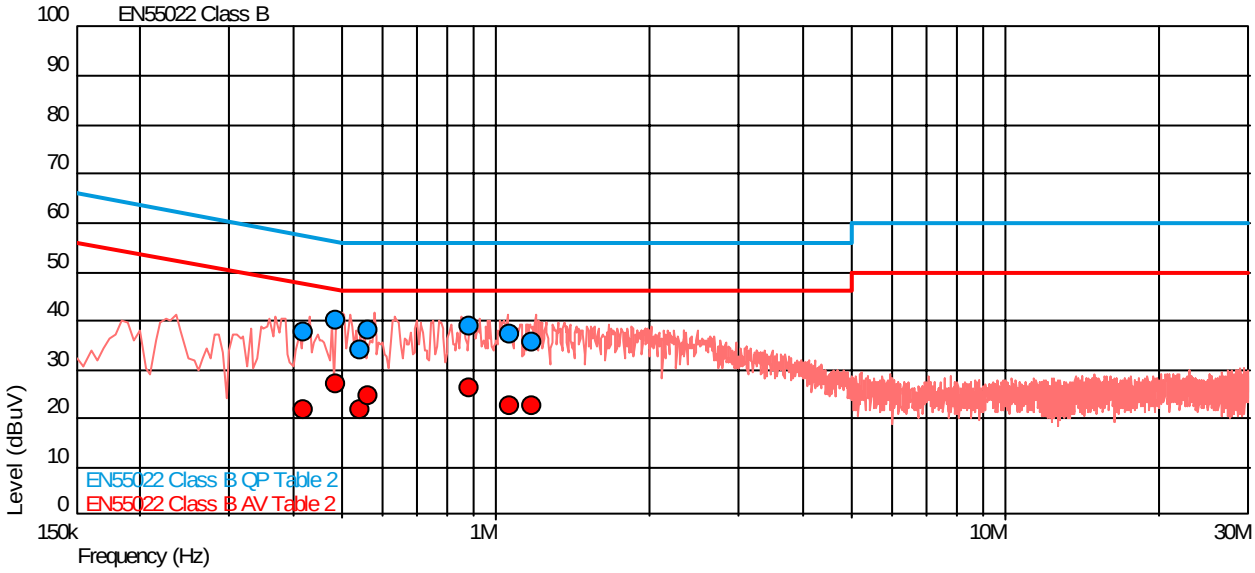
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.206	39.2	63.4	-24.2	20.2	53.4	-33.2
0.456	32.0	56.8	-24.7	12.2	46.8	-34.6
1.094	29.8	56.0	-26.2	11.5	46.0	-34.5
1.171	28.3	56.0	-27.7	11.1	46.0	-34.9
1.245	30.1	56.0	-25.9	11.9	46.0	-34.1
1.311	27.0	56.0	-29.0	10.3	46.0	-35.7

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 2

EUT Receiving on Middle 850 Channel (881.4MHz) – Live Line



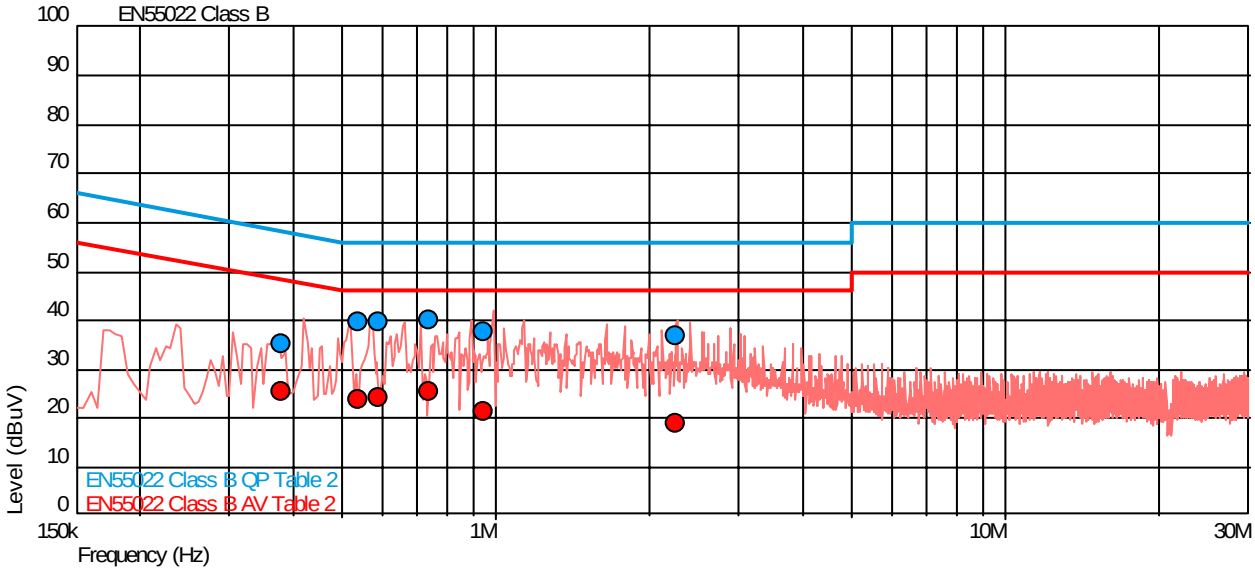
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.420	37.6	57.4	-19.9	21.8	47.4	-25.6
0.487	40.1	56.2	-16.1	27.0	46.2	-19.2
0.540	34.0	56.0	-22.0	21.6	46.0	-24.4
0.560	38.1	56.0	-17.9	24.7	46.0	-21.3
0.884	39.0	56.0	-17.0	26.1	46.0	-19.9
1.064	37.2	56.0	-18.8	22.4	46.0	-23.6
1.172	35.7	56.0	-20.3	22.4	46.0	-23.6

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 2

EUT Receiving on Middle 850 Channel (881.4MHz) – Neutral Line



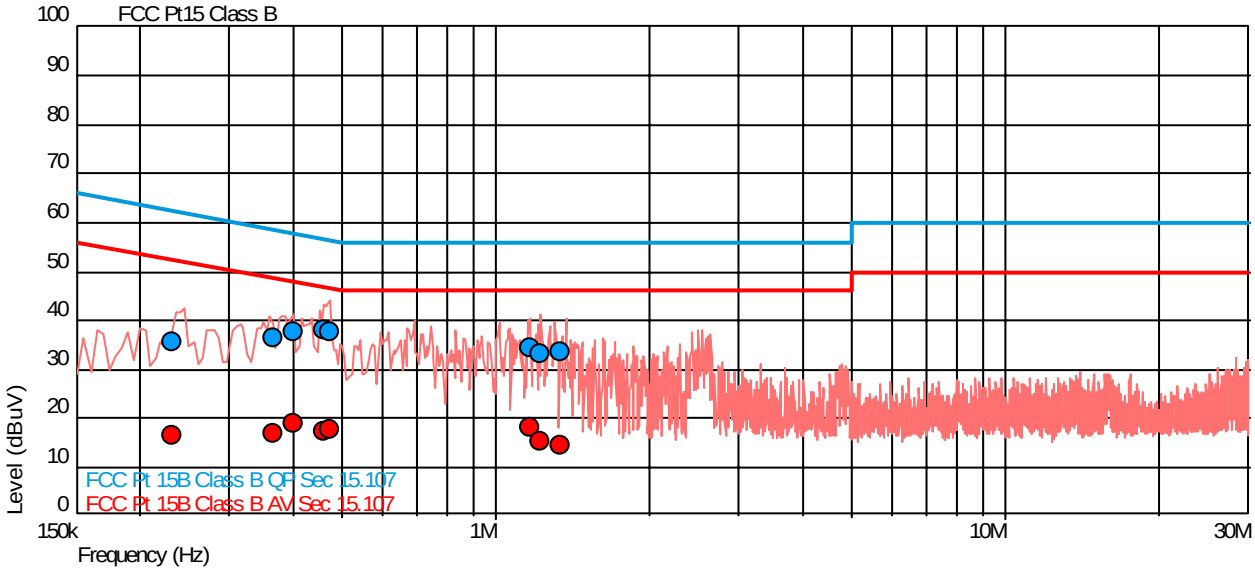
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.378	35.3	58.3	-23.0	25.4	48.3	-22.9
0.538	39.6	56.0	-16.4	23.8	46.0	-22.2
0.589	39.6	56.0	-16.4	24.0	46.0	-22.0
0.741	40.2	56.0	-15.8	25.2	46.0	-20.8
0.944	37.5	56.0	-18.5	21.5	46.0	-24.5
2.253	36.9	56.0	-19.1	18.8	46.0	-27.2

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 2

EUT Receiving on Middle 1900 Channel (1960.0MHz) – Live Line



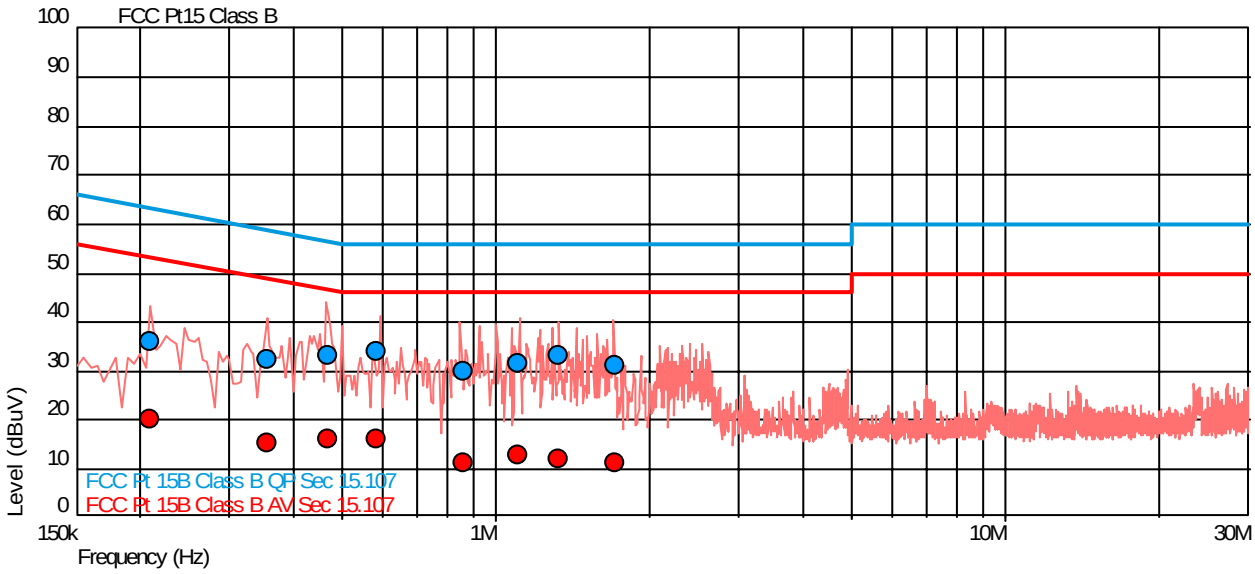
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.231	35.5	62.4	-26.9	16.5	52.4	-35.9
0.365	36.4	58.6	-22.2	16.8	48.6	-31.8
0.400	37.4	57.9	-20.5	19.1	47.9	-28.8
0.458	37.8	56.7	-18.9	17.4	46.7	-29.3
0.470	37.5	56.5	-19.0	17.6	46.5	-28.9
1.165	34.2	56.0	-21.8	18.1	46.0	-27.9
1.221	33.3	56.0	-22.7	15.3	46.0	-30.7
1.343	33.6	56.0	-22.4	14.5	46.0	-31.5

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 2

EUT Receiving on Middle 1900 Channel (1960.0MHz) – Neutral Line



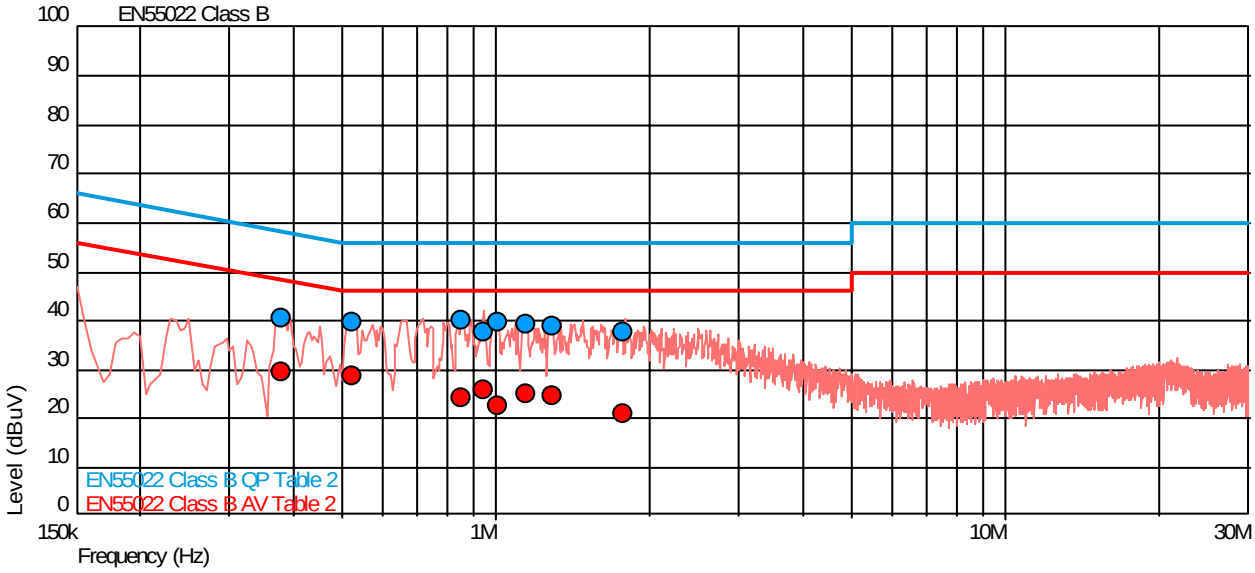
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.210	36.0	63.2	-27.2	20.3	53.2	-32.9
0.355	32.3	58.8	-26.5	15.2	48.8	-33.6
0.466	33.2	56.6	-23.4	15.9	46.6	-30.7
0.584	34.0	56.0	-22.0	15.9	46.0	-30.1
0.865	29.8	56.0	-26.2	11.0	46.0	-35.0
1.107	31.4	56.0	-24.6	12.9	46.0	-33.1
1.331	32.9	56.0	-23.1	11.9	46.0	-34.1
1.707	31.1	56.0	-24.9	11.1	46.0	-34.9

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 3

EUT Receiving on Middle 850 Channel (881.4MHz) – Live Line



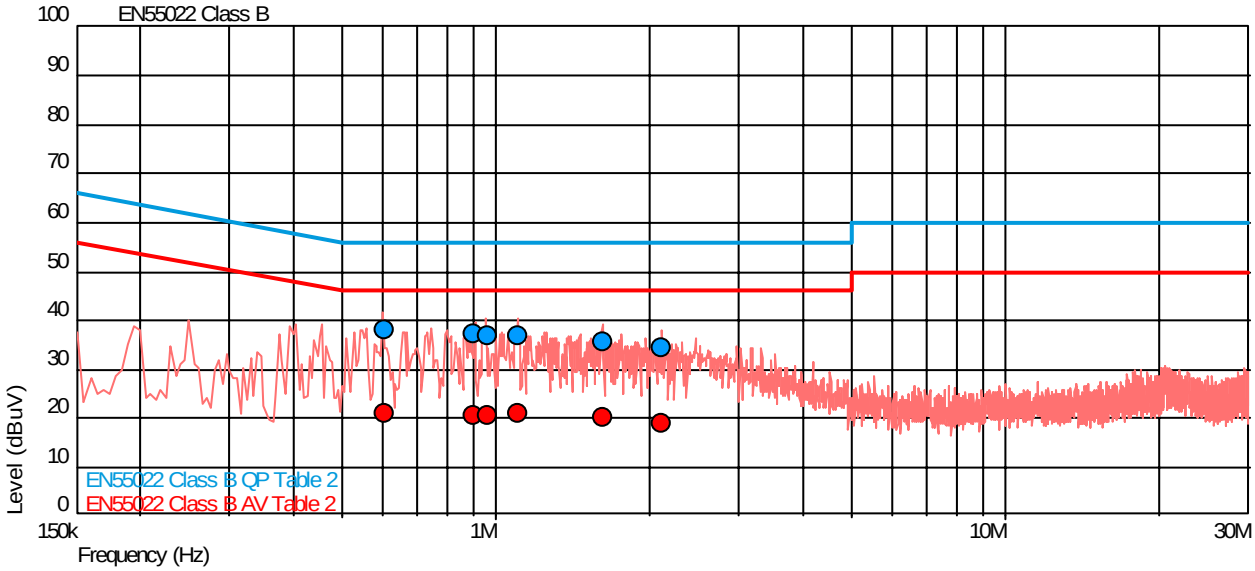
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.143	17.1	66.0	-48.9	15.3	56.0	-40.7
0.381	40.5	58.3	-17.8	29.6	48.3	-18.6
0.520	39.5	56.0	-16.5	28.5	46.0	-17.5
0.858	39.9	56.0	-16.1	24.0	46.0	-22.0
0.946	37.8	56.0	-18.2	26.0	46.0	-20.0
1.004	39.4	56.0	-16.6	22.7	46.0	-23.3
1.146	39.4	56.0	-16.6	25.0	46.0	-21.0
1.291	38.7	56.0	-17.3	24.5	46.0	-21.5
1.771	37.4	56.0	-18.6	21.1	46.0	-24.9

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 3

EUT Receiving on Middle 850 Channel (881.4MHz) – Neutral Line



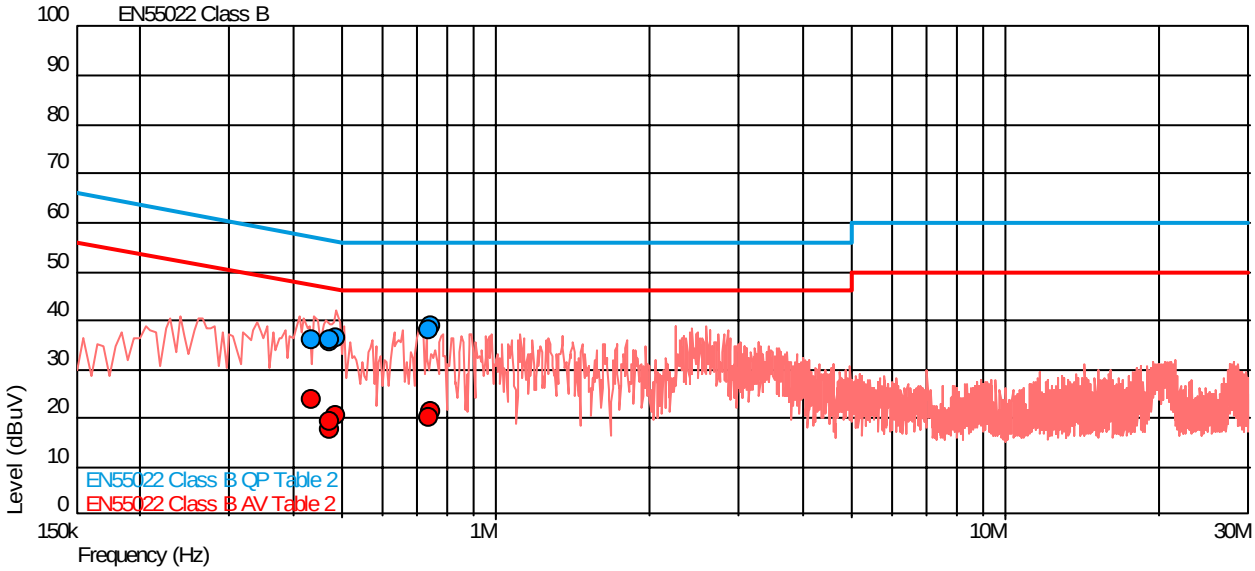
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.605	38.1	56.0	-17.9	21.0	46.0	-25.0
0.907	37.3	56.0	-18.7	20.7	46.0	-25.3
0.959	36.6	56.0	-19.4	20.6	46.0	-25.4
1.109	36.9	56.0	-19.1	20.7	46.0	-25.3
1.614	35.5	56.0	-20.5	20.1	46.0	-25.9
2.120	34.2	56.0	-21.8	19.0	46.0	-27.0

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 3

EUT Receiving on Middle 1900 Channel (1960.0MHz) – Live Line



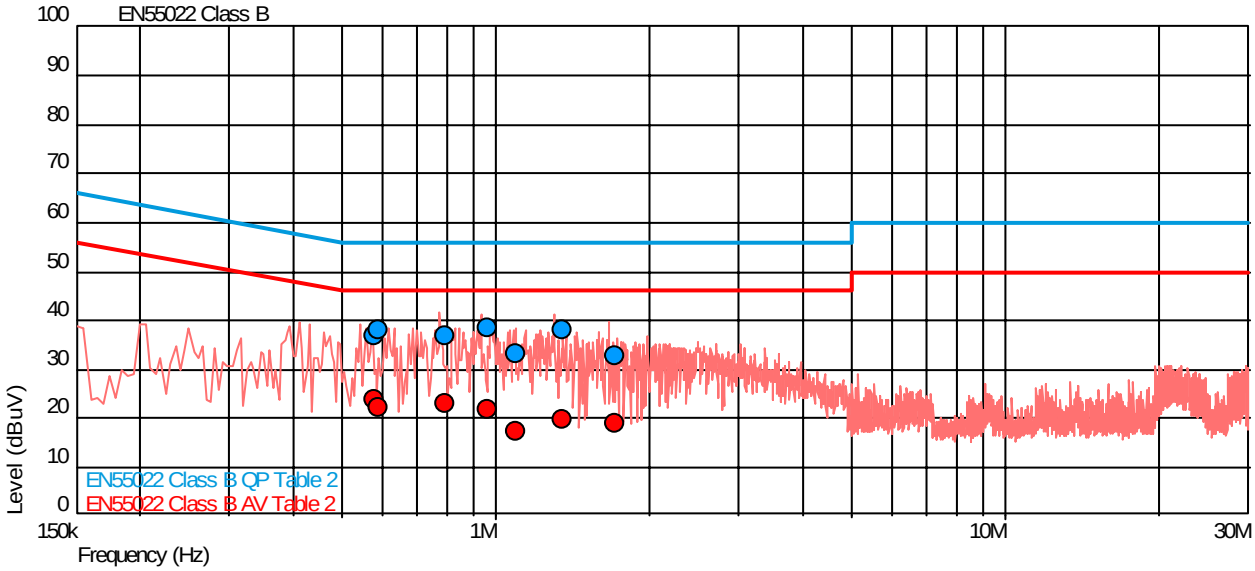
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.437	36.0	57.1	-21.1	23.8	47.1	-23.3
0.470	35.7	56.5	-20.8	17.8	46.5	-28.7
0.473	36.0	56.5	-20.5	19.2	46.5	-27.2
0.486	36.5	56.2	-19.7	20.6	46.2	-25.7
0.739	38.1	56.0	-17.9	20.3	46.0	-25.7
0.747	38.9	56.0	-17.1	21.2	46.0	-24.8

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 3

EUT Receiving on Middle 1900 Channel (1960.0MHz) – Neutral Line



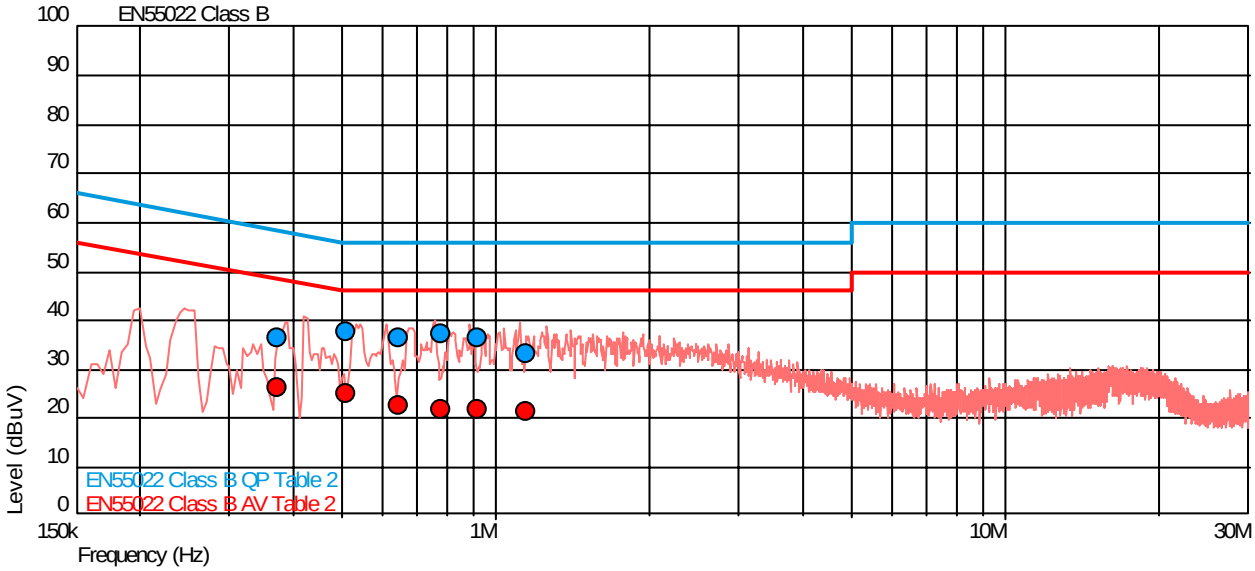
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.578	36.8	56.0	-19.2	23.8	46.0	-22.2
0.585	37.8	56.0	-18.2	22.3	46.0	-23.7
0.793	37.0	56.0	-19.0	22.9	46.0	-23.1
0.965	38.4	56.0	-17.6	21.7	46.0	-24.3
1.091	33.2	56.0	-22.8	17.3	46.0	-28.7
1.346	38.0	56.0	-18.0	19.8	46.0	-26.2
1.714	32.6	56.0	-23.4	18.8	46.0	-27.2

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 4

EUT Receiving on Middle 850 Channel (881.4MHz) – Live Line



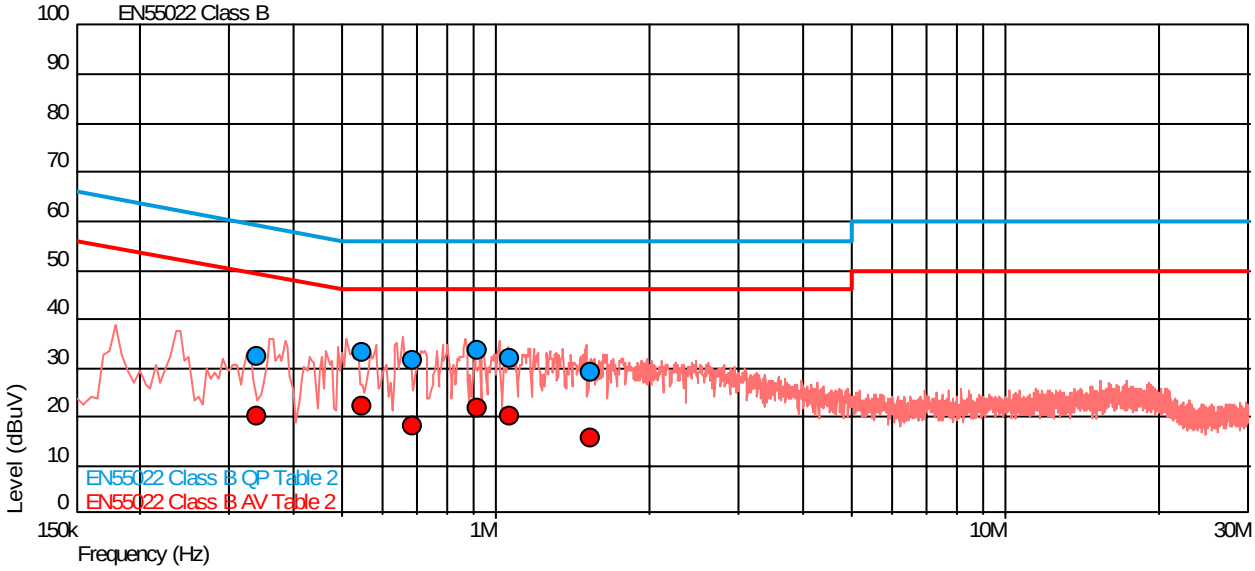
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.371	36.2	58.5	-22.3	26.2	48.5	-22.3
0.506	37.7	56.0	-18.3	25.2	46.0	-20.8
0.646	36.4	56.0	-19.6	22.5	46.0	-23.5
0.782	37.1	56.0	-18.9	21.8	46.0	-24.2
0.920	36.5	56.0	-19.5	21.6	46.0	-24.4
1.142	32.9	56.0	-23.1	21.2	46.0	-24.8

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 4

EUT Receiving on Middle 850 Channel (881.4MHz) – Neutral Line



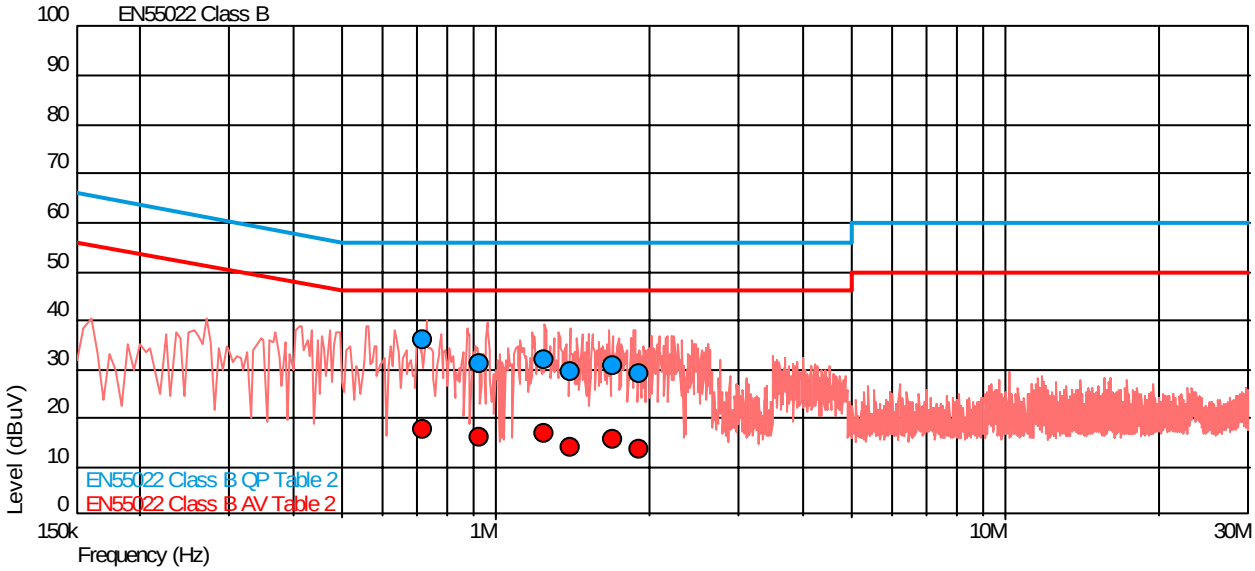
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.341	32.2	59.2	-27.0	20.3	49.2	-28.9
0.546	33.0	56.0	-23.0	22.1	46.0	-23.9
0.685	31.5	56.0	-24.5	18.0	46.0	-28.0
0.920	33.6	56.0	-22.4	21.6	46.0	-24.4
1.063	32.1	56.0	-23.9	20.3	46.0	-25.7
1.537	29.1	56.0	-26.9	15.8	46.0	-30.2

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 4

EUT Receiving on Middle 1900 Channel (1960.0MHz) – Live Line



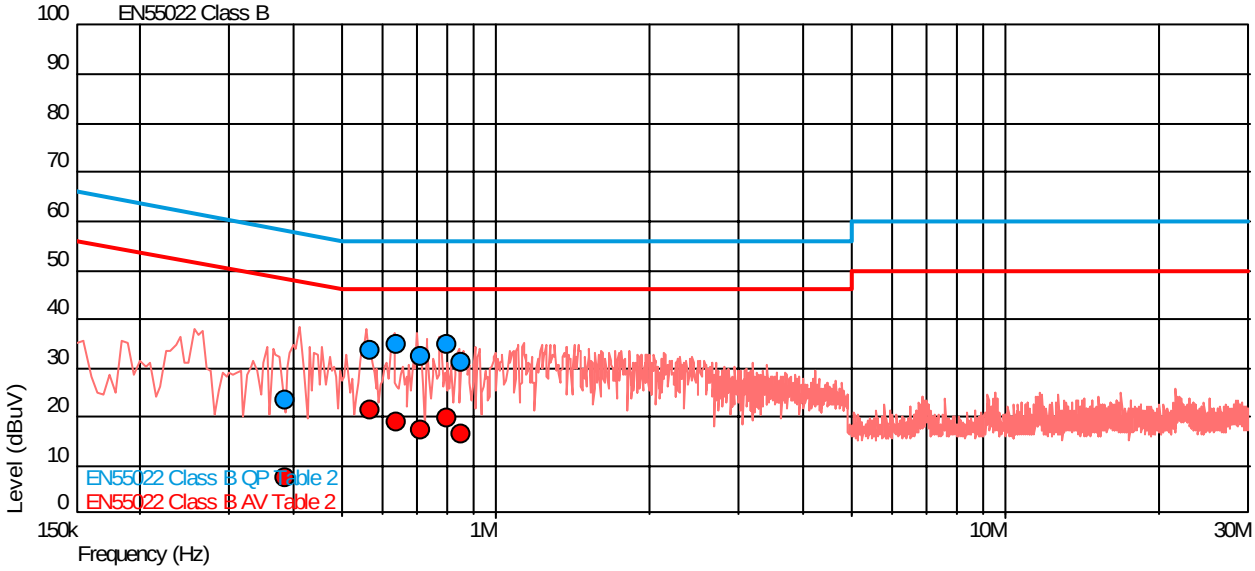
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.719	35.8	56.0	-20.2	17.8	46.0	-28.2
0.930	31.3	56.0	-24.7	15.9	46.0	-30.1
1.245	31.9	56.0	-24.1	16.7	46.0	-29.3
1.395	29.5	56.0	-26.5	14.2	46.0	-31.8
1.691	30.5	56.0	-25.5	15.8	46.0	-30.2
1.902	29.2	56.0	-26.8	13.6	46.0	-32.4

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 4

EUT Receiving on Middle 1900 Channel (1960.0MHz) – Neutral Line



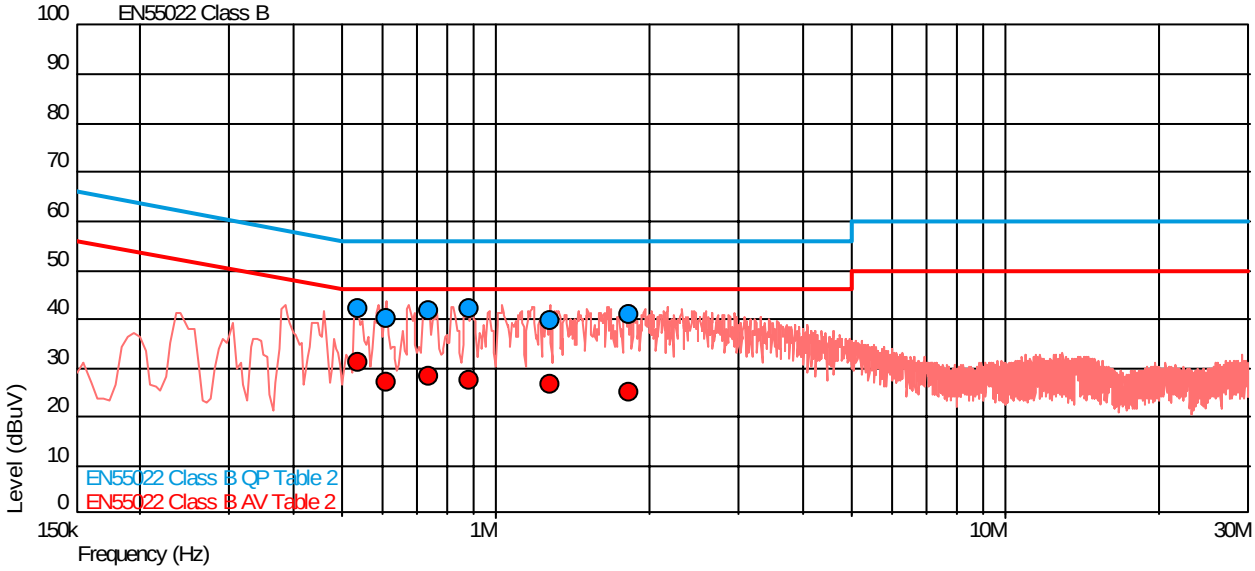
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.388	23.5	58.1	-34.7	7.5	48.1	-40.6
0.565	33.5	56.0	-22.5	21.2	46.0	-24.8
0.640	34.6	56.0	-21.4	18.9	46.0	-27.1
0.713	32.2	56.0	-23.8	17.2	46.0	-28.8
0.804	34.7	56.0	-21.3	19.8	46.0	-26.2
0.854	31.1	56.0	-24.9	16.6	46.0	-29.4

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 5

EUT Receiving on Middle 850 Channel (881.4MHz) – Live Line



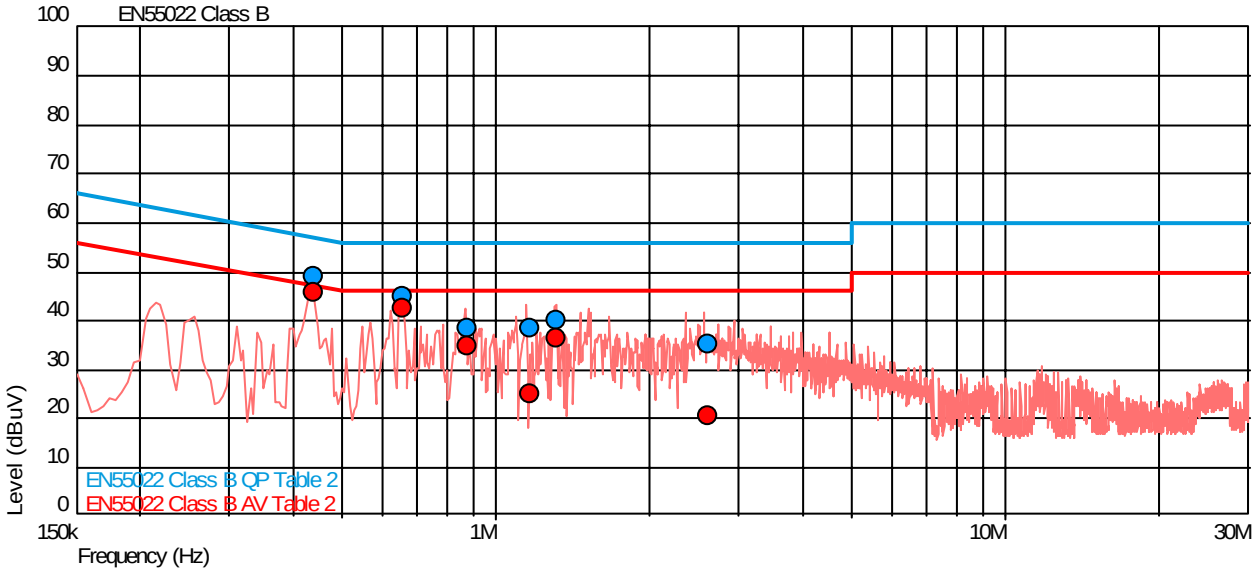
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.537	42.2	56.0	-13.8	31.2	46.0	-14.8
0.610	39.8	56.0	-16.2	26.9	46.0	-19.1
0.738	41.7	56.0	-14.3	28.3	46.0	-17.7
0.888	42.2	56.0	-13.8	27.4	46.0	-18.6
1.276	39.8	56.0	-16.2	26.6	46.0	-19.4
1.826	40.9	56.0	-15.1	24.9	46.0	-21.1

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 5

EUT Receiving on Middle 850 Channel (881.4MHz) – Neutral Line



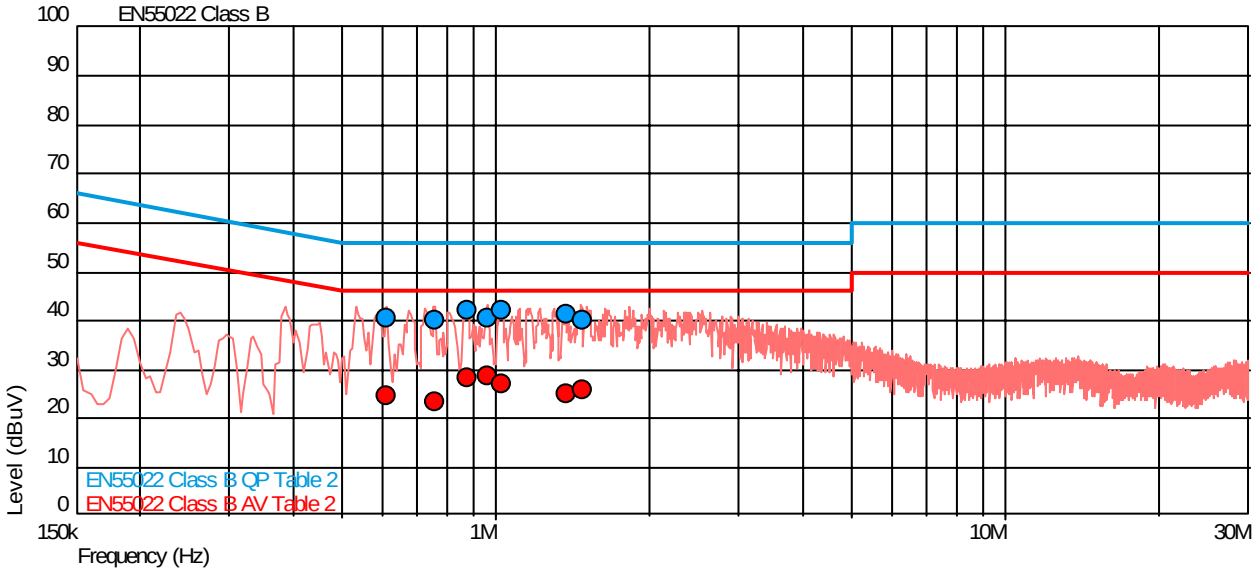
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.438	49.1	57.1	-8.0	45.7	47.1	-1.4
0.657	45.0	56.0	-11.0	42.6	46.0	-3.4
0.875	38.6	56.0	-17.4	34.7	46.0	-11.3
1.163	38.6	56.0	-17.4	25.1	46.0	-20.9
1.315	39.9	56.0	-16.1	36.4	46.0	-9.6
2.597	35.0	56.0	-21.0	20.5	46.0	-25.5

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 5

EUT Receiving on Middle 1900 Channel (1960.0MHz) – Live Line



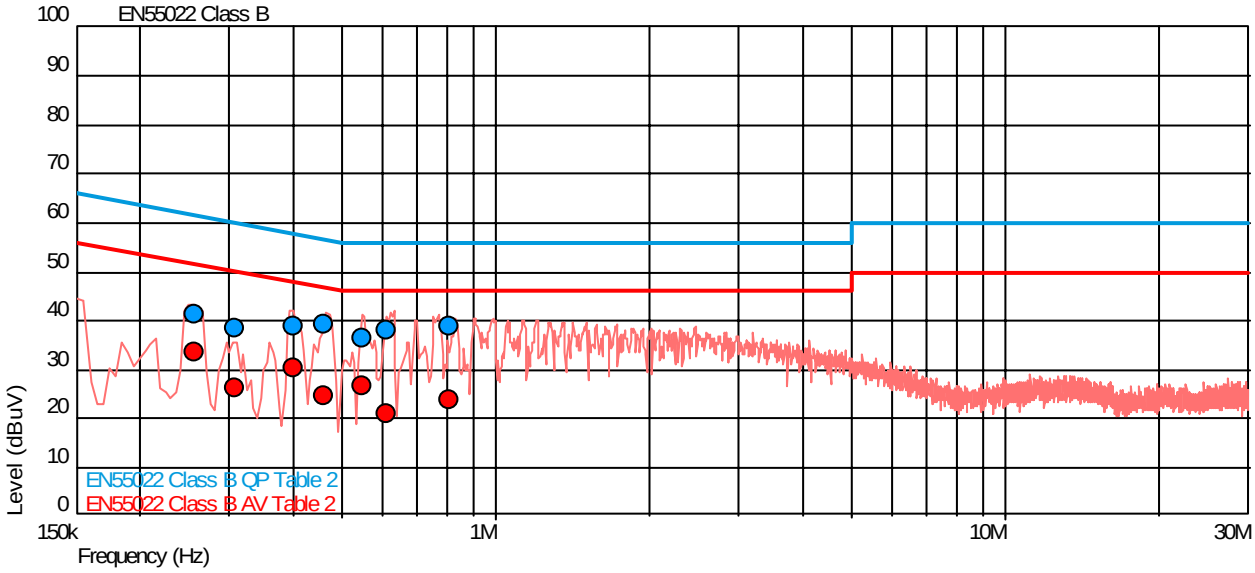
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.610	40.3	56.0	-15.7	24.4	46.0	-21.6
0.763	39.8	56.0	-16.2	23.6	46.0	-22.4
0.880	42.1	56.0	-13.9	28.4	46.0	-17.6
0.965	40.6	56.0	-15.4	28.7	46.0	-17.3
1.029	42.0	56.0	-14.0	27.2	46.0	-18.8
1.376	41.3	56.0	-14.7	25.2	46.0	-20.8
1.475	40.2	56.0	-15.8	25.9	46.0	-20.1

2.2 CONDUCTED EMISSIONS ON POWER PORTS

2.2.6 Test Results

Configuration 5

EUT Receiving on Middle 1900 Channel (1960.0MHz) – Neutral Line



Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.256	41.4	61.6	-20.1	33.5	51.6	-18.1
0.309	38.4	60.0	-21.6	26.3	50.0	-23.7
0.399	38.9	57.9	-19.0	30.5	47.9	-17.4
0.460	39.3	56.7	-17.3	24.7	46.7	-22.0
0.548	36.5	56.0	-19.5	26.8	46.0	-19.2
0.612	38.1	56.0	-17.9	21.1	46.0	-24.9
0.811	39.0	56.0	-17.0	23.8	46.0	-22.2

2.3 EFFECTIVE RADIATED POWER (CONDUCTED)

2.3.1 Specification Reference

FCC CFR 47: Part 22 Subpart H, Section 22.913(a) and Industry Canada RSS-132, 6.4

2.3.2 Equipment Under Test

DC2006a : OR615361IMEI 01094900950083-2

2.3.3 Date of Test

25th July 2006

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 Procedure

Using a spectrum analyser and attenuator(s), the output power of the EUT was measured at the antenna terminals. The EUT supports a GMSK modulation scheme. The carrier power was measured with GMSK modulation with 2 timeslots transmitting.

The spectrum analyser RBW and VBW were set to 1MHz and the path loss measured and entered as a reference level offset.

2.3 EFFECTIVE RADIATED POWER (CONDUCTED)

2.3.6 Test Results

Measurements were made with the EUT in GPRS mode and transmitting in the 850 MHz band.

Maximum Power – GMSK

Frequency MHz	Output Power dBm	Path Loss dB	Result dBm	Result W
824.20	4.418	27.25	31.668	1.468
836.40	4.444	26.80	31.244	1.332
848.80	4.359	26.36	30.719	1.180

Limit for FCC 22.913(a)	<7W
Limit for RSS-132	<6.3W

Remarks

EUT complies with 22.913(a) and Industry Canada RSS-132, 4.4. The EUT does not exceed 6.3W at the measured frequencies.

2.4 EFFECTIVE RADIATED POWER (RADIATED)

2.4.1 Specification Reference

FCC CFR 47: Part 22 Subpart H, Section 22.913(a), 2.1046 and Industry Canada RSS-132, 4.4

2.4.2 Equipment Under Test

DC2006a: IMEI 01094900950061-8

2.4.3 Date of Test

22nd July 2006 (Configuration 3 and 6)

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 Procedure

Test Performed in accordance with ANSI C63.4.

The Spectrum Analyser was tuned to the test frequency. The device Output Power setting was controlled as specified in the Product Information, Section 1.5 of this document. The device was then rotated through 360 degrees until the highest power level was observed in both horizontal and vertical polarisation. The device was then replaced with a substitution antenna and the input signal to this antenna was adjusted until the received level matched that of the previously detected emission.

2.4 EFFECTIVE RADIATED POWER (RADIATED)

2.4.6 Test Results

The EUT met the requirements of FCC CFR 47: Part 22 Subpart H, Section 22.913, 2.1046 and Industry Canada RSS-132, 4.4 for Effective Radiated Power.

Configuration 3

Frequency (MHz)	Result ERP (dBm)	Result ERP (mW)
824.20	29.80	955.00
836.40	29.90	977.24
848.80	26.80	478.63
Spec Limit	38.45	7000.00

Configuration 6

Frequency (MHz)	Result ERP (dBm)	Result ERP (mW)
824.20	27.50	562.34
836.40	28.9	776.25
848.80	27.5	562.34
Spec Limit	38.45	7000.00

2.5 MODULATION CHARACTERISTICS

2.5.1 Specification Reference

FCC CFR 47: Part 22 Subpart H, Section 2.1046(d) and Industry Canada RSS-132, 4.2

2.5.2 Equipment Under Test

DC2006a: IMEI 01094900950083-2

2.5.3 Date of Test

26th July 2006

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 Procedure

The two plots on page 52 and 53 indicate the following:

Plot 1: EUT in GPRS mode transmitting with GMSK modulation showing a close up of two timeslots.
Plot 2: EUT in GPRS mode transmitting with GMSK modulation showing one frame with two timeslots active.

2.5 MODULATION CHARACTERISTICS

2.5.6 Modulation Description

Modulation format for GMSK

Modulating symbol rate

The modulating symbol rate is 1/T = 1 625/6 ksymb/s (i.e. approximately 270.833 ksymb/s), which corresponds to 1 625/6 kbit/s (i.e. 270.833 kbit/s). T is the symbol period.

Start and stop of the burst

Before the first bit of the bursts as defined in 3GPP TS 45.002 [3] enters the modulator, the modulator has an internal state as if a modulating bit stream consisting of consecutive ones (di = 1) had entered the differential encoder. Also after the last bit of the time slot, the modulator has an internal state as if a modulating bit stream consisting of consecutive ones (di = 1) had continued to enter the differential encoder. These bits are called dummy bits and define the start and the stop of the active and the useful part of the burst as illustrated in figure 1. Nothing is specified about the actual phase of the modulator output signal outside the useful part of the burst.

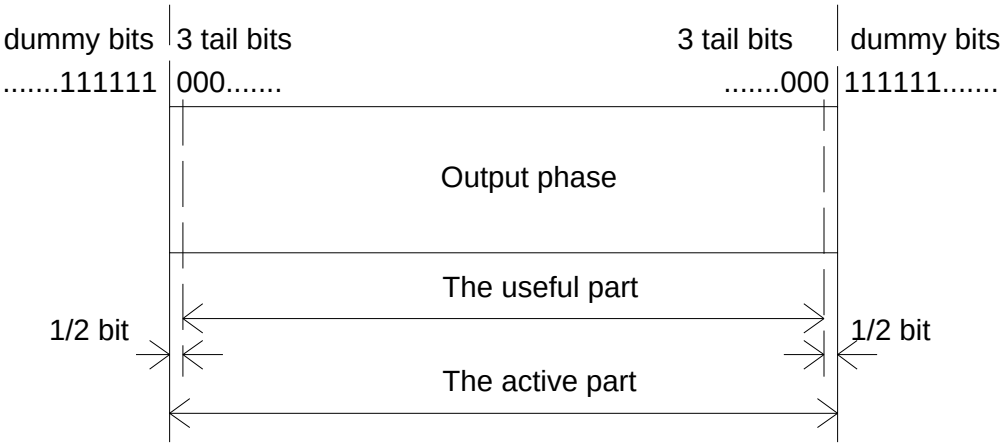


Figure 1: Relation between active part of burst, tail bits and dummy bits. For the normal burst the useful part lasts for 147 modulating bits

Differential encoding

Each data value d_i = *[0,1]* is differentially encoded. The output of the differential encoder is:

$$\hat{d}_i = d_i \oplus d_{i-1} \qquad (d_i \in \{0,1\})$$

where $\oplus$ denotes modulo 2 addition.
The modulating data value α_i input to the modulator is:

$$\alpha_i = 1 - 2\hat{d}_i \qquad (\alpha_i \in \{-1,+1\})$$

2.5 MODULATION CHARACTERISTICS

2.5.5 Modulation Description - continued

Filtering

The modulating data values α_i as represented by Dirac pulses excite a linear filter with impulse response defined by:

$$g(t) = h(t) * rect\left(\frac{t}{T}\right)$$

where the function *rect(x)* is defined by:

$$rect\left(\frac{t}{T}\right) = \frac{1}{T} \qquad for\ |t| < \frac{T}{2}$$

$$rect\left(\frac{t}{T}\right) = 0 \qquad otherwise$$

and * means convolution. *h(t)* is defined by:

$$h(t) = \frac{\exp\left(\frac{-t^2}{2\delta^2 T^2}\right)}{\sqrt{(2\pi)}\ .\ \delta T}$$

where $\delta = \frac{\sqrt{\ln(2)}}{2\pi BT}$ and $BT = 0.3$

where B is the 3 dB bandwidth of the filter with impulse response *h(t)*. This theoretical filter is associated with tolerances defined in 3GPP TS 45.005 [4].

Output phase

The phase of the modulated signal is:

$$\varphi(t') = \sum_i \alpha_i \pi h \int_{-\infty}^{t'-iT} g(u)du$$

where the modulating index *h* is 1/2 (maximum phase change in radians is π/2 per data interval). The time reference *t' = 0* is the start of the active part of the burst as shown in figure 1. This is also the start of the bit period of bit number 0 (the first tail bit) as defined in 3GPP TS 45.002 [2].

Modulation

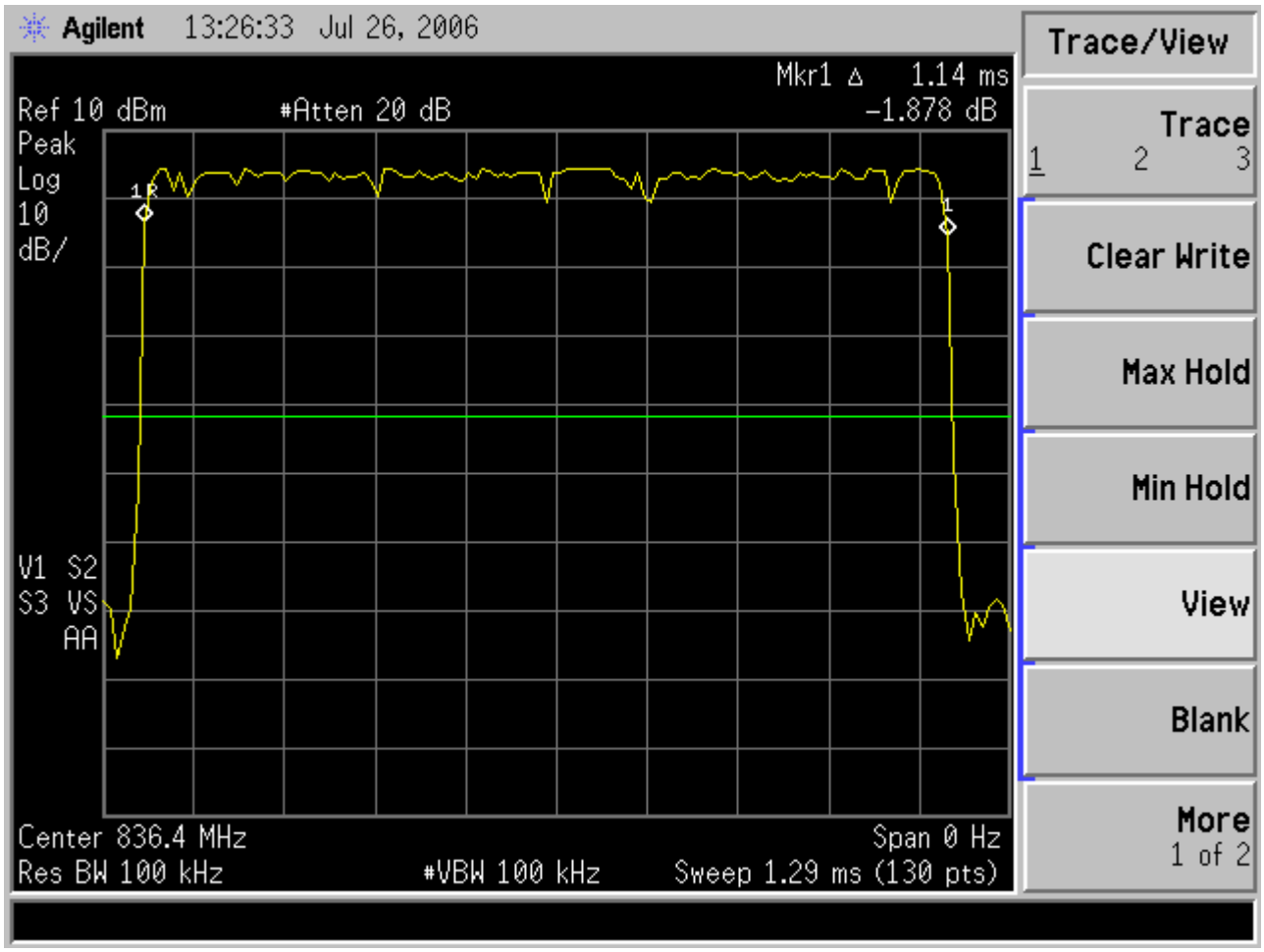
The modulated RF carrier, except for start and stop of the TDMA burst may therefore be expressed as:

$$x(t') = \sqrt{\frac{2E_c}{T}}\ .\ \cos(2\pi f_0 t' + \varphi(t') + \varphi_0)$$

where E_c is the energy per modulating bit, f_0 is the centre frequency and φ_0 is a random phase and is constant during one burst.

2.5 MODULATION CHARACTERISTICS

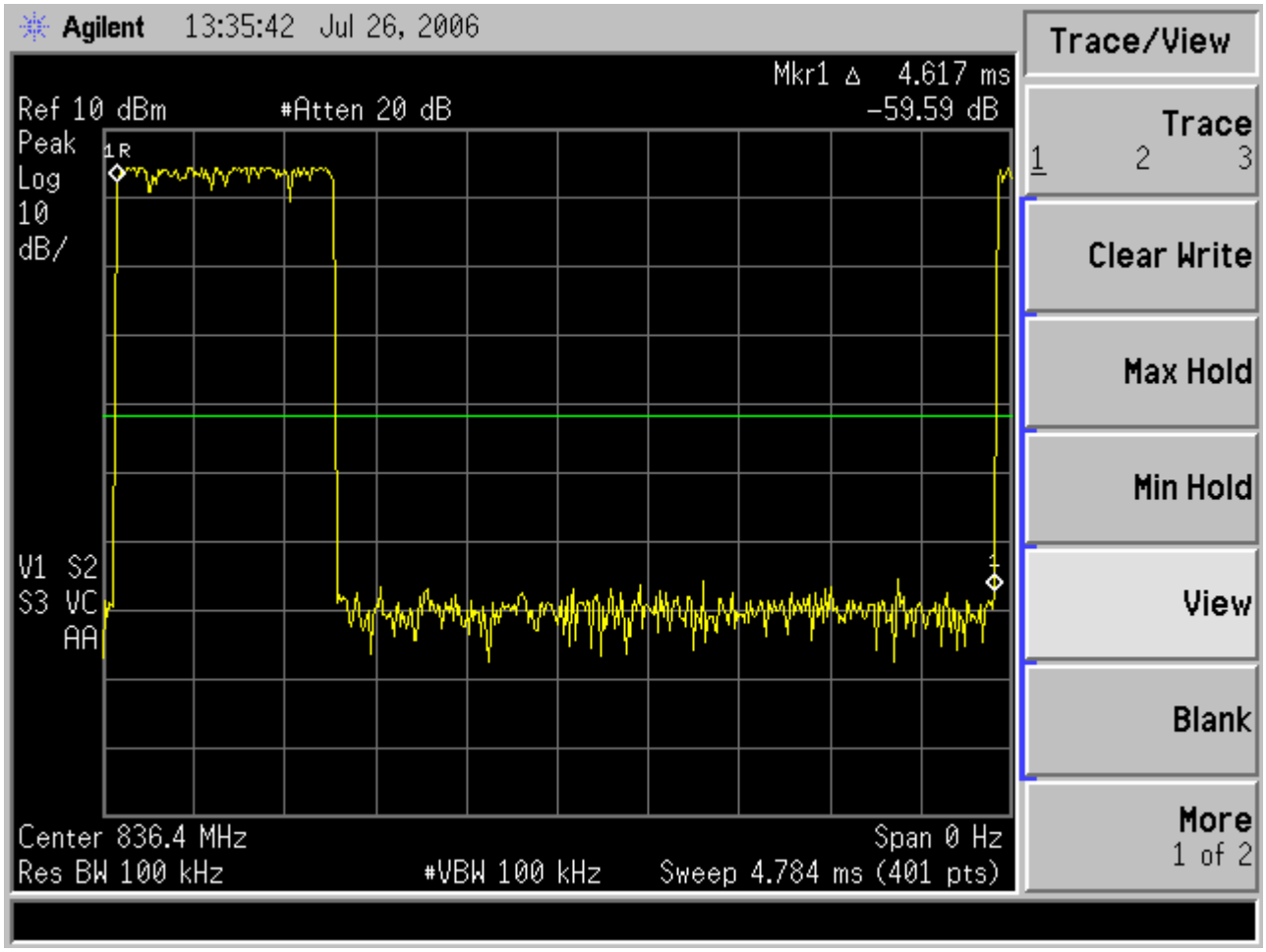
2.5.7 Test Results



View of two timeslots

2.5 MODULATION CHARACTERISTICS

2.5.7 Test Results



View of one complete frame showing two active time slots

2.6 OCCUPIED BANDWIDTH

2.6.1 Specification Reference

FCC CFR 47: Part 22 Subpart H, Section 2.1049, 22.917(b) and
Industry Canada RSS-132, 4.5

2.6.2 Equipment Under Test

DC2006a: IMEI 01094900950083-2

2.6.3 Date of Test

26th July 2006

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 Procedure

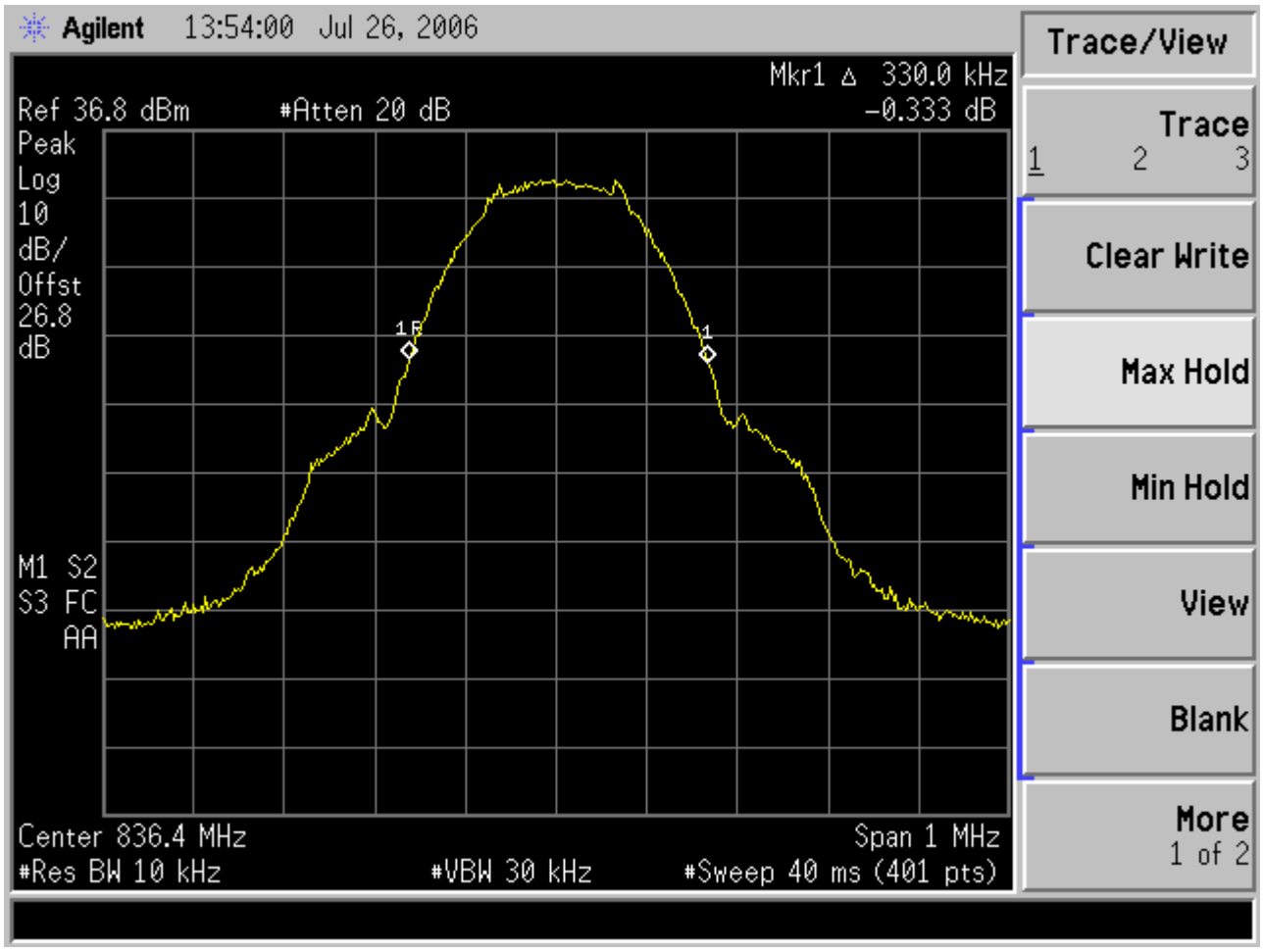
The EUT was transmitting at maximum power, modulated with all timeslots active. Using a resolution bandwidth of 10kHz and a video bandwidth of 30kHz, the -26dBc points were established and the emission bandwidth determined.

The plot on page 55 shows the resultant display from the Spectrum Analyser.

2.6 OCCUPIED BANDWIDTH

2.6.6 Test Results

Occupied Bandwidth As Defined By The –26dBc Points



Maximum Power – GMSK

2.7 SPURIOUS EMISSIONS AT ANTENNA TERMINALS (+/-1MHz)

2.7.1 Specification Reference

FCC CFR 47: Part 22 Subpart H, Section 2.1051, 22.905, 22.917 and
Industry Canada RSS-132, 4.5

2.7.2 Equipment Under Test

DC2006a: IMEI 01094900950083-2

2.7.3 Date of Test

26th July 2006

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 Procedure

In accordance with 22.917(e), any emissions outside of the block edges shall be attenuated by at least 43 + 10 log(P). The measurements are shown to ±1MHz from the block edges. The plots shown under the Spurious Emissions section covers the required range of 9kHz to 9GHz.

The reference power and path losses of all channels used for testing in each frequency block were measured. It was found that there was <0.5dB variation in all channels, thus the worst case reference level offset was used throughout. Having entered the reference level offset, the limit line was displayed, showing the –13dBm, (43+10logP), limit.

2.7 SPURIOUS EMISSIONS AT ANTENNA TERMINALS (+/-1MHz)

2.7.6 Test Results

Communication Channel Pair Blocks

Frequency Block MHz	Block Edge Test Channel/Frequency	Upper Block Edge Test Channels/Frequencies
824.0 – 8.49.0	Channel : 129 Frequency : 824.4MHz	-
824.0 – 849.0	-	Channel : 250 Frequency : 848.6MHz

In accordance with 22.917(b) and 22.905, using a spectrum analyser and attenuator, the emissions were measured between the block edge frequency up to 1MHz away from the block edge to ensure compliance with the 43 + 10logP limit.

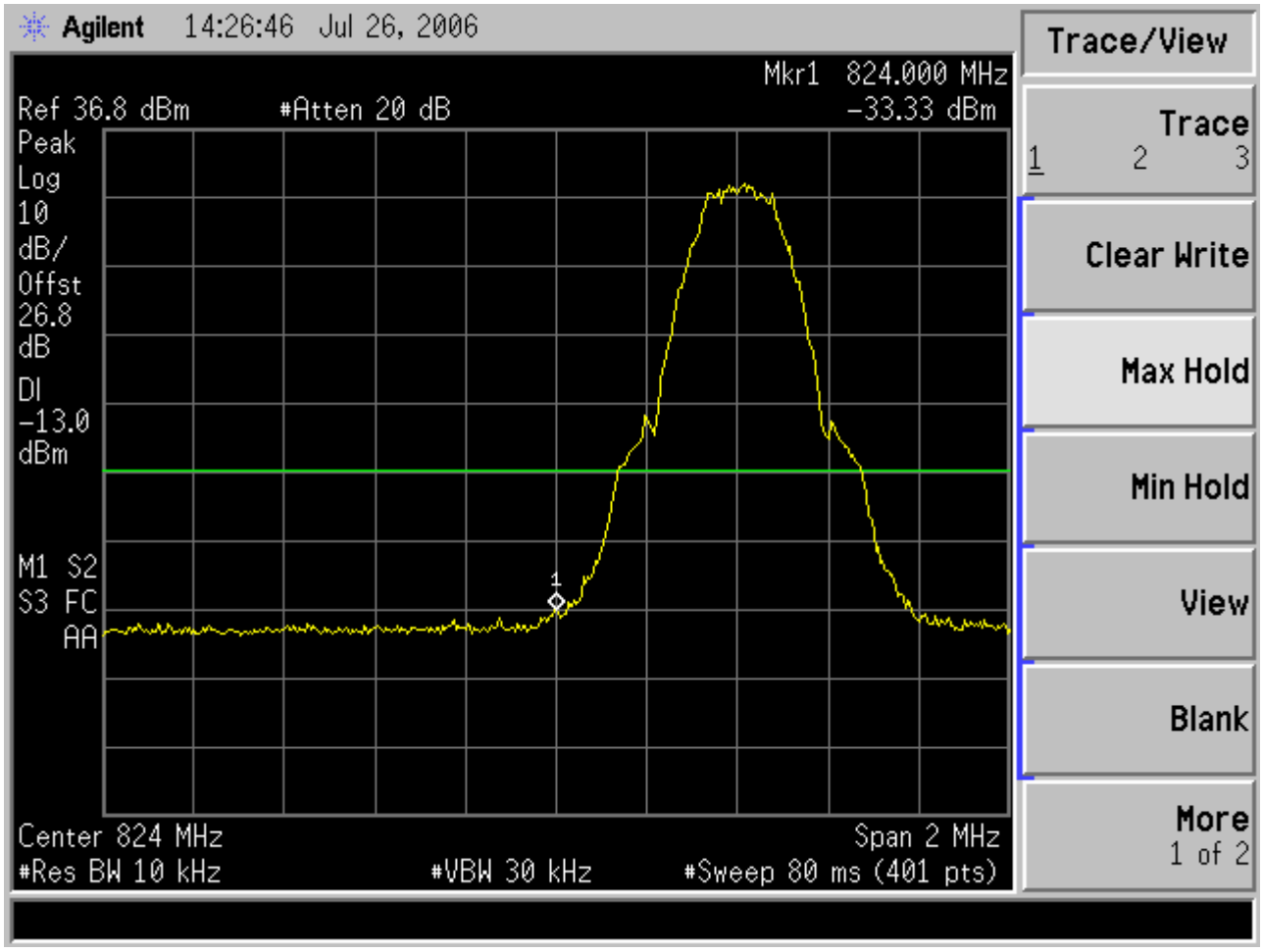
Measurements were made using a peak detector function with the trace display set to max hold. A resolution bandwidth of at lease 1% of the measured 26dB bandwidth was used, in this case 10kHz resolution bandwidth and 30kHz video bandwidth. The path loss was entered as a reference level offset into the spectrum analyser.

The measurement plots are shown on the following pages.

2.7 SPURIOUS EMISSIONS AT ANTENNA TERMINALS (+/-1MHz)

2.7.6 Test Results - continued

Block edge measurement with EUT transmitting at maximum power on Channel 129, 824.40MHz.

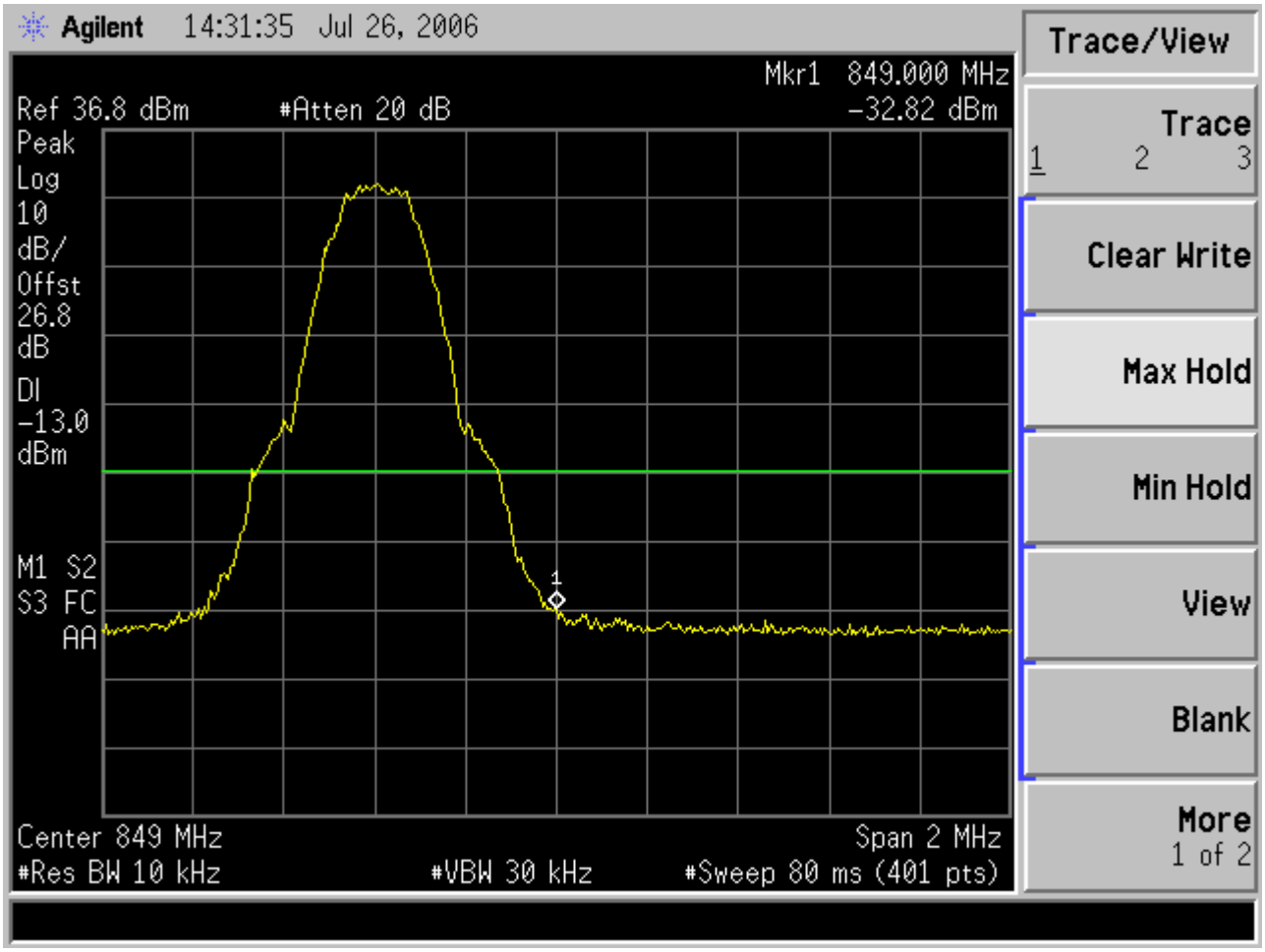


824.0 – 835.0MHz

2.7 SPURIOUS EMISSIONS AT ANTENNA TERMINALS (+/-1MHz)

2.7.6 Test Results - continued

Block edge measurement with EUT Transmitting at maximum power on Channel 250, 848.6MHz.



824.0 – 849.0MHz

2.8 RADIATED SPURIOUS EMISSIONS

2.8.1 Equipment Reference

FCC CFR 47: Part 22 Subpart H, Section 22.917 and Industry Canada RSS-132, 6.5

2.8.2 Equipment Under Test

DC2006a: IMEI 01094900950061-8

2.8.3 Date of Test

22nd July 2006 (Configuration 3 and 6)

2.8.4 Test Equipment Used

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

2.8.5 Test Procedure

Test Performed in accordance with ANSI C63.4.

In order to determine the radiated emission limits, measurements of transmitter power (P) were first carried out on the top, middle and bottom channels using a peak detector, the results are shown in the following table.

A preliminary profile of the spurious radiated emissions was obtained by operating the EUT on a remotely controlled turntable within a semi-anechoic chamber. Measurements of emissions from the EUT were obtained with the measurement antenna in both horizontal and vertical polarisations. The profiling produced a list of the worst-case emissions together with the EUT azimuth and antenna polarisation.

Using the information from the preliminary profiling of the EUT, the list of emissions was then confirmed or updated under alternative open site conditions. Emission levels were maximised by adjusting the antenna height, antenna polarisation and turntable azimuth.

Emissions identified within the range 30MHz – 1GHz were then formally measured using a CISPR quasi-peak detector.

Emissions identified within the range 1GHz – 10GHz were then formally measured using peak and average detectors, as appropriate.

The measurements were performed at a 3m distance unless otherwise stated.

2.8 RADIATED SPURIOUS EMISSIONS

2.8.6 Test Results

30MHz – 1GHz Frequency Range

Equipment Designation: Intentional Radiator.

The EUT met the requirements of FCC CFR 47: Part 22, Subpart H, 22.917 and Industry Canada RSS-132, 4.5 for Radiated Emissions (30MHz – 1GHz).

Configuration 3

EUT Transmitting on Bottom Channel (824.2MHz)

Only noise floor measurements were detected.

EUT Transmitting on Middle Channel (836.4MHz)

Only noise floor measurements were detected.

EUT Transmitting on Top Channel (848.8MHz)

Only noise floor measurements were detected.

The noise floor measurements are shown in the table below.

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength
MHz		cm	degree	dBµV/m
50.0	Vertical	100	000	-86.5
500.0	Vertical	100	000	-84.1
900.0	Vertical	100	000	-82.3

2.8 RADIATED SPURIOUS EMISSIONS

2.8.6 Test Results

30MHz – 1GHz Frequency Range

Configuration 6

EUT Transmitting on Bottom Channel (824.2MHz)

Only noise floor measurements were detected.

EUT Transmitting on Middle Channel (836.4MHz)

Only noise floor measurements were detected.

EUT Transmitting on Top Channel (848.8MHz)

Only noise floor measurements were detected.

The noise floor measurements are shown in the table below.

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength
MHz		cm	degree	dBµV/m
50.0	Vertical	100	000	-86.5
500.0	Vertical	100	000	-84.1
900.0	Vertical	100	000	-82.3

2.8 RADIATED SPURIOUS EMISSIONS

2.8.6 **Test Results** - continued

1GHz – 10GHz Frequency Range

Equipment Designation: Intentional Radiator.

The EUT met the requirements of FCC CFR 47: Part 22, Subpart H, 22.917 and Industry Canada RSS-132, 4.5 for Radiated Emissions (1GHz – 10GHz).

Configuration 3

EUT Transmitting on Bottom Channel (824.2MHz)

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength	Limit
GHz		cm	degree	dBm	dBm
1.648	Horizontal	100	094	-27.8	-13.0
4.121	Vertical	134	321	-46.7	-13.0
6.594	Vertical	100	065	-43.5	-13.0

EUT Transmitting on Middle Channel (836.4MHz)

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength	Limit
GHz		cm	degree	dBm	dBm
1.673	Horizontal	100	097	-34.9	-13.0
6.691	Vertical	120	065	-36.6	-13.0

EUT Transmitting on Bottom Channel (848.8MHz)

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength	Limit
GHz		cm	degree	dBm	dBm
1.698	Horizontal	100	102	-24.7	-13.0
4.244	Vertical	100	035	-43.6	-13.0
6.790	Vertical	100	011	-33.0	-13.0

2.8 RADIATED EMISSIONS

2.8.6 Test Results - continued

1GHz – 10GHz Frequency Range

Equipment Designation: Intentional Radiator.

The EUT met the requirements of FCC CFR 47: Part 22, Subpart H, 22.917 and Industry Canada RSS-132, 4.5 for Radiated Emissions (1GHz – 10GHz).

Configuration 6

EUT Transmitting on Bottom Channel (824.2MHz)

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength	Limit
GHz		cm	degree	dBm	dBm
1.648	Horizontal	100	146	-27.1	-13.0
2.472	Horizontal	100	247	-39.0	-13.0
6.593	Vertical	100	233	-41.2	-13.0

EUT Transmitting on Middle Channel (836.4MHz)

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength	Limit
GHz		cm	degree	dBm	dBm
1.672	Horizontal	100	141	-23.3	-13.0
2.509	Vertical	100	319	-36.0	-13.0
6.691	Vertical	100	236	-40.4	-13.0

EUT Transmitting on Bottom Channel (848.8MHz)

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength	Limit
GHz		cm	degree	dBm	dBm
1.697	Horizontal	100	137	-24.7	-13.0
2.546	Vertical	100	323	-36.2	-13.0
6.790	Vertical	110	232	-36.5	-13.0

2.9 CONDUCTED SPURIOUS EMISSIONS

2.9.1 Specification Reference

FCC CFR 47: Part 22 Subpart H, Section 2.1051, 22.917 (a) and Industry Canada RSS-132, 4.5

2.9.2 Equipment Under Test

DC2006a: IMEI 01094900950083-2

2.9.3 Date of Test

26th July 2006

2.9.4 Test Equipment Used

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

2.9.5 Test Procedure

In accordance with Part 2.1051, the spurious 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 9GHz. The EUT was set to transmit on full power on 2 timeslots. The EUT was tested on Bottom, Middle and Top channels. The resolution and video bandwidths were set to 1MHz thus meeting the requirements of Part 22.917(b). The spectrum analyser detector was set to Max Hold.

From 9kHz to 1.5GHz, an attenuator was used. For measuring the range 1.5GHz to 9GHz, an attenuator and high pass filter were used. This was to reduce saturation effects in the spectrum analyser.

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

2.9 CONDUCTED SPURIOUS EMISSIONS

2.9.6 Test Results

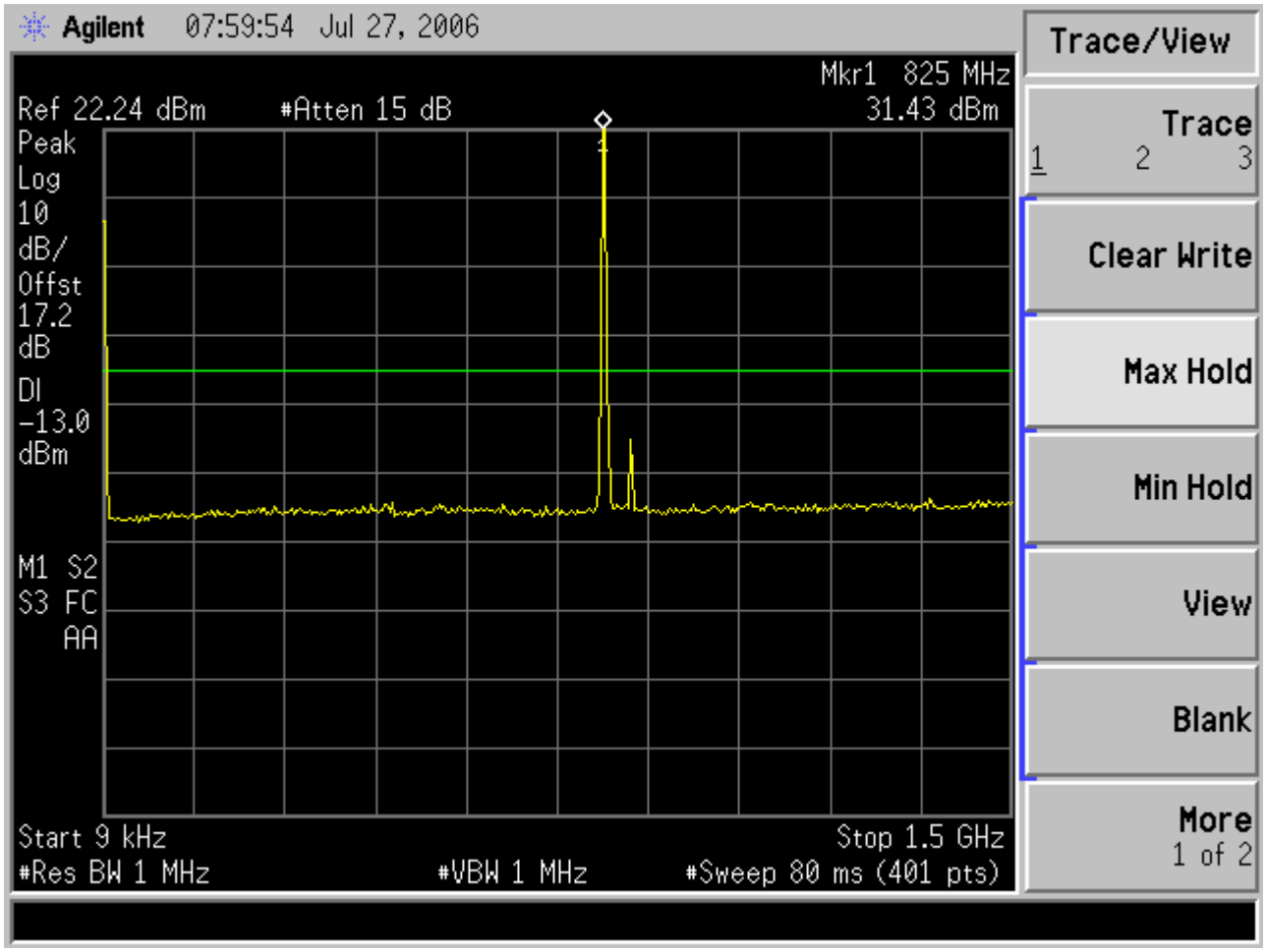
The plots on the following pages show the frequency spectrum from 9kHz to 9GHz of the EUT.

Remarks

The EUT passed the requirements laid out in 22.917(a).

2.9 CONDUCTED SPURIOUS EMISSIONS

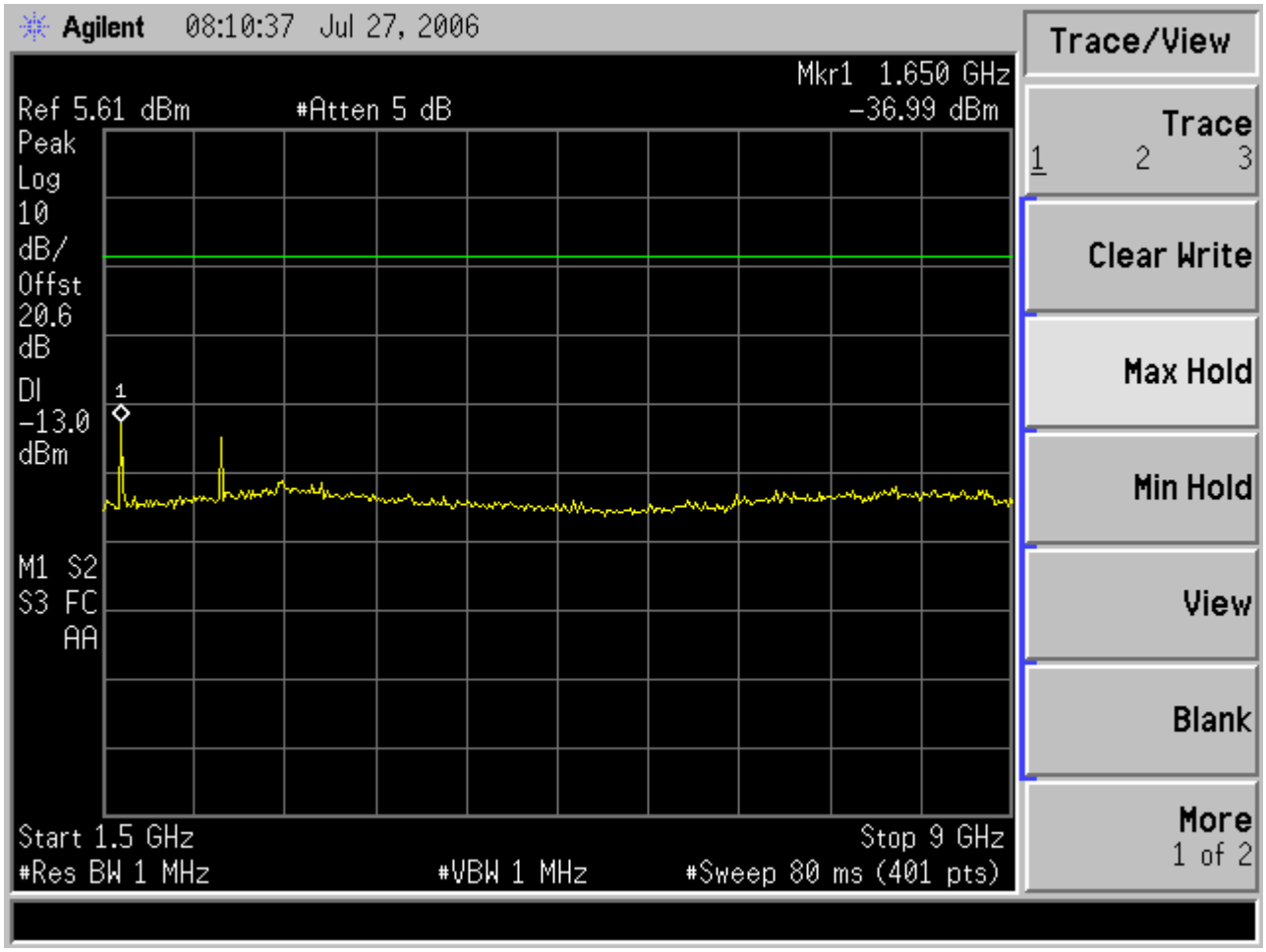
2.9.6 Test Results



Spurious Emissions (9kHz – 1.5GHz)
Channel 128, (824.2MHz) – Maximum Power

2.9 CONDUCTED SPURIOUS EMISSIONS

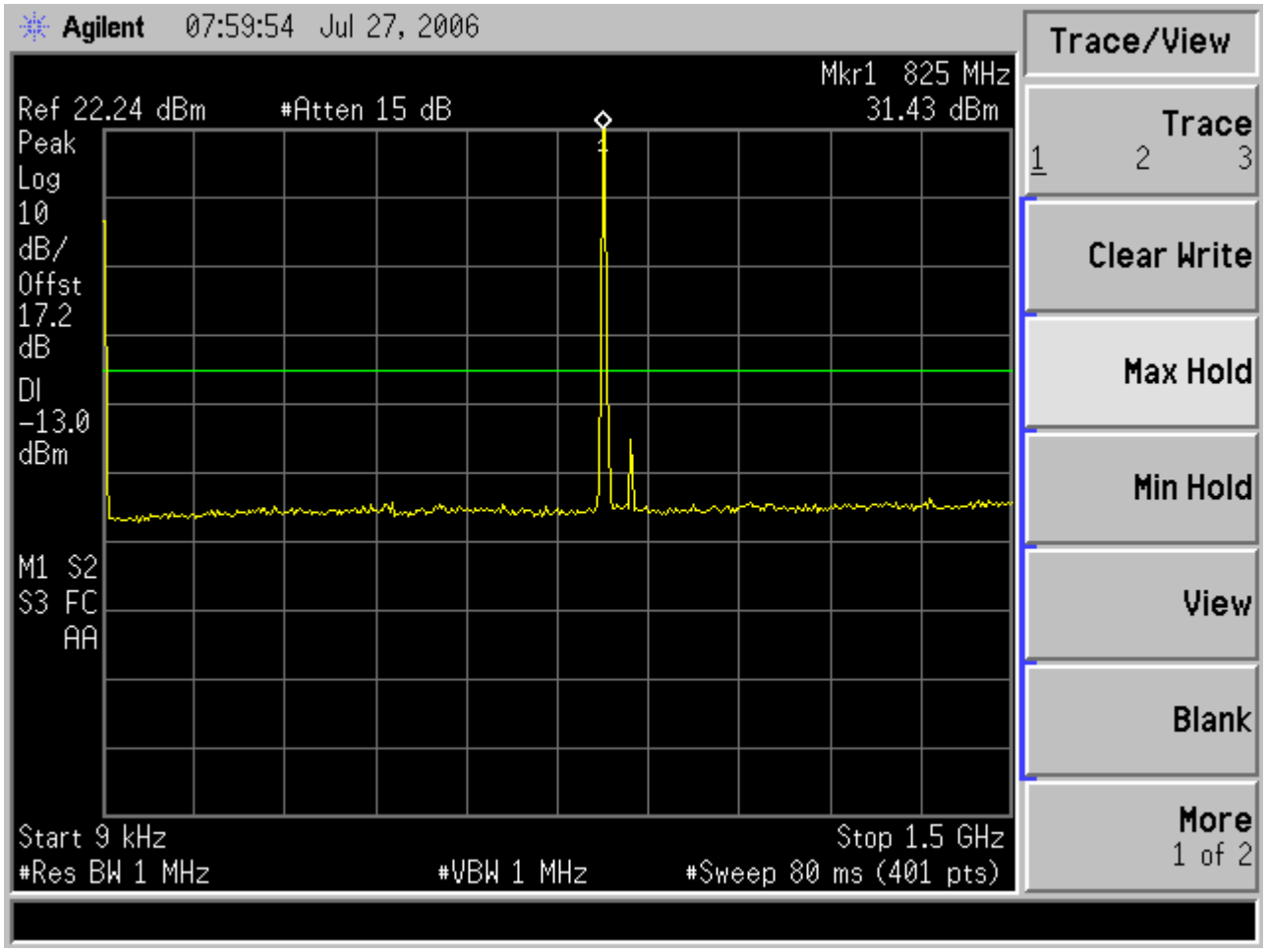
2.9.6 **Test Results** - continued



Spurious Emissions (1.5GHz – 9GHz)
Channel 128, (824.2MHz) – Maximum Power

2.9 CONDUCTED SPURIOUS EMISSIONS

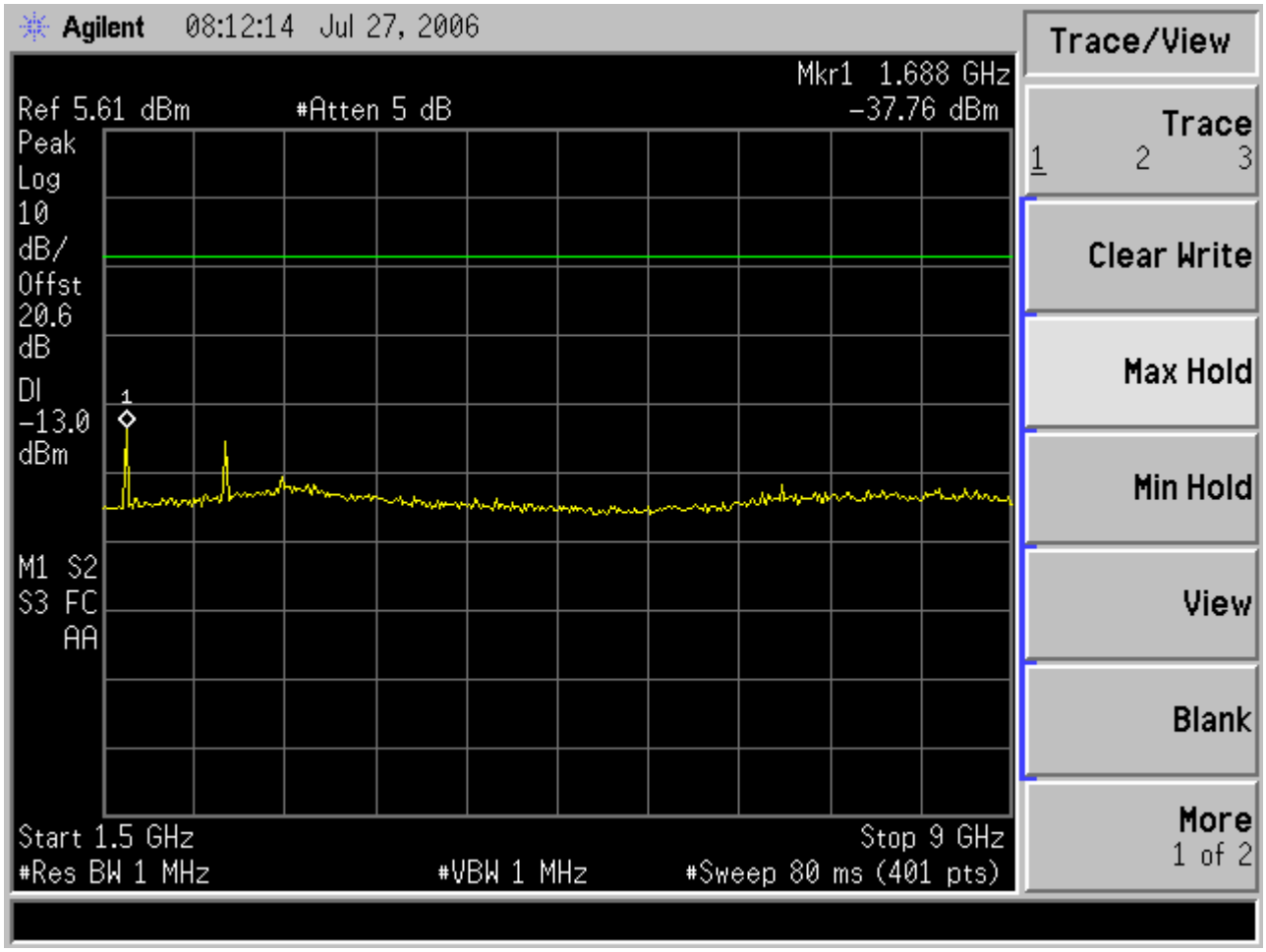
2.9.6 **Test Results** - continued



Spurious Emissions (9kHz – 1.5GHz)
Channel 189, (836.4MHz) – Maximum Power

2.9 CONDUCTED SPURIOUS EMISSIONS

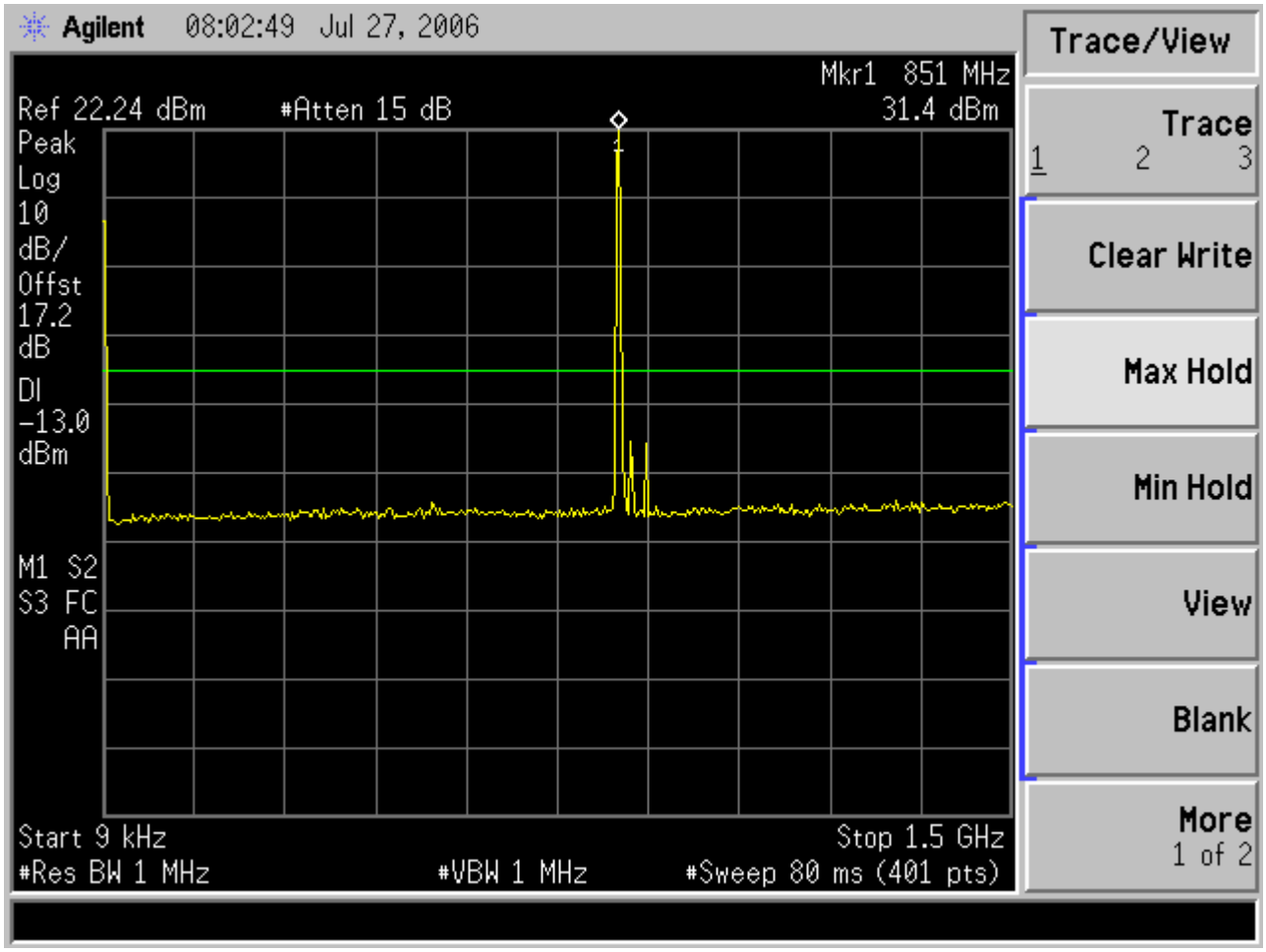
2.9.6 **Test Results** – continued



Spurious Emissions (1.5GHz – 9GHz)
Channel 189, (836.4MHz) – Maximum Power

2.9 CONDUCTED SPURIOUS EMISSIONS

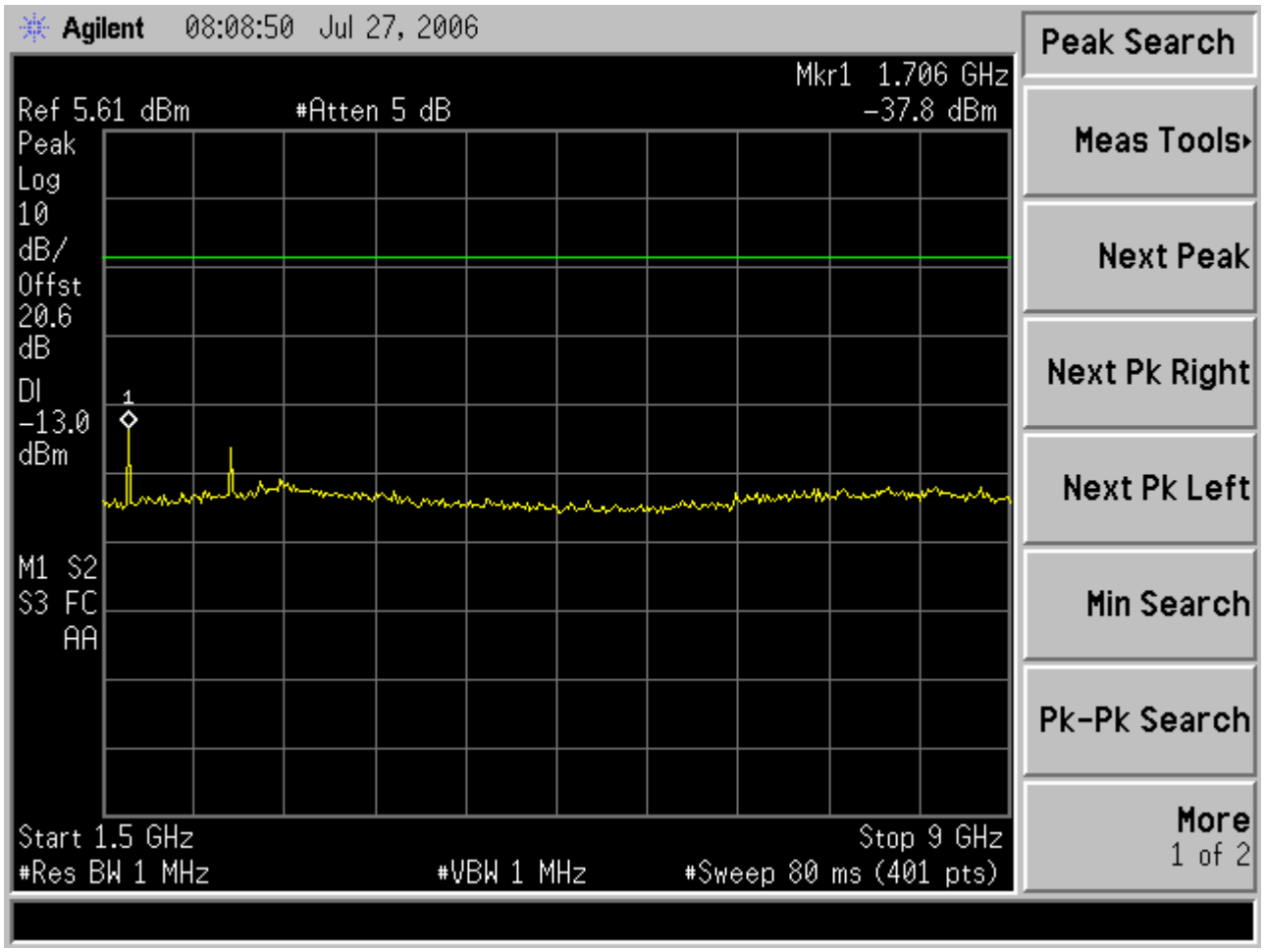
2.9.6 **Test Results** - continued



Spurious Emissions (9kHz – 1.5GHz)
Channel 251, (848.8MHz) – Maximum Power

2.9 CONDUCTED SPURIOUS EMISSIONS

2.9.6 **Test Results** - continued



Spurious Emissions (9kHz – 1.5GHz)
Channel 251, (848.8MHz) – Maximum Power

2.10 FREQUENCY STABILITY UNDER TEMPERATURE VARIATIONS

2.10.1 Specification Reference

FCC CFR 47: Part 22 Subpart H, Section 2.1055, 22.355 and Industry Canada RSS-132, 4.3

2.10.2 Equipment Under Test

DC2006a: IMEI 01094900950083-2

2.10.3 Date of Test

28th July 2006

2.10.4 Test Equipment Used

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

2.10.5 Test Procedure

The EUT was set to transmit on maximum power with 2 timeslots active. A Digital Communication Analyser, (CMU200), was used to measure the frequency error. The average result was taken over 200 bursts. The temperature was adjusted between –30ºC and +50ºC in 10º steps as per 2.1055.

2.10 FREQUENCY STABILITY UNDER TEMPERATURE VARIATIONS

2.10.6 Test Results

3.9V SUPPLY – GMSK Modulation

Temperature Interval ºC	Test Frequency MHz	Deviation Hz	Limit kHz
-30	836.6	*	±2.092
-20	836.6	+1	±2.092
-10	836.6	+14	±2.092
0	836.6	-17	±2.092
+10	836.6	-15	±2.092
+20	836.6	-16	±2.092
+30	836.6	-18	±2.092
+40	836.6	-21	±2.092
+50	836.6	-18	±2.092

Remarks

EUT complies with CFR 47 Part 22.355 and Industry Canada RSS-132, 4.3. The frequency stability of the EUT is sufficient to keep it within the authorised frequency blocks at any temperature interval across the measured range.

* The mobile ceases to transmit at -30°C.

2.11 FREQUENCY STABILITY UNDER VOLTAGE VARIATIONS

2.11.1 Specification Reference

FCC CFR 47: Part 22 Subpart H, Section 2.1055, 22.355 and Industry Canada RSS-132, 4.3

2.11.2 Equipment Under Test

DC2006a: IMEI 01094900950083-2

2.11.3 Date of Test

28th July 2006

2.11.4 Test Equipment Used

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

2.11.5 Test Procedure

The EUT was set to transmit on maximum power on two time slots. A Digital Communication Analyser, (CMU200), was used to measure the frequency error. The average result was taken over 200 bursts.

The voltage to the EUT was varied as shown in the table of results at a temperature of 20ºC.

2.11 FREQUENCY STABILITY UNDER VOLTAGE VARIATIONS

2.11.6 Test Results

3.9V SUPPLY

DC Voltage V	Test Frequency MHz	Deviation Hz	Deviation Limit kHz
3.9	836.6	-18	± 2.092
3.55	836.6	-26	± 2.092

Remarks

EUT complies with CFR 47 Part 22.355. The EUT does not exceed the deviation limit of ±2.092kHz at nominal voltage or at the varied low voltage.

2.12 MAXIMUM PEAK OUTPUT POWER (RADIATED)

2.12.1 Specification Reference

FCC CFR 47: Part 24 Subpart E, Section 24.232(b), 2.1046 and
Industry Canada RSS-133, 4.3/6.4

2.12.2 Equipment Under Test

DC2006a: IMEI 01094900950061-8

2.12.3 Date of Test

22nd July 2006 (Configurations 3 and 6)

2.12.4 Test Equipment Used

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

2.12.5 Test Procedure

Test Performed in accordance with ANSI C63.4.

The EUT is equipped with an antenna connector, therefore the maximum peak output power was performed using a conducted method.

The EUT was connected to a digital storage oscilloscope via an attenuator and a crystal detector. The DC output from the crystal detector was measured on the oscilloscope and the EUT was then substituted for a signal generator. The signal generator frequency was adjusted to that of the EUT and the amplitude was increased to produce the same DC level on the oscilloscope as measured previously from the EUT. The resulting amplitude of the signal generator was recorded and therefore equal to the maximum output power of the EUT.

2.12 MAXIMUM PEAK OUTPUT POWER (RADIATED)

2.12.6 Test Results

The EUT met the requirements of FCC Part 24 Subpart E, Section 24.232(b), 2.1046 and Industry Canada RSS-133, 4.3/6.4

Configuration 3

Frequency (MHz)	Result EIRP (dBm)	Result EIRP (W)
1850.20	32.20	1318.00
1880.00	30.50	1122.00
1909.80	29.90	977.24
Spec Limit	33.00	2000.00

Configuration 6

Frequency (MHz)	Result EIRP (dBm)	Result EIRP (mW)
1850.20	31.00	1259.00
1880.00	30.10	1023.00
1909.80	28.50	707.95
Spec Limit	33.00	2000.00

2.13 MAXIMUM PEAK OUTPUT POWER (CONDUCTED)

2.13.1 Specification Reference

FCC CFR 47: Part 24 Subpart E, Section 24.232(a), 2.1046 and Industry Canada RSS-133, 4.3/6.4

2.13.2 Equipment Under Test

DC2006a: IMEI 01094900950083-2

2.13.3 Date of Test

27th July 2006

2.13.4 Test Equipment Used

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

2.13.5 Test Procedure

The test was performed using a spectrum analyser and an attenuator connected to the antenna connector of the EUT. The EUT supports GPRS and is a multi-slot class 10 mobile, therefore the test was performed on two timeslots using GMSK modulation at maximum output power.

The spectrum analyser RBW and VBW were set to 1MHz and the path loss measured and entered as a reference level offset.

2.13 MAXIMUM PEAK OUTPUT POWER (CONDUCTED)

2.13.6 Test Results

Frequency MHz	Output Power dBm	Path Loss dB	Result dBm	Result mW
1850.2	1.546	26.82	28.336	0.686
1880.0	1.849	26.41	28.259	0.670
1909.8	1.744	26.47	28.214	0.663

Limit	<2W or <+33dBm

Remarks

EUT complies with CFR 47 2.1046 and 24.132(b) and Industry Canada RSS-133, 6.2. The EUT does not exceed 2W or +33dBm at the measured frequencies.

2.14 MODULATION CHARACTERISTICS

2.14.1 Specification Reference

FCC CFR 47: Part 24 Subpart E, Section 2.1047(d) and Industry Canada RSS-133, 6.2

2.14.2 Equipment Under Test

DC2006a: IMEI 01094900950083-2

2.14.3 Date of Test

27th July 2006

2.14.4 Test Equipment Used

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

2.14.5 Test Procedure

The two plots on page 84 and 85 indicate the following:

Plot 1: EUT in GPRS mode transmitting with GMSK modulation showing a close up of two timeslots.
Plot 2: EUT in GPRS mode transmitting with GMSK modulation showing one frame with two timeslots active.

2.14 MODULATION CHARACTERISTICS

2.14.5 Modulation Description

Modulation format for GMSK

Modulating symbol rate

The modulating symbol rate is 1/T = 1 625/6 ksymb/s (i.e. approximately 270.833 ksymb/s), which corresponds to 1 625/6 kbit/s (i.e. 270.833 kbit/s). T is the symbol period.

Start and stop of the burst

Before the first bit of the bursts as defined in 3GPP TS 45.002 [3] enters the modulator, the modulator has an internal state as if a modulating bit stream consisting of consecutive ones (di = 1) had entered the differential encoder. Also after the last bit of the time slot, the modulator has an internal state as if a modulating bit stream consisting of consecutive ones (di = 1) had continued to enter the differential encoder. These bits are called dummy bits and define the start and the stop of the active and the useful part of the burst as illustrated in figure 1. Nothing is specified about the actual phase of the modulator output signal outside the useful part of the burst.

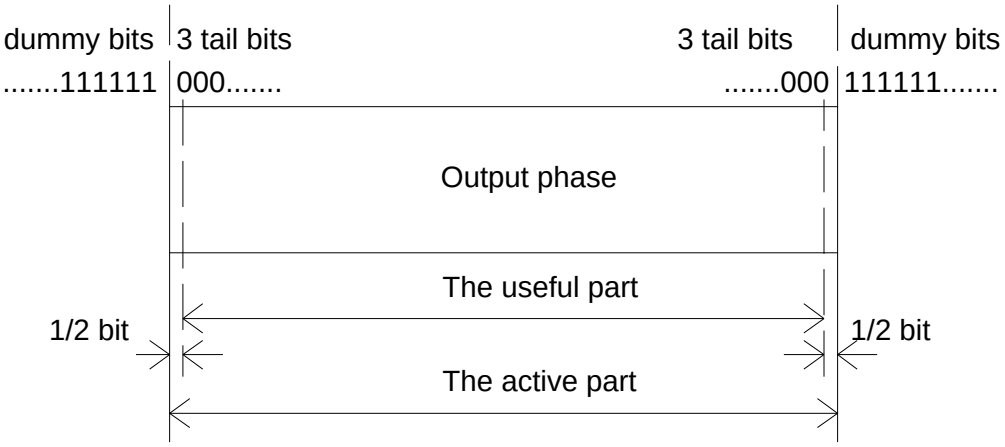


Figure 1: Relation between active part of burst, tail bits and dummy bits. For the normal burst the useful part lasts for 147 modulating bits

Differential encoding

Each data value d_i = *[0,1]* is differentially encoded. The output of the differential encoder is:

$$\hat{d}_i = d_i \oplus d_{i-1} \qquad (d_i \in \{0,1\})$$

where $\oplus$ denotes modulo 2 addition.
The modulating data value α_i input to the modulator is:

$$\alpha_i = 1 - 2\hat{d}_i \qquad (\alpha_i \in \{-1,+1\})$$

2.14 MODULATION CHARACTERISTICS

2.14.5 Modulation Description - continued

Filtering

The modulating data values α_i as represented by Dirac pulses excite a linear filter with impulse response defined by:

$$g(t) = h(t) * rect\left(\frac{t}{T}\right)$$

where the function *rect(x)* is defined by:

$$rect\left(\frac{t}{T}\right) = \frac{1}{T} \qquad for\ |t| < \frac{T}{2}$$

$$rect\left(\frac{t}{T}\right) = 0 \qquad otherwise$$

and * means convolution. *h(t)* is defined by:

$$h(t) = \frac{\exp\left(\frac{-t^2}{2\delta^2 T^2}\right)}{\sqrt{(2\pi)}\ .\ \delta T}$$

where $\delta = \frac{\sqrt{\ln(2)}}{2\pi BT}$ *and* $BT = 0.3$

where B is the 3 dB bandwidth of the filter with impulse response *h(t)*. This theoretical filter is associated with tolerances defined in 3GPP TS 45.005 [4].

Output phase

The phase of the modulated signal is:

$$\varphi(t') = \sum_i \alpha_i \pi h \int_{-\infty}^{t'-iT} g(u)du$$

where the modulating index *h* is 1/2 (maximum phase change in radians is π/2 per data interval). The time reference *t' = 0* is the start of the active part of the burst as shown in figure 1. This is also the start of the bit period of bit number 0 (the first tail bit) as defined in 3GPP TS 45.002 [2].

Modulation

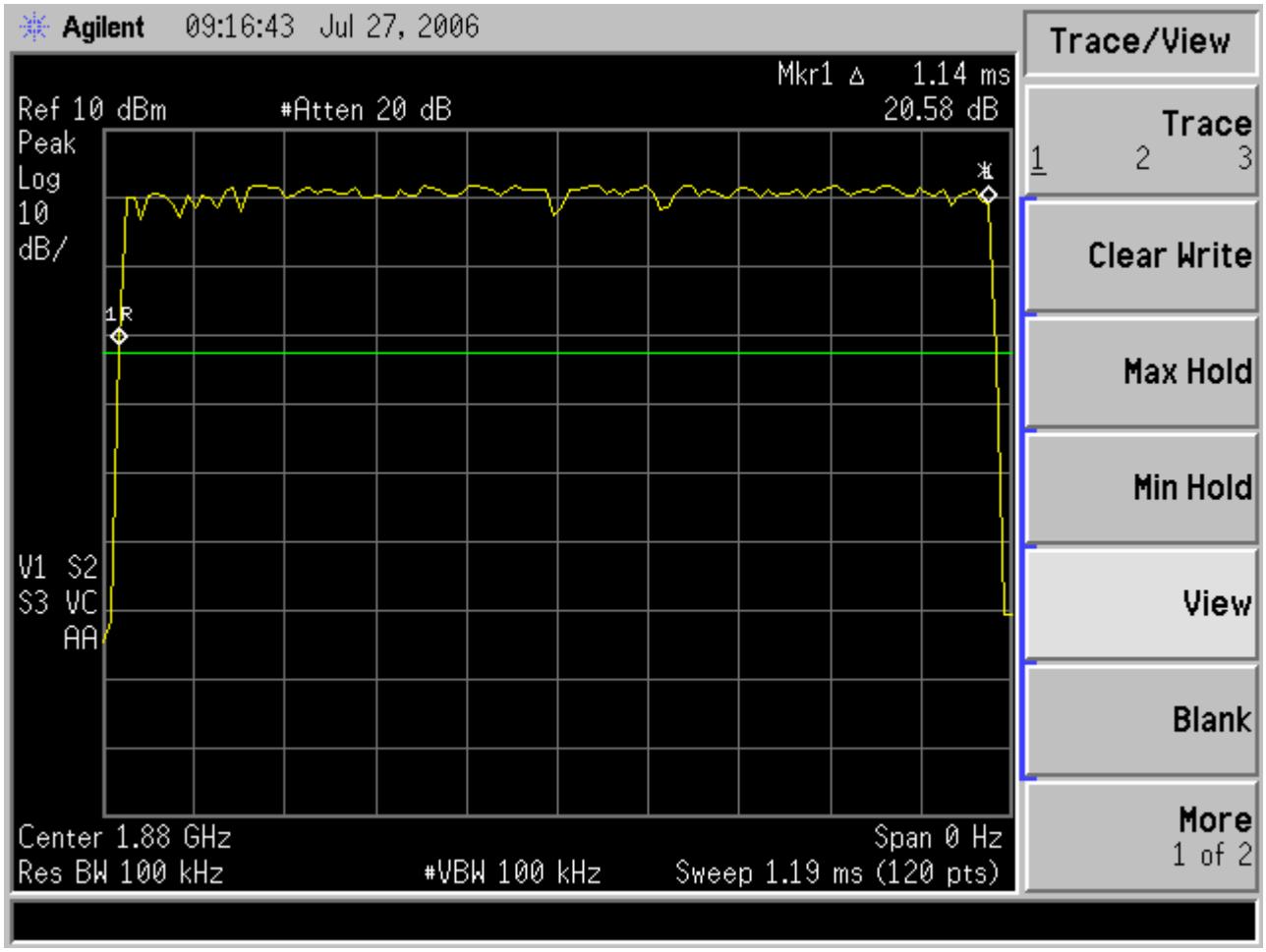
The modulated RF carrier, except for start and stop of the TDMA burst may therefore be expressed as:

$$x(t') = \sqrt{\frac{2E_c}{T}}\ .\ \cos(2\pi f_0 t' + \varphi(t') + \varphi_0)$$

where E_c is the energy per modulating bit, f_0 is the centre frequency and φ_0 is a random phase and is constant during one burst.

2.14 MODULATION CHARACTERISTICS

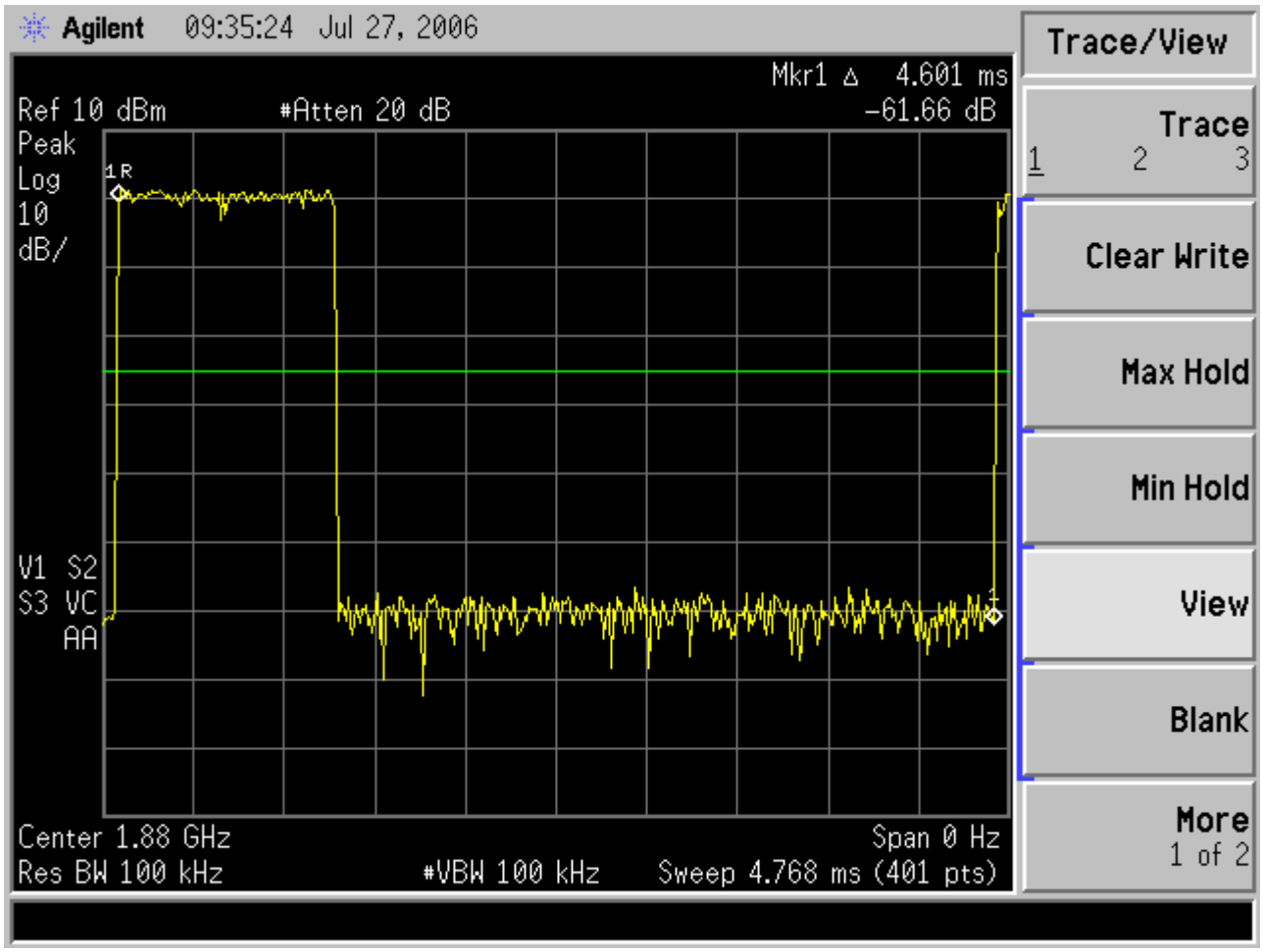
2.14.6 Test Results



View of two timeslots

2.14 MODULATION CHARACTERISTICS

2.14.6 Test Results



View of one complete frame showing two active time slots

2.15 OCCUPIED BANDWIDTH

2.15.1 Specification Reference

FCC CFR 47: Part 24 Subpart E, Section 24.238(b), 2.1049 and Industry Canada RSS-133, 2.6/6.5 and RSS Gen 4.4

2.15.2 Equipment Under Test

DC2006a: IMEI 01094900950083-2

2.15.3 Date of Test

27th July 2006

2.15.4 Test Equipment Used

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

2.15.5 Test Procedure

The EUT was set to transmit on maximum power and measurements were made on 2 timeslots.

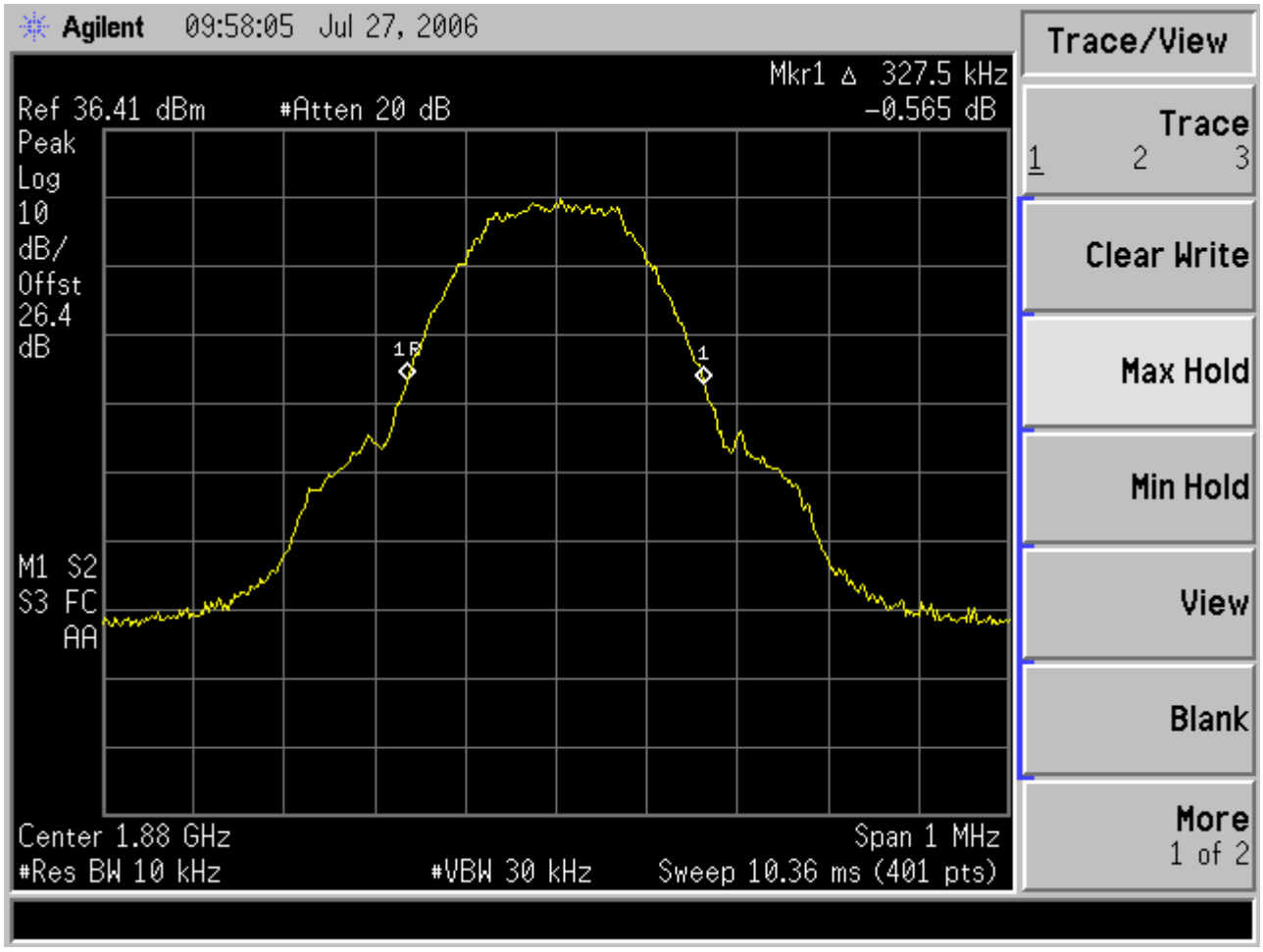
Using a resolution bandwidth of 10kHz and a video bandwidth of 30kHz, the –26dBc points were established and the emission bandwidth determined.

The plots on page 87 show the resultant display from the Spectrum Analyser.

2.15 OCCUPIED BANDWIDTH

2.15.6 Test Results

Occupied Bandwidth As Defined By The - 26dBc Points



Maximum Power – GPRS

2.16 SPURIOUS EMISSIONS AT ANTENNA TERMINALS (+/-1MHz)

2.16.1 Specification Reference

FCC CFR 47: Part 24 Subpart E, Section 24.229, 24.238, 2.1051 and
Industry Canada RSS-133, 4.4/6.5

2.16.2 Equipment Under Test

DC2006a: IMEI 01094900950083-2

2.16.3 Date of Test

27th July 2006

2.16.4 Test Equipment Used

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

2.16.5 Test Procedure

In accordance with Part 24.238, at least 1% of the 26dB bandwidth was used for the resolution and video bandwidths up to 1MHz away from the Block Edge. At greater than 1MHz, the resolution and video bandwidths were increased to 1MHz.

The reference power and path losses of all channels used for testing in each frequency block were measured. It was found that there was <0.6dB variation in all channels, thus the worst case reference level offset was used throughout. Having entered the reference level offset, the limit line was displayed, showing the –13dBm, (43+10logP), limit.

The EUT was configured to transmit at maximum output power.

2.16 SPURIOUS EMISSIONS AT ANTENNA TERMINALS (+/-1MHz)

2.16.6 Test Results

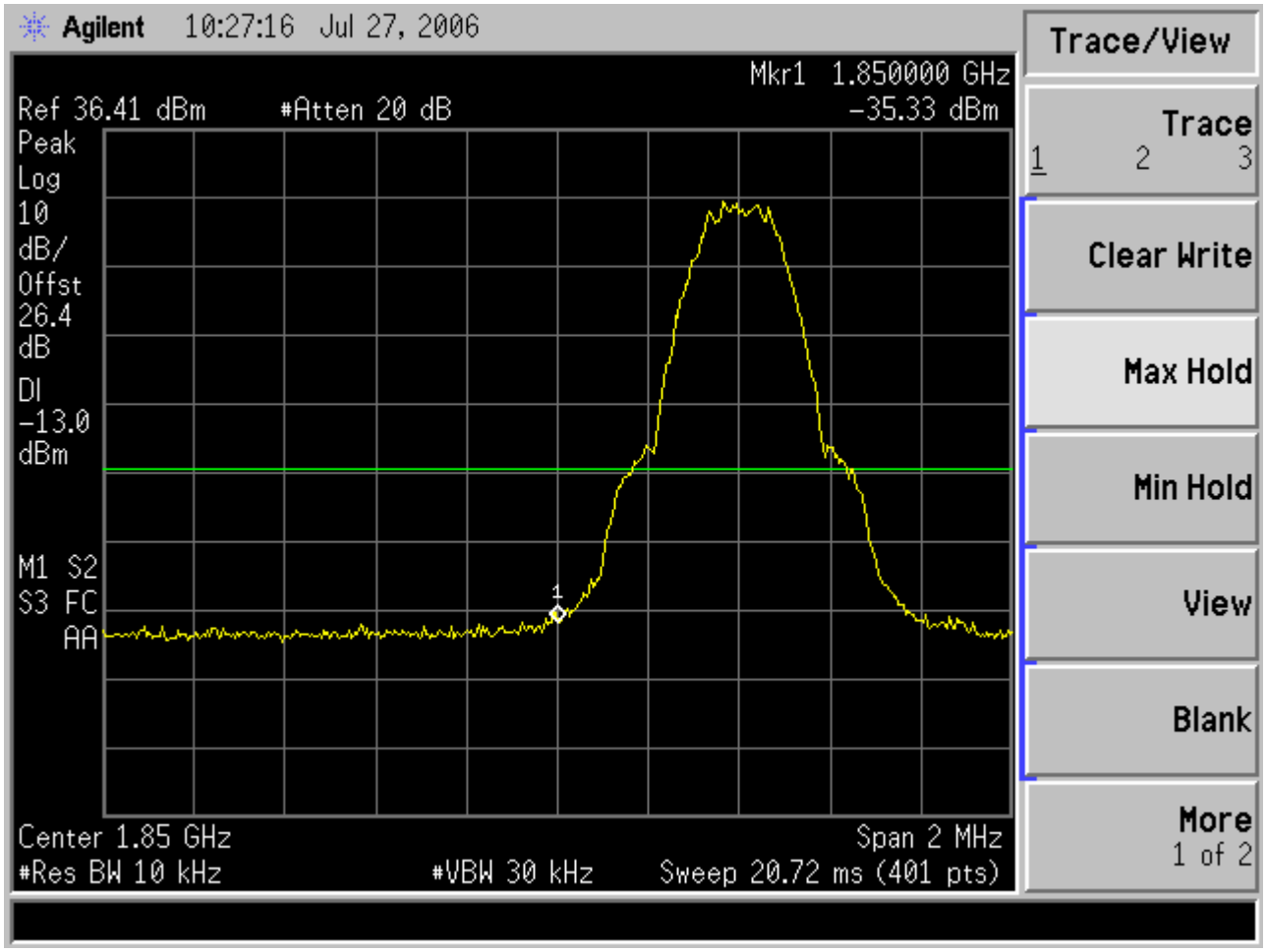
Frequency Block MHz	Lower Block Edge Test Channels/Frequencies	Upper Block Edge Test Channels/Frequencies
1850MHz – 1910MHz	Channel : 513 Frequency : 1850.4 MHz	-
1850MHz – 1910MHz		Channel : 809 Frequency : 1909.6 MHz

The measurement plots are shown on the following pages.

2.16 SPURIOUS EMISSIONS AT ANTENNA TERMINALS (+/-1MHz)

2.16.6 Test Results - continued

Block edge measurement with EUT transmitting at maximum power on Channel 513, 1850.4MHz.

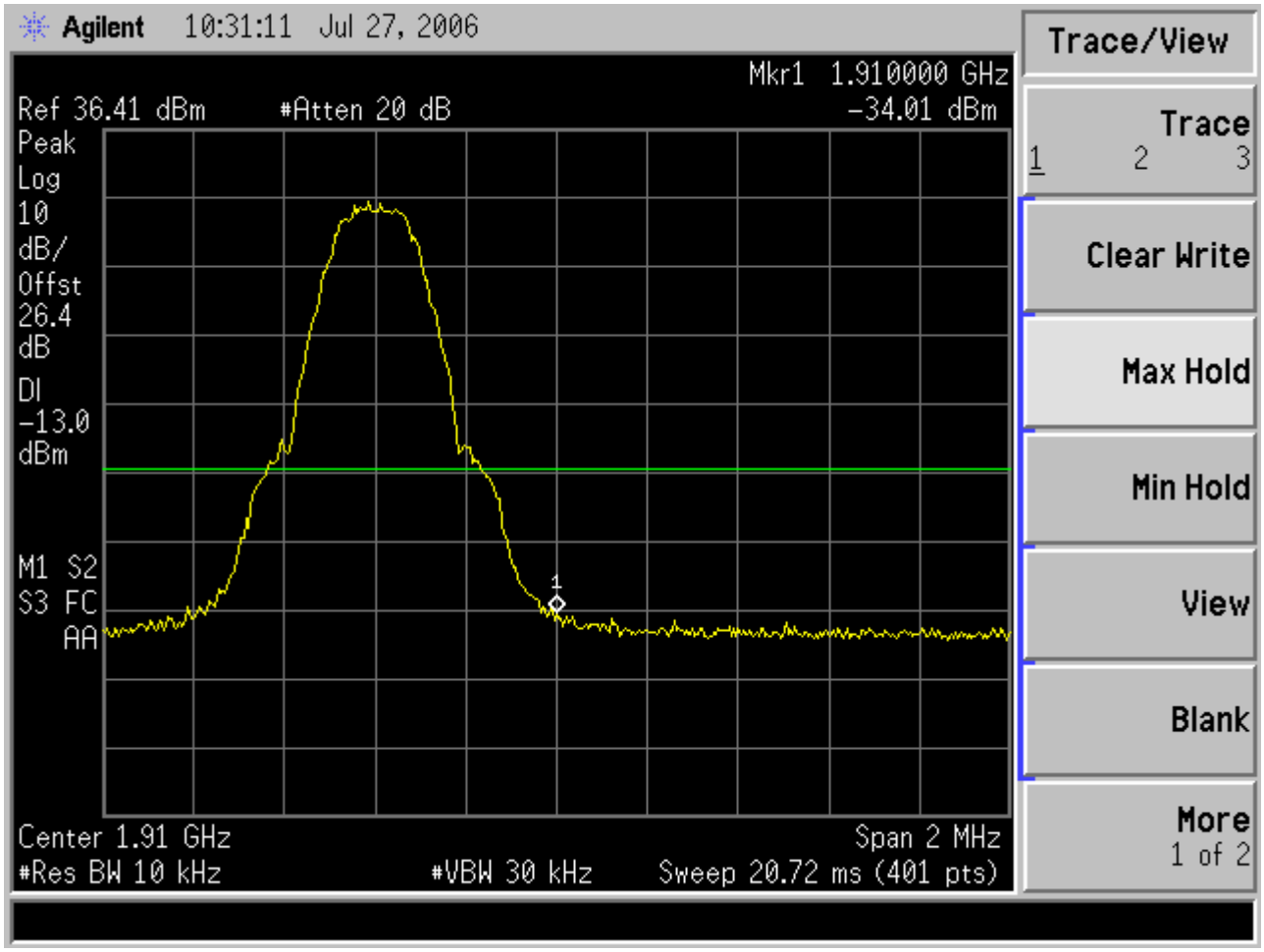


1850MHz – 1910MHz

2.16 SPURIOUS EMISSIONS AT ANTENNA TERMINALS (+/-1MHz)

2.16.6 Test Results - continued

Block edge measurement with EUT transmitting at maximum power on Channel 809, 1909.8MHz.



1850MHz – 1910MHz

2.17 RADIATED SPURIOUS EMISSIONS

2.17.1 Specification Reference

FCC CFR 47: Part 24 Subpart E, Section 24.238, 2.1053 and Industry Canada RSS-133, 4.4/6.5

2.17.2 Equipment Under Test

DC2006a

2.17.3 Date of Test

23rd July 2006 (Configuration 3 and 6)

2.17.4 Test Equipment Used

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

2.17.5 Test Procedure

Test Performed in accordance with ANSI C63.4.

In order to determine the radiated emission limits, measurements of transmitter power (P) were first carried out on the top and bottom channels using a peak detector and the results are shown in the following table.

A preliminary profile of the spurious radiated emissions was obtained by operating the EUT on a remotely controlled turntable within a semi-anechoic chamber. Measurements of emissions from the EUT were obtained with the measurement antenna in both horizontal and vertical polarisations. The profiling produced a list of the worst-case emissions together with the EUT azimuth and antenna polarisation.

Using the information from the preliminary profiling of the EUT, the list of emissions was then confirmed or updated under alternative open site conditions. Emission levels were maximised by adjusting the antenna height, antenna polarisation and turntable azimuth.

Emissions identified within the range 30MHz – 1GHz were then formally measured using a CISPR quasi-peak detector.

Emissions identified within the range 1GHz – 10GHz were then formally measured using peak and average detectors, as appropriate.

The measurements were performed at a 3m distance unless otherwise stated.

2.17 RADIATED SPURIOUS EMISSIONS

2.17.6 Test Results

30MHz – 1GHz Frequency Range

Equipment Designation: Intentional Radiator.

The EUT met the requirements of FCC Part 24.238, 2.1053 and Industry Canada RSS-133, 4.4/6.5 for Radiated Emissions

Configuration 3

EUT Transmitting on Bottom Channel (1850.2MHz)

Only noise floor measurements were detected.

EUT Transmitting on Middle Channel (1880.0MHz)

Only noise floor measurements were detected.

EUT Transmitting on Top Channel (1909.8MHz)

Only noise floor measurements were detected.

The noise floor measurements are shown in the table below.

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength
MHz		cm	degree	dBµV/m
50.0	Vertical	100	000	-86.5
500.0	Vertical	100	000	-84.1
900.0	Vertical	100	000	-82.3

2.17 RADIATED SPURIOUS EMISSIONS

2.17.6 Test Results

30MHz – 1GHz Frequency Range

Equipment Designation: Intentional Radiator.

The EUT met the requirements of FCC Part 24.238, 2.1053 and Industry Canada RSS-133, 4.4/6.5 for Radiated Emissions (30MHz – 1GHz).

Configuration 6

EUT Transmitting on Bottom Channel (1850.2MHz)

Only noise floor measurements were detected.

EUT Transmitting on Middle Channel (1880.0MHz)

Only noise floor measurements were detected.

EUT Transmitting on Top Channel (1909.8MHz)

Only noise floor measurements were detected.

The noise floor measurements are shown in the table below.

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength
MHz		cm	degree	dBµV/m
50.0	Vertical	100	000	-86.5
500.0	Vertical	100	000	-84.1
900.0	Vertical	100	000	-82.3

2.17 RADIATED EMISSIONS

2.17.6 **Test Results** - continued

1GHz – 10GHz Frequency Range

Equipment Designation: Intentional Radiator.

The EUT met the requirements of FCC Part 24.238, 2.1053 and Industry Canada RSS-133, 4.4/6.5 for Radiated Emissions (1GHz – 10GHz).

Configuration 3

EUT Transmitting on Bottom Channel (1850.2MHz)

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength	Limit
GHz		cm	degree	dBm	dBm
3.700	Horizontal	100	037	-22.1	-13.0
5.551	Horizontal	100	261	-33.8	-13.0
9.251	Horizontal	100	173	-30.1	-13.0

EUT Transmitting on Middle Channel (1880.0MHz)

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength	Limit
GHz		cm	degree	dBm	dBm
3.760	Horizontal	100	033	-23.8	-13.0
5.640	Vertical	100	194	-36.2	-13.0
9.400	Vertical	100	218	-31.6	-13.0

EUT Transmitting on Top Channel (1909.8MHz)

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength	Limit
GHz		cm	degree	dBm	dBm
3.820	Horizontal	100	050	-23.7	-13.0
5.729	Vertical	100	193	-34.7	-13.0

2.17 RADIATED EMISSIONS

2.17.6 **Test Results** - continued

1GHz – 10GHz Frequency Range

Equipment Designation: Intentional Radiator.

Configuration 6

EUT Transmitting on Bottom Channel (1850.2MHz)

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength	Limit
GHz		cm	degree	dBm	dBm
3.700	Horizontal	135	081	-22.0	-13.0
5.551	Vertical	100	237	-35.8	-13.0
7.400	Vertical	100	232	-43.3	-13.0
9.251	Vertical	145	103	-31.0	-13.0

EUT Transmitting on Middle Channel (1880.0MHz)

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength	Limit
GHz		cm	degree	dBm	dBm
3.759	Vertical	100	174	-17.9	-13.0
5.640	Vertical	120	232	-36.3	-13.0
9.400	Vertical	134	106	-33.7	-13.0

EUT Transmitting on Top Channel (1909.8MHz)

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength	Limit
GHz		cm	degree	dBm	dBm
1.450	Horizontal	100	015	-40.6	-13.0
3.819	Vertical	100	169	-16.2	-13.0
5.729	Vertical	120	232	-40.4	-13.0
9.400	Vertical	130	103	-36.4	-13.0

2.18 CONDUCTED SPURIOUS EMISSIONS

2.18.1 Specification Reference

FCC CFR 47: Part 24 Subpart E, Section 24.238(a), 2.1051 and Industry Canada RSS-133, 4.4/6.5

2.18.2 Equipment Under Test

DC2006a: IMEI 01094900950083-2

2.18.3 Date of Test

27th July 2006

2.18.4 Test Equipment Used

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

2.18.5 Test Procedure

In accordance with Part 2.1051, the spurious 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 20 GHz. The EUT was set to transmit on full power with 2 timeslots. The EUT was tested on Bottom, Middle and Top channels. The resolution and video bandwidths were set to 1MHz in accordance with Part 24.238. The spectrum analyser detector was set to Max Hold.

For measuring the range 9kHz to 4GHz, on maximum power, a 10dB attenuator was used. From 4GHz to 20GHz, attenuator and a high pass filter were used.

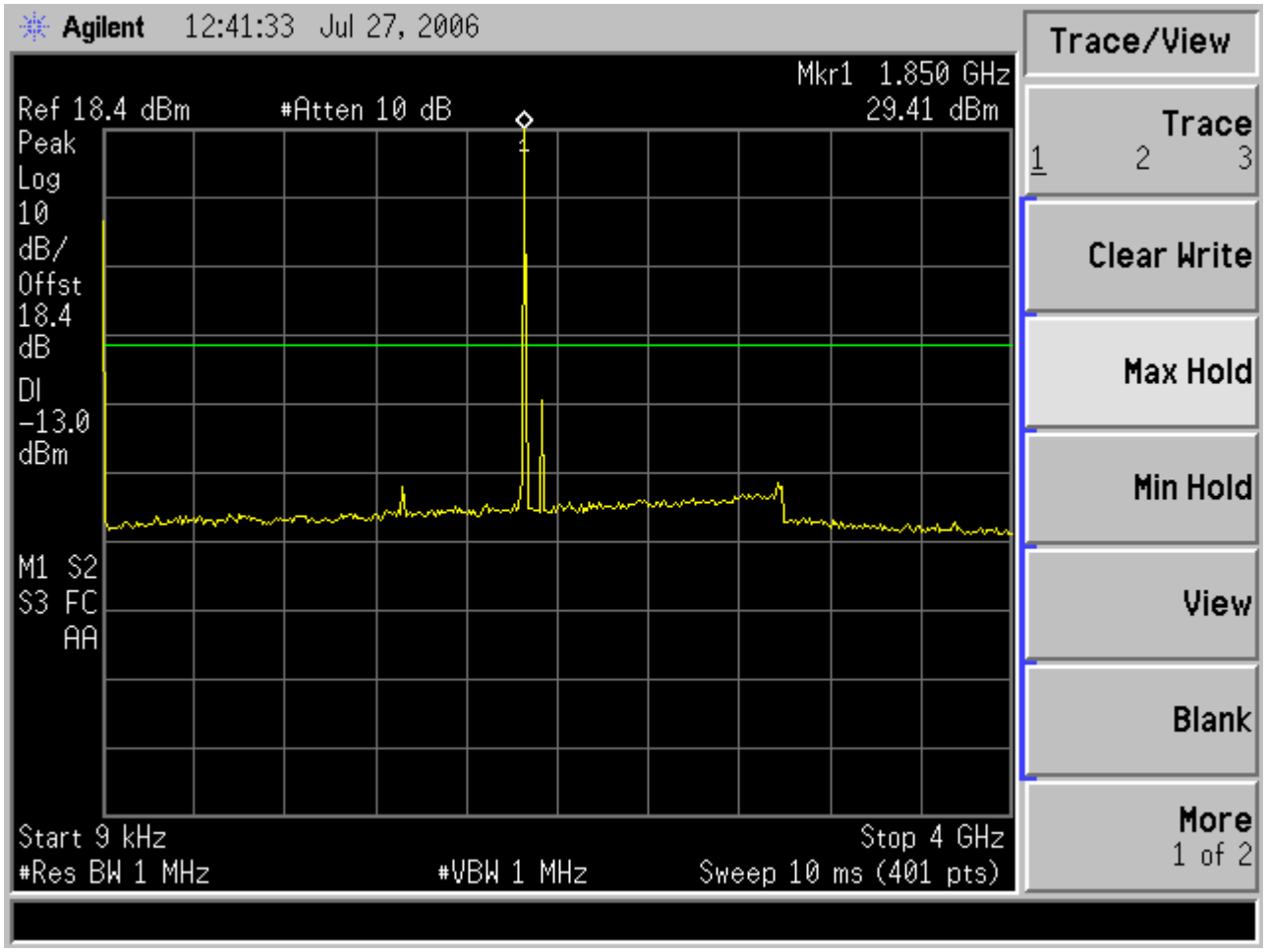
The maximum path loss across the measurement band was used as the reference level offset to ensure worst case

2.18.6 Test Results

The EUT passed the requirements laid out in 24.238. The plots on the following pages show the frequency spectrum from 9kHz to 20GHz of the EUT.

2.18 CONDUCTED SPURIOUS EMISSIONS

2.18.6 **Test Results** - continued

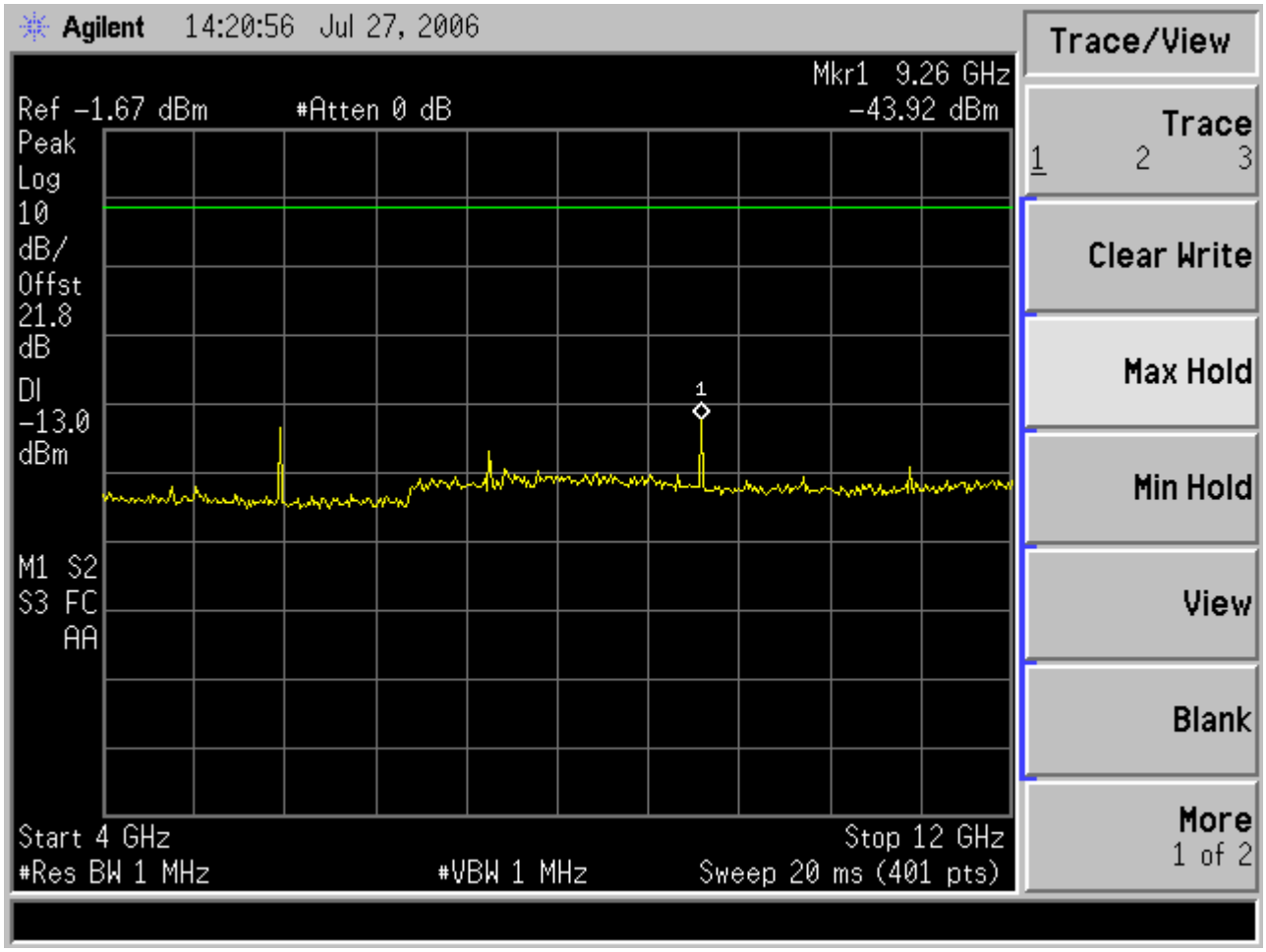


Spurious Emissions (9kHz – 4GHz)
Channel 512 (1850.2MHz) - Maximum Power

GPRS

2.18 CONDUCTED SPURIOUS EMISSIONS

2.18.6 **Test Results** - continued

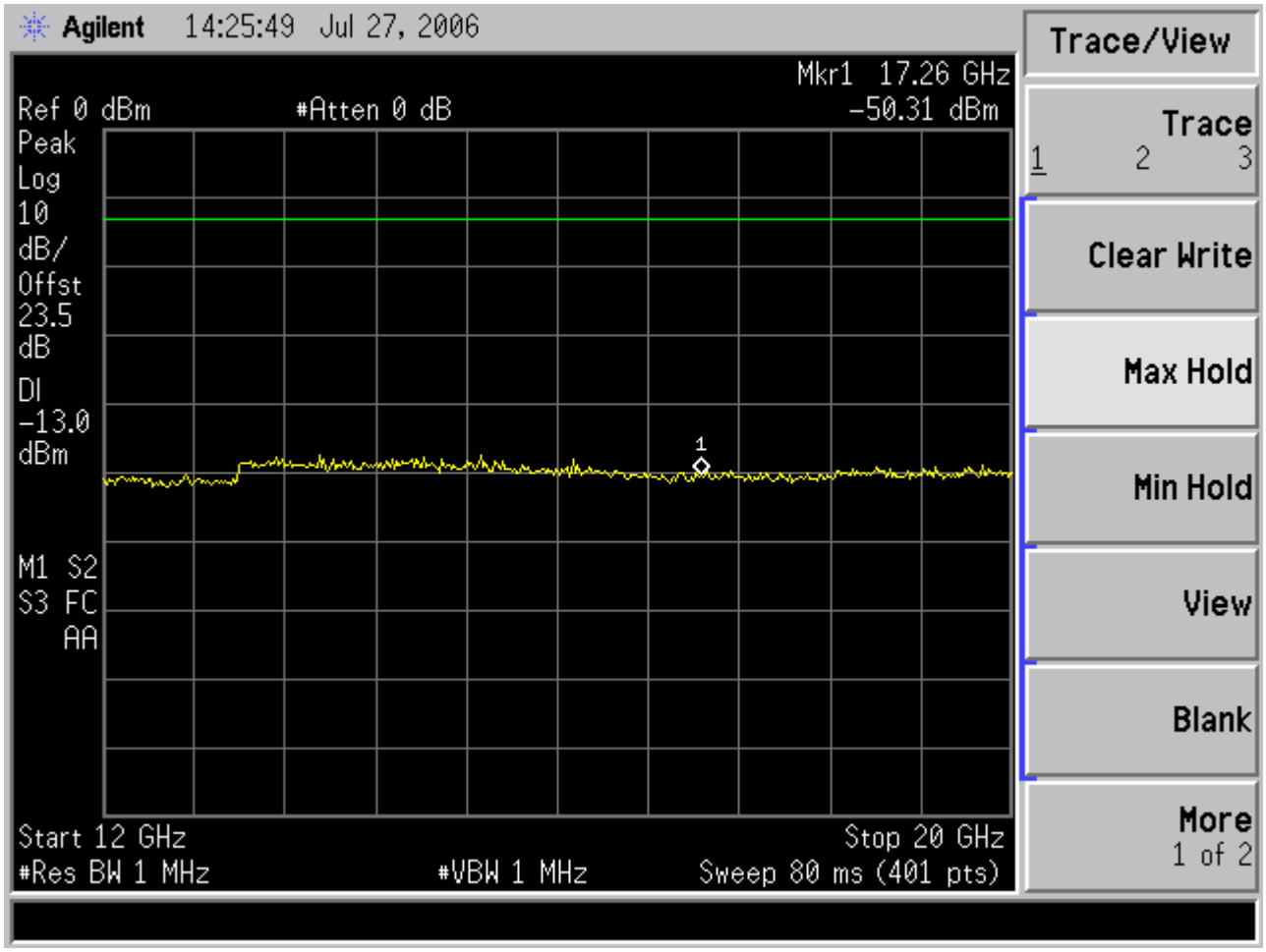


Spurious Emissions (4GHz – 12GHz)
Channel 512 (1850.2MHz) - Maximum Power

GPRS

2.18 CONDUCTED SPURIOUS EMISSIONS

2.18.6 **Test Results** - continued

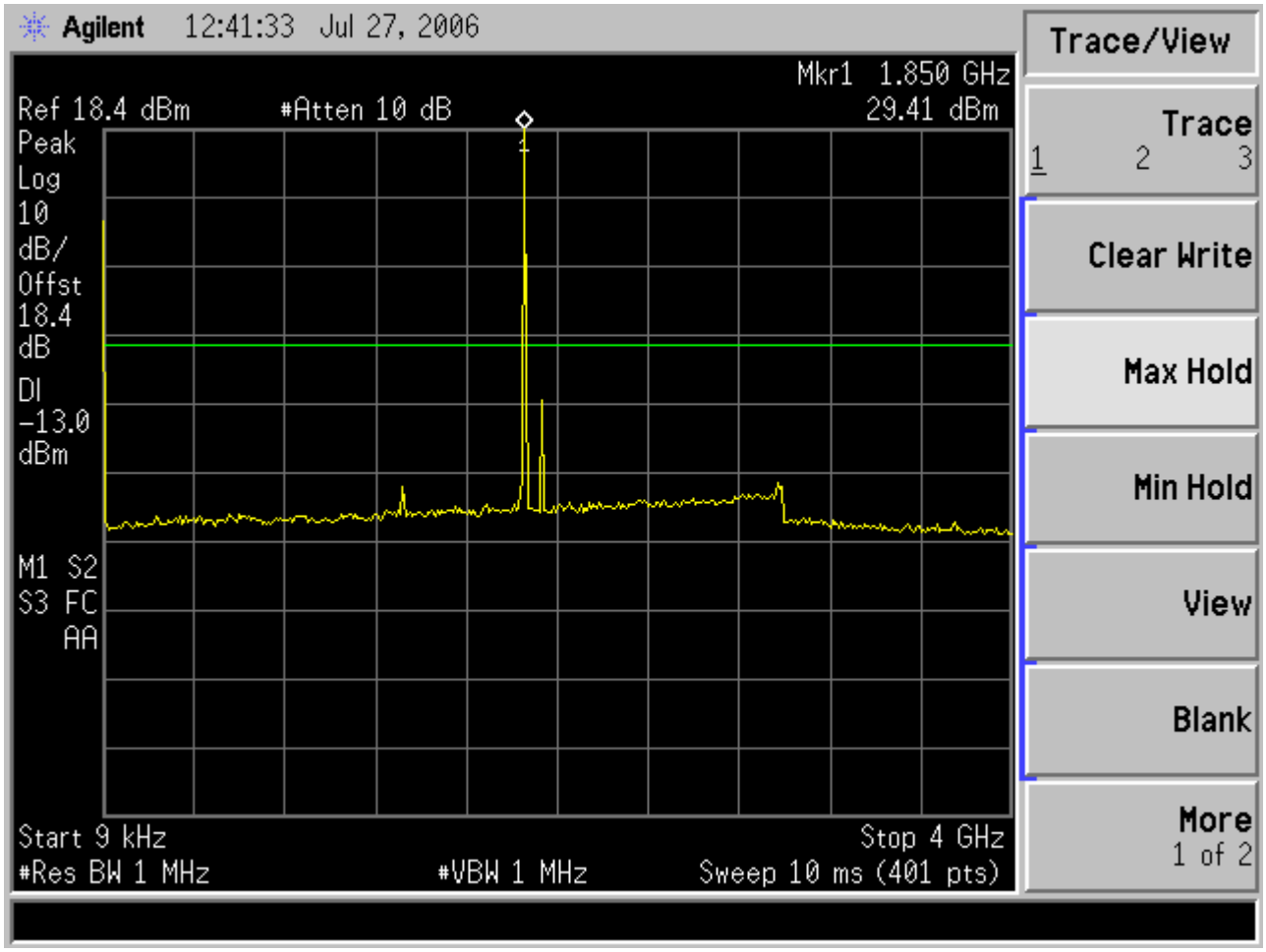


Spurious Emissions (12GHz – 20GHz)
Channel 512 (1850.2MHz) - Maximum Power

GPRS

2.18 CONDUCTED SPURIOUS EMISSIONS

2.18.6 **Test Results** - continued

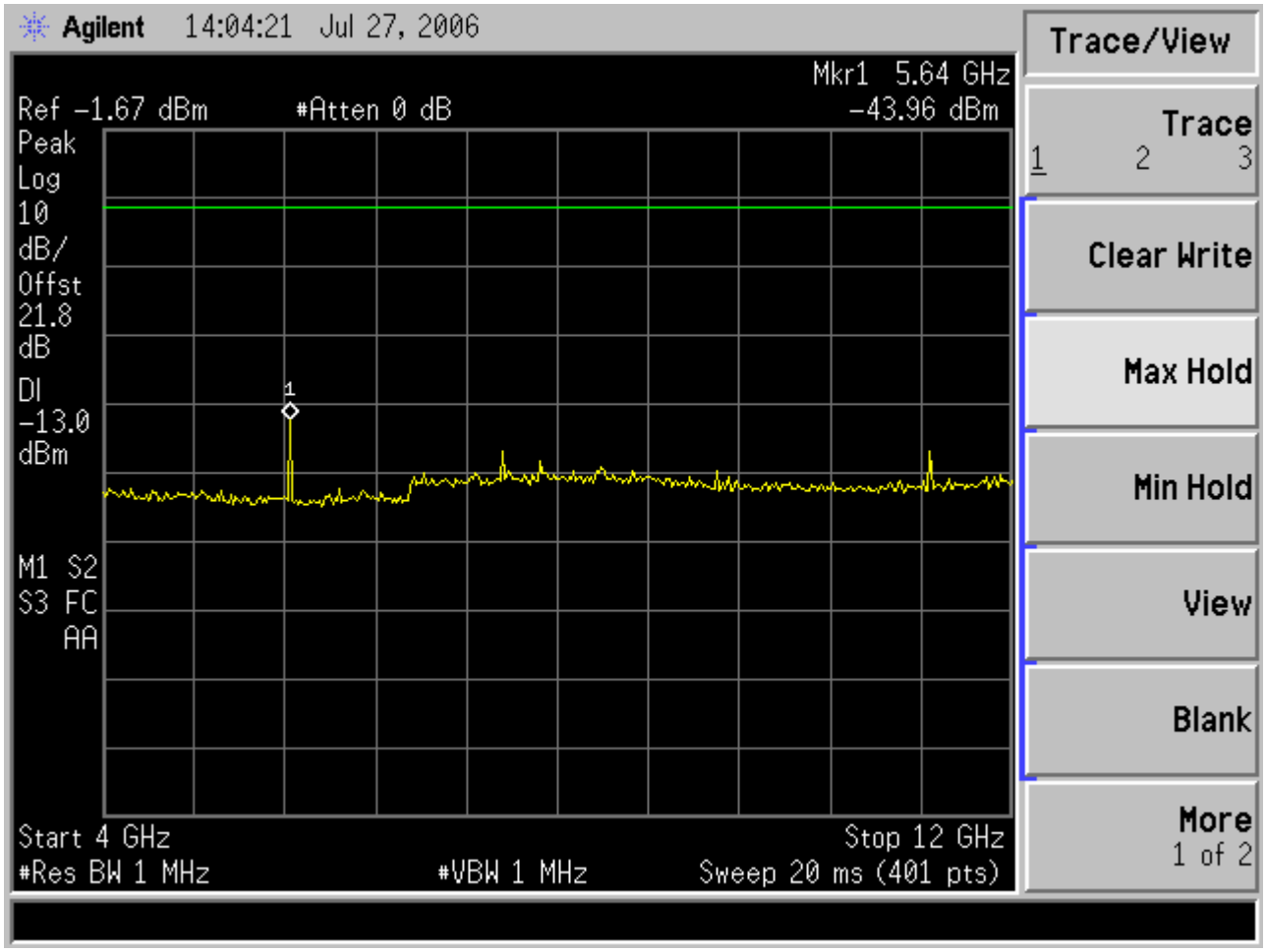


Spurious Emissions (9kHz – 4GHz)
Channel 661 (1880.0MHz) - Maximum Power

GPRS

2.18 CONDUCTED SPURIOUS EMISSIONS

2.18.6 **Test Results** - continued

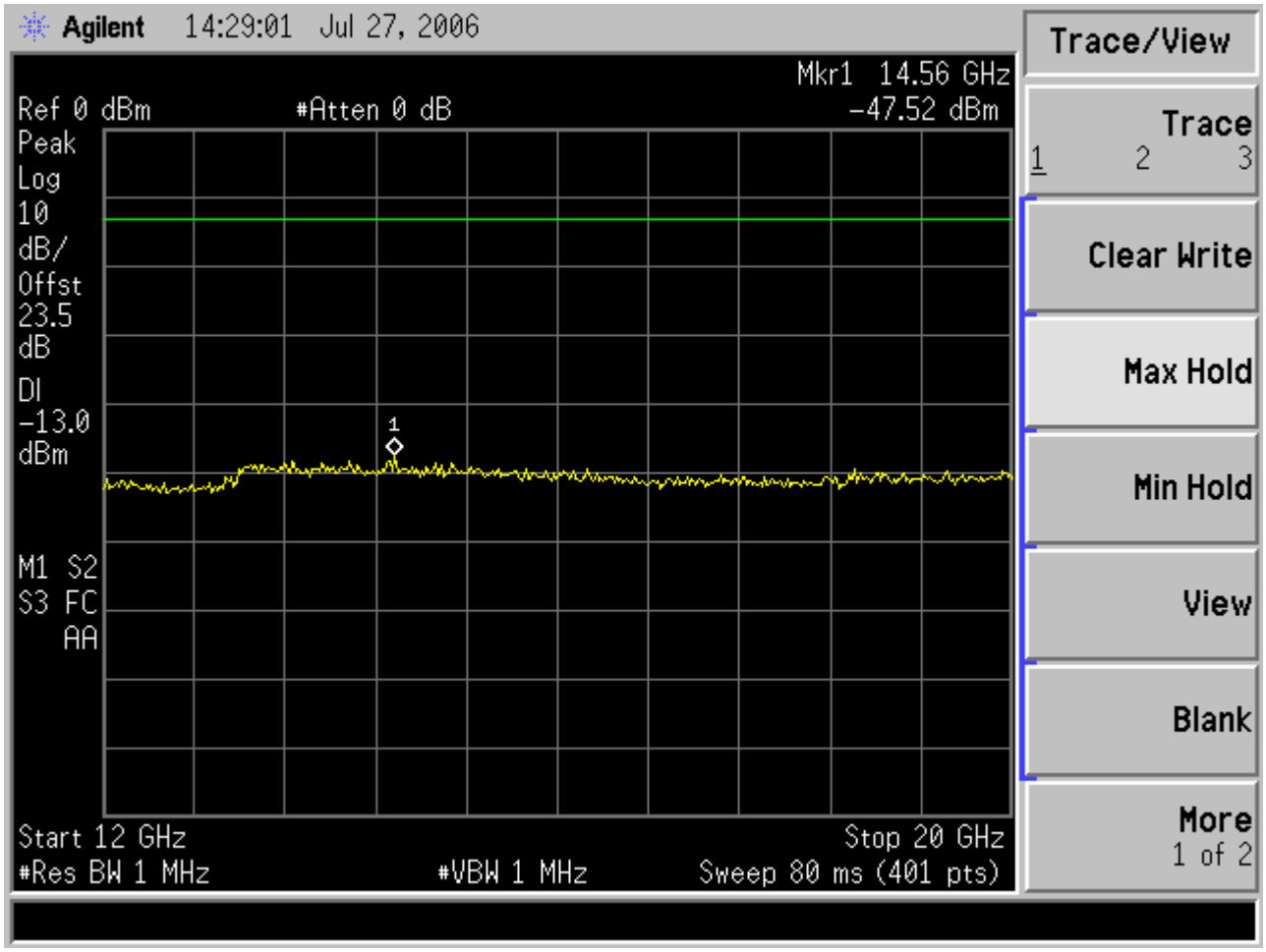


Spurious Emissions (4GHz – 12GHz)
Channel 661 (1880.0MHz) - Maximum Power

GPRS

2.18 CONDUCTED SPURIOUS EMISSIONS

2.18.6 **Test Results** - continued

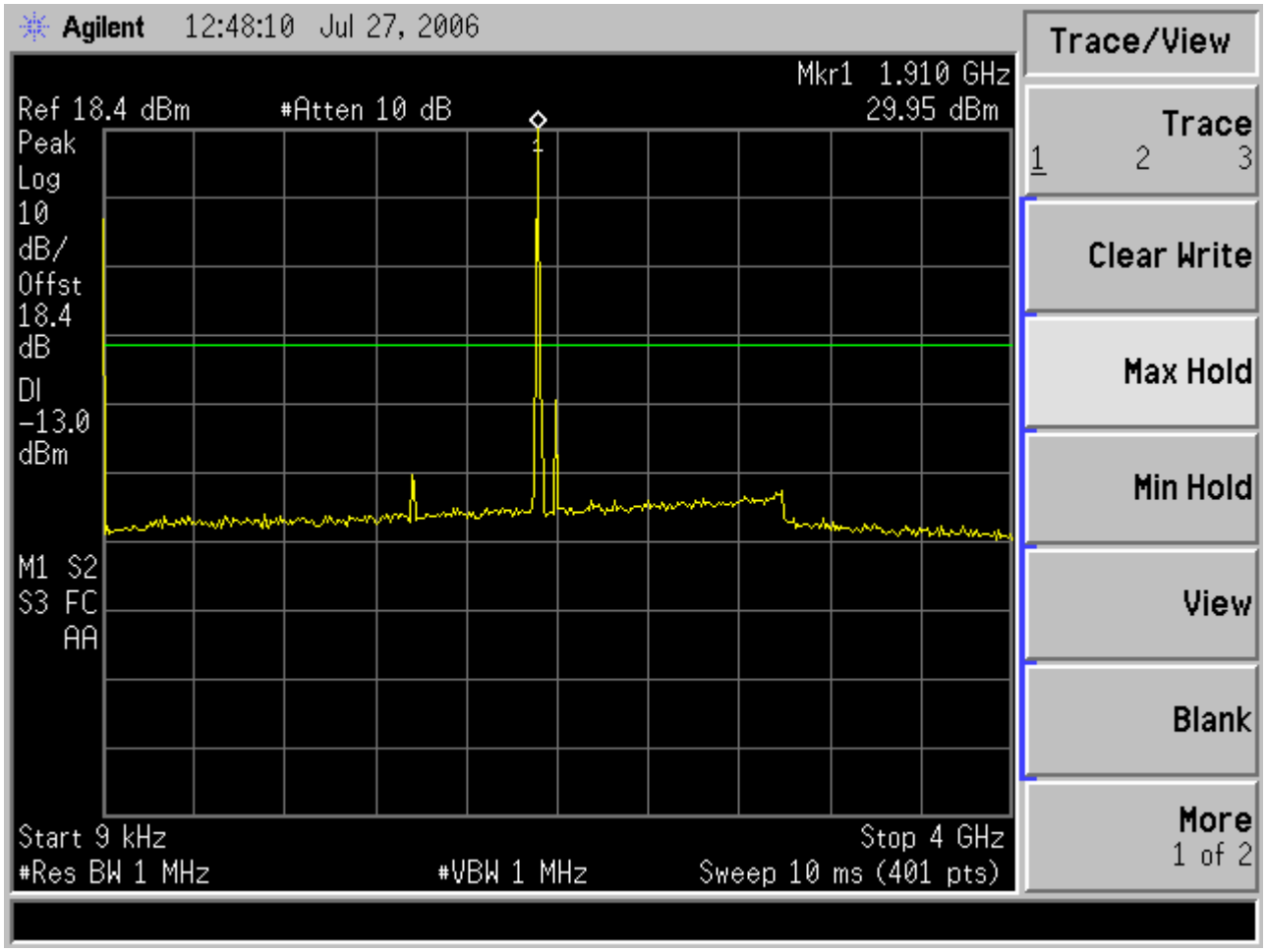


Spurious Emissions (12GHz – 20GHz)
Channel 661 (1880.0MHz) - Maximum Power

GPRS

2.18 CONDUCTED SPURIOUS EMISSIONS

2.18.6 **Test Results** - continued

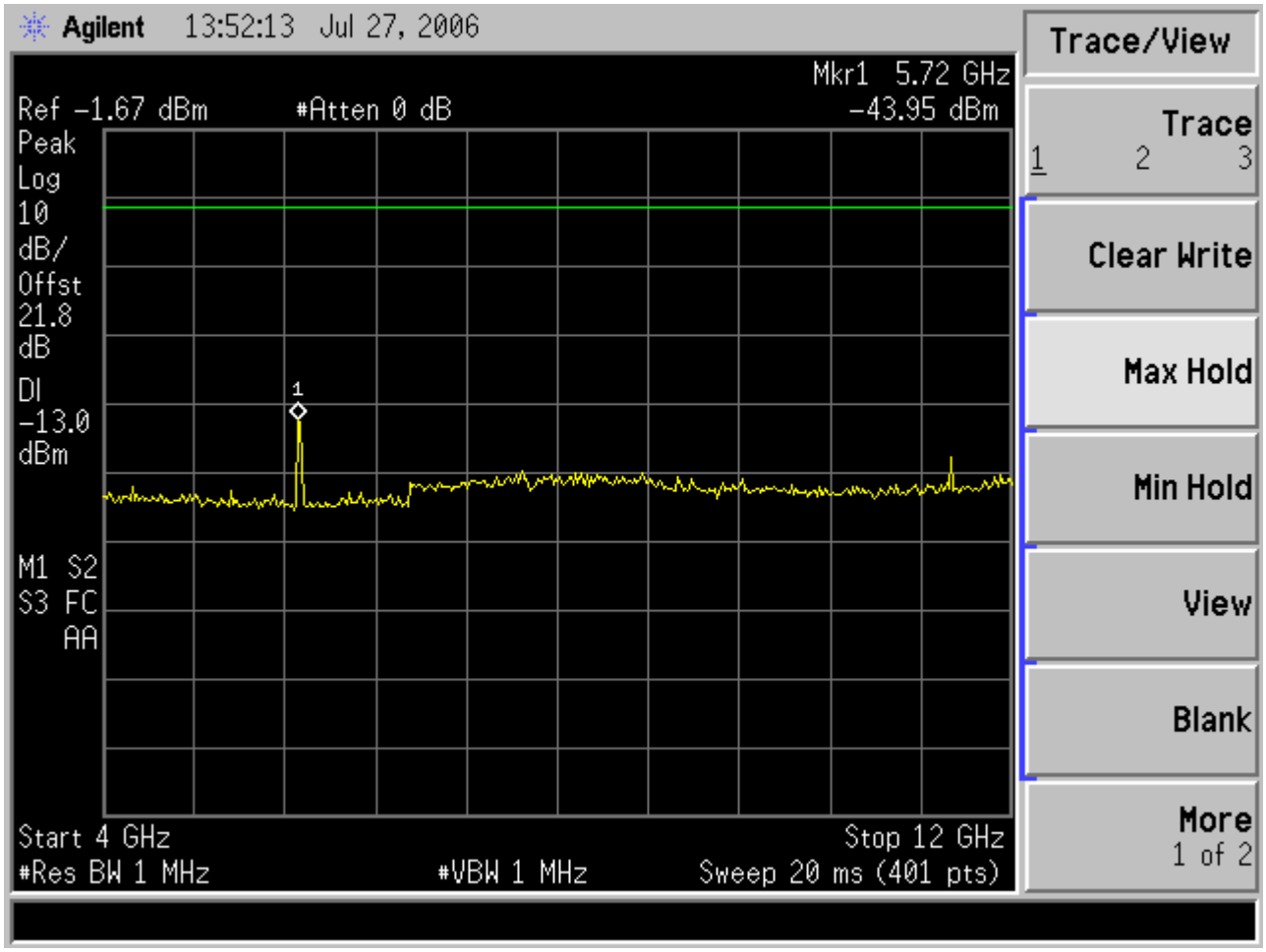


Spurious Emissions (9kHz – 4GHz)
Channel 810 (1909.8MHz) - Maximum Power

GPRS

2.18 CONDUCTED SPURIOUS EMISSIONS

2.18.6 **Test Results** - continued

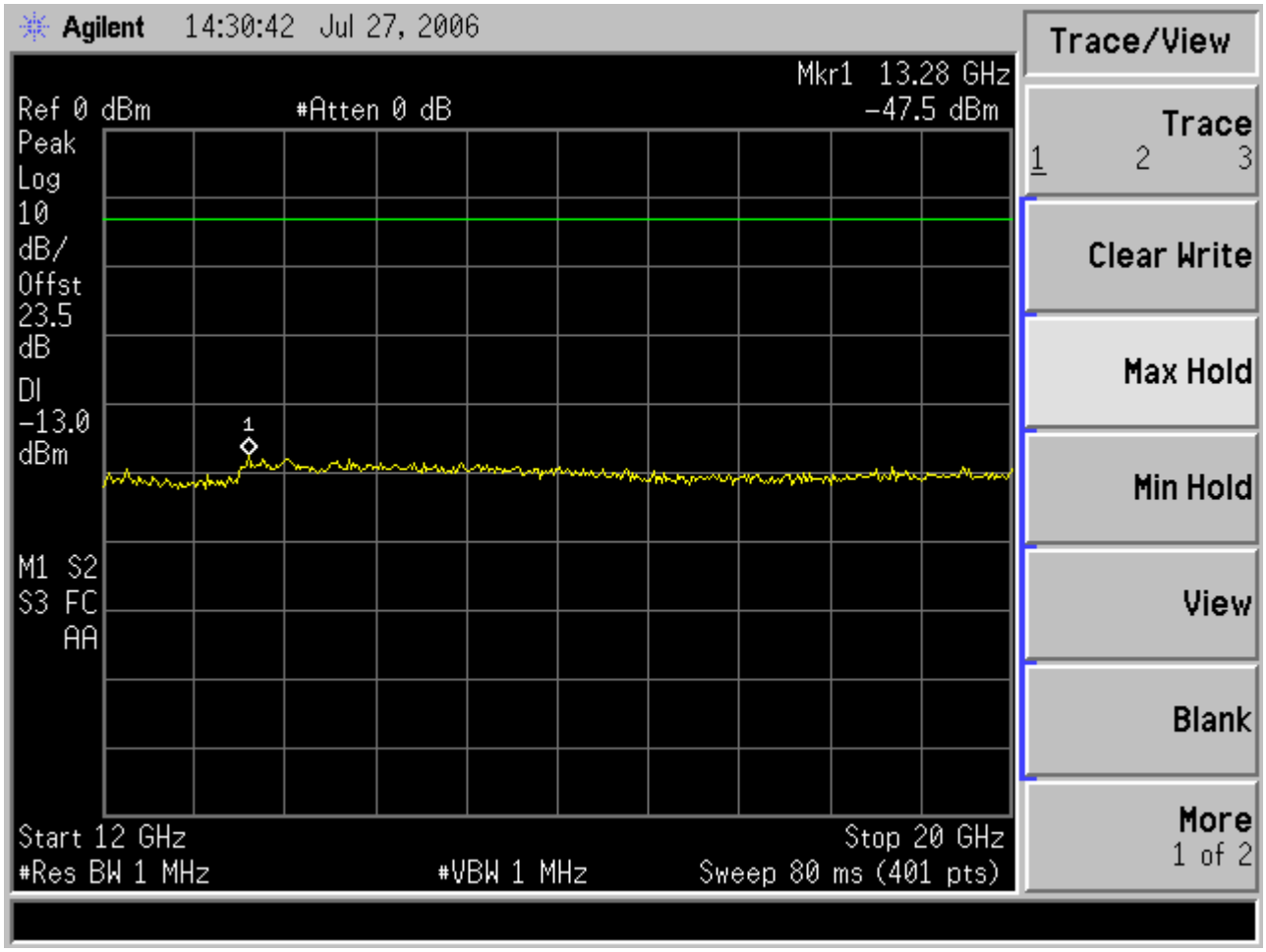


Spurious Emissions (4GHz – 12GHz)
Channel 810 (1909.8MHz) - Maximum Power

GPRS

2.18 CONDUCTED SPURIOUS EMISSIONS

2.18.6 **Test Results** - continued



Spurious Emissions (12GHz – 20GHz)
Channel 810 (1909.8MHz) - Maximum Power

GPRS

2.19 FREQUENCY STABILITY UNDER TEMPERATURE VARIATIONS

2.19.1 Specification Reference

FCC CFR 47: Part 24 Subpart E, Section 24.235, 2.1055 and RSS-133, 4.2/6.3

2.19.2 Equipment Under Test

DC2006a: IMEI 01094900950083-2

2.19.3 Date of Test

28th July 2006

2.19.4 Test Equipment Used

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

2.19.5 Test Procedure

The EUT was set to transmit on maximum power with measurements performed on 2 timeslots. A Digital Communications Analyser, (CMU200), was used to measure the Frequency Error. The maximum result of measurements made over 200 bursts was recorded.

The temperature was adjusted between -30ºC and +50ºC in 10º steps as per 2.1055.

2.19 FREQUENCY STABILITY UNDER TEMPERATURE VARIATIONS

2.19.6 Test Results

GPRS

Temperature Interval ºC	Test Frequency GHz	Deviation Hz	Limit kHz
- 30	1.88	*	± 1.88
- 20	1.88	+26	± 1.88
- 10	1.88	+23	± 1.88
0	1.88	-17	± 1.88
+ 10	1.88	-16	± 1.88
+ 20	1.88	-18	± 1.88
+ 30	1.88	-17	± 1.88
+ 40	1.88	-17	± 1.88
+ 50	1.88	-22	± 1.88

Limit	±0.0001% or 1ppm

Remarks

EUT complies with CFR 47 Part 24.135(a), 2.1055 and Industry Canada RSS-133, 4.2/6.3. The EUT does not exceed ±1.88kHz at the measured frequency at any temperature interval across the measured range.

* The mobile ceases to transmit at -30°C.

2.20 FREQUENCY STABILITY UNDER VOLTAGE VARIATIONS

2.20.1 Specification Reference

FCC CFR 47: Part 24 Subpart E, Section 24.135(a), 2.1055 and Industry Canada RSS-133, 4.2/6.3

2.20.2 Equipment Under Test

DC2006a: IMEI 01094900950083-2

2.20.3 Date of Test

28th July 2006

2.20.4 Test Equipment Used

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

2.20.5 Test Procedure

The EUT was set to transmit on maximum power with measurements performed on 2 timeslots. A Digital Communications Analyser, (CMU200/CMU300), was used to measure the Frequency Error. The maximum result of measurements made over 200 bursts was recorded.

The voltage was varied as described in the results table.

2.20 FREQUENCY STABILITY UNDER VOLTAGE VARIATIONS

2.20.6 **Test Results** - continued

GPRS

DC Voltage V	Test Frequency GHz	Deviation Hz	Deviation Limit kHz
3.90	1.88	-20	* See Note 1
3.55	1.88	-24	* See Note 1

Limit	Note 1: Fundamental must remain within authorized frequency block

Remarks

EUT complies with CFR 47 Part 24.235, 2.1055 and Industry Canada RSS-133, 4.2/6.3. The EUT fundamental remains within the licensed frequency band at the measured frequency either at nominal or voltage variation.

SECTION 3

TEST EQUIPMENT

3.1 TEST EQUIPMENT

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

Instrument	Manufacturer	Type No	TE Number	Calibration Due
Sections 2.7 and 2.16 Radio (Tx) - Block Edge				
Power Divider	Weinschel	1506A	603	06/08/2006
Spectrum Analyser	Hewlett Packard	E4407B	1154	31/05/2007
1m N(m) - N(m) Cable	Reynolds	269-0088-1000	2397	TU
2m N(m) - N(m) RF Cable	Reynolds	269-0088-2000	2411	TU
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	11/03/2007
1m N(m)-N(m) RF Cable	Reynolds	269-0088-1000 0201	3079	TU
20dB/10W Attenuator	Aeroflex / Weinschel	23-20-34	3160	01/06/2007
Sections 2.9 and 2.18 Radio (Tx) - Conducted Spurious Emissions				
Power Supply Unit	Farnell	LT-30-2	41	TU
Attenuator (10dB)	Weinschel	47-10-34	481	21/12/2006
Power Divider	Weinschel	1506A	603	06/08/2006
Spectrum Analyser	Hewlett Packard	E4407B	1154	31/05/2007
1m N(m) - N(m) Cable	Reynolds	269-0088-1000	2397	TU
2m N(m) - N(m) RF Cable	Reynolds	269-0088-2000	2411	TU
Multimeter	Iso-tech	Iso Tech IDM101	2421	10/08/2006
High Pass Filter (4GHz)	RLC Electronics	F-100-4000-5-R	2773	18/05/2007
Daden Anthony Filter	Daden Anthony Ass	MH-1500-7SS	2778	01/11/2006
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	11/03/2007
Hygrometer	Rotronic	I-1000	3068	06/04/2007
1m N(m)-N(m) RF Cable	Reynolds	269-0088-1000 0201	3079	TU

3.1 TEST EQUIPMENT

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

Instrument	Manufacturer	Type No	TE Number	Calibration Due
Sections 2.10, 2.11, 2.19 and 2.20 Radio (Tx) - Frequency Characteristics				
Power Supply Unit	Farnell	LT-30-2	41	TU
Climatic Chamber	Heraeus Votsch	VM 04/100	85	TU
2m N(m) - N(m) RF Cable	Reynolds	269-0088-2000	2411	TU
Multimeter	Iso-tech	Iso Tech IDM101	2421	10/08/2006
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	11/03/2007
Hygrometer	Rotronic	I-1000	3068	06/04/2007
Sections 2.5 and 2.14 Radio (Tx) - Modulation Characteristics				
Power Supply Unit	Farnell	LT-30-2	41	TU
Power Divider	Weinschel	1506A	603	06/08/2006
Spectrum Analyser	Hewlett Packard	E4407B	1154	31/05/2007
1m N(m) - N(m) Cable	Reynolds	269-0088-1000	2397	TU
2m N(m) - N(m) RF Cable	Reynolds	269-0088-2000	2411	TU
Multimeter	Iso-tech	Iso Tech IDM101	2421	10/08/2006
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	11/03/2007
Hygrometer	Rotronic	I-1000	3068	06/04/2007
1m N(m)-N(m) RF Cable	Reynolds	269-0088-1000 0201	3079	TU
20dB/10W Attenuator	Aeroflex / Weinschel	23-20-34	3160	01/06/2007

3.1 TEST EQUIPMENT

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

Instrument	Manufacturer	Type No	TE Number	Calibration Due
Sections 2.5 and 2.14 Radio (Tx) - Modulation Characteristics				
Power Supply Unit	Farnell	LT-30-2	41	TU
Power Divider	Weinschel	1506A	603	06/08/2006
Spectrum Analyser	Hewlett Packard	E4407B	1154	31/05/2007
1m N(m) - N(m) Cable	Reynolds	269-0088-1000	2397	TU
2m N(m) - N(m) RF Cable	Reynolds	269-0088-2000	2411	TU
Multimeter	Iso-tech	Iso Tech IDM101	2421	10/08/2006
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	11/03/2007
Hygrometer	Rotronic	I-1000	3068	06/04/2007
1m N(m)-N(m) RF Cable	Reynolds	269-0088-1000 0201	3079	TU
20dB/10W Attenuator	Aeroflex / Weinschel	23-20-34	3160	01/06/2007
Sections 2.6 and 2.15 Radio (Tx) - Occupied Bandwidth				
Power Supply Unit	Farnell	LT-30-2	41	TU
Power Divider	Weinschel	1506A	603	06/08/2006
Spectrum Analyser	Hewlett Packard	E4407B	1154	31/05/2007
1m N(m) - N(m) Cable	Reynolds	269-0088-1000	2397	TU
2m N(m) - N(m) RF Cable	Reynolds	269-0088-2000	2411	TU
Multimeter	Iso-tech	Iso Tech IDM101	2421	10/08/2006
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	11/03/2007
Hygrometer	Rotronic	I-1000	3068	06/04/2007
1m N(m)-N(m) RF Cable	Reynolds	269-0088-1000 0201	3079	TU
20dB/10W Attenuator	Aeroflex / Weinschel	23-20-34	3160	01/06/2007

3.1 TEST EQUIPMENT

Instrument	Manufacturer	Type No	TE Number	Calibration Due
Sections 2.4 and 2.13 Radio (Tx) – Effective Radiated Power				
Power Supply Unit	Farnell	LT-30-2	41	TU
Signal Generator	Hewlett Packard	ESG4000A	61	02/03/2007
Power Meter	Hewlett Packard	436A	83	11/08/2006
Power Divider	Weinschel	1506A	603	06/08/2006
Spectrum Analyser	Hewlett Packard	E4407B	1154	31/05/2007
POWER SENSOR	Hewlett Packard	8481A	1342	24/08/2006
1m N(m) - N(m) Cable	Reynolds	269-0088-1000	2397	TU
2m N(m) - N(m) RF Cable	Reynolds	269-0088-2000	2411	TU
Multimeter	Iso-tech	Iso Tech IDM101	2421	10/08/2006
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	11/03/2007
Hygrometer	Rotronic	I-1000	3068	06/04/2007
1m N(m)-N(m) RF Cable	Reynolds	269-0088-1000 0201	3079	TU
20dB/10W Attenuator	Aeroflex / Weinschel	23-20-34	3160	01/06/2007

3.1 TEST EQUIPMENT

Instrument	Manufacturer	Type No	TE Number	Calibration Due
Section 2.2 EMC - Conducted Emissions				
Transient Limiter	Hewlett Packard	11947A	15	22/09/2006
LISN	Rohde & Schwarz	ESH2-Z5	16	17/08/2006
DCS Test Set	Hewlett Packard	83220E	257	TU
Variac	R.S Components	8 AMP	290	TU
Test Receiver	Rohde & Schwarz	ESIB40	1006	07/04/2007
Screened Room (5)	Rainford	Rainford	1545	01/03/2008
Mast Controller	Inn-Co GmbH	CO 1000	1606	TU
Turntable/Mast Controller	EMCO	2090	1607	TU
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	11/03/2007
Sections 2.1, 2.4, 2.8, 2.12 and 2.17 EMC - Radiated Emissions				
Spectrum Analyser	Hewlett Packard	8542E	18	09/02/2007
Signal Generator	Marconi	2031	53	20/12/2006
Antenna (Double Ridge Guide)	Link Microtek Ltd	AM180HA-K-TU2	230	22/06/2008
Amplifier	Miteq Corp	AMF-3D-001080-18-13P	231	TU
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	29/06/2007
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	235	29/06/2007
Amplifier (Low Noise, 18GHz-40GHz)	Narda	NARDA DB02-0447	240	15/06/2007
Dual Power Supply Unit	Thurlby	PL320	288	TU
Variac	R.S Components	8 AMP	290	TU
Antenna (Bilog)	Schaffner	CBL 6143	316	TU
Communications Tester	Rohde & Schwarz	CMU 200	442	11/05/2007

3.1 TEST EQUIPMENT

Instrument	Manufacturer	Type No	TE Number	Calibration Due
Sections 2.1, 2.4, 2.8, 2.12 and 2.17 EMC - Radiated Emissions				
Filter (High Pass, 3GHz)	RLC Electronics	F-100-3000-5-R	563	01/11/2006
Filter (High Pass, 4GHz)	Sematron	F-100-4000-5-R	564	TU
Test Receiver	Rohde & Schwarz	ESIB40	1006	07/04/2007
Mast Controller	Inn-Co GmbH	CO 1000	1606	TU
Turntable/Mast Controller	EMCO	2090	1607	TU
EMI Test Receiver	Rohde & Schwarz	ESIB26	2028	13/06/2007
Amplifier (8GHz-18GHz)	Avantec	AWT-18036	2821	TU
Filter Hi Pass	RLC Electronics	RLC-F100-1500-S-R	2843	TU
Bilog Antenna	Chase	CBL6143	2904	10/11/2007
Comb Generator	Schaffner	RSG1000	3034	TU
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	11/03/2007
Signal Generator: 10MHz to 40GHz	Rohde & Schwarz	SMR40	3171	29/06/2007

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*
Substitution Antenna, Radiated Field	30MHz to 18GHz Amplitude	2.6dB

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

* In accordance with CISPR 16-4

SECTION 4

PHOTOGRAPHS

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)

DC2006a Front View

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)

DC2006a Rear View

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)

DC2006a Front View Open

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)

DC2006a Rear View Battery Removed

4.1 PHOTOGRAPHS OF TEST EQUIPMENT

Bluetooth Headset & Charger Adaptor

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)

Headset

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)

AC Adapter - EU

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)

AC Adapter - AUS

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)

AC Adapter - US

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)

AC Adapter - ARG

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)

AC Adapter - UK

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

Group

This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).