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Report On

FCC and Industry Canada Testing of the
Ericsson AB RUS 01 B2 / KRC 118 66/2

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FCC ID: TA8AKRC11866-2
IC ID: 287AB-AS118662

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April 2013



Product Service

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COMMERCIAL-IN-CONFIDENCE

REPORT ON

FCC and Industry Canada Testing of the
Ericsson RUS 01 B2 / KRC 118 66/2

Document 75921580 Report 06 Issue 1

April 2013

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DATED

26 April 2013

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 compliance with FCC CFR 47: Part 24 and Industry Canada RSS-133. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

G Zhao

X Zhang





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SECTION 1

REPORT SUMMARY

FCC and Industry Canada Testing of the
Ericsson RUS 01 B2 / KRC 118 66/2



1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Ericsson RUS 01 B2 / KRC 118 66/2 to the requirements of FCC CFR 47 Part 24 and Industry Canada RSS-133.

Testing was carried out in support of a C2PC application for Grant of RUS 01 B2 / KRC 118 66/2 for hardware update in WCDMA/GSM multi-standard.

Objective	To perform FCC and Industry Canada Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Ericsson AB
Product Name	RUS 01 B2
Product Number	KRC 118 66/2
IC Model Number	AS118662
Serial Number(s)	D164655166
WCDMA Software	CXP9018350/1 Rev R12B07
GSM Software	CXP1040013/09 Rev R71H
PIS Software	CXP9017316/1 Rev R39UL
Hardware Version	R1G
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 24: 2012 Industry Canada RSS-133 Issue 6: 2013
Incoming Release Date	Declaration of Build Status 26 March 2013
Order Number Date	PTP 29 March 2013
Start of Test	11 April 2013
Finish of Test	23 April 2013
Name of Engineer(s)	G Zhao X Zhang
Related Document(s)	ANSI C63.4: 2009 FCC CFR 47 Part 2: 2012 Industry Canada RSS-GEN Issue 3: 2010



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results in accordance with FCC CFR 47 Part 24 and Industry Canada RSS-133, is shown below.

Configuration 1 – Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2 and 24	RSS-133 and RSS-GEN					
	24.232 (a)	6.4	Effective Radiated Power	1932.4MHz (W) + 1949.8MHz (G)		N/A	No integral antenna.
				1960.0MHz (W) + 1977.4MHz (G)		N/A	
				1987.6MHz (W) + 1970.2MHz (G)		N/A	
				1930.4MHz* (G) + 1932.0MHz (G) + 1947.8MHz (W)		N/A	
				1960.0MHz (G) + 1961.6MHz (G) + 1977.4MHz (W)		N/A	
				1988.0MHz (G) + 1989.6MHz (G) * + 1972.2MHz (W)		N/A	
				1930.4MHz* (G) + 1932.0MHz (G) + 1942.8MHz (W) + 1947.8MHz (W)		N/A	
				1960.0MHz (G) + 1961.6MHz (G) + 1972.4MHz (W) + 1977.4MHz (W)		N/A	
				1988.0MHz (G) + 1989.6MHz* (G) + 1972.2MHz (W) + 1977.2MHz (W)		N/A	
2.1	2.1046, 24.232 (a)	6.4	Maximum Peak Output Power - Conducted	1932.4MHz (W) + 1949.8MHz (G)	0	Pass	-
				1960.0MHz (W) + 1977.4MHz (G)	0	Pass	
				1987.6MHz (W) + 1970.2MHz (G)	0	Pass	
				1930.4MHz* (G) + 1932.0MHz (G) + 1947.8MHz (W)	0	Pass	
				1960.0MHz (G) + 1961.6MHz (G) + 1977.4MHz (W)	0	Pass	
				1988.0MHz (G) + 1989.6MHz (G) * + 1972.2MHz (W)	0	Pass	
				1930.4MHz* (G) + 1932.0MHz (G) + 1942.8MHz (W) + 1947.8MHz (W)	0	Pass	
				1960.0MHz (G) + 1961.6MHz (G) + 1972.4MHz (W) + 1977.4MHz (W)	0	Pass	
				1988.0MHz (G) + 1989.6MHz* (G) + 1972.2MHz (W) + 1977.2MHz (W)	0	Pass	
2.2	24.232 (d)	6.4	Peak – Average Ratio	1932.4MHz (W) + 1949.8MHz (G)	0	Pass	-
				1960.0MHz (W) + 1977.4MHz (G)	0	Pass	
				1987.6MHz (W) + 1970.2MHz (G)	0	Pass	
				1930.4MHz* (G) + 1932.0MHz (G) + 1947.8MHz (W)	0	Pass	
				1960.0MHz (G) + 1961.6MHz (G) + 1977.4MHz (W)	0	Pass	
				1988.0MHz (G) + 1989.6MHz (G) * + 1972.2MHz (W)	0	Pass	
				1930.4MHz* (G) + 1932.0MHz (G) + 1942.8MHz (W) + 1947.8MHz (W)	0	Pass	
				1960.0MHz (G) + 1961.6MHz (G) + 1972.4MHz (W) + 1977.4MHz (W)	0	Pass	
				1988.0MHz (G) + 1989.6MHz* (G) + 1972.2MHz (W) + 1977.2MHz (W)	0	Pass	



Configuration 1 – Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2 and 24	RSS-133 and RSS-GEN					
	2.1047 (d)	6.2	Modulation Characteristics	1932.4MHz (W) + 1949.8MHz (G)		N/A	-
				1960.0MHz (W) + 1977.4MHz (G)		N/A	
				1987.6MHz (W) + 1970.2MHz (G)		N/A	
				1930.4MHz* (G) + 1932.0MHz (G) + 1947.8MHz (W)		N/A	
				1960.0MHz (G) + 1961.6MHz (G) + 1977.4MHz (W)		N/A	
				1988.0MHz (G) + 1989.6MHz (G) * + 1972.2MHz (W)		N/A	
				1930.4MHz* (G) + 1932.0MHz (G) + 1942.8MHz (W) + 1947.8MHz (W)		N/A	
				1960.0MHz (G) + 1961.6MHz (G) + 1972.4MHz (W) + 1977.4MHz (W)		N/A	
				1988.0MHz (G) + 1989.6MHz* (G) + 1972.2MHz (W) + 1977.2MHz (W)		N/A	
	2.1049, 24.238 (b)	RSS-Gen 4.6.1	Occupied Bandwidth	1932.4MHz (W) + 1949.8MHz (G)		N/A	-
				1960.0MHz (W) + 1977.4MHz (G)		N/A	
				1987.6MHz (W) + 1970.2MHz (G)		N/A	
				1930.4MHz* (G) + 1932.0MHz (G) + 1947.8MHz (W)		N/A	
				1960.0MHz (G) + 1961.6MHz (G) + 1977.4MHz (W)		N/A	
				1988.0MHz (G) + 1989.6MHz (G) * + 1972.2MHz (W)		N/A	
				1930.4MHz* (G) + 1932.0MHz (G) + 1942.8MHz (W) + 1947.8MHz (W)		N/A	
				1960.0MHz (G) + 1961.6MHz (G) + 1972.4MHz (W) + 1977.4MHz (W)		N/A	
				1988.0MHz (G) + 1989.6MHz* (G) + 1972.2MHz (W) + 1977.2MHz (W)		N/A	
2.3	2.1051, 24.238 (b)	6.5	Spurious Emissions at Antenna Terminals (±1MHz)	1932.4MHz (W) + 1949.8MHz (G)	0	Pass	
				1960.0MHz (W) + 1977.4MHz (G)		N/A	
				1987.6MHz (W) + 1970.2MHz (G)	0	Pass	
				1930.4MHz* (G) + 1932.0MHz (G) + 1934.8MHz (W)	0	Pass	
				1930.4MHz* (G) + 1932.0MHz (G) + 1947.8MHz (W)	0	Pass	
				1960.0MHz (G) + 1961.6MHz (G) + 1977.4MHz (W)		N/A	
				1988.0MHz (G) + 1989.6MHz (G) * + 1972.2MHz (W)	0	Pass	
				1988.0MHz (G) + 1989.6MHz (G) * + 1985.2MHz (W)	0	Pass	
				1940.6MHz (G) + 1952.4MHz (G) + 1946.4MHz (W)	0	Pass	
				1967.6MHz (G) + 1979.4MHz (G) + 1973.6MHz (W)	0	Pass	
				1930.4MHz* (G) + 1932.0MHz (G) + 1942.8MHz (W) + 1947.8MHz (W)	0	Pass	
				1960.0MHz (G) + 1961.6MHz (G) + 1972.4MHz (W) + 1977.4MHz (W)		N/A	
				1988.0MHz (G) + 1989.6MHz* (G) + 1972.2MHz (W) + 1977.2MHz (W)	0	Pass	
				1940.6MHz (G) + 1952.4MHz (G) + 1943.4MHz (W) + 1949.6MHz (W)	0	Pass	
				1967.6MHz (G) + 1979.4MHz (G) + 1976.6MHz (W) + 1970.4MHz (W)	0	Pass	



Configuration 1 – Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2 and 24	RSS-133 and RSS-GEN					
2.4	2.1053, 24.238 (a)	6.5	Radiated Spurious Emissions	1932.4MHz (W) + 1949.8MHz (G)	0	Pass	-
				1960.0MHz (W) + 1977.4MHz (G)	0	Pass	
				1987.6MHz (W) + 1970.2MHz (G)	0	Pass	
				1930.4MHz* (G) + 1932.0MHz (G) + 1947.8MHz (W)		N/A	
				1960.0MHz (G) + 1961.6MHz (G) + 1977.4MHz (W)	0	Pass	
				1988.0MHz (G) + 1989.6MHz (G) * + 1972.2MHz (W)	0	Pass	
				1930.4MHz* (G) + 1932.0MHz (G) + 1942.8MHz (W) + 1947.8MHz (W)		N/A	
				1960.0MHz (G) + 1961.6MHz (G) + 1972.4MHz (W) + 1977.4MHz (W)		N/A	
				1988.0MHz (G) + 1989.6MHz* (G) + 1972.2MHz (W) + 1977.2MHz (W)	0	Pass	
2.5	2.1051, 24.238 (a)	6.5	Conducted Spurious Emissions	1932.4MHz (W) + 1949.8MHz (G)	0	Pass	-
				1960.0MHz (W) + 1977.4MHz (G)	0	Pass	
				1987.6MHz (W) + 1970.2MHz (G)	0	Pass	
				1930.4MHz* (G) + 1932.0MHz (G) + 1947.8MHz (W)	0	Pass	
				1960.0MHz (G) + 1961.6MHz (G) + 1977.4MHz (W)	0	Pass	
				1988.0MHz (G) + 1989.6MHz (G) * + 1972.2MHz (W)	0	Pass	
				1930.4MHz* (G) + 1932.0MHz (G) + 1942.8MHz (W) + 1947.8MHz (W)	0	Pass	
				1960.0MHz (G) + 1961.6MHz (G) + 1972.4MHz (W) + 1977.4MHz (W)	0	Pass	
				1988.0MHz (G) + 1989.6MHz* (G) + 1972.2MHz (W) + 1977.2MHz (W)	0	Pass	
	2.1055, 24.235	6.3	Frequency Stability Under Temperature Variations	1932.4MHz (W) + 1949.8MHz (G)		N/A	-
				1960.0MHz (W) + 1977.4MHz (G)		N/A	
				1987.6MHz (W) + 1970.2MHz (G)		N/A	
				1930.4MHz* (G) + 1932.0MHz (G) + 1947.8MHz (W)		N/A	
				1960.0MHz (G) + 1961.6MHz (G) + 1977.4MHz (W)		N/A	
				1988.0MHz (G) + 1989.6MHz (G) * + 1972.2MHz (W)		N/A	
				1930.4MHz* (G) + 1932.0MHz (G) + 1942.8MHz (W) + 1947.8MHz (W)		N/A	
				1960.0MHz (G) + 1961.6MHz (G) + 1972.4MHz (W) + 1977.4MHz (W)		N/A	
				1988.0MHz (G) + 1989.6MHz* (G) + 1972.2MHz (W) + 1977.2MHz (W)		N/A	



Configuration 1 – Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2 and 24	RSS-133 and RSS-GEN					
	2.1055, 24.235	6.3	Frequency Stability Under Voltage Variations	1932.4MHz (W) + 1949.8MHz (G)		N/A	-
1960.0MHz (W) + 1977.4MHz (G)					N/A		
1987.6MHz (W) + 1970.2MHz (G)					N/A		
1930.4MHz* (G) + 1932.0MHz (G) + 1947.8MHz (W)					N/A		
1960.0MHz (G) + 1961.6MHz (G) + 1977.4MHz (W)					N/A		
1988.0MHz (G) + 1989.6MHz (G) * + 1972.2MHz (W)					N/A		
1930.4MHz* (G) + 1932.0MHz (G) + 1942.8MHz (W) + 1947.8MHz (W)					N/A		
1960.0MHz (G) + 1961.6MHz (G) + 1972.4MHz (W) + 1977.4MHz (W)					N/A		
1988.0MHz (G) + 1989.6MHz* (G) + 1972.2MHz (W) + 1977.2MHz (W)					N/A		

Note*: The channel adjacent to the lower and higher band-edge cannot be used. The lowest usable channel is 513 (1930.4MHz), the highest usable channel is 809 (1989.6MHz)

N/A – Not Applicable



1.3 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Radio Equipment
MANUFACTURER	Ericsson AB
PRODUCT NUMBER	RUS 01 B2
PART NUMBER	KRC 118 66/2
IC Model NUMBER	AS118662
SERIAL NUMBER	D164655166
HARDWARE VERSION	R1G
WCDMA Software	CXP9018350/1 Rev R12B07
GSM Software	CXP1040013/09 Rev R71H
PIS Software	CXP9017316/1 Rev R39UL
TRANSMITTER OPERATING RANGE	TX: 1930.4MHz - 1989.6MHz RX: 1850.4MHz - 1909.6MHz
MODULATIONS	WCDMA: QPSK, 16QAM, 64QAM GSM: GMSK, 8-PSK, 16QAM, 32QAM, AQPSK
NUMBER OF CARRIERS	Maximum 4 carriers (1-2 WCDMA carriers and 1 - 3 GSM carriers)
ITU DESIGNATION OF EMISSION	5M00F9W 250KGXW 250KG7W
OUTPUT POWER (RMS) (W or dBm)	Maximum 49dB total power (80W)
IF BANDWIDTH	20MHz
CHANNLE BANDWIDTH	WCDMA: 4.2 to 5MHz (configurable in steps of 100/200kHz) GSM: 250kHz
NUMBER OF ANTENNA PORTS	1 TX/ RX and 1 RX ports
FCC ID	TA8AKRC11866-2
IC ID	287AB-AS118662
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The equipment is the Radio Part of WCDMA/GSM MSR Base Station.

Signature

Date

22 April 2013

D of B S Serial No

75921580/06

No responsibility will be accepted by TÜV SÜD Product Service as to the accuracy of the information declared in this document by the manufacturer.



1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) RUS 01 B2 / KRC 118 66/2 is an Ericsson Radio Equipment working in the public mobile service 1900MHz band which provides communication connections to WCDMA/GSM1900 network. The RUS 01 B2 / KRC 118 66/2 operates from a - 48V DC supply.

The Equipment Under Test (EUT) is shown in the photograph below. A full technical description can be found in the Manufacturers documentation.



Equipment Under Test



1.4.2 Test Configuration

Configuration 1: Radio Equipment

The EUT was configured in accordance with FCC CFR 47 Part 24 and Industry Canada RSS-133.

The RUS 01 B2 / KRC 118 66/2 supports multi-standard GSM/WCDMA configured for Mix-carrier. WCDMA supports TM1 (QPSK), TM5 (16QAM) and TM6 (64QAM) defined in 3GPP TS 25.141, and GSM supports GMSK, 8-PSK, 16QAM, 32QAM and AQPSK modulations at 1900MHz. The EUT includes a TX/RX port and a RX port. It can be configured to transmit with 1900MHz Mix-carrier at the RF output connector. All TX measurements were performed on the combined TX/RX output connector RF A of the EUT, with RX antenna port RF B terminated.

The settings below were found to be representative for all modes when several settings with the different modulations and different number of carriers were tested to find the worst case setting. The settings were used for all measurements if not otherwise noted:

WCDMA:

- Single Carrier: Test Model 1 (TM1): 64DPCHs at 30 ksps (SF=128)
- Multi Carrier (1x2): Test Model 1 (TM1): 32 DPCHs at 30 ksps (SF=128)

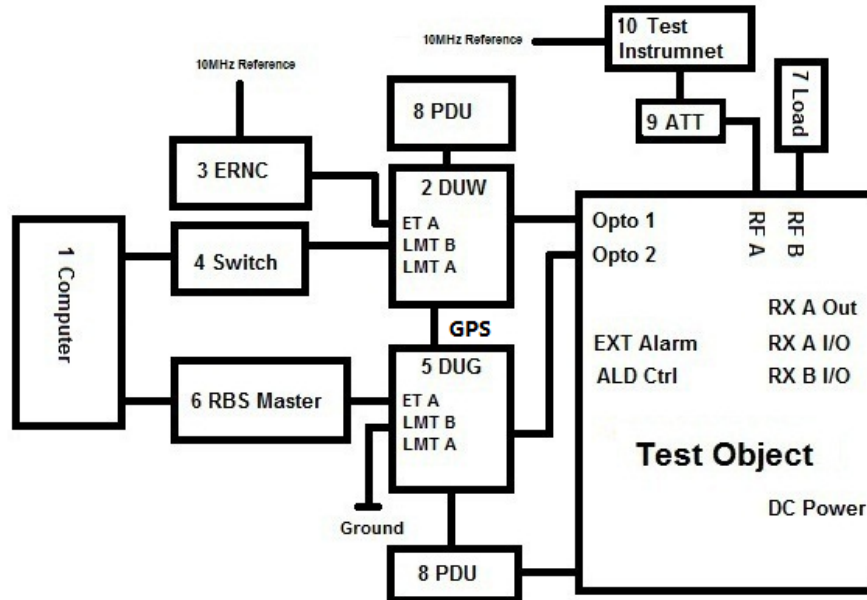
Channel Bandwidth: 5MHz
Modulation: QPSK

GSM:

- 1 or 2 activated GSM Carrier(s) with all GSM timeslots activated, using GMSK modulation.

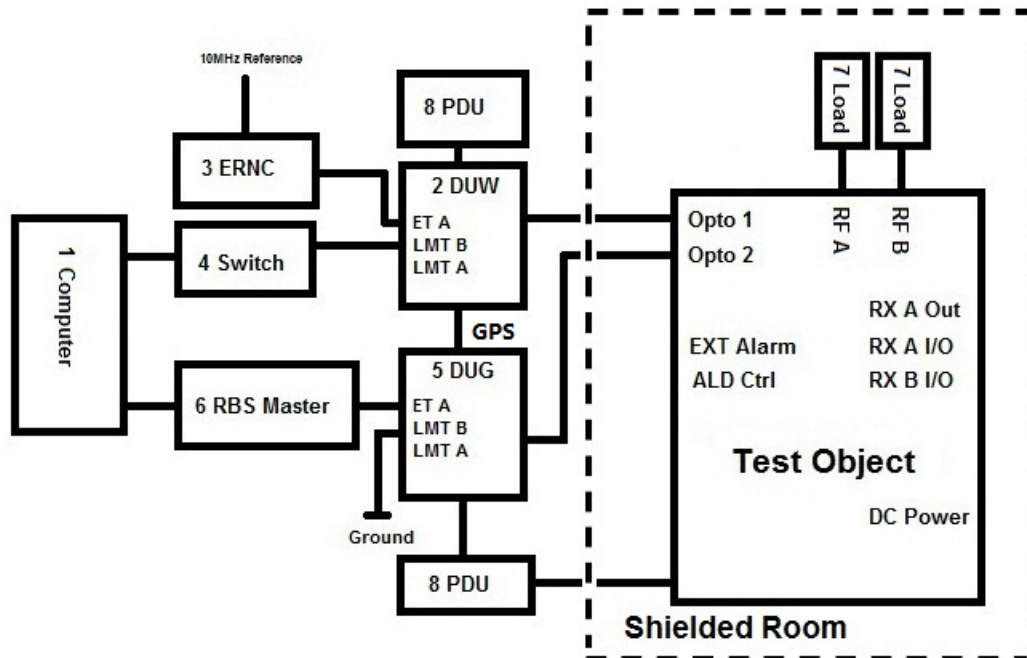
The complete testing was performed with the EUT transmitting at maximum RF power unless otherwise stated.

The EUT was powered by a -48V DC Power supply.

**Test Setup, Conducted Measurement:**

Product Name	Product Number	Version	Serial Number
RUS 01 B2	KRC 118 66/2	R1G	D164655166

No.	Auxiliary Equipment	Part Number / Model Type	Version	Serial Number
1	Computer	HP EliteBook 8530w	--	AP103078
	Work Station	Sun A70-XHZB1-9AG-2GDT	--	0826TFC1V9
2	RBS 6601	BFL 901 009/1	--	--
	DUW 30 01	KDU 127 161/2	R3A	C823579748
	SUP 6601	1/BFL 901 009/1	R3B	BR80908065
3	ERNC SIM	FAB 102 614	--	ETC/L167
4	Switch	TL-HP8MU	--	05300902892
5	RBS 6601	BFL 901 009/1	--	--
	DUG 20 01	KDU 137 569/1	R2B	C823856106
	SUP 6601	1/BFL 901 009/4	R1E	BR82322420
6	RBS Master	LPY 107 1007/3	R1C	T01E050944
7	Load	TFE5	--	090715057
8	Power Supply	DH1716-5D	--	2008040041
	Power Supply	DH1716-5D	--	2008040050
9	40dB Attenuator	48-40-43-LIM	--	BR5020
10	Power Meter	Rohde & Schwarz NRP	--	101283
	Power Sensor	Rohde & Schwarz NRP-Z21	--	103607
	Spectrum Analyzer	FSQ26	--	200014

**Test Setup, Radiated Measurement:**

Product Name	Product Number	Version	Serial Number
RUS 01 B2	KRC 118 66/2	R1G	D164655166

No.	Auxiliary Equipment	Part Number / Model Type	Version	Serial Number
1	Computer	HP EliteBook 8530w	--	AP103078
	Work Station	Sun A70-XHZB1-9AG-2GDT	--	0826TFC1V9
2	RBS 6601	BFL 901 009/1	--	--
	DUW 30 01	KDU 127 161/2	R3A	C823579748
	SUP 6601	1/BFL 901 009/1	R3B	BR80908065
3	ERNC SIM	FAB 102 614	--	ETC/L167
4	Switch	TL-HP8MU	--	05300902892
5	RBS 6601	BFL 901 009/1	--	--
	DUG 20 01	KDU 137 569/1	R2B	C823856106
	SUP 6601	1/BFL 901 009/4	R1E	BR82322420
6	RBS Master	LPY 107 1007/3	R1C	T01E050944
7	Load	TF100	--	09121648
	Load	TF100	--	09121605
8	Power Supply	DH1716-5D	--	2008040041
	Power Supply	DH1716-5D		2008040050



1.4.3 Modes of Operation

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

Mix Carrier: 1W (40W) + 1G (40W)

Mode 1 – 9662 (W) + 610 (G): 1932.4MHz (W) + 1949.8MHz (G)

Mode 2 – 9800 (W) + 748 (G): 1960.0MHz (W) + 1977.4MHz (G)

Mode 3 – 9938 (W) + 712 (G): 1987.6MHz (W) + 1970.2MHz (G)

Mix Carrier: 2G (30W x 2) + 1W (20W)

Mode 4 – 513 & 521 (G) + 9739 (W): 1930.4MHz (G) + 1932.0MHz (G) + 1947.8MHz (W)

Mode 5 – 661 & 669 (G) + 9887 (W): 1960.0MHz (G) + 1961.6MHz (G) + 1977.4MHz (W)

Mode 6 – 801 & 809 (G) + 9861 (W): 1988.0MHz (G) + 1989.6MHz (G) + 1972.2MHz (W)

Mode 7 – 513 & 521 (G) + 9674 (W): 1930.4MHz (G) + 1932.0MHz (G) + 1934.8MHz (W)

Mode 8 – 801 & 809 (G) + 9926 (W): 1988.0MHz (G) + 1989.6MHz (G) + 1985.2MHz (W)

Mode 9 – 564 & 623 (G) + 9732 (W): 1940.6MHz (G) + 1952.4MHz (G) + 1946.4MHz (W)

Mode 10 – 699 & 758 (G) + 9868 (W): 1967.6MHz (G) + 1979.4MHz (G) + 1973.6MHz (W)

Mix Carrier: 2G (20W x 2) + 2W (20W x 2)

Mode 11 – 513 & 521 (G) + 9714 & 9739 (W):
1930.4MHz (G) + 1932.0MHz (G) + 1942.8MHz (W) + 1947.8MHz (W)

Mode 12 – 661 & 669 (G) + 9862 & 9887 (W):
1960.0MHz (G) + 1961.6MHz (G) + 1972.4MHz (W) + 1977.4MHz (W)

Mode 13 – 801 & 809 (G) + 9861 & 9886 (W):
1988.0MHz (G) + 1989.6MHz (G) + 1972.2MHz (W) + 1977.2MHz (W)

Mode 14 – 564 & 623 (G) + 9717 & 9748 (W):
1940.6MHz (G) + 1952.4MHz (G) + 1943.4MHz (W) + 1949.6MHz (W)

Mode 15 – 699 & 758 (G) + 9883 & 9852 (W):
1967.6MHz (G) + 1979.4MHz (G) + 1976.6MHz (W) + 1970.4MHz (W)

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



Product Service

1.5 TEST CONDITIONS

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

The EUT was powered from a -48V DC supply.

1.6 DEVIATIONS FROM THE STANDARD

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

1.7 MODIFICATION RECORD

No modifications were made to the EUT during testing.

1.8 ALTERNATIVE TEST SITE

Only Radiated Spurious Emissions testing has been performed under the following site registrations:

FCC Accreditation 910917:

The State Radio Monitoring Centre, No.80 Beilishi Road Xicheng District Beijing, China.

Industry Canada Accreditation 7308A-1:

The State Radio Monitoring Centre, No.80 Beilishi Road Xicheng District Beijing, China.



Product Service

SECTION 2

TEST DETAILS

FCC and Industry Canada Testing of the
Ericsson RUS 01 B2 / KRC 118 66/2



Product Service

2.1 MAXIMUM PEAK OUTPUT POWER - CONDUCTED

2.1.1 Specification Reference

FCC CFR 47 Part 2.1046
 FCC CFR 47 Part 24, Clause 24.232 (a)
 Industry Canada RSS-133, Clause 6.4

2.1.2 Equipment Under Test

RUS 01 B2 / KRC 118 66/2, S/N: D164655166

2.1.3 Date of Test and Modification State

16 to 19 April 2013 – Modification State 0

2.1.4 Test Equipment Used

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

2.1.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 2 and Part 24 and Industry Canada RSS-133.

Using a power meter and attenuator(s), the output power of the EUT was measured at the antenna terminal.

The path loss was measured and entered as a reference level offset.

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

Configuration 1 - Mode 1
 - Mode 2
 - Mode 3
 - Mode 4
 - Mode 5
 - Mode 6
 - Mode 11
 - Mode 12
 - Mode 13

2.1.6 Environmental Conditions

	16 April 2013	17 April 2013	18 April 2013	19 April 2013
Ambient Temperature	24.6°C	25.3°C	25.2°C	23.5°C
Relative Humidity	38.0%	39.0%	31.0%	30.0%



2.1.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 2 and Part 24 and Industry Canada RSS-133 for Maximum Peak Output Power.

The test results are shown below

Mix Carrier: 1W (40W) + 1G (40W)

Configuration 1 - Mode 1, 2 and 3

Channel Numbers	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
9662 (W) + 610 (G)	1932.4 (W) + 1949.8 (G)	40.8	48.67	73.62
9800 (W) + 748 (G)	1960.0 (W) + 1977.4 (G)	40.8	48.68	73.79
9938 (W) + 712 (G)	1987.6 (W) + 1970.2 (G)	40.8	48.44	69.82

Mix Carrier: 2G (30W x 2) + 1W (20W)

Configuration 1 - Mode 4, 5 and 6

Channel Numbers	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
513 & 521 (G) + 9739 (W)	1930.4 & 1932.0 (G) + 1947.8 (W)	40.8	47.27	53.33
661 & 669 (G) + 9887 (W)	1960.0 & 1961.6 (G) + 1977.4 (W)	40.8	48.47	70.31
801 & 809 (G) + 9861 (W)	1988.0 & 1989.6 (G) + 1972.2 (W)	40.8	47.19	52.36

Mix Carrier: 2G (20W x 2) + 2W (20W X 2)

Configuration 1 - Mode 11, 12 and 13

Channel Numbers	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
513 & 521 (G) + 9714 & 9739 (W)	1930.4 & 1932.0 (G) + 1942.8 & 1947.8 (W)	40.8	48.11	64.71
661 & 669 (G) + 9862 & 9887 (W)	1960.0 & 1961.6 (G) + 1972.4 & 1977.4 (W)	40.8	48.25	66.83
801 & 809 (G) + 9861 & 9886 (W)	1988.0 & 1989.6 (G) + 1972.2 & 1977.2 (W)	40.8	48.08	64.27

Limit	≤100W or ≤+50dBm
-------	------------------

Remarks

The EUT does not exceed 100W or 50dBm at the measured frequencies.



Product Service

2.2 PEAK – AVERAGE RATIO

2.2.1 Specification Reference

FCC CFR 47 Part 24, Clause 24.232 (d)
Industry Canada RSS-133, Clause 6.4

2.2.2 Equipment Under Test

RUS 01 B2 / KRC 118 66/2, S/N: D164655166

2.2.3 Date of Test and Modification State

17 and 18 April 2013 – Modification State 0

2.2.4 Test Equipment Used

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

2.2.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 24.

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

The path loss measured and entered as a reference level offset.

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

Configuration 1 - Mode 1
- Mode 2
- Mode 3
- Mode 4
- Mode 5
- Mode 6
- Mode 11
- Mode 12
- Mode 13

2.2.6 Environmental Conditions

	17 April 2013	18 April 2013
Ambient Temperature	25.3°C	25.2°C
Relative Humidity	39.0%	31.0%



Product Service

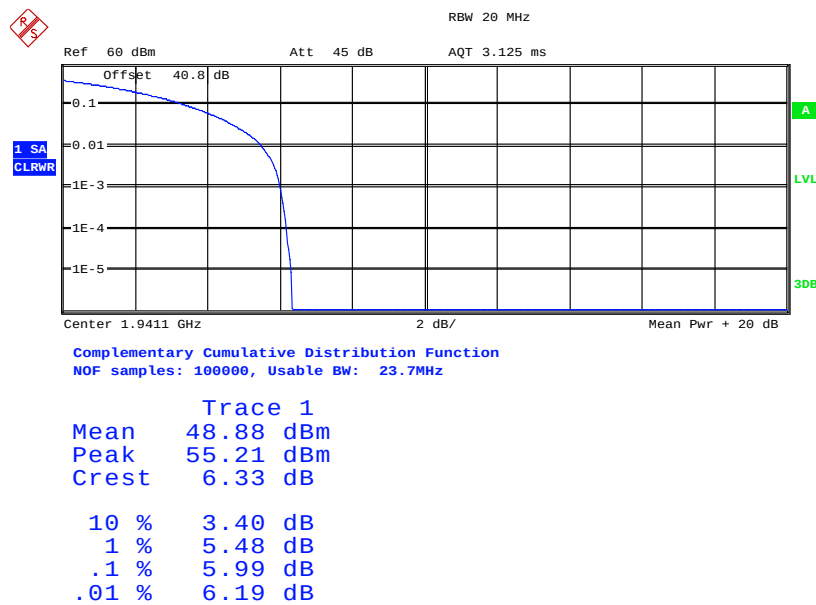
2.2.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 24 Peak – Average Ratio.

The test results are shown below.

Mix Carrier: 1W (40W) + 1G (40W)

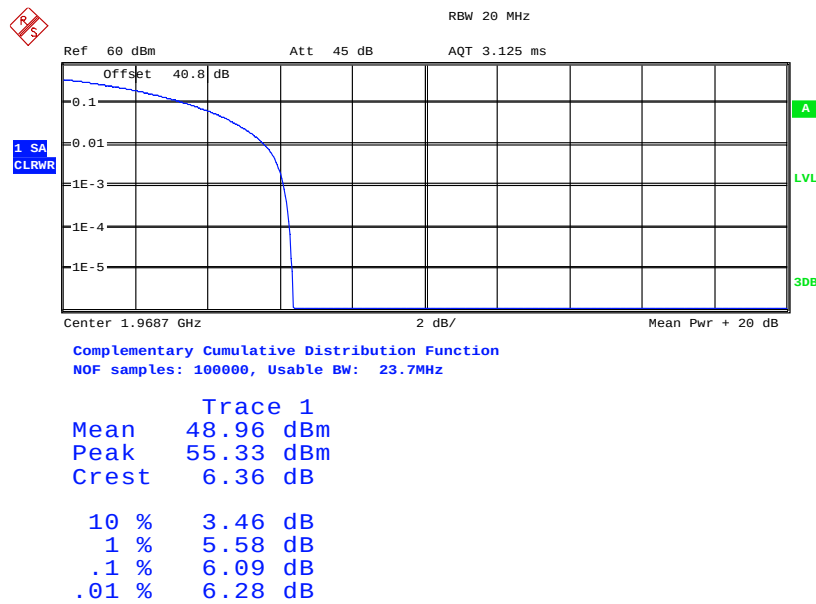
Configuration 1 - Mode 1



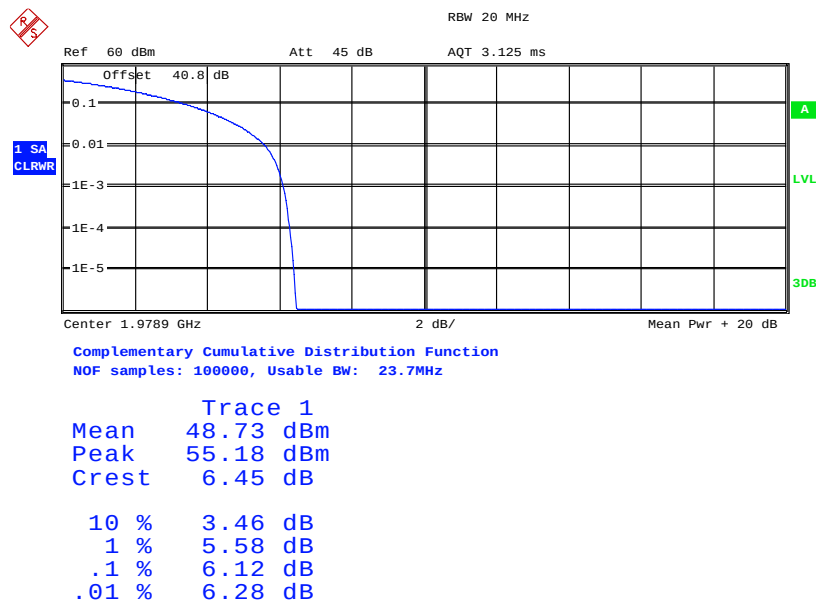
Date: 17.APR.2013 02:40:16



Product Service

Configuration 1 - Mode 2

Date: 17.APR.2013 02:17:32

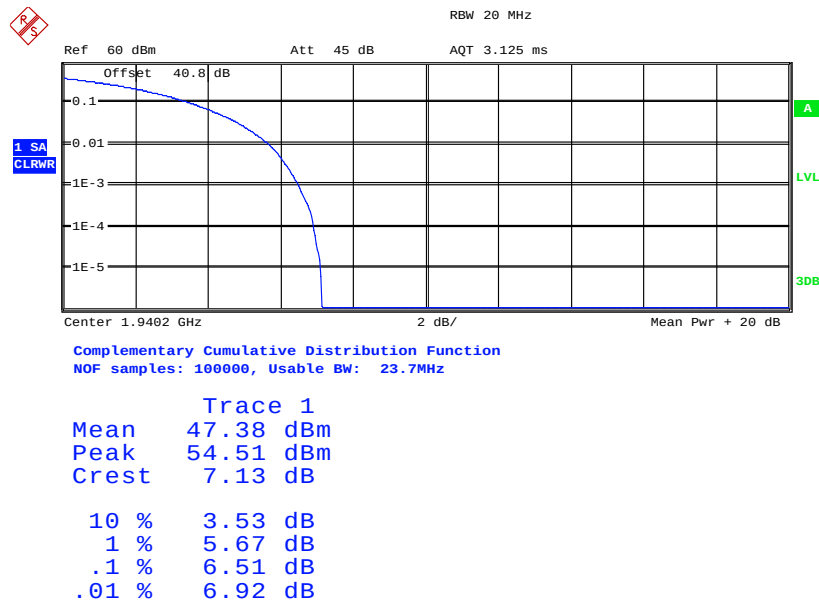
Configuration 1 - Mode 3

Date: 17.APR.2013 01:01:00



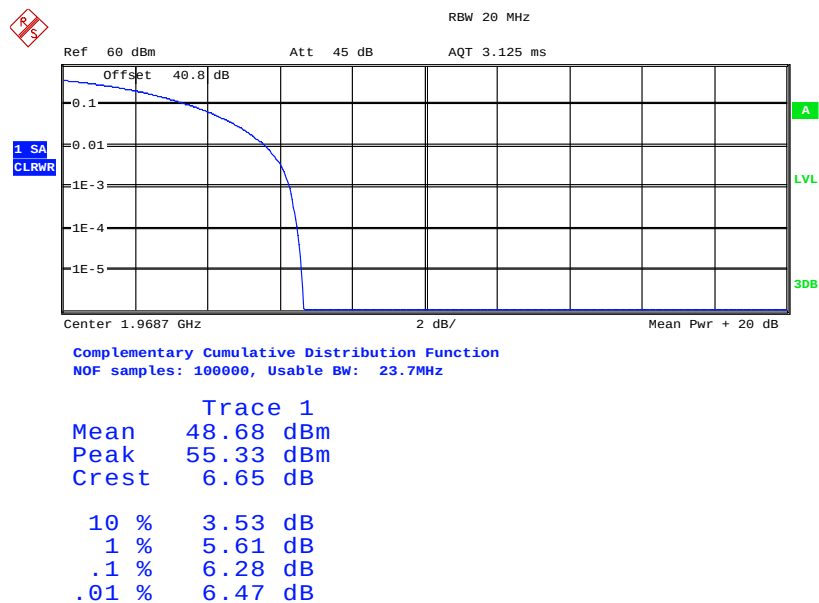
Mix Carrier: 2G (30W x 2) + 1W (20W)

Configuration 1 - Mode 4

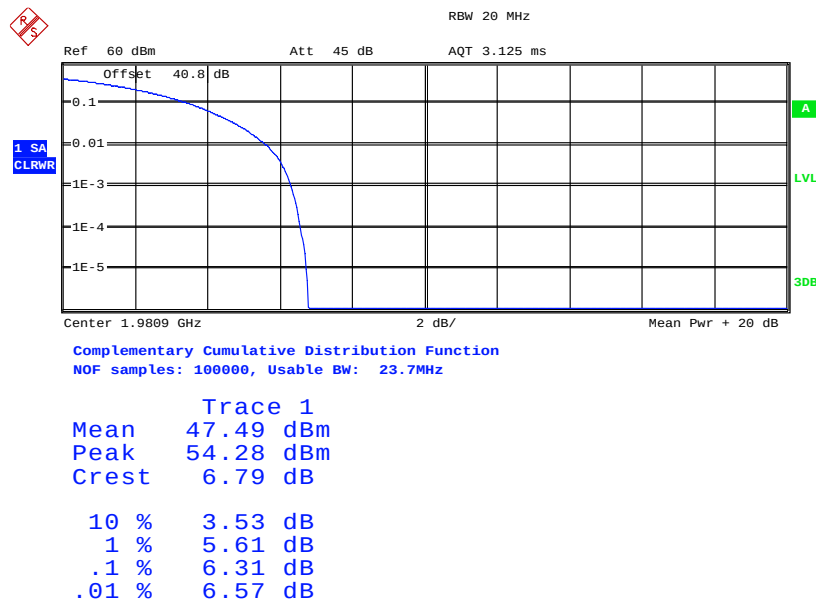


Date: 17.APR.2013 04:36:30

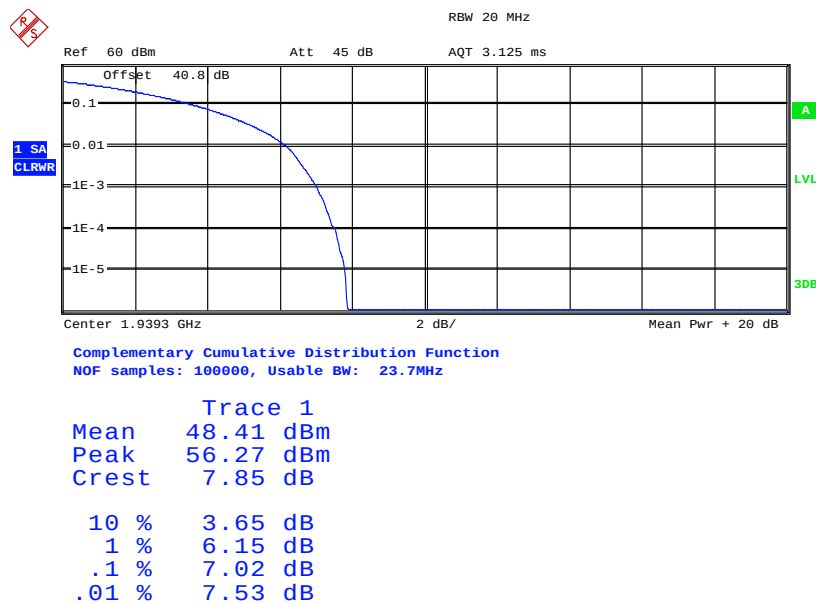
Configuration 1 - Mode 5



Date: 17.APR.2013 07:42:44

Configuration 1 - Mode 6

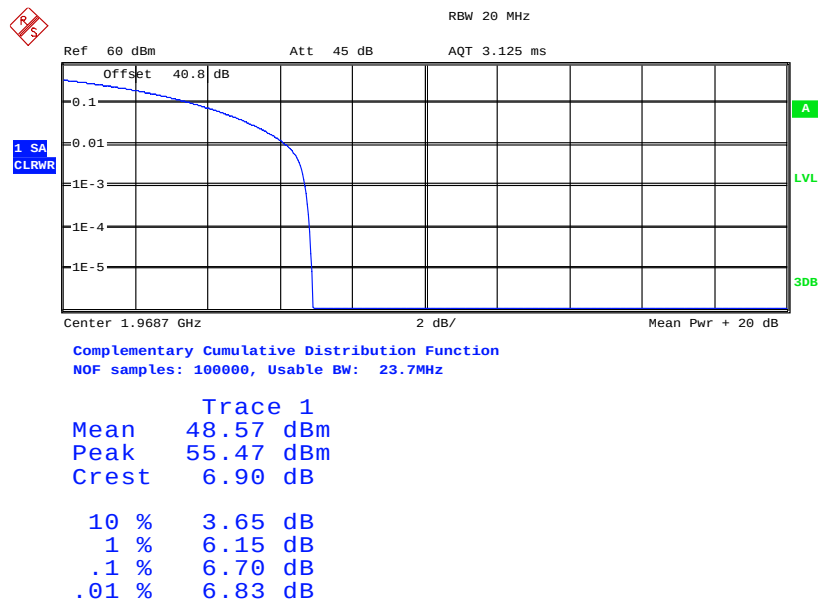
Date: 17.APR.2013 06:04:21

Mix Carrier: 2G (20W x 2) + 2W (20W x 2)Configuration 1 - Mode 11

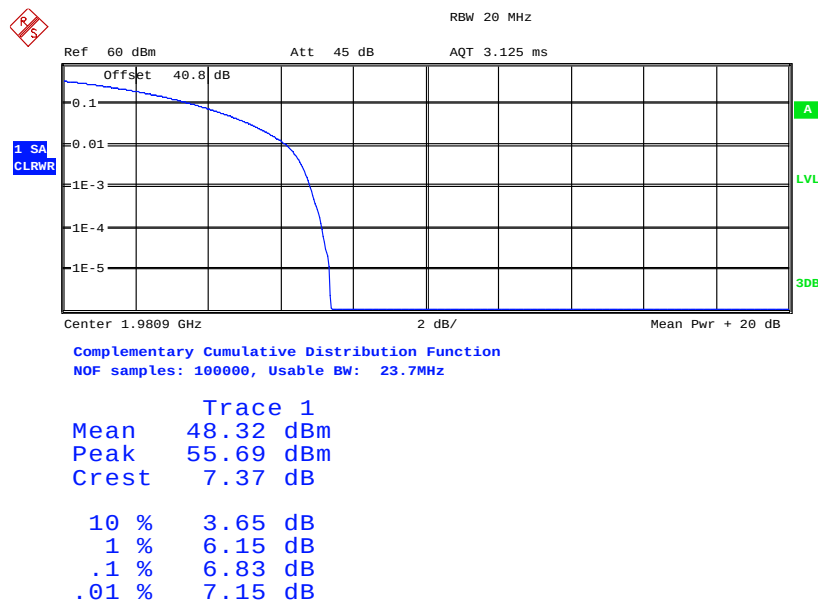
Date: 18.APR.2013 01:48:23



Product Service

Configuration 1 - Mode 12

Date: 18.APR.2013 06:43:04

Configuration 1 - Mode 13

Date: 18.APR.2013 05:55:41



Product Service

Limit	13dB
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Remarks

The Peak – Average ratio does not exceed 13dB at the measured frequencies.



Product Service

2.3 SPURIOUS EMISSIONS AT ANTENNA TERMINALS (± 1 MHz)**2.3.1 Specification Reference**

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 24, Clause 24.238(b)
Industry Canada RSS-133 Clause 6.5

2.3.2 Equipment Under Test

RUS 01 B2 / KRC 118 66/2, S/N: D164655166

2.3.3 Date of Test and Modification State

17, 18 and 23 April 2013 – Modification State 0

2.3.4 Test Equipment Used

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

2.3.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 2 and Part 24 and Industry Canada RSS-133.

In accordance with 24.238(b), at least 1% of the emission bandwidth should be used for the resolution bandwidths up to 1MHz away from the block edge. For 1W + 1G mix carrier, with WCDMA signal at the edge, 30kHz resolution bandwidth was used and the limit was adjusted with 2dB to -15dB to compensate for the reduced measurement bandwidth. For 2G + 1W and 2G + 2W, with GSM signal at the edge, 3kHz resolution bandwidth was used.

A resolution bandwidth of 50kHz was used between 1MHz to 5MHz from the band edge. As the FCC rules specify a RBW of 1MHz or greater for measurements of emissions > 1MHz away from the band edges, the limit was adjusted with -13dB to -26dBm to compensate for the reduced measurement bandwidth. Spectrum analyser detector was set as RMS.

The path loss measured and entered as a reference level offset.

The EUT was tested at its maximum power level with all timeslots activated.

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

Configuration 1 - Mode 1
 - Mode 3
 - Mode 4
 - Mode 6
 - Mode 7
 - Mode 8
 - Mode 9
 - Mode 10
 - Mode 11
 - Mode 13
 - Mode 14
 - Mode 15



2.3.6 Environmental Conditions

	17 April 2013	18 April 2013	23 April 2013
Ambient Temperature	25.3°C	25.2°C	23.2°C
Relative Humidity	39.0%	31.0%	29.5%

2.3.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 2 and Part 24 and Industry Canada RSS-133 for Spurious Emissions Antenna Terminals (± 1 MHz).

Below are the Frequencies the EUT was tested against along with the tested channels.

Remark:

The channel adjacent to the lower and higher band-edge cannot be used. For GSM, the lowest usable channel is 513 (1930.4MHz), the highest usable channel is 809 (1989.6MHz)

Mix Carrier: 1W (40W) + 1G (40W)

Configuration 1 - Mode 1 and 3

Band Edge Frequency	Edge Test with WCDMA QPSK Channel No./Frequencies	RBW / VBW (kHz)	Limit (dB)
Bottom 1930MHz	Channel: 9662 Frequency: 1932.4 MHz	30 / 300	-15
Top 1990MHz	Channel: 9938 Frequency: 1987.6 MHz	30 / 300	-15

Mix Carrier: 2G (30W x 2) + 1W (20W)

Configuration 1 – Mode 4,6, 7 and 8

Band Edge Frequency	Edge Test with GSM GMSK Channel No./Frequencies	RBW / VBW (kHz)	Limit (dB)
Bottom 1930MHz	Channel: 513 Frequency: 1930.4 MHz	3 / 30	-13
Top 1990MHz	Channel: 809 Frequency: 1989.6 MHz	3 / 30	-13



Mix Carrier: 2G (20W x 2) + 2W (20W x 2)

Configuration 1 - Mode 11 and 13

Band Edge Frequency	Edge Test with GSM GMSK Channel No./Frequencies	RBW / VBW (kHz)	Limit (dB)
Bottom 1930MHz	Channel: 513 Frequency: 1930.4 MHz	3 / 30	-13
Top 1990MHz	Channel: 809 Frequency: 1989.6 MHz	3 / 30	-13

The channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels used outside of those stated and power levels used beyond those stated in the table exceed the specification limits, thus they cannot be used.

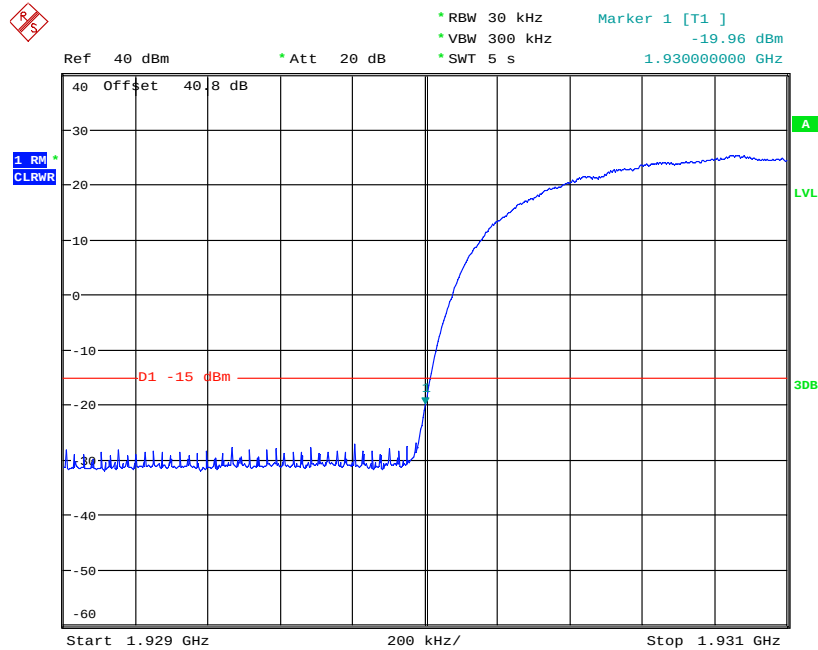
The channels outside of those shown in the table above were not tested at lower power levels to determine a level at which compliance would be achieved. Therefore, to maintain compliance, only the channels shown in the table above shall be used.



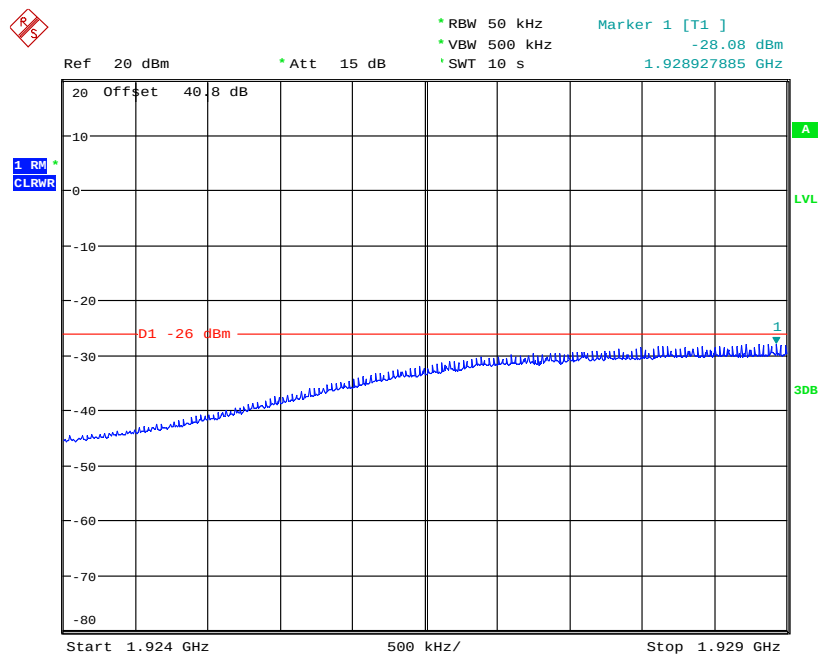
The test results are shown below

Mix Carrier: 1W (40W) + 1G (40W)

Configuration 1 - Mode 1



Date: 17.APR.2013 02:43:36

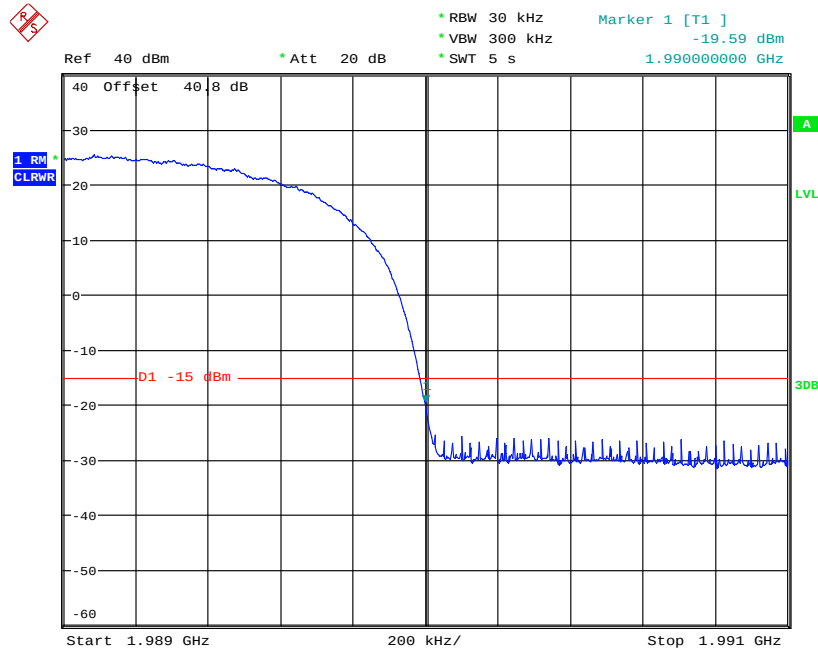


Date: 17.APR.2013 03:32:39

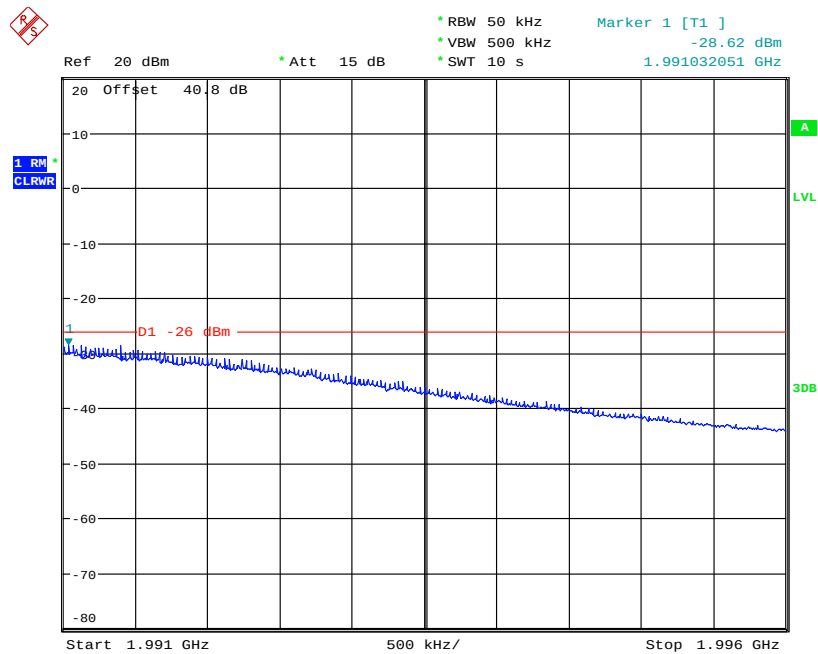


Product Service

Configuration 1 – Mode 3



Date: 17.APR.2013 01:08:51

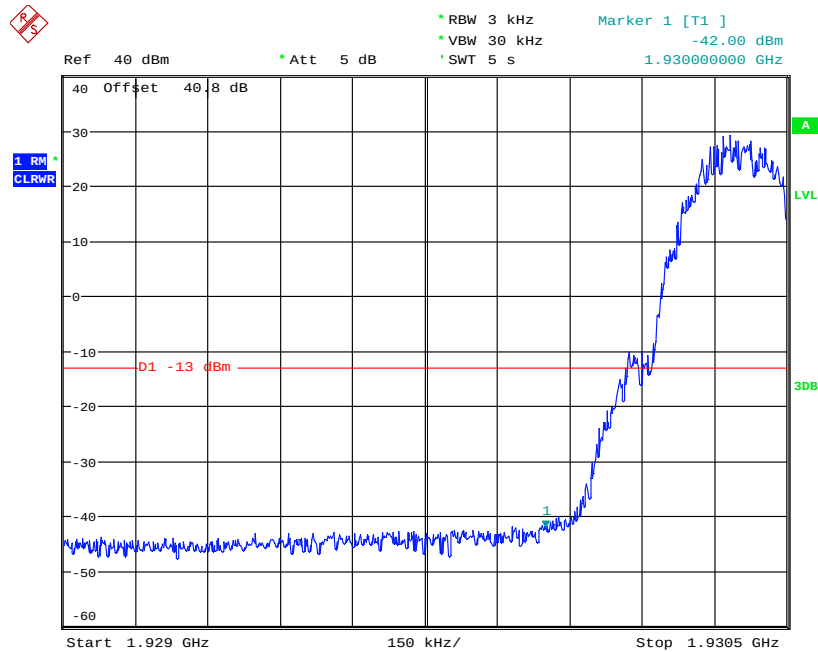


Date: 17.APR.2013 01:40:32

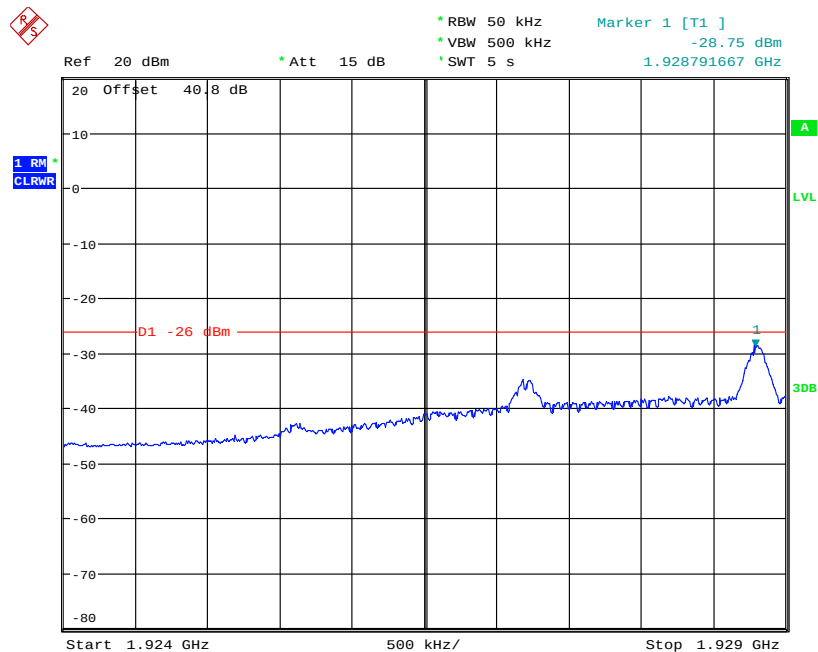


Mix Carrier: 2G (30W x 2) + 1W (20W)

Configuration 1 – Mode 4



Date: 17.APR.2013 04:57:36

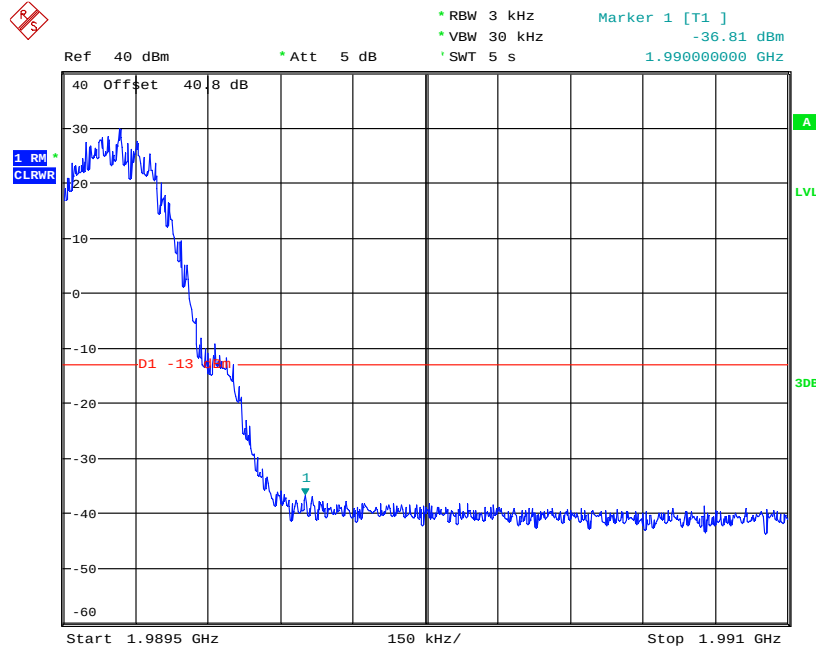


Date: 17.APR.2013 05:07:24

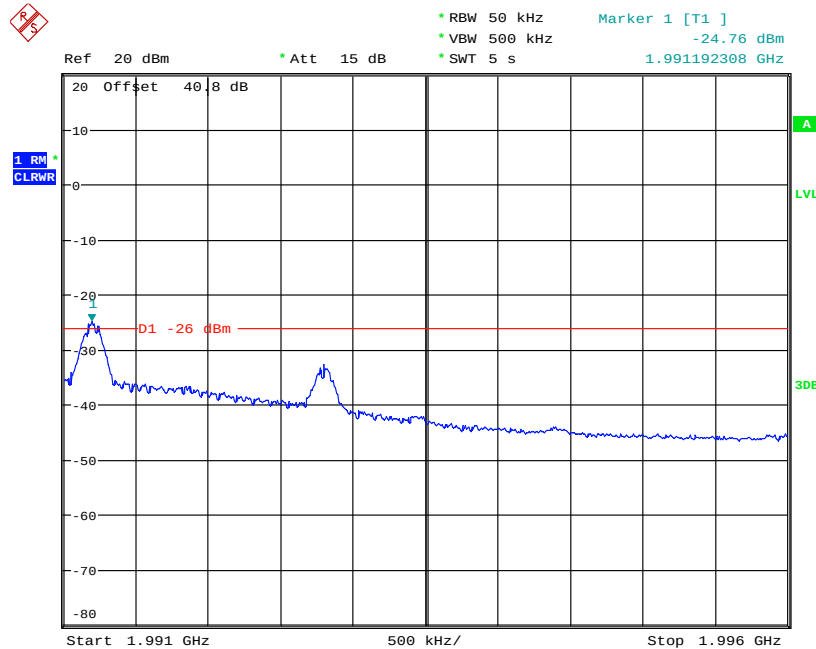


Product Service

Configuration 1 – Mode 6



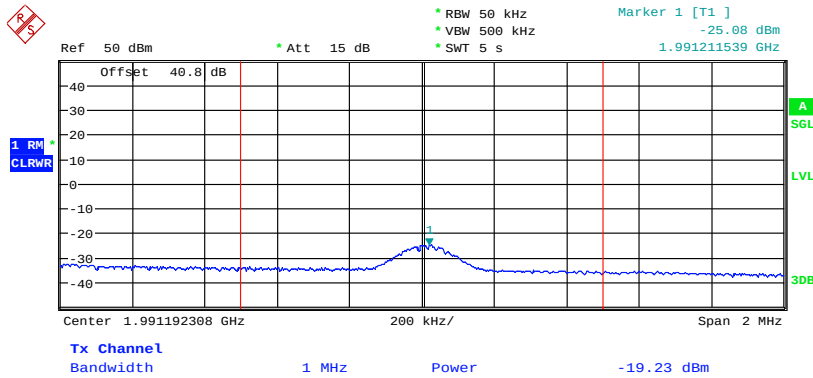
Date: 17.APR.2013 06:06:47



Date: 17.APR.2013 06:10:56

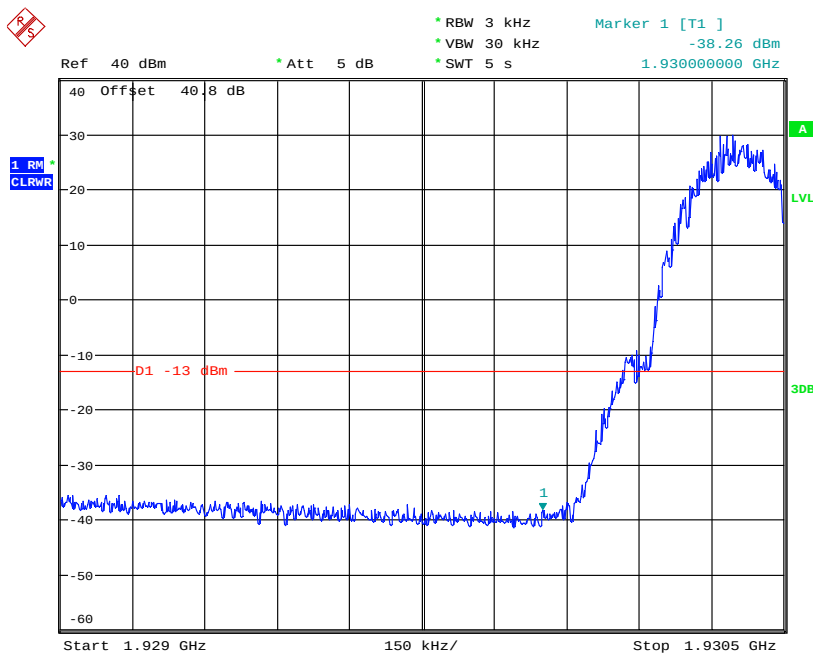


Verification for the 1MHz channel power between 1MHz to 5MHz away from the band edge.
The limitation is -13dBm.



Date: 23.APR.2013 05:55:03

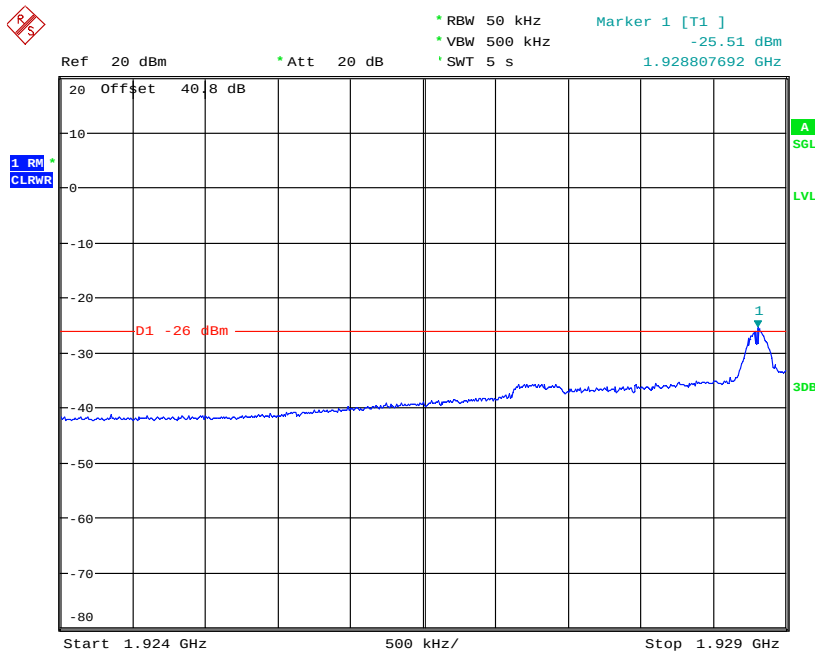
Configuration 1 – Mode 7



Date: 18.APR.2013 00:50:52

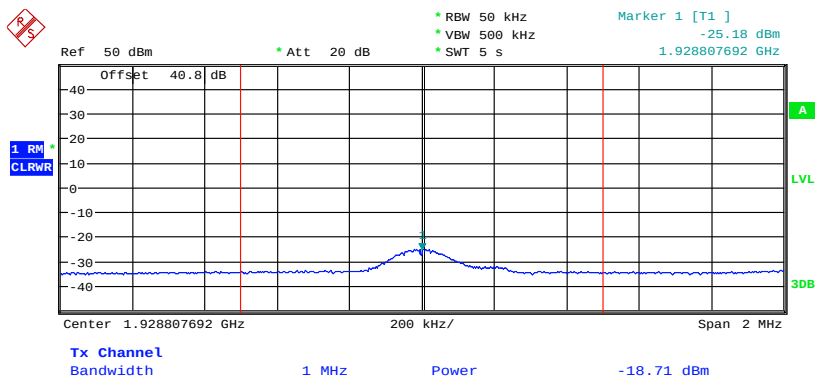


Product Service



Date: 18.APR.2013 00:54:35

Verification for the 1MHz channel power between 1MHz to 5MHz away from the band edge.
The limitation is -13dBm.

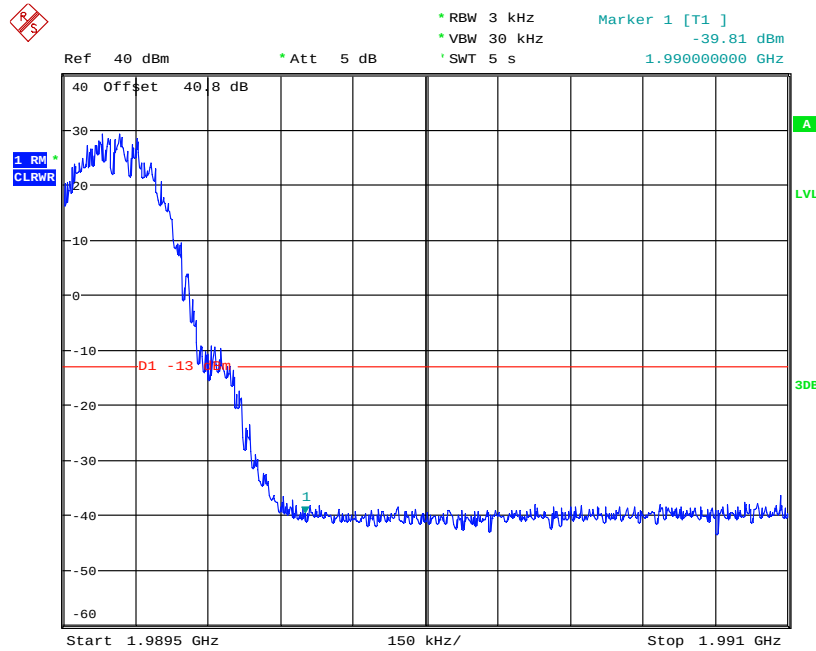


Date: 18.APR.2013 00:55:46

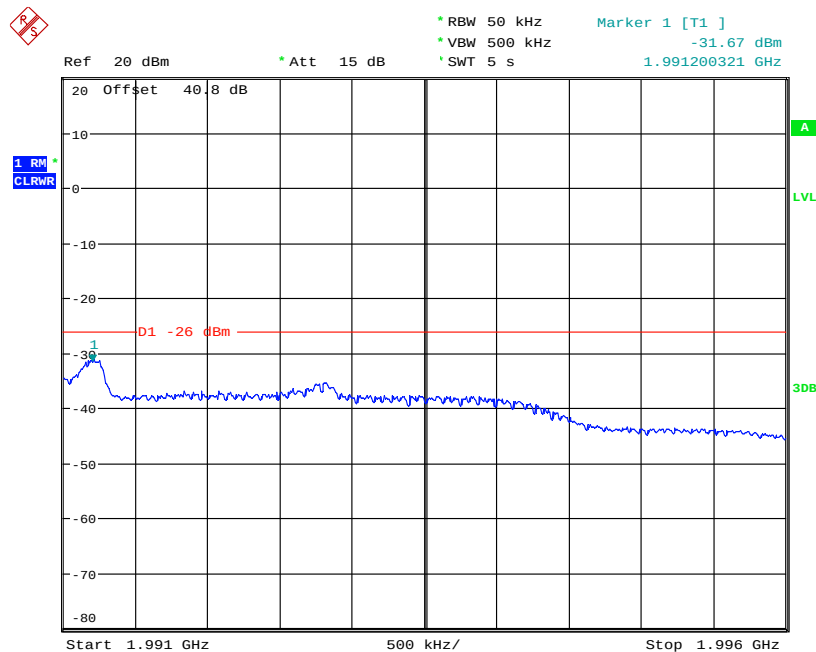


Product Service

Configuration 1 - Mode 8



Date: 17.APR.2013 06:43:13

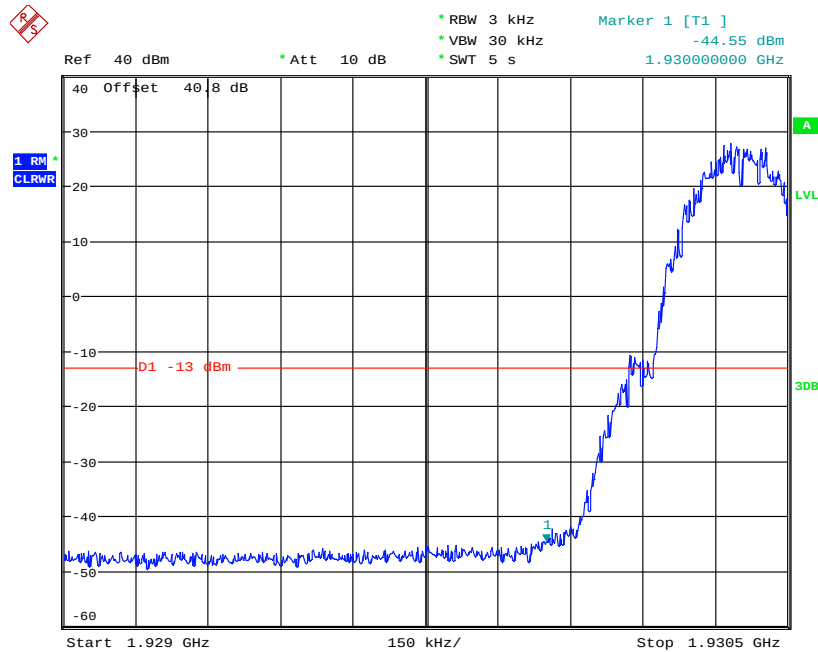


Date: 17.APR.2013 06:40:38

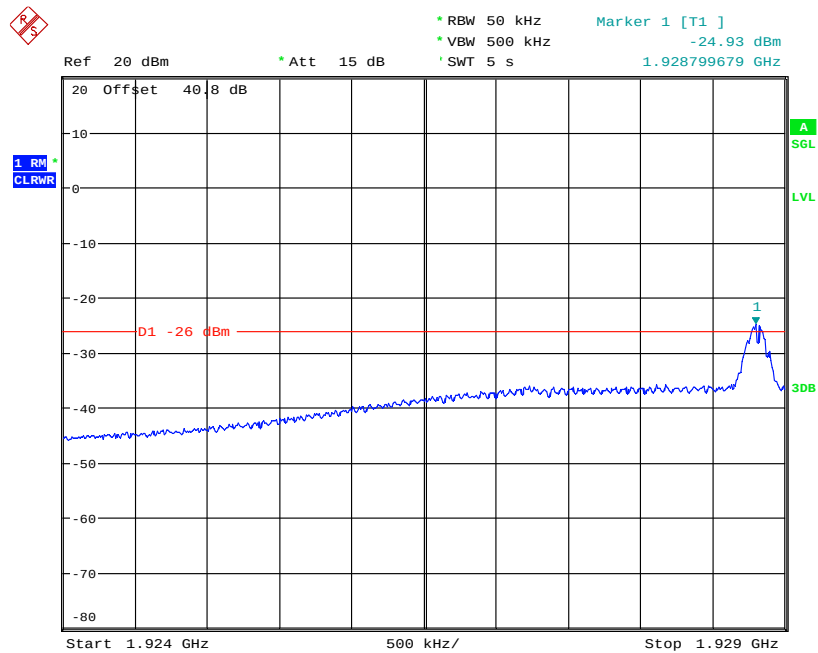


Mix Carrier: 2G (20W x 2) + 2W (20W x 2)

Configuration 1 - Mode 11



Date: 18.APR.2013 03:51:51

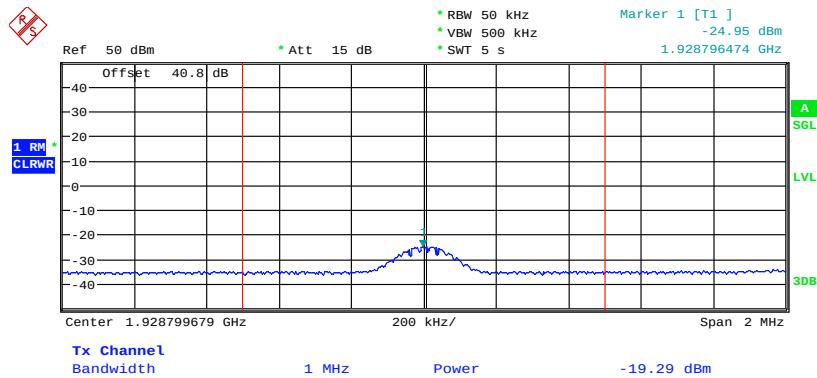


Date: 18.APR.2013 05:08:47



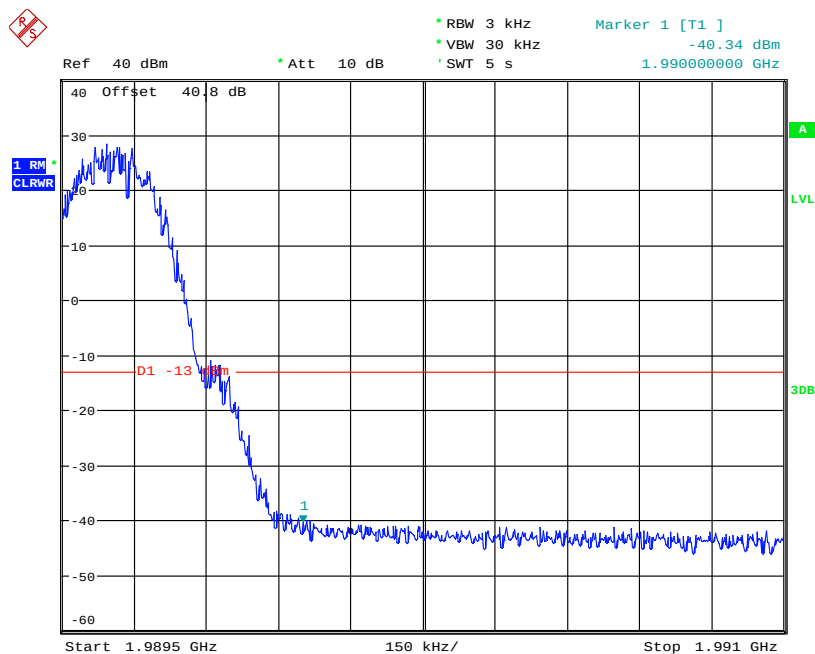
Product Service

Verification for the 1MHz channel power between 1MHz to 5MHz away from the band edge.
The limitation is -13dBm.



Date: 18.APR.2013 05:09:39

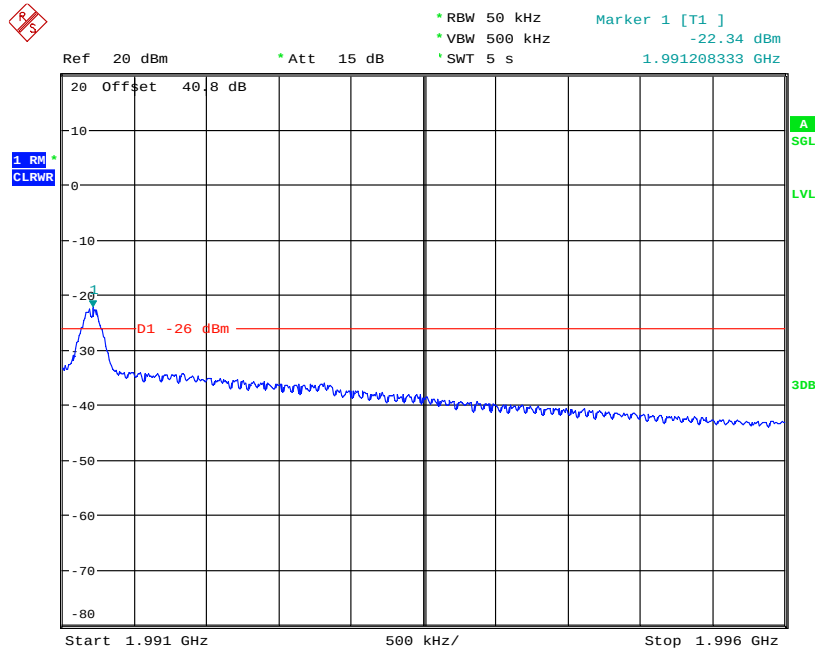
Configuration 1 - Mode 13



Date: 18.APR.2013 05:46:59

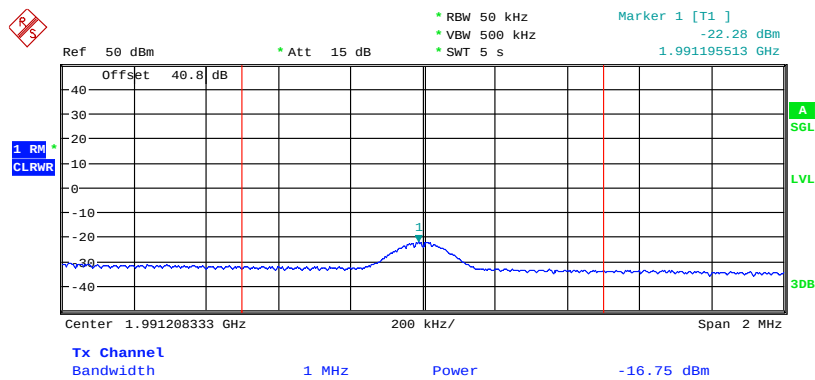


Product Service



Date: 18.APR.2013 05:42:36

Verification for the 1MHz channel power between 1MHz to 5MHz away from the band edge.
The limitation is -13dBm.



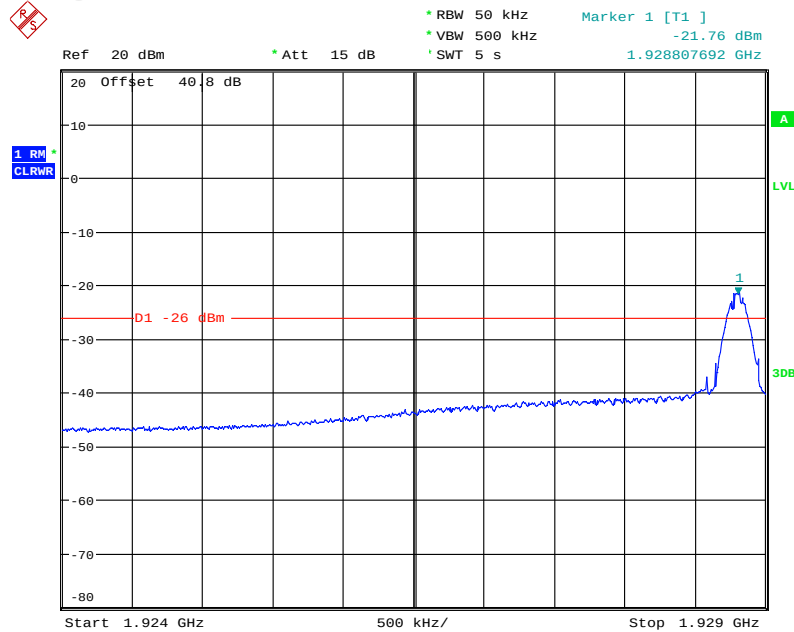
Date: 18.APR.2013 05:44:21



From 1MHz to 5MHz or higher away from the band edge, the following configurations were tested at to verify their compliance to the requirement:

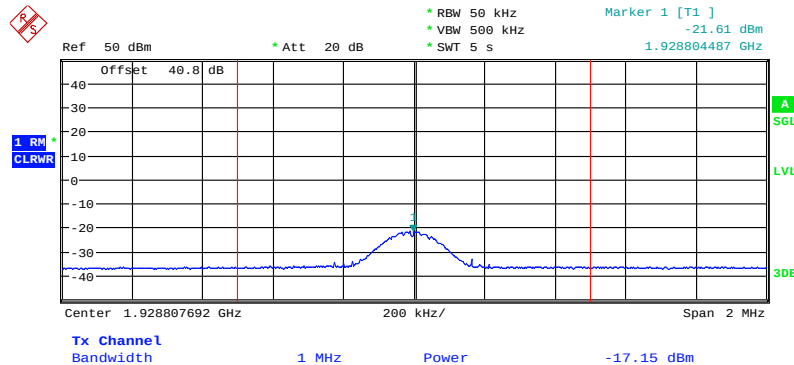
Mix Carrier: 2G (30W x 2) + 1W (20W)

Configuration 1 - Mode 9



Date: 17.APR.2013 07:13:51

Verification for the 1MHz channel power between 1MHz to 5MHz away from the band edge. The limitation is -13dBm.

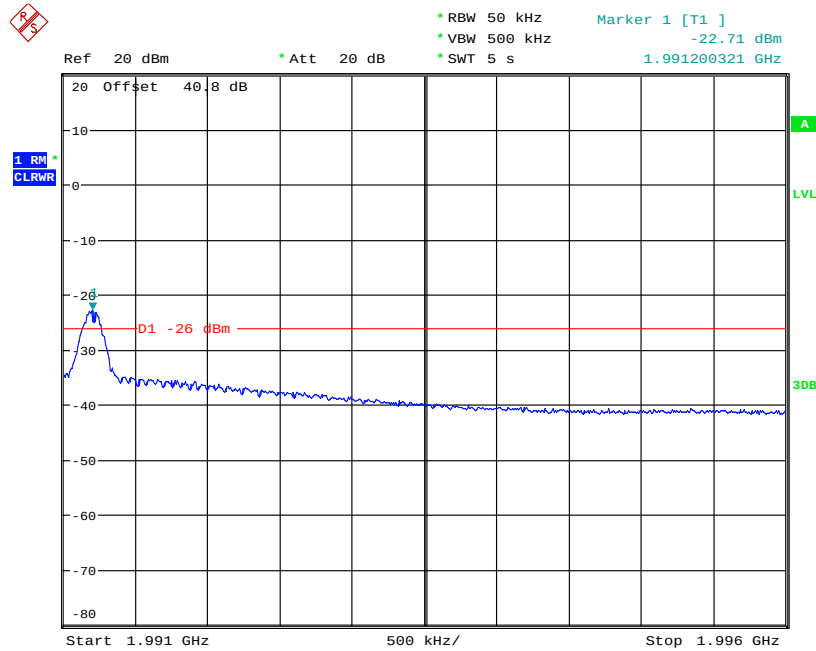


Date: 18.APR.2013 01:08:38



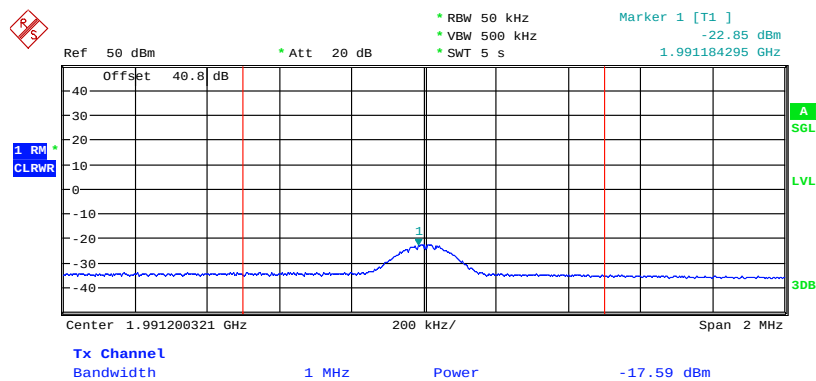
Product Service

Configuration 1 - Mode 10



Date: 18.APR.2013 01:18:41

Verification for the 1MHz channel power between 1MHz to 5MHz away from the band edge.
The limitation is -13dBm.

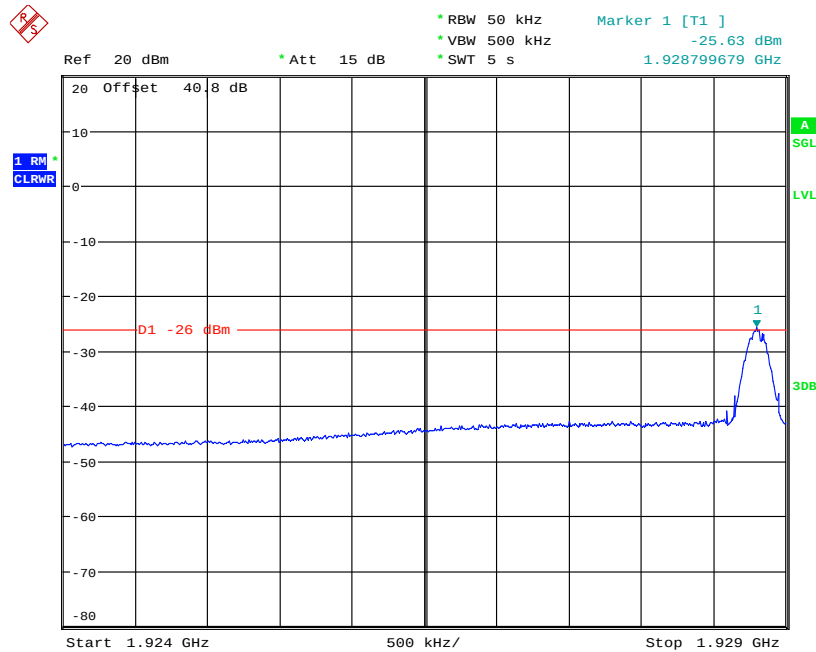


Date: 18.APR.2013 01:20:35



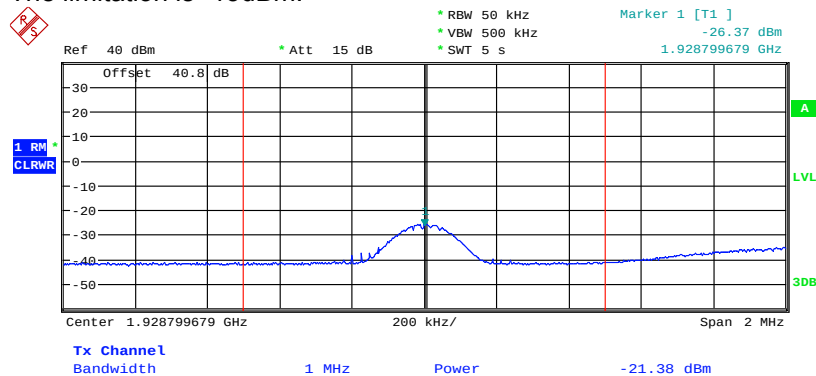
Mix Carrier: 2G (20W x 2) + 2W (20W x 2)

Configuration 1 - Mode 14



Date: 18.APR.2013 05:26:04

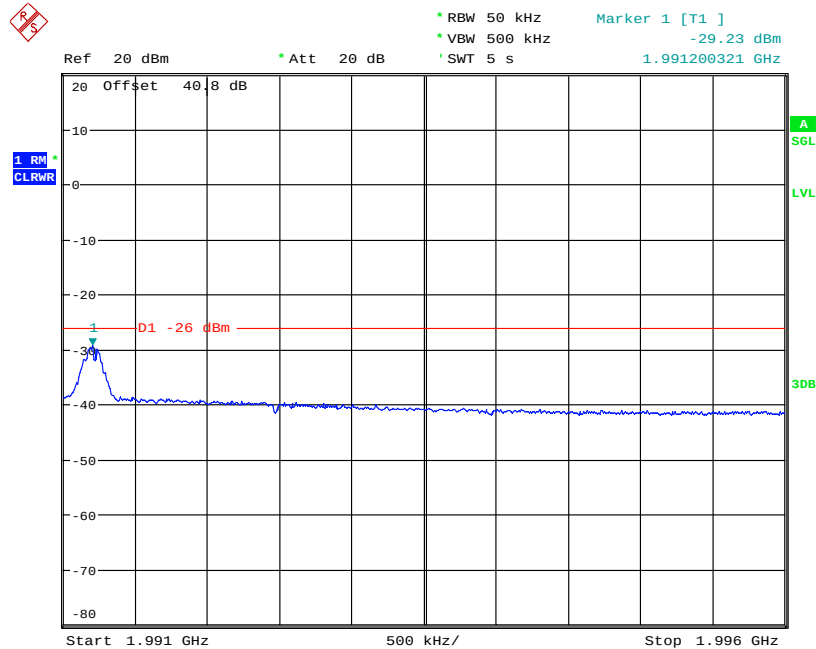
Verification for the 1MHz channel power between 1MHz to 5MHz away from the band edge.
The limitation is -13dBm.



Date: 18.APR.2013 05:26:51



Configuration 1 - Mode 15



Date: 18.APR.2013 06:29:44

Limit

The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least $43 + 10\log P$ dB.



Product Service

2.4 RADIATED SPURIOUS EMISSIONS

2.4.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1053
FCC CFR 47 Part 24, Clause 24.238 (a)
Industry Canada RSS-133, Clause 6.5

2.4.2 Equipment Under Test

RUS 01 B2 / KRC 118 66/2, S/N: D164655166

2.4.3 Date of Test and Modification State

12 and 13 April 2013 – Modification State 0

2.4.4 Test Equipment Used

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

2.4.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 2 and Part 24 and Industry Canada RSS-133.

A preliminary profile of the Spurious Radiated Emissions was obtained by operating the EUT on a remotely controlled turntable within the chamber. Measurements of emissions from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisation.

For WCDMA, QPSK was found to be the representative modulation, and for GSM, 8-PSK was found to be the worst modulation.

Emissions identified within the range 30MHz – 25GHz were then formally measured using a Peak detector as the worst case.

In the frequency Range 30MHz – 25GHz, the measurement was performed with a resolution bandwidth of 1MHz.

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

The limits for Spurious Emissions have been calculated, as shown below using the following formula:

Field Strength of Carrier - $(43 + 10\log(P))$ dB

Where:

Field Strength is measured in dB μ V/m

P is measured Transmitter Power in Watts



Determination of Spurious Emission Limit

As the EUT does not have an integral antenna, the field strength of the carrier has been calculated assuming that the power is to be fed to a half-wave tuned dipoles as per 2.1053 (a).

$$E_{(v/m)} = (30 \times G_i \times P_o)^{0.5} / d$$

Where G_i is the antenna gain of ideal half-wave dipoles,
 P_o is the power out of the transceiver in W,
 d is the measurement distance in meter.

Therefore at 3m measurement distance the field strength using the lowest transceiver output power would be:

$$E_{(v/m)} = (30 \times 1.64 \times 52.36)^{0.5} / 3 = 16.92 \text{ V/m} = 144.6 \text{ dB}\mu\text{V/m}$$

As per 24.238 (a) the spurious emission must be attenuated by $43 + 10\log(P_o)$ dB this gives:

$$43 + 10\log(52.36) = 60.2 \text{ dB}$$

Therefore the limit at 3m measurement distance is:

$$144.6 - 60.2 = 84.4 \text{ dB}\mu\text{V/m}$$

This limit has been used to determine Pass or Fail for the harmonics measured and detailed in the following results.

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

- Configuration 1 - Mode 1
 - Mode 2
 - Mode 3
 - Mode 5
 - Mode 6
 - Mode 13

2.4.6 Environmental Conditions

	12 April 2013	13 April 2013
Ambient Temperature	20.1°C	20.8°C
Relative Humidity	23.0%	24.1%



2.4.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 2 & Part 24 and Industry Canada RSS-133 for Radiated Spurious Emissions.

The test results are shown below

Note: Only the worst case results plots have been included as all of the emissions are greater than 20dB below the limit. A set of plots have been included to show the measurement system noise floor.

QPSK (W) and GMSK (G)

Mix Carrier: 1W (40W) + 1G (40W)

Configuration 1 - Mode 1

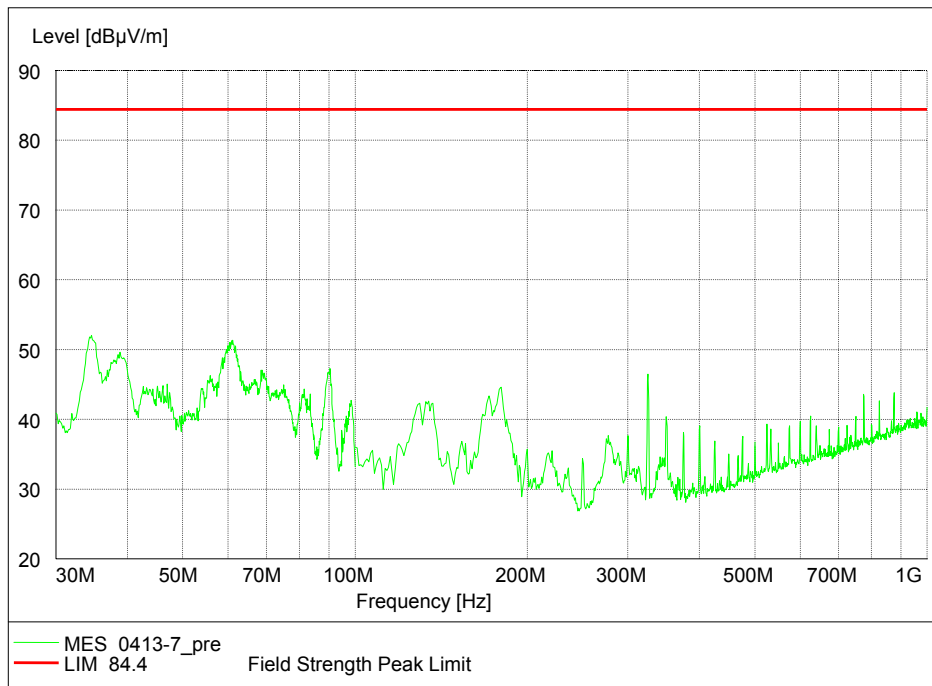
No emissions were detected within 20dB of the limit.

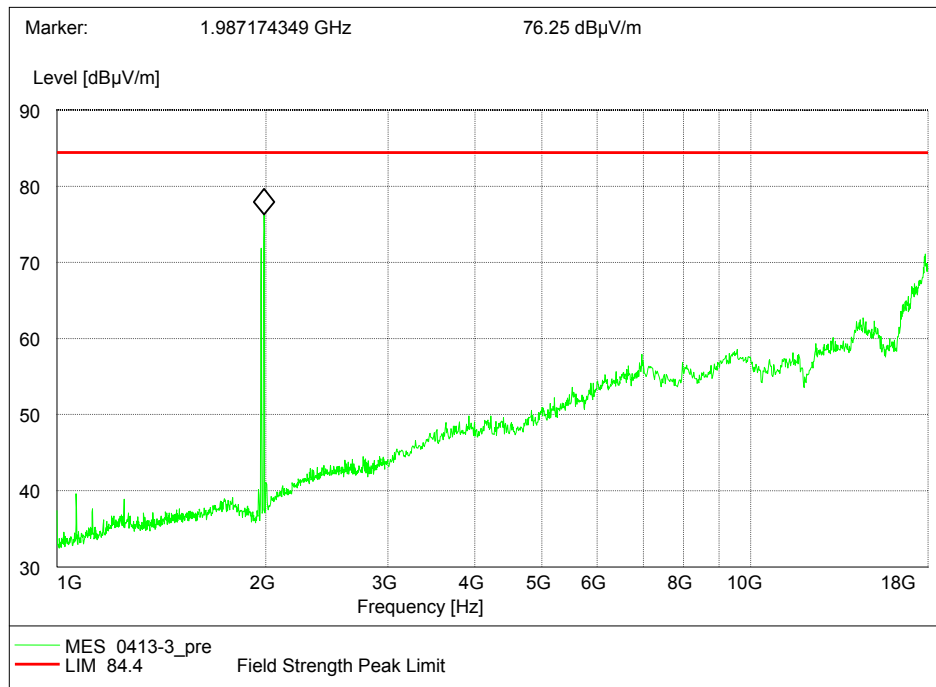
Configuration 1 - Mode 2

No emissions were detected within 20dB of the limit.

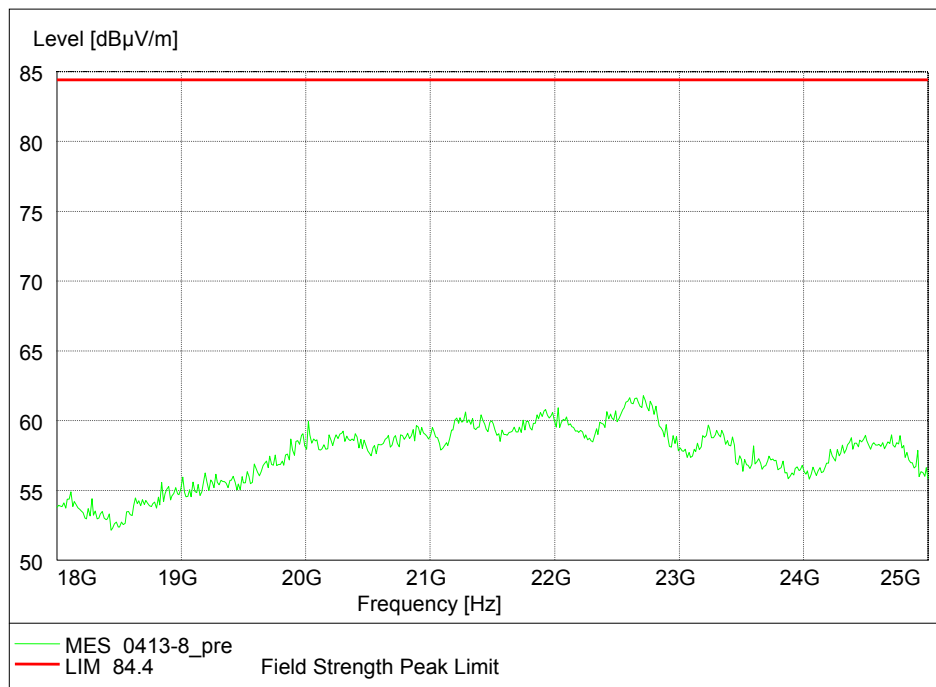
Configuration 1 - Mode 3

30MHz – 1GHz



1GHz - 18GHz

Note: The emission beyond the limit is the operating frequency.

18GHz -25GHz



Product Service

QPSK (W) and 8-PSK (G)**Mix Carrier: 1W (40W) + 1G (40W)**Configuration 1 - Mode 2

No emissions were detected within 20dB of the limit.

16QAM (W) and 8-PSK (G)**Mix Carrier: 1W (40W) + 1G (40W)**Configuration 1 - Mode 2

No emissions were detected within 20dB of the limit.

64QAM (W) and 16QAM (G)**Mix Carrier: 1W (40W) + 1G (40W)**Configuration 1 - Mode 2

No emissions were detected within 20dB of the limit.

QPSK (W) and GMSK (G)**Mix Carrier: 2G (30W x 2) + 1W (20W)**Configuration 1 - Mode 5 and 6

No emissions were detected within 20dB of the limit.

QPSK (W) and GMSK (G)**Mix Carrier: 2G (20W x 2) + 2W (20W x 2)**Configuration 1 - Mode 13

No emissions were detected within 20dB of the limit.

Limit	-13dBm or 84.4dB μ V/m
-------	----------------------------

RemarksThe EUT does not exceed -13dBm or 84.4dB μ V/m at the measured frequencies.



Product Service

2.5 CONDUCTED SPURIOUS EMISSIONS

2.5.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 24, Clause 24.238 (a)
Industry Canada RSS-133, Clause 6.5

2.5.2 Equipment Under Test

RUS 01 B2 / KRC 118 66/2, S/N: D164655166

2.5.3 Date of Test and Modification State

16, 17 and 23 April 2013 – Modification State 0

2.5.4 Test Equipment Used

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

2.5.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 2 and Part 24 and Industry Canada RSS-133.

In accordance with Part 2.1051, the spurious emissions from the antenna terminal were measured. The transmitter output power was attenuated using an attenuator and the frequency spectrum investigated from 9kHz to 25GHz. The EUT was set to transmit on maximum power. The resolution was set to 1MHz for 9kHz to 25GHz thus meeting the requirements of Part 24.238 (b). The spectrum analyser detector was set to peak and trace was kept on Max Hold.

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

In addition, measurements were made up to the 10th harmonics of the highest internal frequency.

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

Configuration 1 - Mode 1
 - Mode 2
 - Mode 3
 - Mode 4
 - Mode 5
 - Mode 6
 - Mode 11
 - Mode 12
 - Mode 13



2.5.6 Environmental Conditions

	16 April 2013	17 April 2013	23 April 2013
Ambient Temperature	24.6°C	25.3°C	23.2°C
Relative Humidity	38.0%	39.0%	29.5%

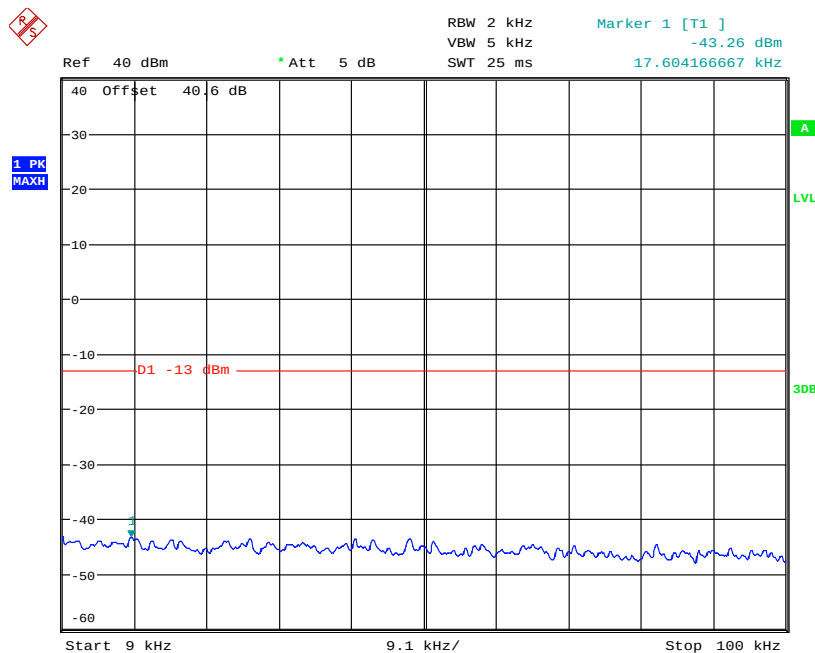
2.5.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 2 and Part 24 and Industry Canada RSS-133 for Conducted Spurious Emissions.

The test results are shown below

Remark:

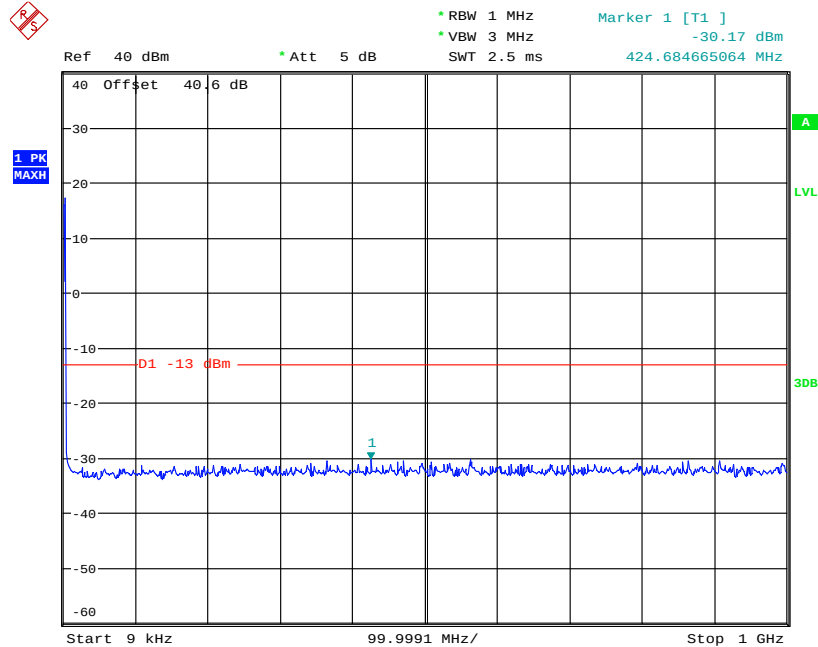
The emissions at 9kHz on the plots was not generated by the test object. A complementary measruement with a smaller Span showed that it was related to the LO feedthrough.



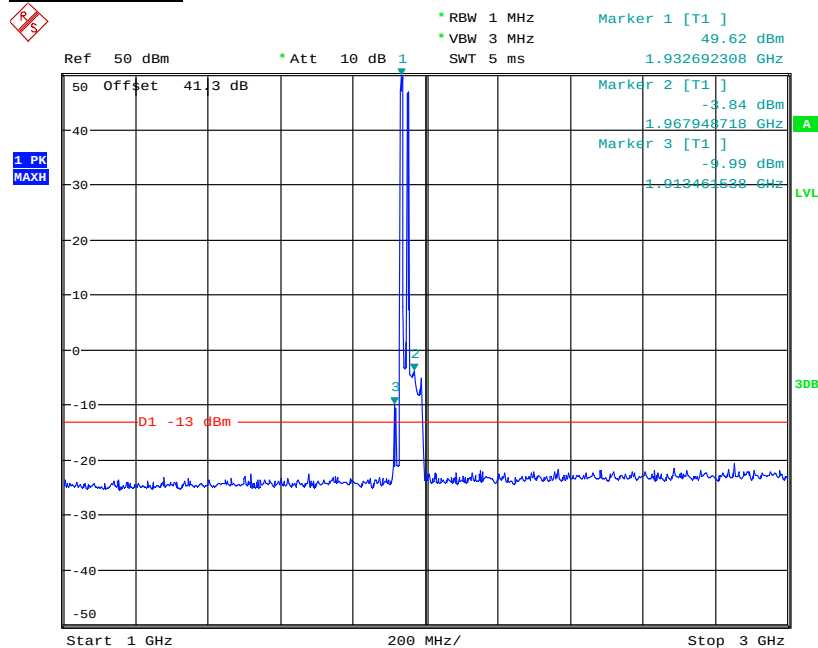
Date: 16.APR.2013 08:54:34



Product Service

Mix Carrier: 1W (40W) + 1G (40W)**Configuration 1 - Mode 1****9kHz to 1GHz**

Date: 17.APR.2013 02:31:03

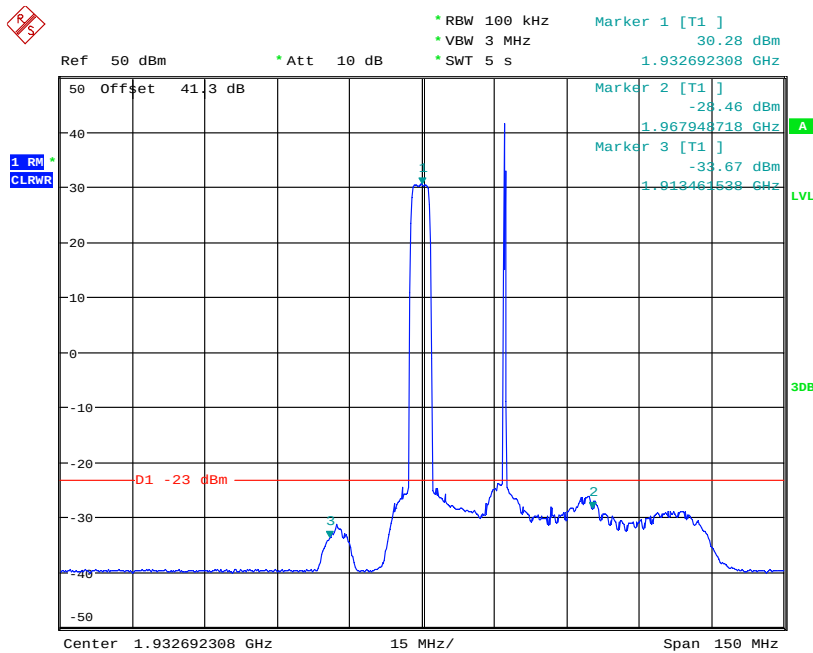
1GHz to 3GHz

Date: 23.APR.2013 03:20:19

Note: The emissions beyond the limit are the operating frequencies.



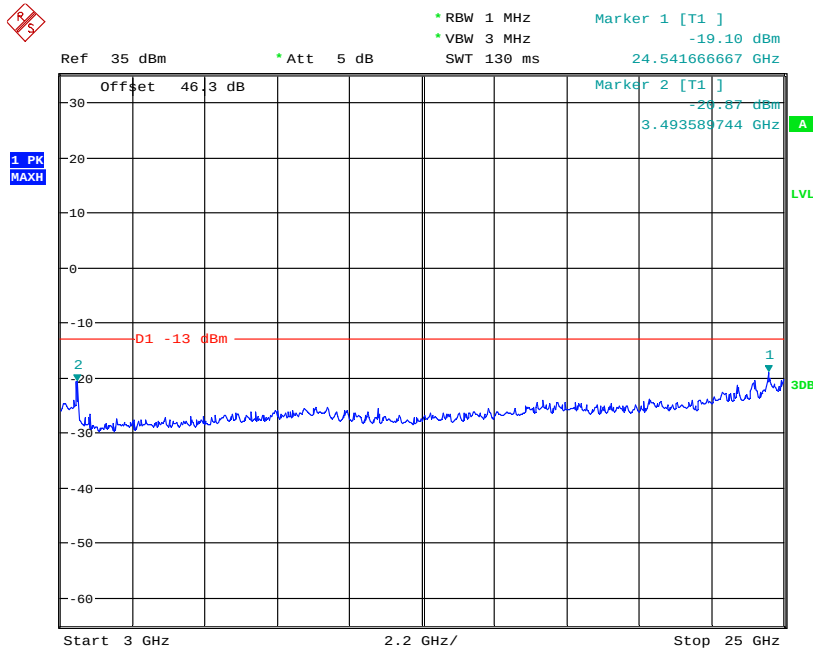
Product Service



Date: 23.APR.2013 03:23:04

Note: The emissions beyond the limit are the operating frequencies.

3GHz to 25GHz

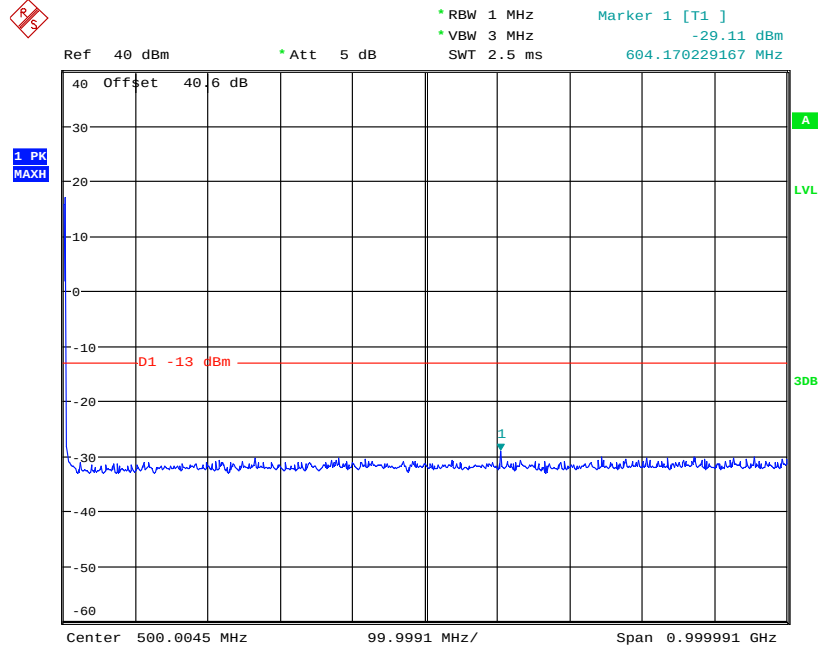


Date: 17.APR.2013 02:38:00



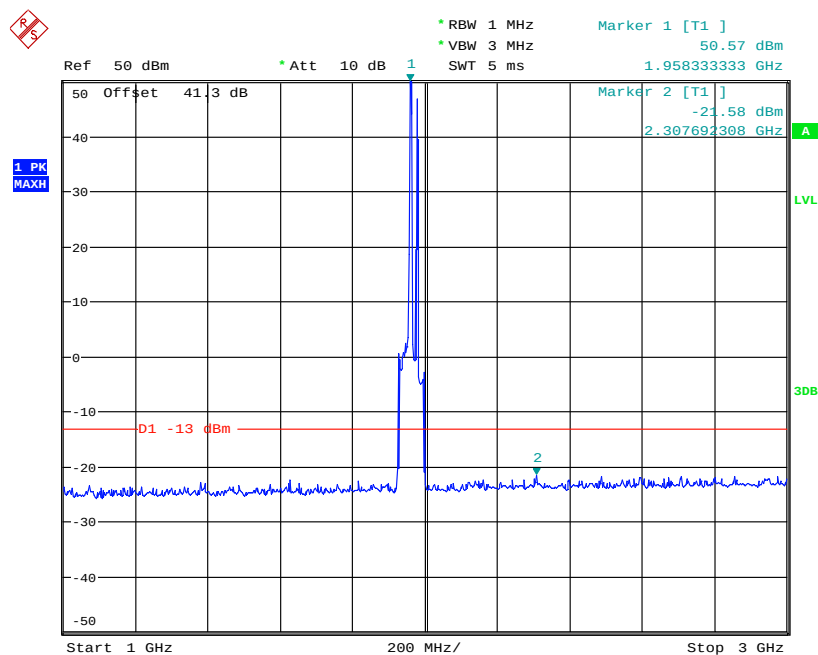
Configuration 1 - Mode 2

9kHz to 1GHz



Date: 17.APR.2013 02:02:35

1GHz to 3GHz



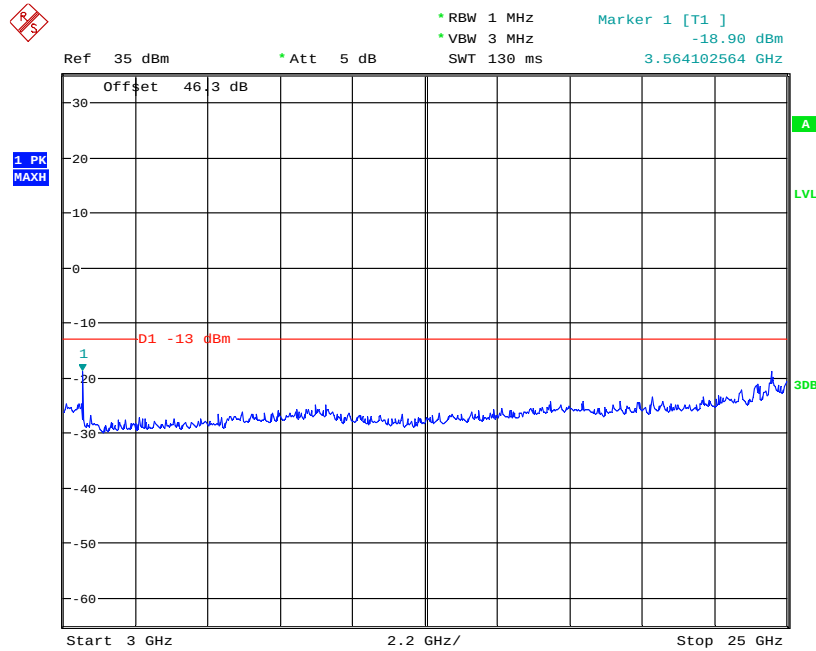
Date: 17.APR.2013 02:08:31

Note: The emissions beyond the limit are the operating frequencies.



Product Service

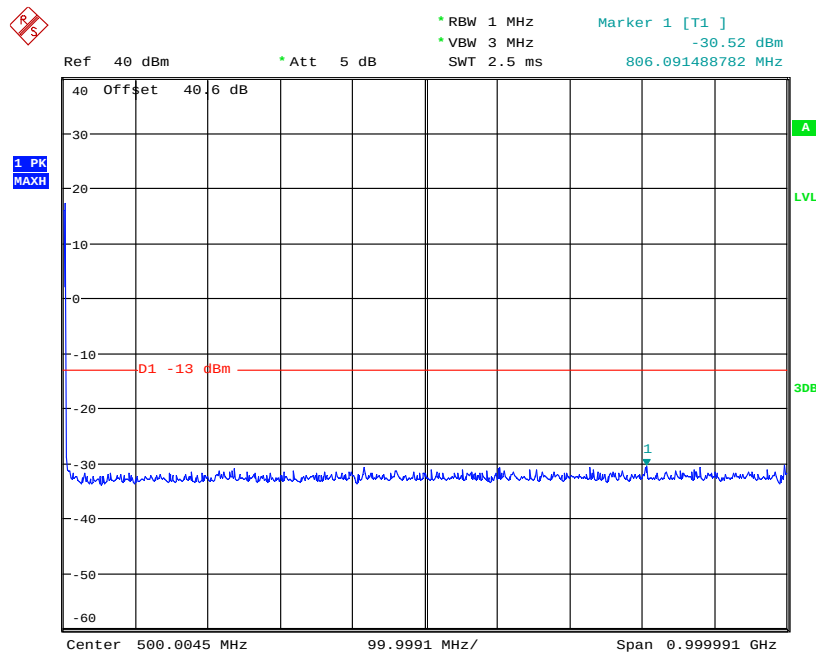
3GHz to 25GHz



Date: 17.APR.2013 02:14:26

Configuration 1 - Mode 3

9kHz to 1GHz

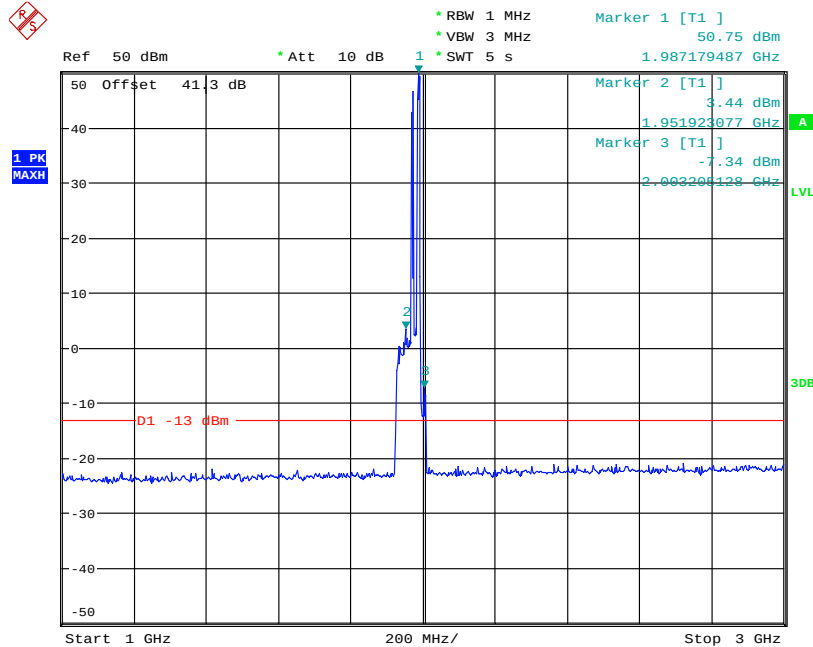


Date: 17.APR.2013 01:52:48



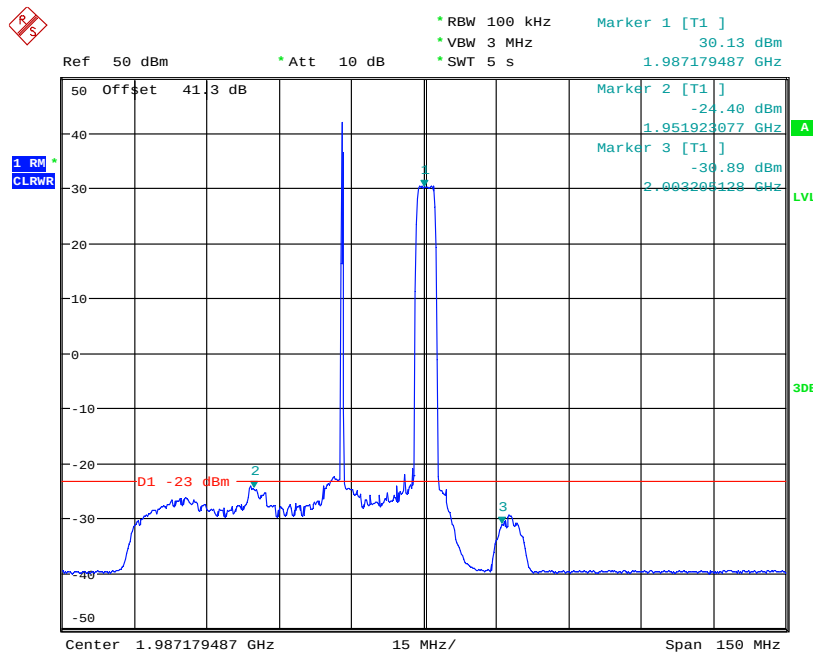
Product Service

1GHz to 3GHz



Date: 23.APR.2013 03:57:01

Note: The emissions beyond the limit are the operating frequencies.

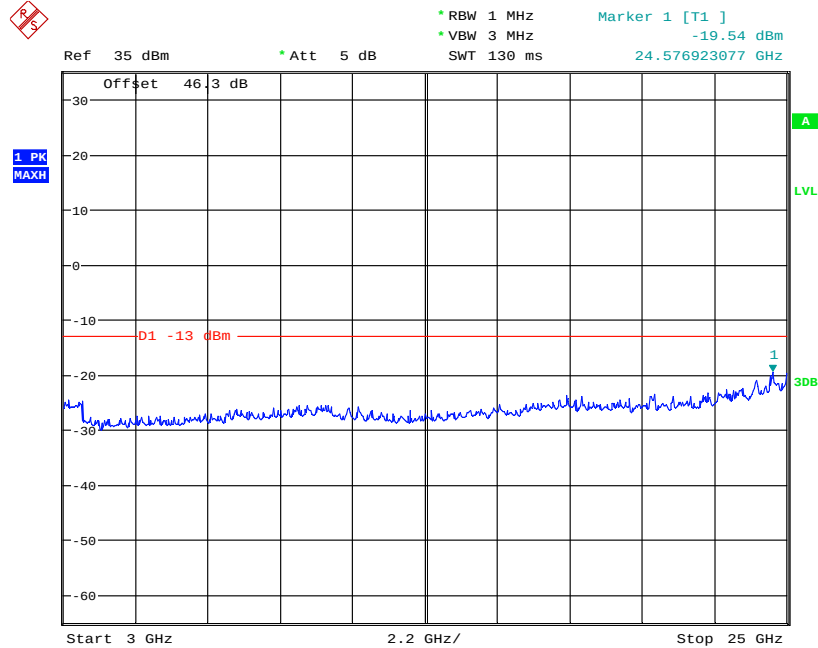


Date: 23.APR.2013 03:59:40

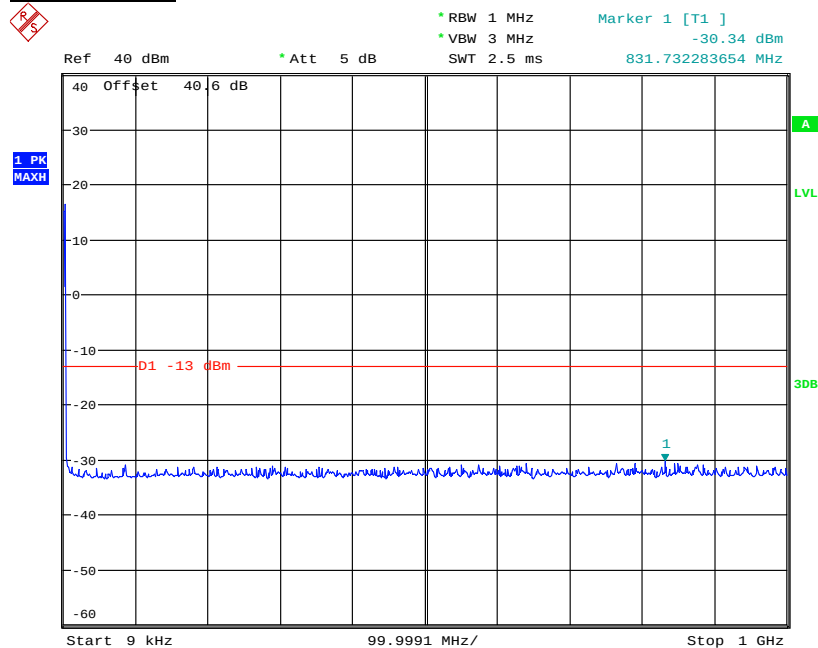
Note: The emissions beyond the limit are the operating frequencies.



Product Service

3GHz to 25GHz

Date: 17.APR.2013 01:06:12

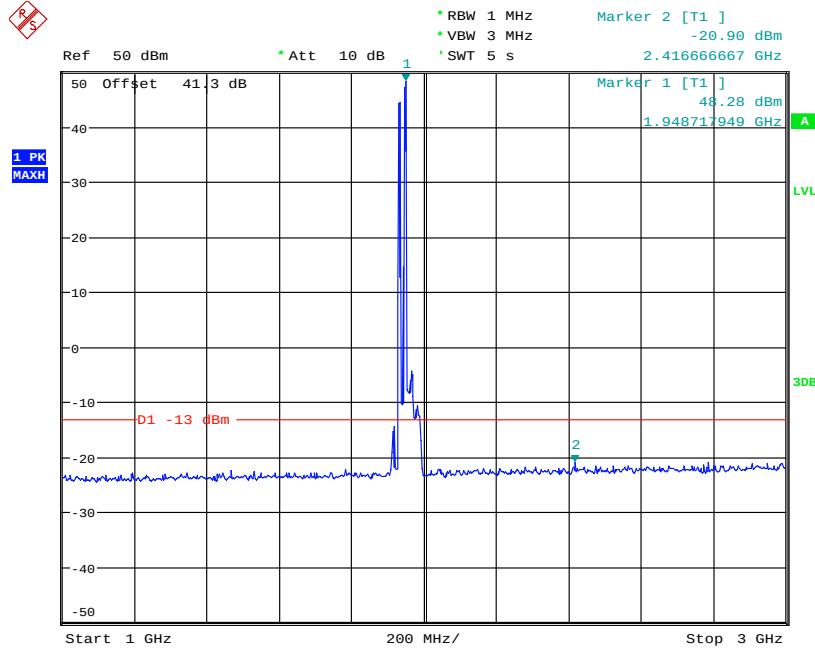
Mix Carrier: 2G (30W x 2) + 1W (20W)**Configuration 1 - Mode 4****9kHz to 1GHz**

Date: 17.APR.2013 05:35:49



Product Service

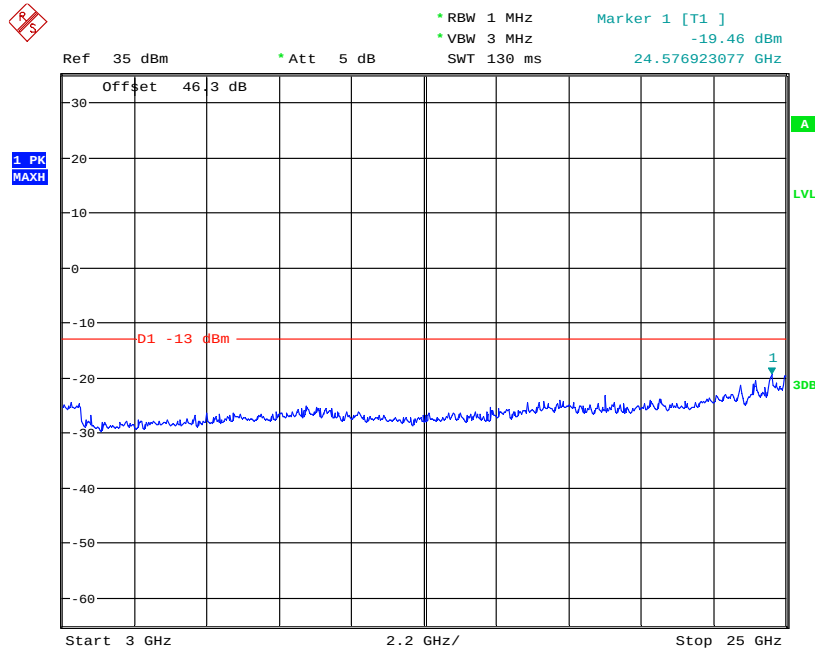
1GHz to 3GHz



Date: 17.APR.2013 05:13:38

Note: The emissions beyond the limit are the operating frequencies.

3GHz to 25GHz



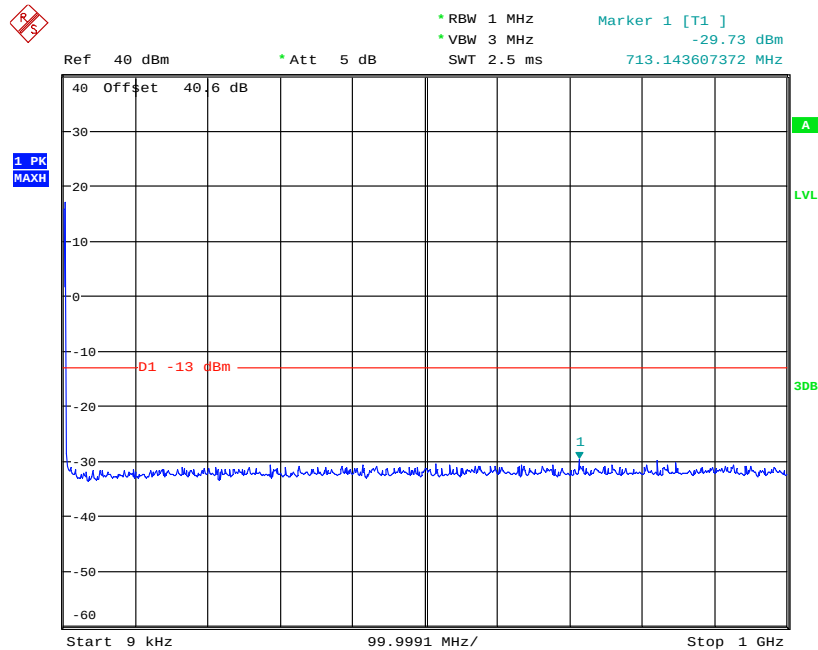
Date: 17.APR.2013 05:18:02



Product Service

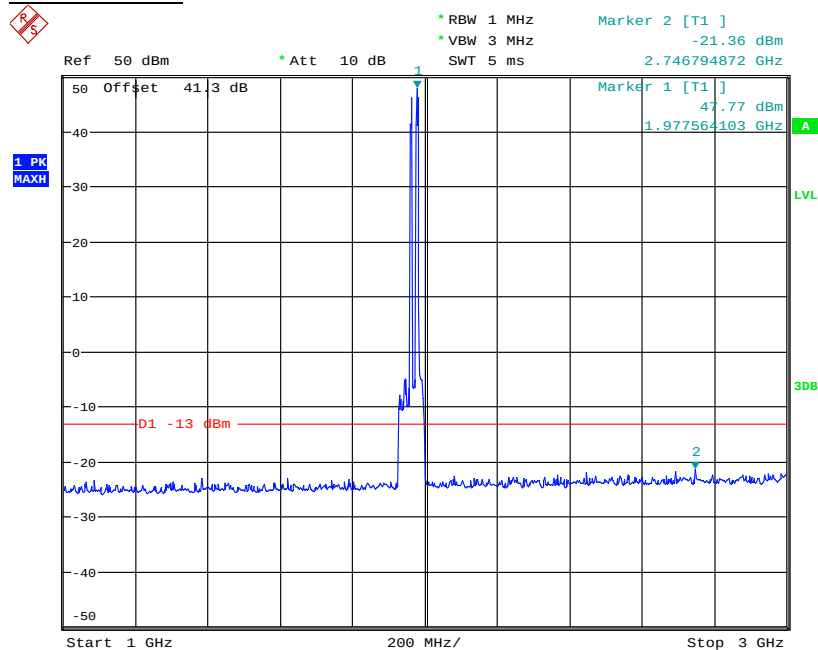
Configuration 1 - Mode 5

9kHz to 1GHz



Date: 17.APR.2013 07:50:17

1GHz to 3GHz



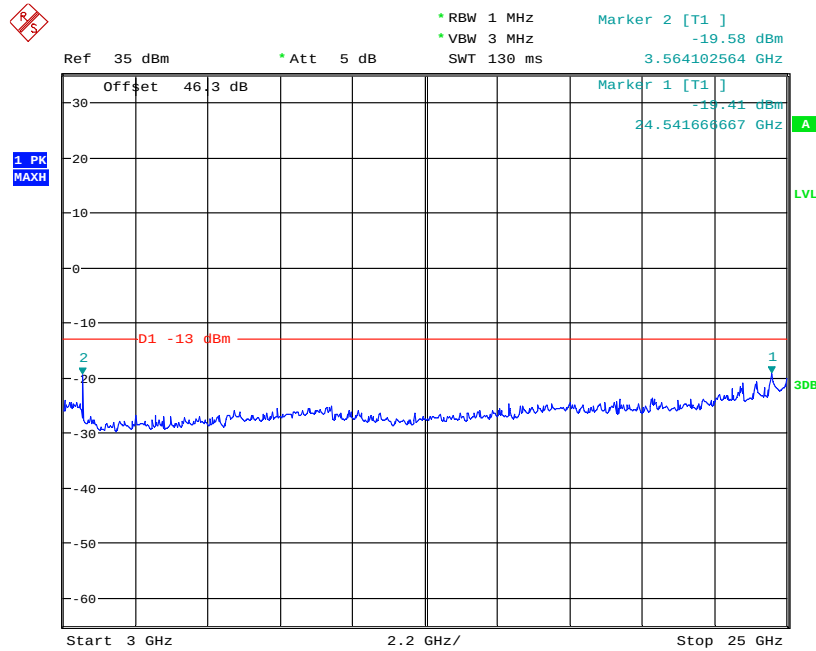
Date: 17.APR.2013 07:44:57

Note: The emissions beyond the limit are the operating frequencies.



Product Service

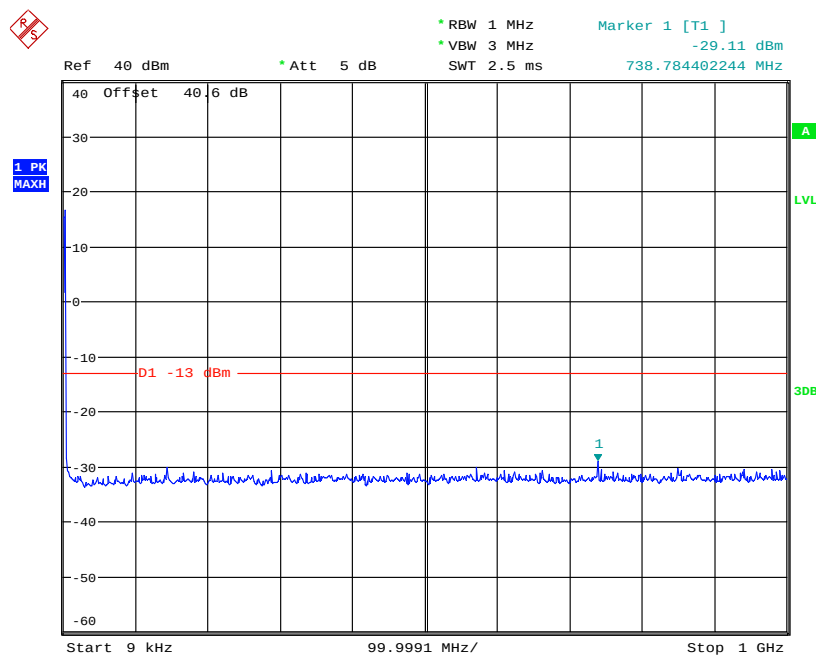
3GHz to 25GHz



Date: 17.APR.2013 07:46:47

Configuration 1 - Mode 6

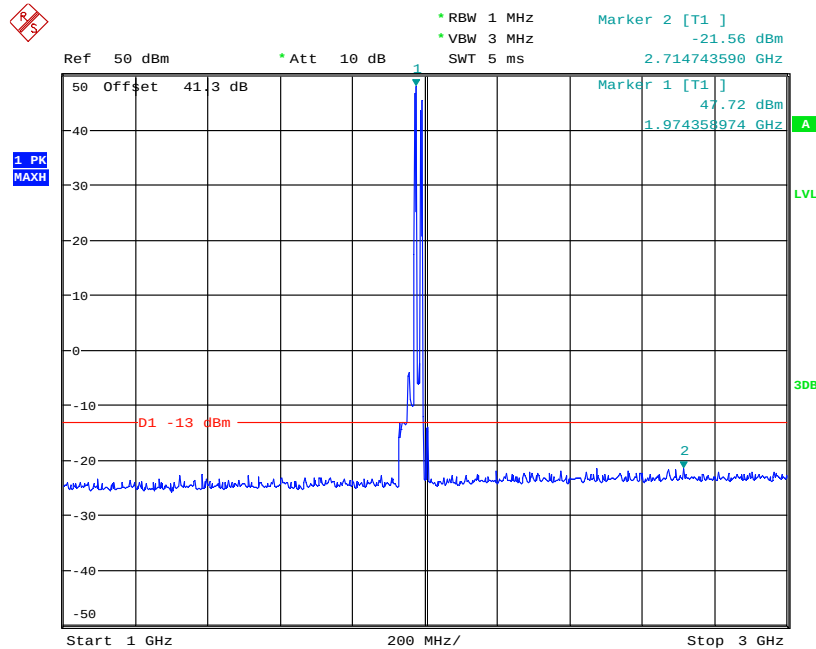
9kHz to 1GHz



Date: 17.APR.2013 05:49:54

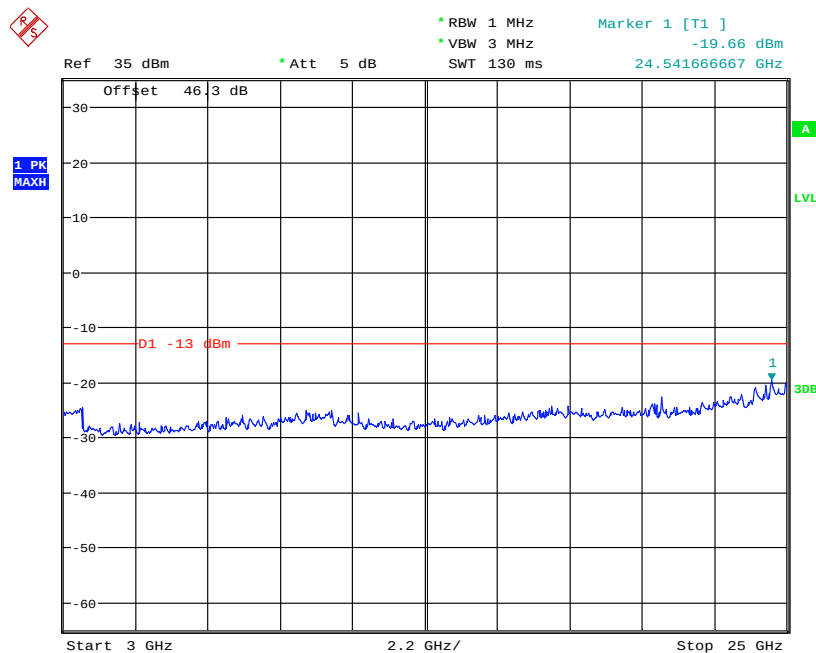


Product Service

1GHz to 3GHz

Date: 17.APR.2013 05:59:31

Note: The emissions beyond the limit are the operating frequencies.

3GHz to 25GHz

Date: 17.APR.2013 06:00:39

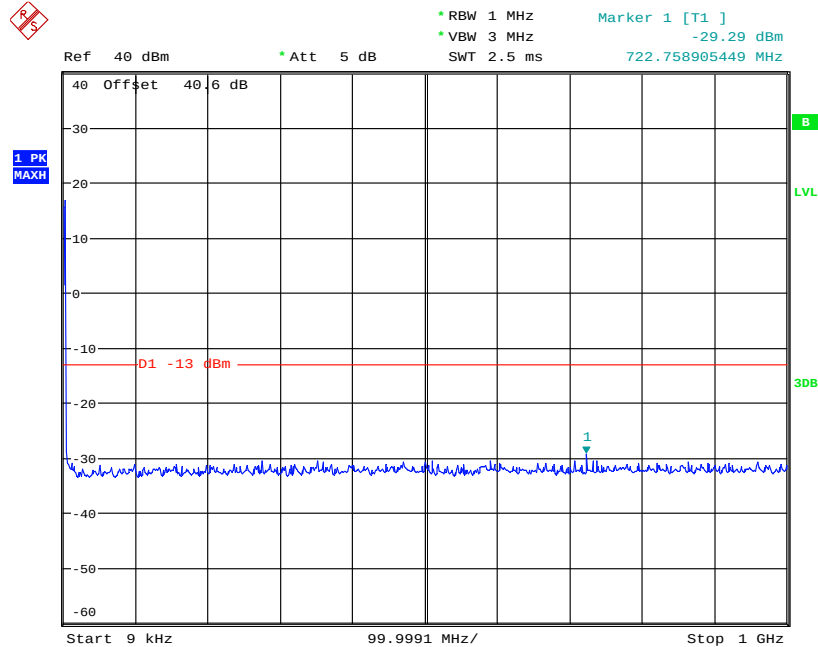


Product Service

Mix Carrier: 2G (20W x 2) + 2W (20W X 2)

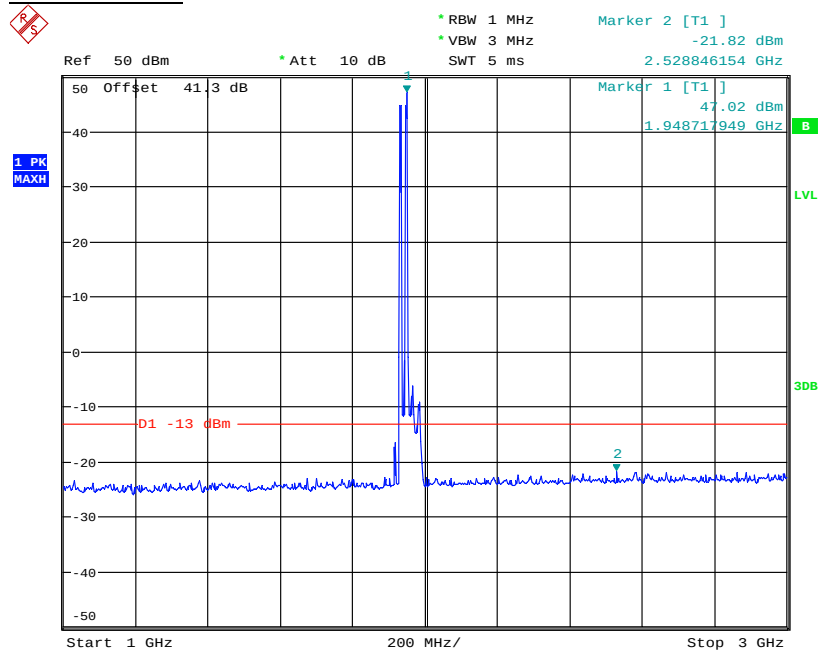
Configuration 1 - Mode 11

9kHz to 1GHz



Date: 17.APR.2013 08:59:37

1GHz to 3GHz

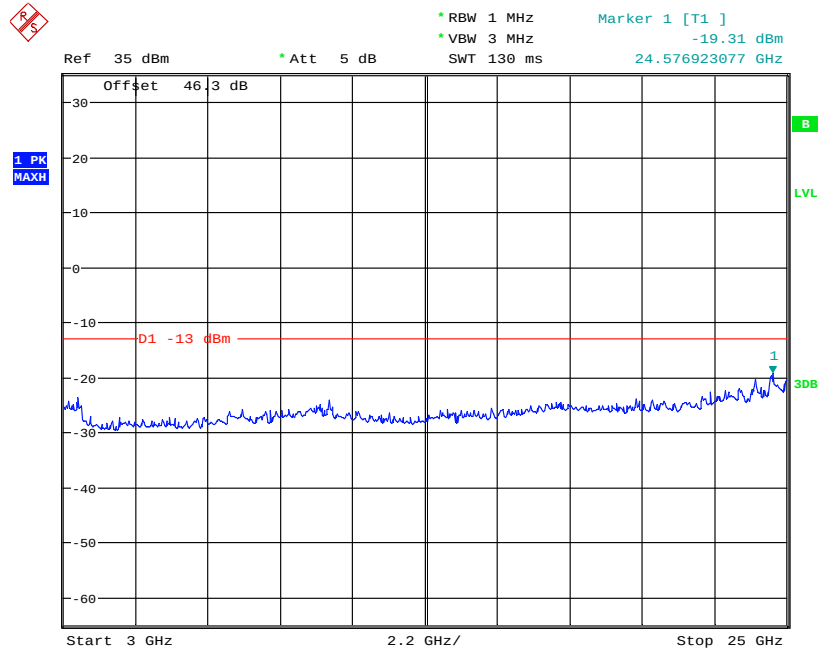


Date: 17.APR.2013 08:55:13

Note: The emissions beyond the limit are the operating frequencies.



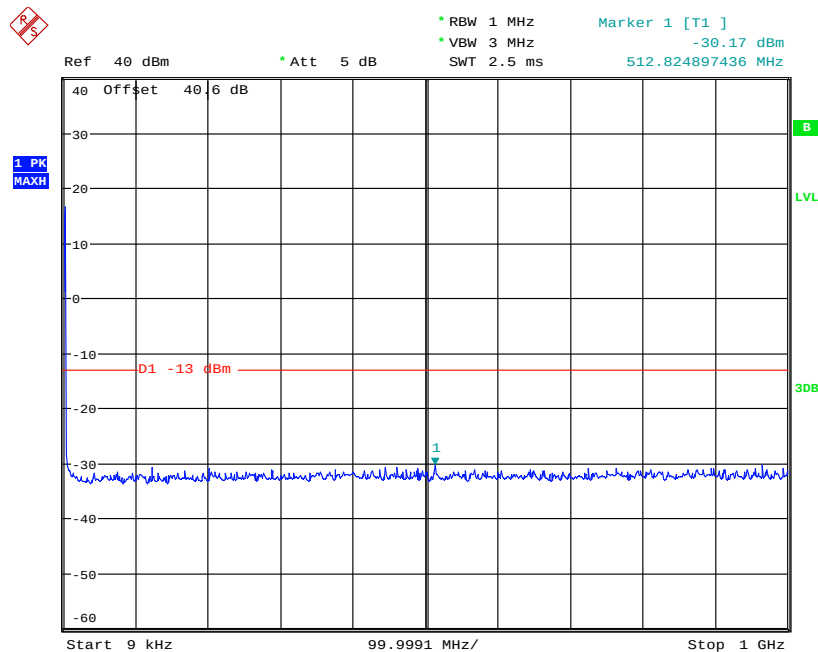
3GHz to 25GHz



Date: 17.APR.2013 08:56:26

Configuration 1 - Mode 12

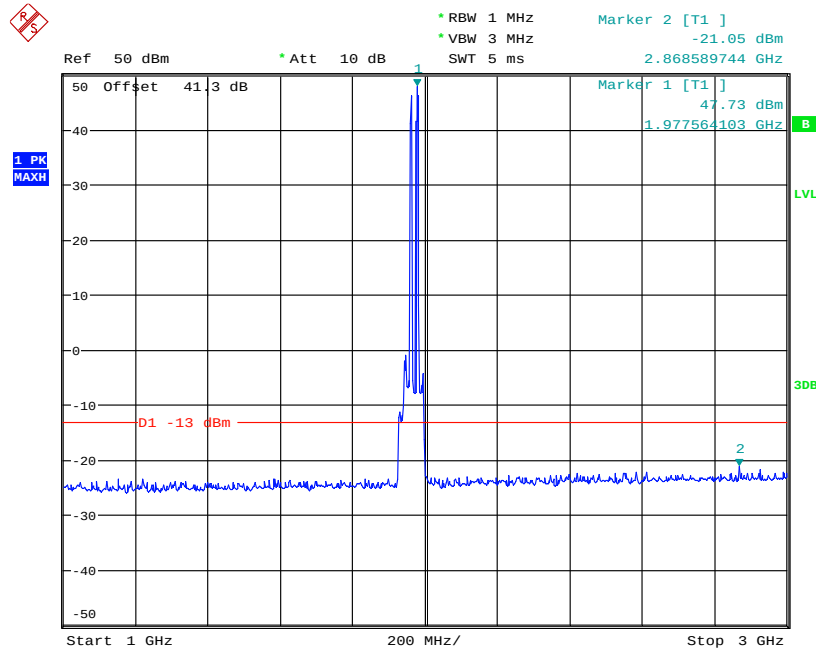
9kHz to 1GHz



Date: 17.APR.2013 09:09:08

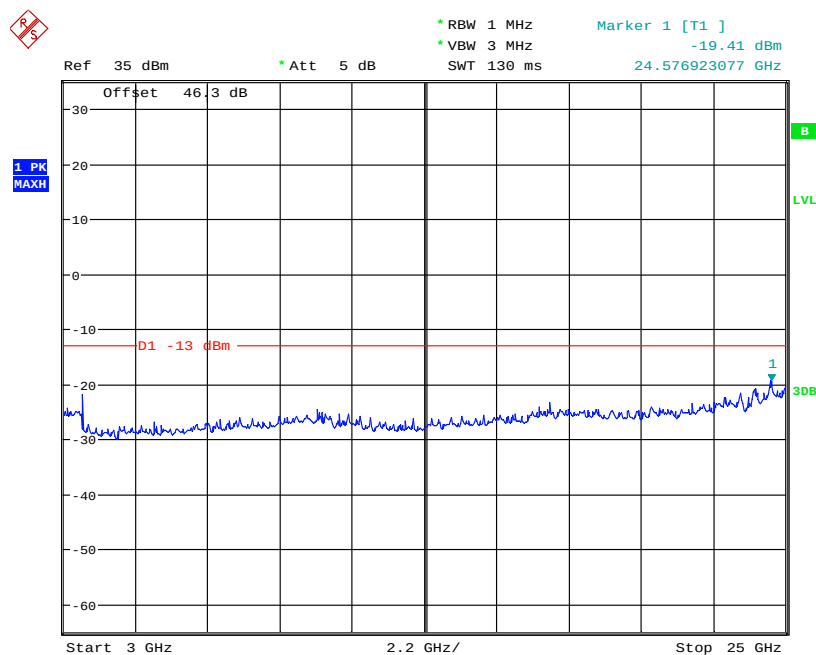


Product Service

1GHz to 3GHz

Date: 17.APR.2013 09:11:31

Note: The emissions beyond the limit are the operating frequencies.

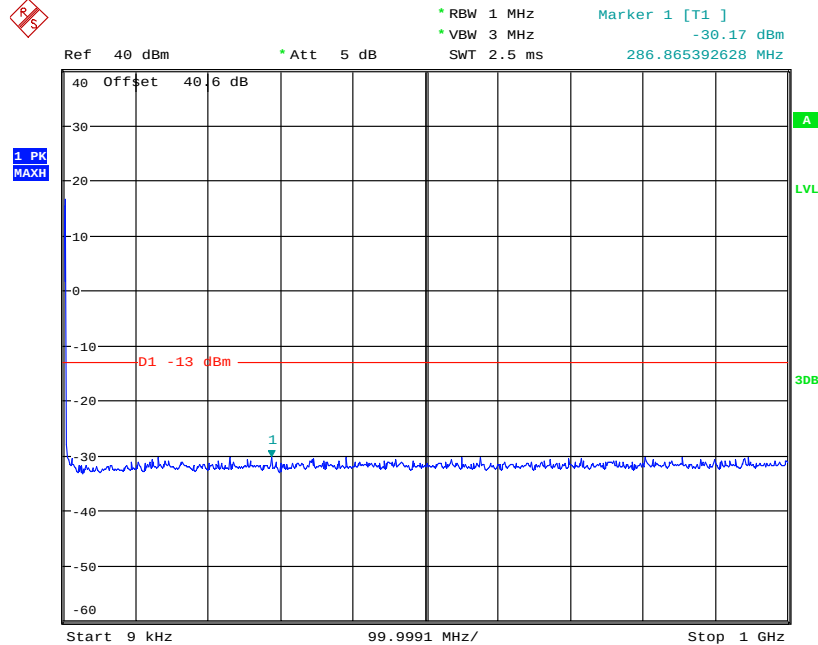
3GHz to 25GHz

Date: 17.APR.2013 09:12:46



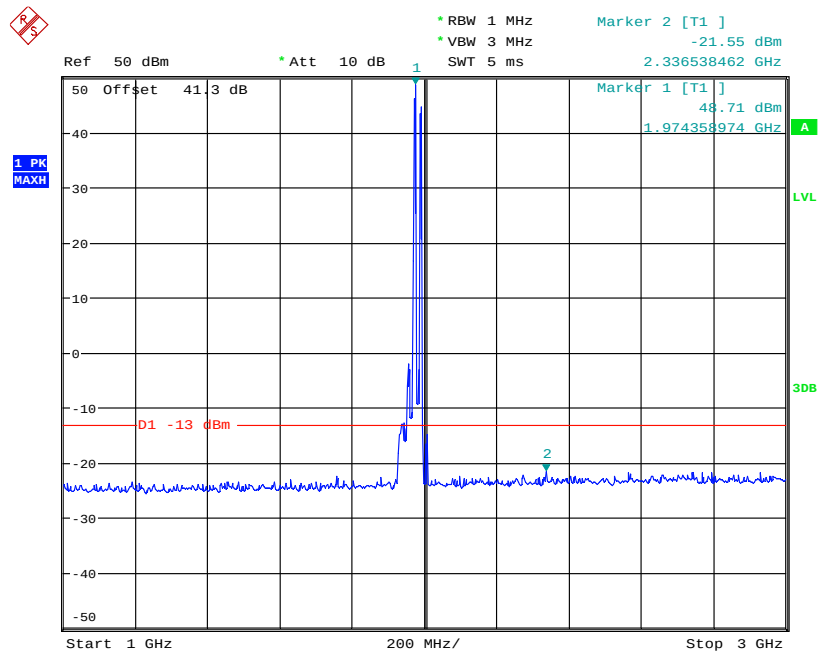
Configuration 1 - Mode 13

9kHz to 1GHz



Date: 17.APR.2013 09:28:59

1GHz to 3GHz



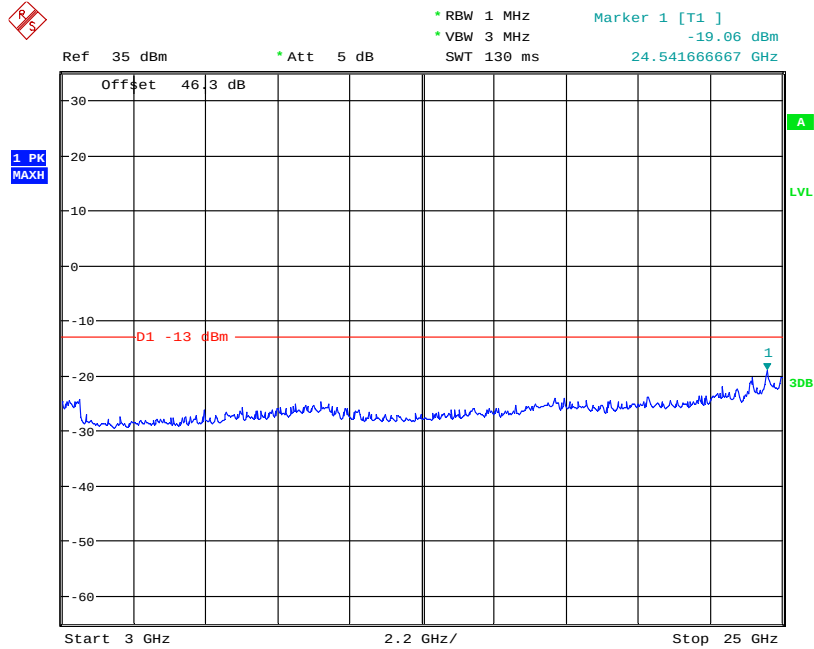
Date: 17.APR.2013 09:24:16

Note: The emissions beyond the limit are the operating frequencies.



Product Service

3GHz to 25GHz



Date: 17.APR.2013 09:25:40

Limit	-13dBm
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Remarks

The EUT does not exceed -13dBm at the frequency range of 9kHz to 25GHz.



Product Service

SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT USED

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

Instrument	Manufacturer	Type No.	Serial No.	Calibration Period (months)	Calibration Due
Section 2.1, 2.2, 2.3, 2.5 – Maximum Conducted Output Power, Peak – Average Ratio, Spurious Emissions at Antenna Terminals (± 1MHz) and Conducted Spurious Emissions.					
Spectrum Analyser	Rohde & Schwarz	FSQ26	200014	12	06-Sep-2013
Power Meter	Rohde & Schwarz	NRP	101283	12	12-Aug-2013
Power Sensor	Rohde & Schwarz	NRP-Z21	103607	12	06-Jan-2014
Network Analyzer	Agilent	8720D	US36140166	12	06-Sep-2013
40dB Attenuator	Aeroflex / Weinschel	48-40-43-LIM	BR5020	-	O/P MON
Load	Shanghai Huaxiang	TFE5	090715057	-	O/P MON
Power Supply	Dahua	DH1716-5D	2008040041	-	O/P MON
Power Supply	Dahua	DH1716-5D	2008040050	-	O/P MON
Digital Multi-meter	FLUKE	179	91820401	12	13-Dec-2013
Thermo-hygrometer	AZ Instruments	8705	9151655	12	16-Dec-2013
Section 2.4 – Radiated Spurious Emissions					
Load	Shanghai Huaxiang	TF100	09121648	-	O/P MON
Load	Shanghai Huaxiang	TF100	09121605	-	O/P MON
EMI Receiver	Rohde & Schwarz	ESI 40	100015	12	19-Aug-2013
Ultra log test antenna	Rohde & Schwarz	HL562	100167	12	19-Aug-2013
Double-Ridged Waveguide Horn Antenna	Rohde & Schwarz	HF 906	100029	12	19-Aug-2013
Pyramidal Horn Antenna	EMCO	3160-09	-	-	-
Antenna master	Frankonia	MA 260	-	12	19-Aug-2013
Relay Switch Unit	Rohde & Schwarz	331.1601.31	338965002	-	TU
Semi Anechoic Chamber	Frankonia	23.18m×16.88 m×9.60m	-	12	19-Aug-2013
Power Supply	Dahua	DH1716-5D	2008040041	-	O/P MON
Power Supply	Dahua	DH1716-5D	2008040050	-	O/P MON
Digital Multimeter	FLUKE	179	91820401	12	13-Dec-2013
Thermo-hygrometer	AZ Instruments	8705	9151655	12	16-Dec-2013

O/P MON Output monitored with calibration equipment
 TU Traceability Unscheduled



Product Service

3.2 MEASUREMENT UNCERTAINTY

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

Test Discipline	Frequency / Parameter	MU
Conducted Maximum Peak Output Power	30MHz to 10GHz Amplitude	0.5dB*
Conducted Emissions	30MHz to 40GHz Amplitude	3.0dB*
Radiated Emissions, Bilog Antenna, AOATS	30MHz to 1GHz Amplitude	5.1dB*
Radiated Emissions, Horn Antenna, AOATS	1GHz to 40GHz Amplitude	6.3dB*
Worst case error for both Time and Frequency measurement 12 parts in 10 ⁶		

* In accordance with CISPR 16-4



Product Service

SECTION 4

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



Product Service

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



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
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TÜV SÜD Product Service

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