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# Report On

FCC and Industry Canada Testing of the  
Ericsson AB RUS 01 B5 / KRC 118 64/2

COMMERCIAL-IN-CONFIDENCE

FCC ID: TA8AKRC11864-2

IC ID: 287AB-AS118642

Document 75923085 Report 03 Issue 1

July 2013



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COMMERCIAL-IN-CONFIDENCE

**REPORT ON** FCC and Industry Canada Testing of the  
Ericsson RUS 01 B5 / KRC 118 64/2  
  
Document 75923085 Report 03 Issue 1  
  
July 2013

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Test Engineer

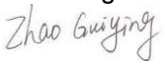
**APPROVED BY**   
**S Bennett**  
Authorised Signatory

**DATED** 03 July 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 22 and Industry Canada RSS-132. 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 B5 / KRC 118 64/2



## 1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Ericsson RUS 01 B5 / KRC 118 64/2 to the requirements of FCC CFR 47 Part 22 and Industry Canada RSS-132.

Testing was carried out in support of a C2PC application for Grant of RUS 01 B5 / KRC 118 64/2 to add the following new functionalities:

- 1) Support MSR (Multi Standard Radio) with combination of WCDMA and LTE;
- 2) Support MIMO (Multiple Input Multiple Output). Two Radio Units (RUS 01 B5) have the ability to transmit with Multiple Outputs in the same Band with 3GPP MIMO/Spatial multiplexing and beam-forming technologies.

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 B5
Product Number	KRC 118 64/2
IC Model Number	AS118642
Serial Number(s)	C824937848 C824937852
WCDMA Software	CXP9021719 Rev R1CB18
LTE Software	CXP102051/16 Rev R32BD
PIS Software	CXP9013268/6 Rev R49DT
Hardware Version	R2A
Number of Samples Tested	2
Test Specification/Issue/Date	FCC CFR 47 Part 22: 2012 Industry Canada RSS-132 Issue 3: 2013
Incoming Release Date	Declaration of Build Status 8 June 2013
Order Number Date	PTP 30 May 2013
Start of Test	8 June 2013
Finish of Test	25 June 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 22 and Industry Canada RSS-132, is shown below.

Configuration 1 – Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2, 15 and 22	RSS-132 and RSS-GEN					
	22.913 (a)	5.4	Effective Radiated Power	871.4MHz (W) + 888.3 MHz (L1.4) / 871.4 MHz (W) + 887.5 MHz (L3) 871.4 MHz (W) + 886.5 MHz (L5) / 871.4 MHz (W) + 884.0 MHz (L10)		N/A	No integral antenna.
				873.8 MHz (W) + 890.7 MHz (L1.4) / 873.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 888.9 MHz (L5) / 873.8 MHz (W) + 886.4 MHz (L10)		N/A	
				874.7 MHz (L1.4) + 891.6 MHz (W) / 875.5 MHz (L3) + 891.6 MHz (W) 876.5 MHz (L5) + 891.6 MHz (W) / 879.0 MHz (L10) + 891.6 MHz (W)		N/A	
				873.8 MHz (W) + 878.8 MHz (W) + 890.7 MHz (L1.4) 873.8 MHz (W) + 878.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 878.8 MHz (W) + 888.9 MHz (L5) 873.8 MHz (W) + 878.8 MHz (W) + 886.4 MHz (L10)		N/A	
				873.8 MHz (W) + 878.8 MHz (W) + 889.3 MHz (L1.4) + 890.7 MHz(L1.4) 873.8 MHz (W) + 878.8 MHz (W) + 886.9 MHz (L3) + 889.9 MHz (L3) 873.8 MHz (W) + 878.8 MHz (W) + 883.9 MHz (L5) + 888.9 MHz (L5)		N/A	
				871.4MHz (W) + 888.3 MHz (L1.4) / 871.4 MHz (W) + 887.5 MHz (L3) 871.4 MHz (W) + 886.5 MHz (L5) / 871.4 MHz (W) + 884.0 MHz (L10)		N/A	
				873.8 MHz (W) + 890.7 MHz (L1.4) / 873.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 888.9 MHz (L5) / 873.8 MHz (W) + 886.4 MHz (L10)		N/A	
				874.7 MHz (L1.4) + 891.6 MHz (W) / 875.5 MHz (L3) + 891.6 MHz (W) 876.5 MHz (L5) + 891.6 MHz (W) / 879.0 MHz (L10) + 891.6 MHz (W)		N/A	
2.1	2.1046, 22.913 (a)	5.4	Maximum Peak Output Power - Conducted	871.4MHz (W) + 888.3 MHz (L1.4) / 871.4 MHz (W) + 887.5 MHz (L3) 871.4 MHz (W) + 886.5 MHz (L5) / 871.4 MHz (W) + 884.0 MHz (L10)	0	Pass	-
				873.8 MHz (W) + 890.7 MHz (L1.4) / 873.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 888.9 MHz (L5) / 873.8 MHz (W) + 886.4 MHz (L10)	0	Pass	
				874.7 MHz (L1.4) + 891.6 MHz (W) / 875.5 MHz (L3) + 891.6 MHz (W) 876.5 MHz (L5) + 891.6 MHz (W) / 879.0 MHz (L10) + 891.6 MHz (W)	0	Pass	
				873.8 MHz (W) + 878.8 MHz (W) + 890.7 MHz (L1.4) 873.8 MHz (W) + 878.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 878.8 MHz (W) + 888.9 MHz (L5) 873.8 MHz (W) + 878.8 MHz (W) + 886.4 MHz (L10)	0	Pass	
				873.8 MHz (W) + 878.8 MHz (W) + 889.3 MHz (L1.4) + 890.7 MHz(L1.4) 873.8 MHz (W) + 878.8 MHz (W) + 886.9 MHz (L3) + 889.9 MHz (L3) 873.8 MHz (W) + 878.8 MHz (W) + 883.9 MHz (L5) + 888.9 MHz (L5)	0	Pass	
				871.4MHz (W) + 888.3 MHz (L1.4) / 871.4 MHz (W) + 887.5 MHz (L3) 871.4 MHz (W) + 886.5 MHz (L5) / 871.4 MHz (W) + 884.0 MHz (L10)		Pass	
				873.8 MHz (W) + 890.7 MHz (L1.4) / 873.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 888.9 MHz (L5) / 873.8 MHz (W) + 886.4 MHz (L10)		Pass	
				874.7 MHz (L1.4) + 891.6 MHz (W) / 875.5 MHz (L3) + 891.6 MHz (W) 876.5 MHz (L5) + 891.6 MHz (W) / 879.0 MHz (L10) + 891.6 MHz (W)		Pass	



Configuration 1 – Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2, 15 and 22	RSS-132 and RSS-GEN					
2.2	22.913 (a)	5.4	Peak – Average Ratio	871.4MHz (W) + 888.3 MHz (L1.4) / 871.4 MHz (W) + 887.5 MHz (L3) 871.4 MHz (W) + 886.5 MHz (L5) / 871.4 MHz (W) + 884.0 MHz (L10)	0	Pass	-
				873.8 MHz (W) + 890.7 MHz (L1.4) / 873.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 888.9 MHz (L5) / 873.8 MHz (W) + 886.4 MHz (L10)	0	Pass	
				874.7 MHz (L1.4) + 891.6 MHz (W) / 875.5 MHz (L3) + 891.6 MHz (W) 876.5 MHz (L5) + 891.6 MHz (W) / 879.0 MHz (L10) + 891.6 MHz (W)	0	Pass	
				873.8 MHz (W) + 878.8 MHz (W) + 890.7 MHz (L1.4) 873.8 MHz (W) + 878.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 878.8 MHz (W) + 888.9 MHz (L5) 873.8 MHz (W) + 878.8 MHz (W) + 886.4 MHz (L10)	0	Pass	
				873.8 MHz (W) + 878.8 MHz (W) + 889.3 MHz (L1.4) + 890.7 MHz(L1.4) 873.8 MHz (W) + 878.8 MHz (W) + 886.9 MHz (L3) + 889.9 MHz (L3) 873.8 MHz (W) + 878.8 MHz (W) + 883.9 MHz (L5) + 888.9 MHz (L5)	0	Pass	
	2.1047 (d)	5.2	Modulation Characteristics	871.4MHz (W) + 888.3 MHz (L1.4) / 871.4 MHz (W) + 887.5 MHz (L3) 871.4 MHz (W) + 886.5 MHz (L5) / 871.4 MHz (W) + 884.0 MHz (L10)		N/A	-
				873.8 MHz (W) + 890.7 MHz (L1.4) / 873.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 888.9 MHz (L5) / 873.8 MHz (W) + 886.4 MHz (L10)		N/A	
				874.7 MHz (L1.4) + 891.6 MHz (W) / 875.5 MHz (L3) + 891.6 MHz (W) 876.5 MHz (L5) + 891.6 MHz (W) / 879.0 MHz (L10) + 891.6 MHz (W)		N/A	
				873.8 MHz (W) + 878.8 MHz (W) + 890.7 MHz (L1.4) 873.8 MHz (W) + 878.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 878.8 MHz (W) + 888.9 MHz (L5) 873.8 MHz (W) + 878.8 MHz (W) + 886.4 MHz (L10)		N/A	
				873.8 MHz (W) + 878.8 MHz (W) + 889.3 MHz (L1.4) + 890.7 MHz(L1.4) 873.8 MHz (W) + 878.8 MHz (W) + 886.9 MHz (L3) + 889.9 MHz (L3) 873.8 MHz (W) + 878.8 MHz (W) + 883.9 MHz (L5) + 888.9 MHz (L5)		N/A	



Configuration 1 – Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2, 15 and 22	RSS-132 and RSS-GEN					
	2.1049, 22.917 (b)	RSS-Gen 4.6.1	Occupied Bandwidth	871.4MHz (W) + 888.3 MHz (L1.4) / 871.4 MHz (W) + 887.5 MHz (L3)		N/A	-
				871.4 MHz (W) + 886.5 MHz (L5) / 871.4 MHz (W) + 884.0 MHz (L10)		N/A	
				873.8 MHz (W) + 890.7 MHz (L1.4) / 873.8 MHz (W) + 889.9 MHz (L3)		N/A	
				873.8 MHz (W) + 888.9 MHz (L5) / 873.8 MHz (W) + 886.4 MHz (L10)		N/A	
				874.7 MHz (L1.4) + 891.6 MHz (W) / 875.5 MHz (L3) + 891.6 MHz (W)		N/A	
				876.5 MHz (L5) + 891.6 MHz (W) / 879.0 MHz (L10) + 891.6 MHz (W)		N/A	
2.3	2.1051, 22.917 (b)	5.5	Spurious Emissions at Antenna Terminals (±1MHz)	871.4MHz (W) + 874.7MHz (L1.4)	0	Pass	
				888.3MHz (L1.4) + 891.6MHz(W)	0	Pass	
2.4	2.1053, 22.917 (a)	5.5	Radiated Spurious Emissions	871.4MHz (W) + 888.3 MHz (L1.4)	0	Pass	-
				873.8 MHz (W) + 890.7 MHz (L1.4) / 873.8 MHz (W) + 889.9 MHz (L3)	0	Pass	
				873.8 MHz (W) + 888.9 MHz (L5) / 873.8 MHz (W) + 886.4 MHz (L10)	0	Pass	
				874.7 MHz (L1.4) + 891.6 MHz (W)	0	Pass	
				873.8 MHz (W) + 878.8 MHz (W) + 890.7 MHz (L1.4)	0	Pass	
2.5	2.1051, 22.917 (a)	5.5	Conducted Spurious Emissions	873.8 MHz (W) + 878.8 MHz (W) + 889.3 MHz (L1.4) + 890.7 MHz(L1.4)	0	Pass	-
				873.8 MHz (W) + 878.8 MHz (W) + 886.9 MHz (L3) + 889.9 MHz (L3)	0	Pass	
				873.8 MHz (W) + 878.8 MHz (W) + 883.9 MHz (L5) + 888.9 MHz (L5)	0	Pass	
				871.4MHz (W) + 888.3 MHz (L1.4) / 871.4 MHz (W) + 884.0 MHz (L10)	0	Pass	
				873.8 MHz (W) + 890.7 MHz (L1.4) / 873.8 MHz (W) + 889.9 MHz (L3)	0	Pass	
				873.8 MHz (W) + 888.9 MHz (L5) / 873.8 MHz (W) + 886.4 MHz (L10)	0	Pass	
				874.7 MHz (L1.4) + 891.6 MHz (W) / 879.0 MHz (L10) + 891.6 MHz (W)	0	Pass	
				873.8 MHz (W) + 878.8 MHz (W) + 890.7 MHz (L1.4)	0	Pass	
				873.8 MHz (W) + 878.8 MHz (W) + 889.3 MHz (L1.4) + 890.7 MHz(L1.4)	0	Pass	
				871.4MHz (W) + 888.3 MHz (L1.4) / 871.4 MHz (W) + 884.0 MHz (L10)	0	Pass	
				873.8 MHz (W) + 890.7 MHz (L1.4) / 873.8 MHz (W) + 889.9 MHz (L3)	0	Pass	





Configuration 1 – Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2, 15 and 22	RSS-132 and RSS-GEN					
	2.1055, 22.355	5.3	Frequency Stability Under Temperature Variations	871.4MHz (W) + 888.3 MHz (L1.4) / 871.4 MHz (W) + 887.5 MHz (L3) 871.4 MHz (W) + 886.5 MHz (L5) / 871.4 MHz (W) + 884.0 MHz (L10)		N/A	-
				873.8 MHz (W) + 890.7 MHz (L1.4) / 873.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 888.9 MHz (L5) / 873.8 MHz (W) + 886.4 MHz (L10)		N/A	
				874.7 MHz (L1.4) + 891.6 MHz (W) / 875.5 MHz (L3) + 891.6 MHz (W) 876.5 MHz (L5) + 891.6 MHz (W) / 879.0 MHz (L10) + 891.6 MHz (W)		N/A	
				873.8 MHz (W) + 878.8 MHz (W) + 890.7 MHz (L1.4) 873.8 MHz (W) + 878.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 878.8 MHz (W) + 888.9 MHz (L5) 873.8 MHz (W) + 878.8 MHz (W) + 886.4 MHz (L10)		N/A	
				873.8 MHz (W) + 878.8 MHz (W) + 889.3 MHz (L1.4) + 890.7 MHz(L1.4) 873.8 MHz (W) + 878.8 MHz (W) + 886.9 MHz (L3) + 889.9 MHz (L3) 873.8 MHz (W) + 878.8 MHz (W) + 883.9 MHz (L5) + 888.9 MHz (L5)		N/A	
				871.4MHz (W) + 888.3 MHz (L1.4) / 871.4 MHz (W) + 887.5 MHz (L3) 871.4 MHz (W) + 886.5 MHz (L5) / 871.4 MHz (W) + 884.0 MHz (L10)		N/A	
				873.8 MHz (W) + 890.7 MHz (L1.4) / 873.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 888.9 MHz (L5) / 873.8 MHz (W) + 886.4 MHz (L10)		N/A	
				874.7 MHz (L1.4) + 891.6 MHz (W) / 875.5 MHz (L3) + 891.6 MHz (W) 876.5 MHz (L5) + 891.6 MHz (W) / 879.0 MHz (L10) + 891.6 MHz (W)		N/A	
	2.1055, 22.355	5.3	Frequency Stability Under Voltage Variations	873.8 MHz (W) + 878.8 MHz (W) + 890.7 MHz (L1.4) 873.8 MHz (W) + 878.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 878.8 MHz (W) + 888.9 MHz (L5) 873.8 MHz (W) + 878.8 MHz (W) + 886.4 MHz (L10)		N/A	-
				873.8 MHz (W) + 878.8 MHz (W) + 889.3 MHz (L1.4) + 890.7 MHz(L1.4) 873.8 MHz (W) + 878.8 MHz (W) + 886.9 MHz (L3) + 889.9 MHz (L3) 873.8 MHz (W) + 878.8 MHz (W) + 883.9 MHz (L5) + 888.9 MHz (L5)		N/A	
				871.4MHz (W) + 888.3 MHz (L1.4) / 871.4 MHz (W) + 887.5 MHz (L3) 871.4 MHz (W) + 886.5 MHz (L5) / 871.4 MHz (W) + 884.0 MHz (L10)		N/A	
				873.8 MHz (W) + 890.7 MHz (L1.4) / 873.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 888.9 MHz (L5) / 873.8 MHz (W) + 886.4 MHz (L10)		N/A	
				874.7 MHz (L1.4) + 891.6 MHz (W) / 875.5 MHz (L3) + 891.6 MHz (W) 876.5 MHz (L5) + 891.6 MHz (W) / 879.0 MHz (L10) + 891.6 MHz (W)		N/A	
				873.8 MHz (W) + 878.8 MHz (W) + 890.7 MHz (L1.4) 873.8 MHz (W) + 878.8 MHz (W) + 889.9 MHz (L3) 873.8 MHz (W) + 878.8 MHz (W) + 888.9 MHz (L5) 873.8 MHz (W) + 878.8 MHz (W) + 886.4 MHz (L10)		N/A	
				873.8 MHz (W) + 878.8 MHz (W) + 889.3 MHz (L1.4) + 890.7 MHz(L1.4) 873.8 MHz (W) + 878.8 MHz (W) + 886.9 MHz (L3) + 889.9 MHz (L3) 873.8 MHz (W) + 878.8 MHz (W) + 883.9 MHz (L5) + 888.9 MHz (L5)		N/A	
				871.4MHz (W) + 888.3 MHz (L1.4) / 871.4 MHz (W) + 887.5 MHz (L3) 871.4 MHz (W) + 886.5 MHz (L5) / 871.4 MHz (W) + 884.0 MHz (L10)		N/A	
2.6	15.111	-	Receiver Spurious Emissions	871.4MHz (W) + 888.3 MHz (L1.4)	0	Pass	-
				873.8 MHz (W) + 890.7 MHz (L1.4)	0	Pass	
				874.7 MHz (L1.4) + 891.6 MHz (W)	0	Pass	

L1.4 denotes LTE network with 1.4MHz channel bandwidth.  
 L3 denotes LTE network with 3MHz channel bandwidth.  
 L5 denotes LTE network with 5MHz channel bandwidth.  
 L10 denotes LTE network with 10MHz channel bandwidth.  
 W denotes WCDMA network  
 N/A – Not Applicable



## 1.3 DECLARATION OF BUILD STATUS

<b>MAIN EUT</b>	
<b>MANUFACTURING DESCRIPTION</b>	Radio Equipment
<b>MANUFACTURER</b>	Ericsson AB
<b>PRODUCT NUMBER</b>	RUS 01 B5
<b>PART NUMBER</b>	KRC 118 64/2
<b>IC Model NUMBER</b>	AS118642
<b>SERIAL NUMBER</b>	C824937848 C824937852
<b>HARDWARE VERSION</b>	R2A
<b>WCDMA Software</b>	CXP9021719 Rev R1CB18
<b>LTE Software</b>	CXP102051/16 Rev R32BD
<b>PIS Software</b>	CXP9013268/6 Rev R49DT
<b>TRANSMITTER OPERATING RANGE</b>	TX: 869MHz - 894MHz RX: 824MHz - 849MHz
<b>MODULATIONS</b>	WCDMA: QPSK, 16QAM, 64QAM LTE: QPSK, 16QAM, 64QAM
<b>NUMBER OF CARRIERS</b>	Maximum 4 carriers (2 WCDMA carriers and 2 LTE carriers)
<b>ITU DESIGNATION OF EMISSION</b>	WCDMA: 5M00F9W LTE: 1M40F9W, 3M00F9W, 5M00F9W, 10M0F9W
<b>OUTPUT POWER (RMS) (W or dBm)</b>	2 x 47.8dBm (2 x 60W)
<b>OUTPUT POWER TOLERANCE</b>	± 2.0dB
<b>INSTANTANEOUS BANDWIDTH</b>	20MHz
<b>CHANNEL BANDWIDTH</b>	WCDMA: 4.2 MHz to 5MHz (configurable in steps of 100/200kHz) LTE: 1.4MHz, 3MHz, 5MHz and 10MHz according to 3GPP TS 36.141
<b>NUMBER OF ANTENNA PORTS</b>	Non-MIMO: 1 TX/RX port and 1 RX port MIMO 2x 2: 2 TX/RX ports and 2 RX ports are supported by combining two Radio Units.
<b>FCC ID</b>	TA8AKRC11864-2
<b>IC ID</b>	287AB-AS118642
<b>TECHNICAL DESCRIPTION (a brief description of the intended use and operation)</b>	The equipment is the Radio Part of WCDMA, LTE Base Station.

Signature

Date

27 June 2013

D of B S Serial No

75923085/03

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 B5 / KRC 118 64/2 is an Ericsson Radio Equipment working in the public mobile service 850MHz band which provides communication connections to WCDMA and LTE network. The RUS 01 B5 / KRC 118 64/2 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 22 and Industry Canada RSS-132.

The RUS 01 B5 / KRC 118 64/2 supports MSR LTE/WCDMA access technology. WCDMA supports TM1 (QPSK), TM5 (16QAM) and TM6 (64QAM) defined in 3GPP TS 25.141, and LTE supports Test Models E-TM1.1 (QPSK), E-TM3.2 (16QAM) and E-TM3.1 (64QAM) defined in 3GPP TS 36.141 at 869-894MHz.

By combining two EUTs together, the EUTs were configured to transmit in 850MHz MIMO mode with two TX/RX ports (RF A1, RF A2) and two RX ports (RF B1, RF B2). MIMO mode was used for measurements as the worst configuration.

The Maximum Output Power was tested on both TX/RX output connector RF A1 and RF A2, all other measurements were performed on the combined TX/RX output connector RF A1 of the EUTs. RX testing was performed on the RX connector RF B1 of the EUT when the EUT was set as single transmitter. The complete testing was performed with the EUT transmitting at maximum RF power unless otherwise stated.

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/LTE Mix Carrier:

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

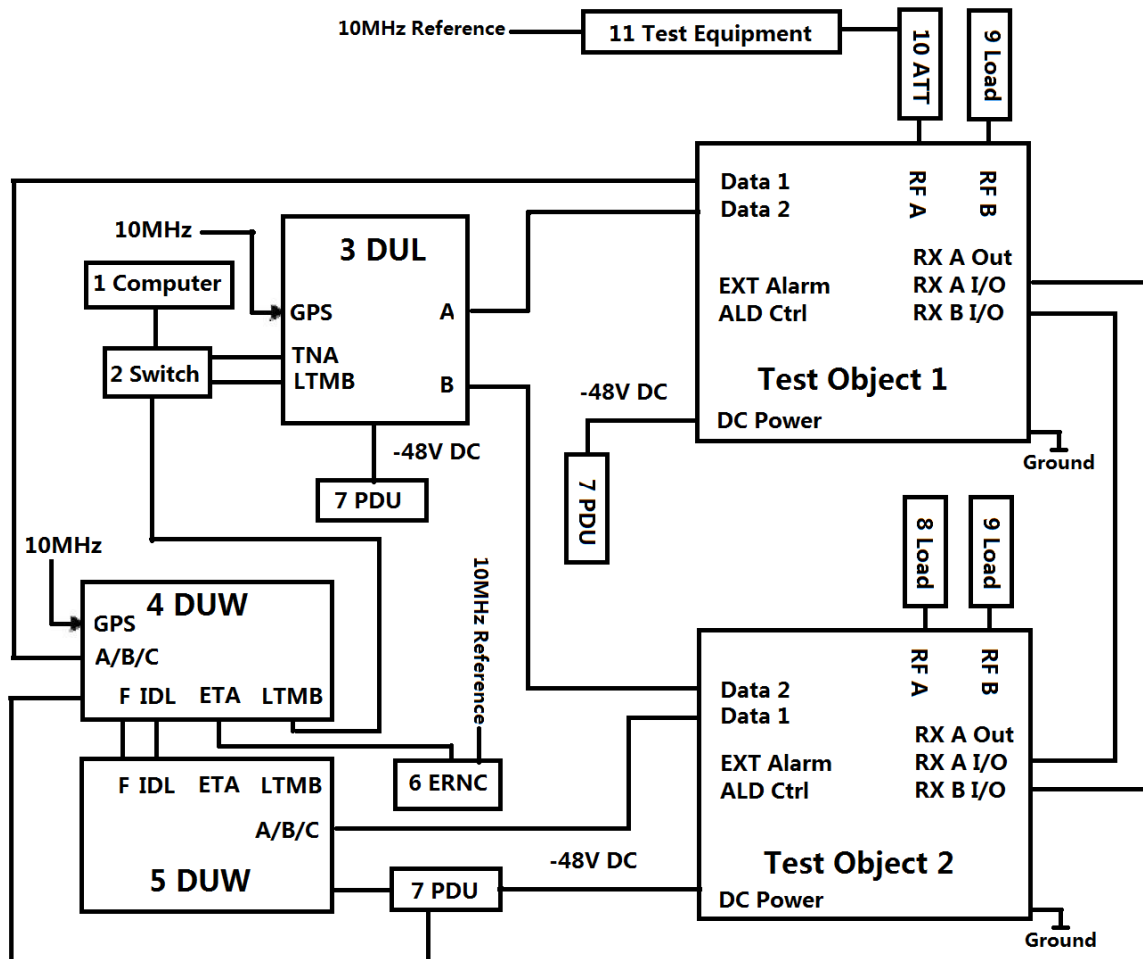
LTE:

Test Model E-TM1.1 (QPSK) in channel bandwidth 1.4MHz and 10MHz

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



Test Setup, Conducted Measurement:



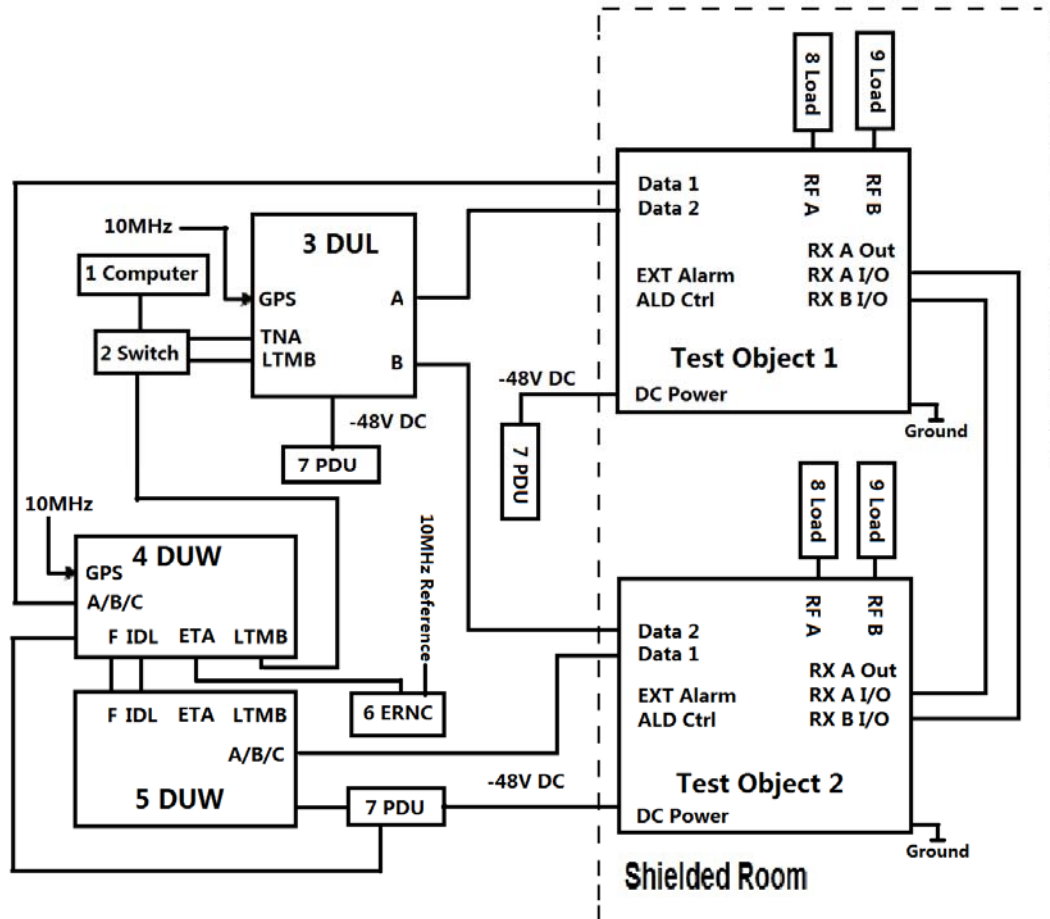


Product Name	Product Number	Version	Serial Number
RUS 01 B5	KRC 118 64/2	R2A	C824937848
RUS 01 B5	KRC 118 64/2	R2A	C824937852

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	Switch	TL-HP8MU	--	05300902892
	Switch	TL-SF1008+	--	11936826484
3	RBS 6601	BFL 901 009/1	--	--
	DUL 20 01	KDU 137 533/4	R1F	D161977582
	SUP 6601	1/BFL 901 009/1	R3B	BR81262578
4	RBS 6601	BFL 901 009/1	--	--
	DUW 30 01	KDU 127 161/3	R4F	TU8X960893
	SUP 6601	1/BFL 901 009/1	R3B	BR80908065
5	RBS 6601	BFL 901 009/1	--	--
	DUW 30 01	KDU 127 161/3	R4F	TU8X960894
	SUP 6601	1/BFL 901 009/1	R3B	BR80993658
6	ERNC SIM	FAB 102 614	--	ETC/L167
7	Power Supply	DH1716-5D	--	2008040041
	Power Supply	DH1716-5D	--	2008040050
	Power Supply	DH1716-5D	--	20030062
8	Load	TF100	--	09121648
9	Load	TFE5-3	--	090323194
	Load	TFE5-3	--	090323220
10	40dB Attenuator	48-40-43-LIM	--	BR5020
	30dB Attenuator	DTS100	--	04081801
	10dB Attenuator	48-10-43	--	BB8290
11	Power Meter	Rohde & Schwarz NRP	--	102625
	Power Sensor	Rohde & Schwarz NRP-Z51	--	102433
	Spectrum Analyzer	FSQ26	--	100244
	Spectrum Analyzer	FSQ26	--	200235



**Test Setup, Radiated Measurement:**





Product Name	Product Number	Version	Serial Number
RUS 01 B5	KRC 118 64/2	R2A	C824937848
RUS 01 B5	KRC 118 64/2	R2A	C824937852

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	Switch	TL-HP8MU	--	05300902892
	Switch	TL-SF1008+	--	11936826484
3	RBS 6601	BFL 901 009/1	--	--
	DUL 20 01	KDU 137 533/4	R1F	D161977582
	SUP 6601	1/BFL 901 009/1	R3B	BR81262578
4	RBS 6601	BFL 901 009/1	--	--
	DUW 30 01	KDU 127 161/3	R4F	TU8X960893
	SUP 6601	1/BFL 901 009/1	R3B	BR80908065
5	RBS 6601	BFL 901 009/1	--	--
	DUW 30 01	KDU 127 161/3	R4F	TU8X960894
	SUP 6601	1/BFL 901 009/1	R3B	BR80993658
6	ERNC SIM	FAB 102 614	--	ETC/L167
7	Power Supply	DH1716-5D	--	2008040041
	Power Supply	DH1716-5D	--	2008040050
	Power Supply	DH1716-5D	--	20030062
8	Load	TF100	--	09121648
	Load	TF100	--	09121605
9	Load	TFE5-3	--	090323194
	Load	TFE5-3	--	090323220





### 1.4.3 Modes of Operation

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

L1.4 denotes LTE network with 1.4MHz channel bandwidth.  
 L3 denotes LTE network with 3MHz channel bandwidth.  
 L5 denotes LTE network with 5MHz channel bandwidth.  
 L10 denotes LTE network with 10MHz channel bandwidth.  
 W denotes WCDMA network

#### WCDMA/LTE MSR:

##### Mix Carrier(x2): 1W (30W) + 1L (30W)

Mode 1 - W&L1.4, W&L3, W&L5, W&L10

MSR	Channel No.	Frequencies (MHz)
W & L1.4	4357(W) & 2593(L)	871.4+888.3
W & L3	4357(W) & 2585(L)	871.4+887.5
W & L5	4357(W) & 2575(L)	871.4+886.5
W & L10	4357(W) & 2550(L)	871.4+884.0

Mode 2 - W&L1.4, W&L3, W&L5, W&L10

MSR	Channel No.	Frequencies (MHz)
W & L1.4	4369(W) & 2617(L)	873.8+890.7
W & L3	4369(W) & 2609(L)	873.8+889.9
W & L5	4369(W) & 2599(L)	873.8+888.9
W & L10	4369(W) & 2574(L)	873.8+886.4

Mode 3 - L1.4&W, L3&W, L5&W, L10&W

MSR	Channel No.	Frequencies (MHz)
L1.4 & W	2457(L) & 4458(W)	874.7+891.6
L3 & W	2465(L) & 4458(W)	875.5+891.6
L5 & W	2475(L) & 4458(W)	876.5+891.6
L10 & W	2500(L) & 4458(W)	879.0+891.6

Mode 4 - W&L1.4

MSR	Channel No.	Frequencies (MHz)
W & L1.4	4357(W) & 2457(L)	871.4+874.7

Mode 5 - L1.4&W

MSR	Channel No.	Frequencies (MHz)
L1.4 & W	2593(L) & 4458(W)	888.3+891.6

**Mix Carrier(x3): 2W (2x20W) + 1L (1x20W)**

Mode 6 - W&amp;W&amp;L1.4, W&amp;W&amp;L3, W&amp;W&amp;L5, W&amp;W&amp;L10

<b>MSR</b>	<b>Channel No.</b>	<b>Frequencies (MHz)</b>
W&W & L1.4	4369(W)&4394(W) & 2617(L)	873.8+878.8+890.7
W&W & L3	4369(W)&4394(W) & 2609(L)	873.8+878.8+889.9
W&W & L5	4369(W)&4394(W) & 2599(L)	873.8+878.8+888.9
W&W & L10	4369(W)&4394(W) & 2574(L)	873.8+878.8+886.4

**Mix Carrier(x4): 2W (2x15W) + 2L (2x15W)**

Mode 7 - W&amp;W&amp;L1.4&amp;L1.4, W&amp;W&amp;L3&amp;L3, W&amp;W&amp;L5&amp;L5

<b>MSR</b>	<b>Channel No.</b>	<b>Frequencies (MHz)</b>
W&W & L1.4&L1.4	4369(W)&4394(W) & 2603(L)&2617(L)	873.8+878.8+889.3+890.7
W&W & L3&L3	4369(W)&4394(W) & 2579(L)&2609(L)	873.8+878.8+886.9+889.9
W&W & L5&L5	4369(W)&4394(W) & 2549(L)&2599(L)	873.8+878.8+883.9+888.9

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 B5 / KRC 118 64/2



Product Service

## 2.1 MAXIMUM PEAK OUTPUT POWER - CONDUCTED

### 2.1.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1046  
 FCC CFR 47 Part 22, Clause 22.913 (a)  
 Industry Canada RSS-132, Clause 5.4

### 2.1.2 Equipment Under Test

RUS 01 B5 / KRC 118 64/2, S/N: C824937848 / C824937852

### 2.1.3 Date of Test and Modification State

8, 9, 13 and 19 June 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 22 and Industry Canada RSS-132.

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

Since the EUTs working in MIMO mode, the EUTs transmit two antennas simultaneously in the same frequency range, using the Measure-and-Sum approach, the output power at both TX antennas RF A1 and RF A2 were tested, and the total output power were then summed mathematically in linear power units.

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 - W&L1.4, W&L3, W&L5, W&L10  
 - Mode 2 - W&L1.4, W&L3, W&L5, W&L10  
 - Mode 3 - L1.4&W, L3&W, L5&W, L10&W  
 - Mode 6 - W&W&L1.4, W&W&L3, W&W&L5, W&W&L10  
 - Mode 7 - W&W&L1.4&L1.4, W&W&L3&L3, W&W&L5&L5

### 2.1.6 Environmental Conditions

	8 June 2013	9 June 2013	13 June 2013	19 June 2013
Ambient Temperature	24.8°C	24.5°C	23.5°C	22.0°C
Relative Humidity	46.0%	46.0%	48.0%	59.0%



## 2.1.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 2 and Part 22 and Industry Canada RSS-132 for Maximum Peak Output Power.

The test results are shown below

### Antenna RF A1 and RF A2

#### Mix Carrier(x2): 1W+1L

Configuration 1 - Mode 1 - W&L1.4, W&L3, W&L5, W&L10

#### **LTE (E-TM1.1) & WCDMA (QPSK)**

MSR	Frequency(MHz)	Antenna A1		Antenna A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
W & L1.4	871.4+888.3	47.50	56.23	47.49	56.10	50.50	112.33
W & L3	871.4+887.5	47.67	58.48	47.63	57.94	50.66	116.42
W & L5	871.4+886.5	47.61	57.68	47.57	57.15	50.60	114.82
W & L10	871.4+884.0	47.66	58.34	47.61	57.68	50.65	116.02

#### **LTE (E-TM3.2) & WCDMA (16QAM)**

MSR	Frequency(MHz)	Antenna A1		Antenna A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
W & L1.4	871.4+888.3	47.48	55.98	47.48	55.98	50.49	111.96
W & L3	871.4+887.5	47.63	57.94	47.60	57.54	50.63	115.48
W & L5	871.4+886.5	47.60	57.54	47.59	57.41	50.61	114.95
W & L10	871.4+884.0	47.66	58.34	47.66	58.34	50.67	116.68

#### **LTE (E-TM3.1) & WCDMA (64QAM)**

MSR	Frequency(MHz)	Antenna A1		Antenna A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
W & L1.4	871.4+888.3	47.42	55.21	47.41	55.08	50.43	110.29
W & L3	871.4+887.5	47.55	56.89	47.54	56.75	50.56	113.64
W & L5	871.4+886.5	47.57	57.15	47.56	57.02	50.58	114.17
W & L10	871.4+884.0	47.57	57.15	47.54	56.75	50.57	113.90



Configuration 1 - Mode 2 - W&L1.4, W&L3, W&L5, W&L10

**LTE (E-TM1.1) & WCDMA (QPSK)**

MSR	Frequency(MHz)	Antenna A1		Antenna A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
W & L1.4	873.8+890.7	47.50	56.23	47.48	55.98	50.50	112.21
W & L3	873.8+889.9	47.70	58.88	47.66	58.34	50.69	117.22
W & L5	873.8+888.9	47.65	58.21	47.65	58.21	50.66	116.42
W & L10	873.8+886.4	47.70	58.88	47.69	58.75	50.71	117.63

**LTE (E-TM3.2) & WCDMA (16QAM)**

MSR	Frequency(MHz)	Antenna A1		Antenna A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
W & L1.4	873.8+890.7	47.47	55.85	47.48	55.98	50.49	111.83
W & L3	873.8+889.9	47.64	58.08	47.62	57.81	50.64	115.89
W & L5	873.8+888.9	47.65	58.21	47.64	58.08	50.66	116.29
W & L10	873.8+886.4	47.67	58.48	47.63	57.94	50.66	116.42

**LTE (E-TM3.1) & WCDMA (64QAM)**

MSR	Frequency(MHz)	Antenna A1		Antenna A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
W & L1.4	873.8+890.7	47.37	54.58	47.36	54.45	50.38	109.03
W & L3	873.8+889.9	47.57	57.15	47.52	56.49	50.56	113.64
W & L5	873.8+888.9	47.58	57.28	47.56	57.02	50.58	114.30
W & L10	873.8+886.4	47.58	57.28	47.57	57.15	50.59	114.43

Configuration 1 - Mode 3 - L1.4&W, L3&W, L5&W, L10&W

**LTE (E-TM1.1) & WCDMA (QPSK)**

MSR	Frequency(MHz)	Antenna A1		Antenna A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
L1.4 & W	874.7+891.6	47.51	56.36	47.43	55.34	50.48	111.70
L3 & W	875.5+891.6	47.67	58.48	47.62	57.81	50.66	116.29
L5 & W	876.5+891.6	47.65	58.21	47.59	57.41	50.63	115.62
L10 & W	879.0+891.6	47.68	58.61	47.68	58.61	50.69	117.22

**LTE (E-TM3.2) & WCDMA (16QAM)**

MSR	Frequency(MHz)	Antenna A1		Antenna A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
L1.4 & W	874.7+891.6	47.51	56.36	47.49	56.10	50.51	112.46
L3 & W	875.5+891.6	47.66	58.34	47.63	57.94	50.66	116.28
L5 & W	876.5+891.6	47.67	58.48	47.61	57.68	50.65	116.16
L10 & W	879.0+891.6	47.67	58.48	47.61	57.68	50.65	116.16

**LTE (E-TM3.1) & WCDMA (64QAM)**

MSR	Frequency(MHz)	Antenna A1		Antenna A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
L1.4 & W	874.7+891.6	47.40	54.95	47.35	54.33	50.39	109.28
L3 & W	875.5+891.6	47.60	57.54	47.53	56.62	50.58	114.16
L5 & W	876.5+891.6	47.61	57.68	47.55	56.89	50.59	114.57
L10 & W	879.0+891.6	47.58	57.28	47.50	56.23	50.55	113.51

**Mix Carrier(x3): 2W+1L**

Configuration 1 - Mode 6 - W&W&L1.4, W&W&L3, W&W&L5, W&W&L10

**LTE (E-TM1.1) & WCDMA (QPSK)**

MSR	Frequency(MHz)	Antenna A1		Antenna A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
W&W & L1.4	873.8+878.8+890.7	46.95	49.55	46.93	49.32	49.95	98.87
W&W & L3	873.8+878.8+889.9	46.94	49.43	46.94	49.43	49.95	98.86
W&W & L5	873.8+878.8+888.9	46.95	49.55	46.95	49.55	49.96	99.10
W&W & L10	873.8+878.8+886.4	46.98	49.89	46.99	50.00	50.00	99.89

**Mix Carrier(x4): 2W+2L**

Configuration 1 - Mode 7 - W&W&L1.4&L1.4, W&W&L3&L3, W&W&L5&L5, W&W&L10&L10

**LTE (E-TM1.1) & WCDMA (QPSK)**

MSR	Frequency(MHz)	Antenna A1		Antenna A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
W&W & L1.4&L1.4	873.8+878.8+889.3+890.7	46.96	49.66	46.93	49.32	49.96	98.98
W&W & L3&L3	873.8+878.8+886.9+889.9	47.57	57.15	47.55	56.89	50.57	114.04
W&W & L5&L5	873.8+878.8+883.9+888.9	47.62	57.81	47.57	57.15	50.61	114.96





Product Service

**LTE (E-TM3.2) & WCDMA (16QAM)**

MSR	Frequency(MHz)	Antenna A1		Antenna A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
W&W & L1.4&L1.4	873.8+878.8+889.3+890.7	46.96	49.66	46.94	49.43	49.96	99.09
W&W & L3&L3	873.8+878.8+886.9+889.9	47.58	57.28	47.55	56.89	50.58	114.17
W&W & L5&L5	873.8+878.8+883.9+888.9	47.58	57.28	47.56	57.02	50.58	114.30

**LTE (E-TM3.1) & WCDMA (64QAM)**

MSR	Frequency(MHz)	Antenna A1		Antenna A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
W&W & L1.4&L1.4	873.8+878.8+889.3+890.7	46.85	48.42	46.81	47.97	49.84	96.39
W&W & L3&L3	873.8+878.8+886.9+889.9	47.50	56.23	47.46	55.72	50.49	111.95
W&W & L5&L5	873.8+878.8+883.9+888.9	47.50	56.23	47.50	56.23	50.51	112.46

Note \*:

Two transmitters output power were summed up according to FCC KDB662911 D01 for MIMO mode.

Limit	≤500W or ≤+57dBm
-------	------------------

Remarks

The EUT does not exceed 500W or 57dBm at the measured frequencies.



Product Service

## 2.2 PEAK – AVERAGE RATIO

### 2.2.1 Specification Reference

FCC CFR 47 Part 22, Clause 22.913 (a)  
Industry Canada RSS-132, Clause 5.4

### 2.2.2 Equipment Under Test

RUS 01 B5 / KRC 118 64/2, S/N: C824937848 / C824937852

### 2.2.3 Date of Test and Modification State

8, 9, 13 and 19 June 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 22.

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 measurements were performed on the combined output connector RF A1. Limited complementary measurement were done at the output connector RF A2 to verify identical performance for both transmitter chains.

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 - W&L1.4, W&L3, W&L5, W&L10  
 - Mode 2 - W&L1.4, W&L3, W&L5, W&L10  
 - Mode 3 - L1.4&W, L3&W, L5&W, L10&W  
 - Mode 6 - W&W&L1.4, W&W&L3, W&W&L5, W&W&L10  
 - Mode 7 - W&W&L1.4&L1.4, W&W&L3&L3, W&W&L5&L5

### 2.2.6 Environmental Conditions

	8 June 2013	9 June 2013	13 June 2013	19 June 2013
Ambient Temperature	24.8°C	24.5°C	23.5°C	22.0°C
Relative Humidity	46.0%	46.0%	48.0%	59.0%



Product Service

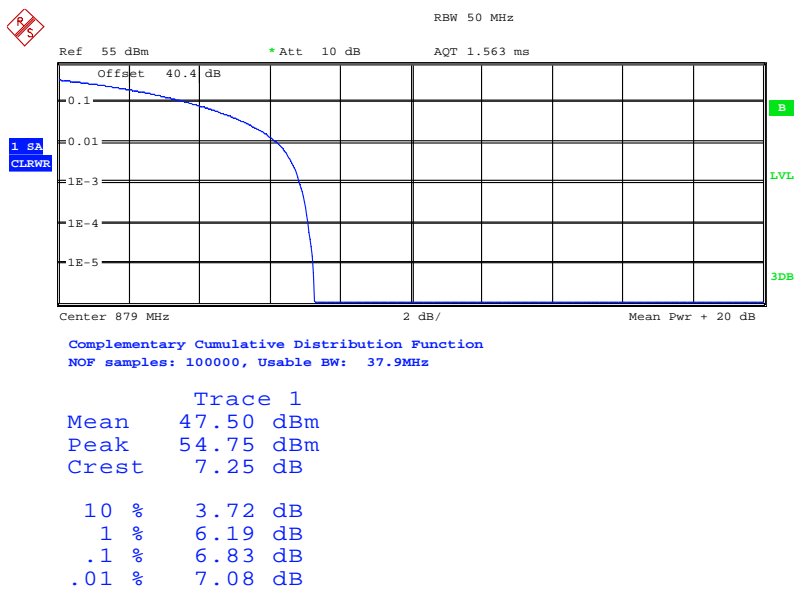
2.2.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 22 Peak – Average Ratio.

The test results are shown below.

**Mix Carrier(x2): 1W+1L**

**Configuration 1 - Mode 1 - W&L1.4**

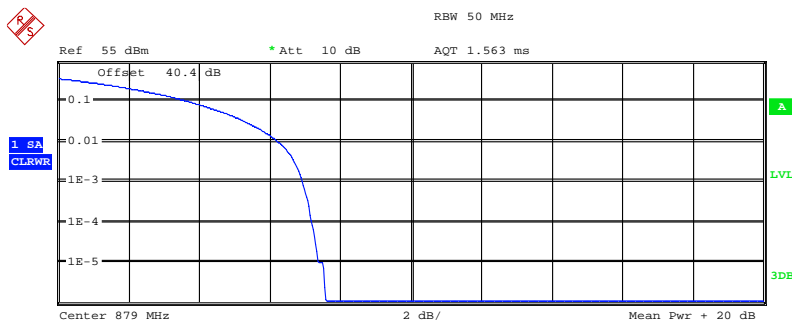


Date: 8.JUN.2013 12:07:42



Product Service

Configuration 1 - Mode 1 - W&L3



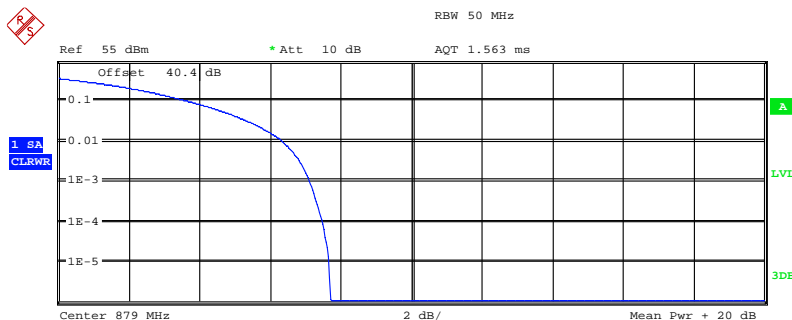
Center 879 MHz 2 dB/ Mean Pwr + 20 dB  
Complementary Cumulative Distribution Function  
NOF samples: 100000, Usable BW: 37.9MHz

Trace 1

Mean	47.61 dBm
Peak	55.18 dBm
Crest	7.57 dB
10 %	3.72 dB
1 %	6.22 dB
.1 %	6.92 dB
.01 %	7.18 dB

Date: 8.JUN.2013 14:16:56

Configuration 1 - Mode 1 - W&L5



Center 879 MHz 2 dB/ Mean Pwr + 20 dB  
Complementary Cumulative Distribution Function  
NOF samples: 100000, Usable BW: 37.9MHz

Trace 1

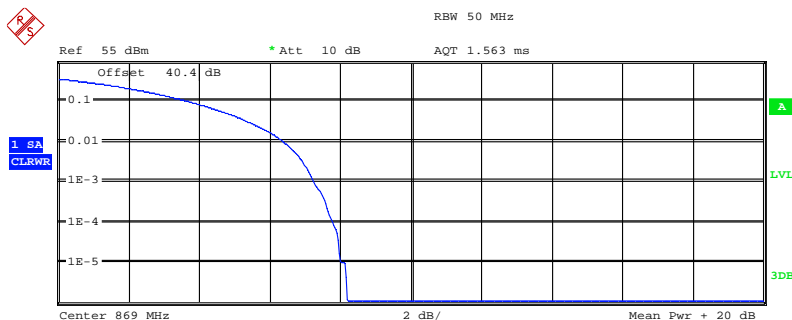
Mean	47.63 dBm
Peak	55.32 dBm
Crest	7.69 dB
10 %	3.72 dB
1 %	6.35 dB
.1 %	7.12 dB
.01 %	7.47 dB

Date: 8.JUN.2013 14:49:50



Product Service

**Configuration 1 - Mode 1 - W&L10**

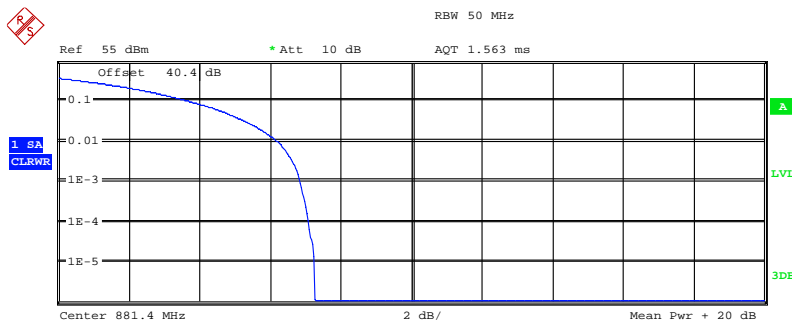


Complementary Cumulative Distribution Function  
 NOF samples: 100000, Usable BW: 37.9MHz

Trace 1	
Mean	47.53 dBm
Peak	55.72 dBm
Crest	8.19 dB
10 %	3.72 dB
1 %	6.38 dB
.1 %	7.24 dB
.01 %	7.79 dB

Date: 8.JUN.2013 15:40:00

**Configuration 1 - Mode 2 - W&L1.4**



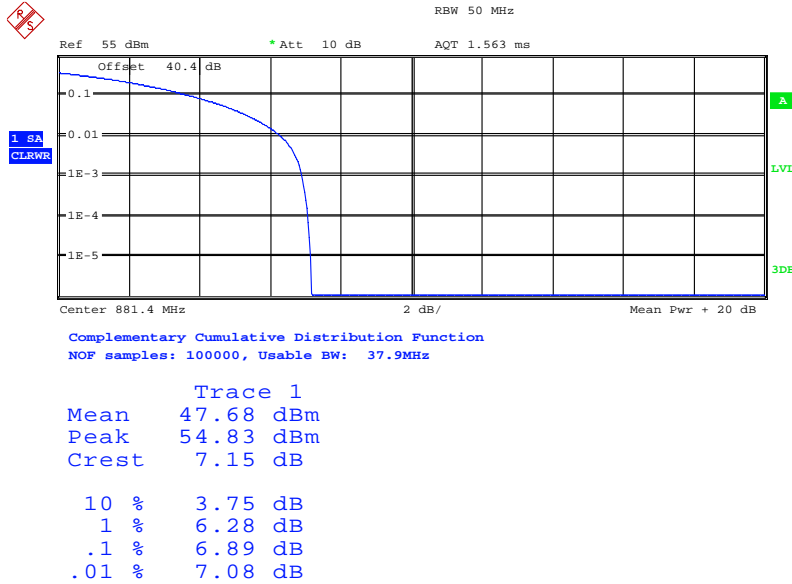
Complementary Cumulative Distribution Function  
 NOF samples: 100000, Usable BW: 37.9MHz

Trace 1	
Mean	47.57 dBm
Peak	54.83 dBm
Crest	7.26 dB
10 %	3.72 dB
1 %	6.19 dB
.1 %	6.86 dB
.01 %	7.08 dB

Date: 9.JUN.2013 14:02:41

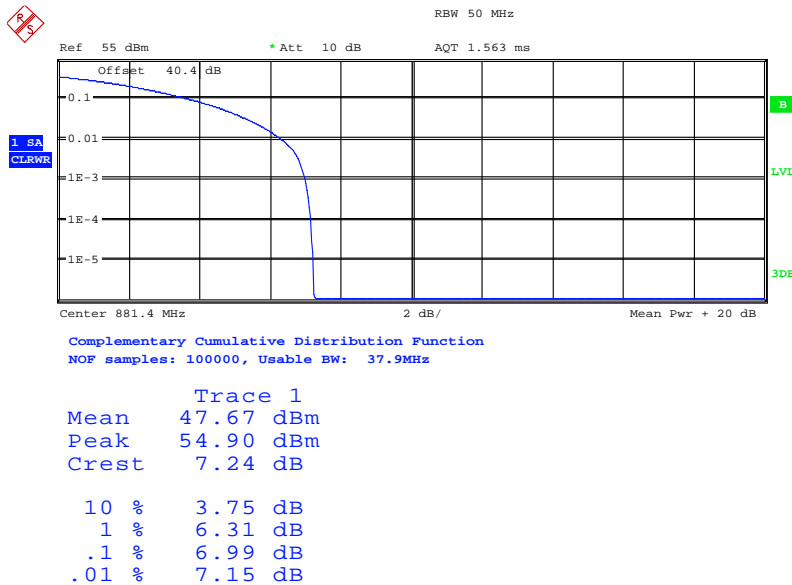


Configuration 1 - Mode 2 - W&L3



Date: 9.JUN.2013 13:42:24

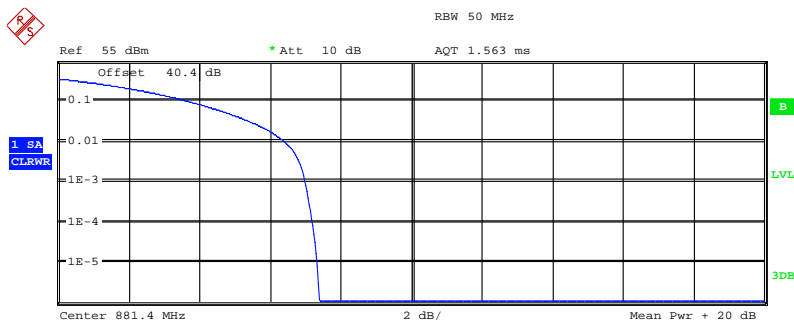
Configuration 1 - Mode 2 - W&L5



Date: 9.JUN.2013 13:01:40



**Configuration 1 - Mode 2 - W&L10**

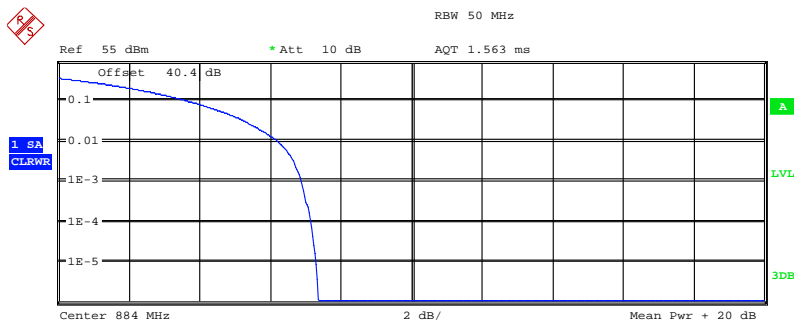


Center 881.4 MHz 2 dB/ Mean Pwr + 20 dB  
 Complementary Cumulative Distribution Function  
 NOF samples: 100000, Usable BW: 37.9MHz

Trace 1	
Mean	47.66 dBm
Peak	55.04 dBm
Crest	7.38 dB
10 %	3.72 dB
1 %	6.41 dB
.1 %	6.99 dB
.01 %	7.18 dB

Date: 9.JUN.2013 12:17:18

**Configuration 1 - Mode 3 - L1.4&W**



Center 884 MHz 2 dB/ Mean Pwr + 20 dB  
 Complementary Cumulative Distribution Function  
 NOF samples: 100000, Usable BW: 37.9MHz

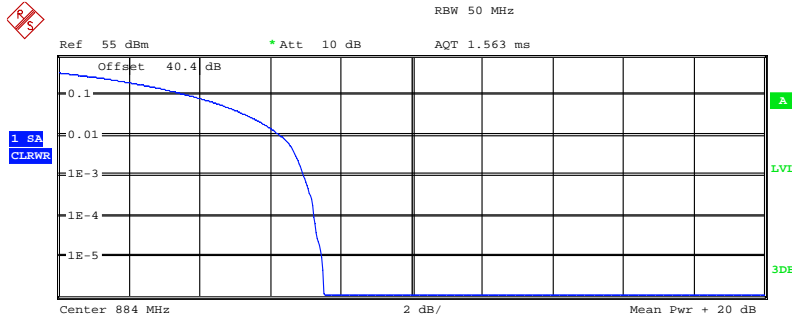
Trace 1	
Mean	47.55 dBm
Peak	54.91 dBm
Crest	7.35 dB
10 %	3.72 dB
1 %	6.19 dB
.1 %	6.89 dB
.01 %	7.15 dB

Date: 8.JUN.2013 17:11:53



Product Service

Configuration 1 - Mode 3 - L3&W



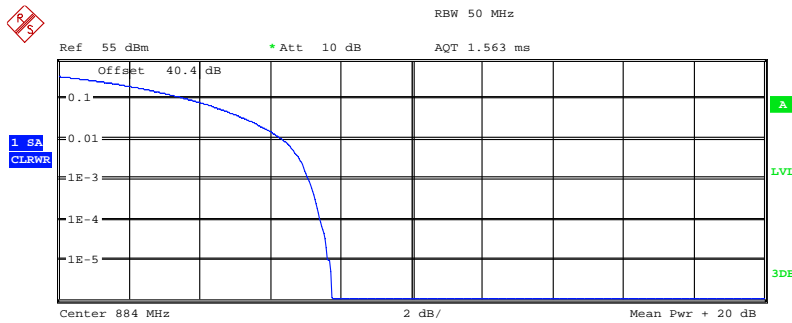
Center 884 MHz 2 dB/ Mean Pwr + 20 dB  
Complementary Cumulative Distribution Function  
NOF samples: 100000, Usable BW: 37.9MHz

Trace 1

Mean	47.60 dBm
Peak	55.12 dBm
Crest	7.52 dB
10 %	3.72 dB
1 %	6.28 dB
.1 %	6.96 dB
.01 %	7.24 dB

Date: 9.JUN.2013 10:24:49

Configuration 1 - Mode 3 - L5&W



Center 884 MHz 2 dB/ Mean Pwr + 20 dB  
Complementary Cumulative Distribution Function  
NOF samples: 100000, Usable BW: 37.9MHz

Trace 1

Mean	47.65 dBm
Peak	55.40 dBm
Crest	7.75 dB
10 %	3.72 dB
1 %	6.31 dB
.1 %	7.08 dB
.01 %	7.40 dB

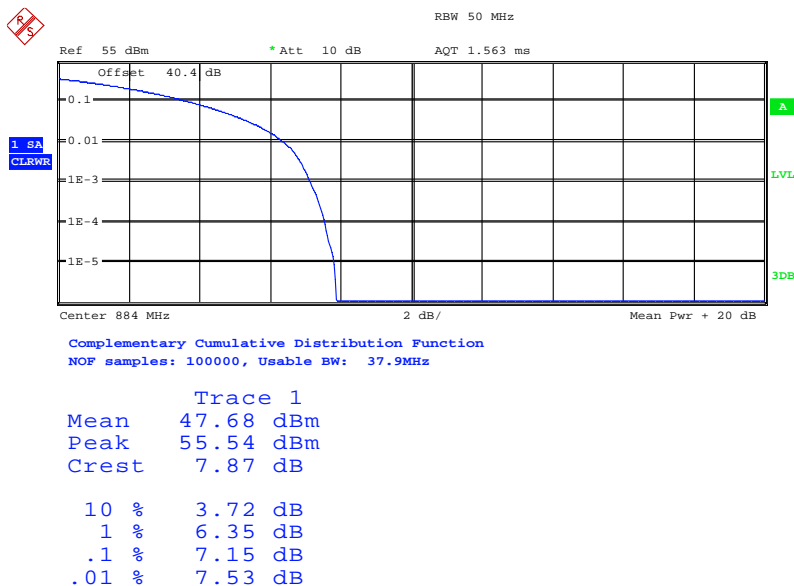
Date: 9.JUN.2013 10:40:27





Product Service

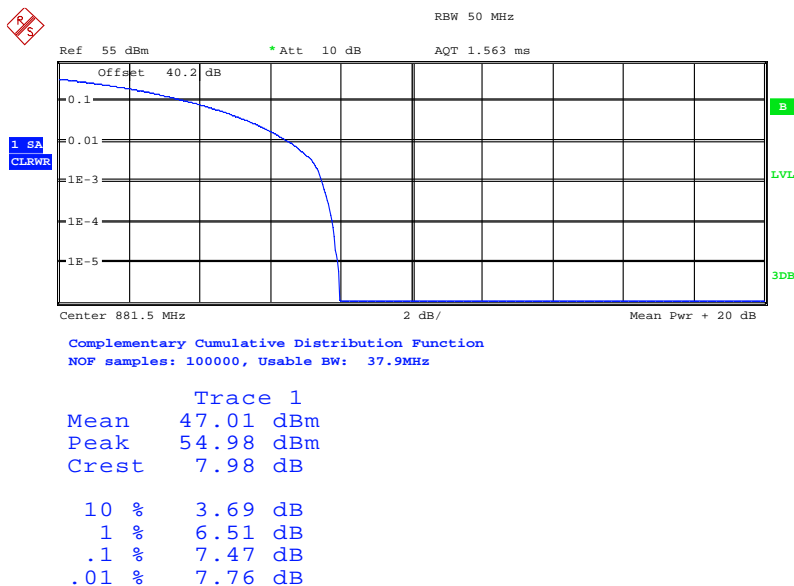
**Configuration 1 - Mode 3 - L10&W**



Date: 9.JUN.2013 10:59:49

**Mix Carrier(x3): 2W+1L**

**Configuration 1 - Mode 6 - W&W&L1.4**

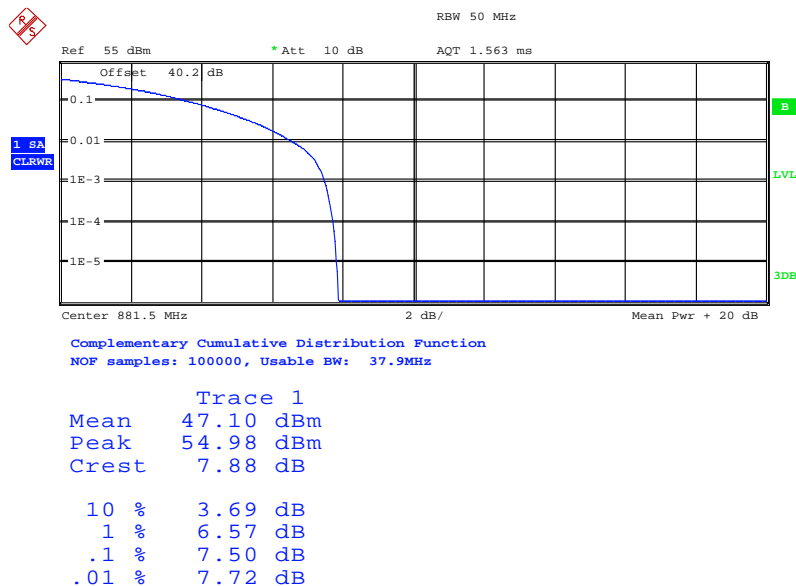


Date: 19.JUN.2013 14:28:35



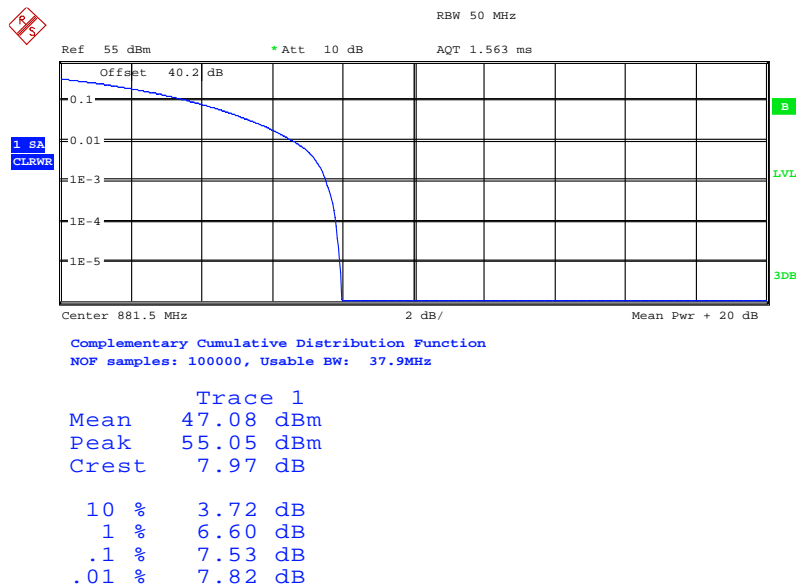
Product Service

Configuration 1 - Mode 6 - W&W&L3



Date: 19.JUN.2013 14:36:20

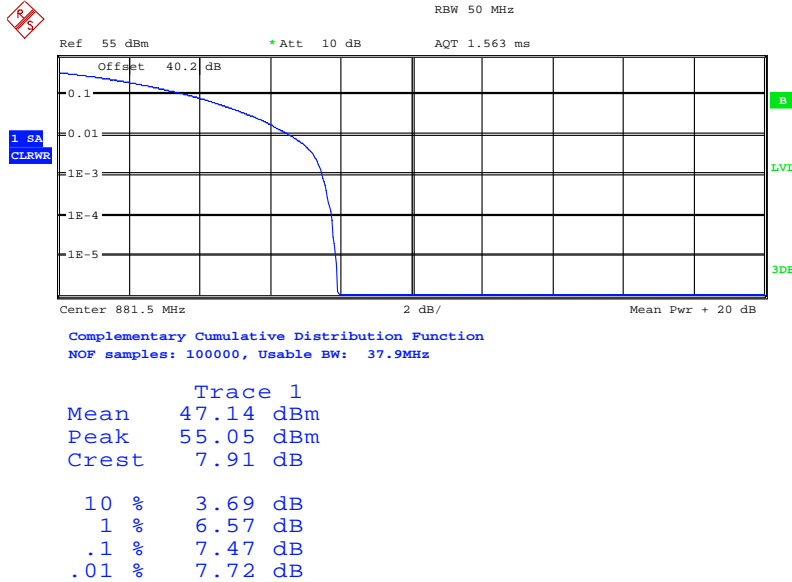
Configuration 1 - Mode 6 - W&W&L5



Date: 19.JUN.2013 14:42:23



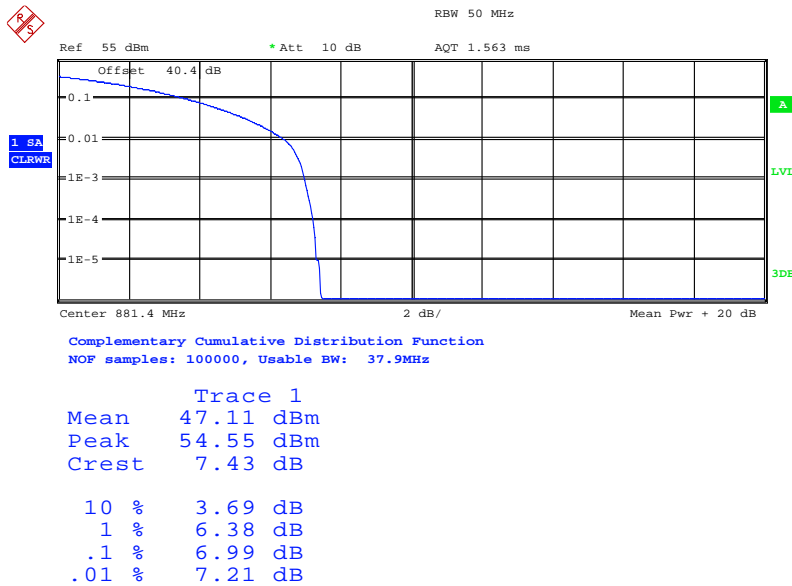
**Configuration 1 - Mode 6 - W&W&L10**



Date: 19.JUN.2013 14:50:56

**Mix Carrier(x4): 2W+2L**

**Configuration 1 - Mode 7 - W&W&L1.4&L1.4**

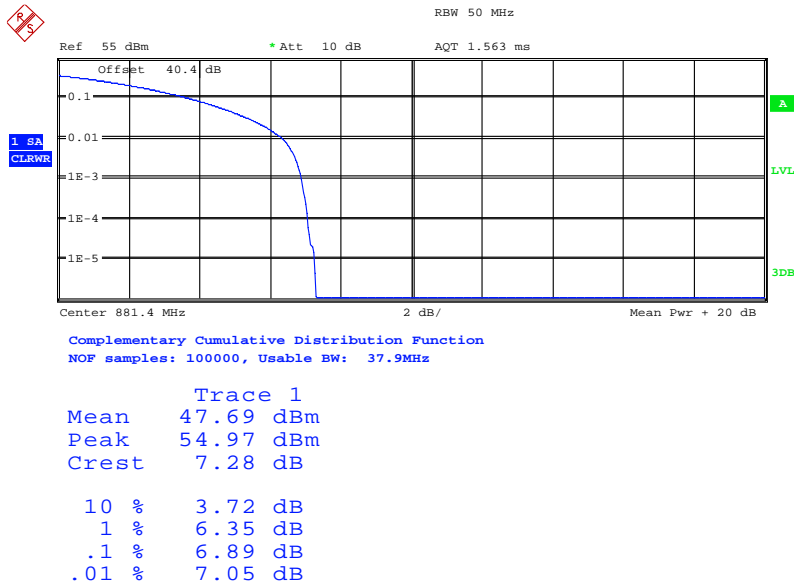


Date: 13.JUN.2013 13:49:52



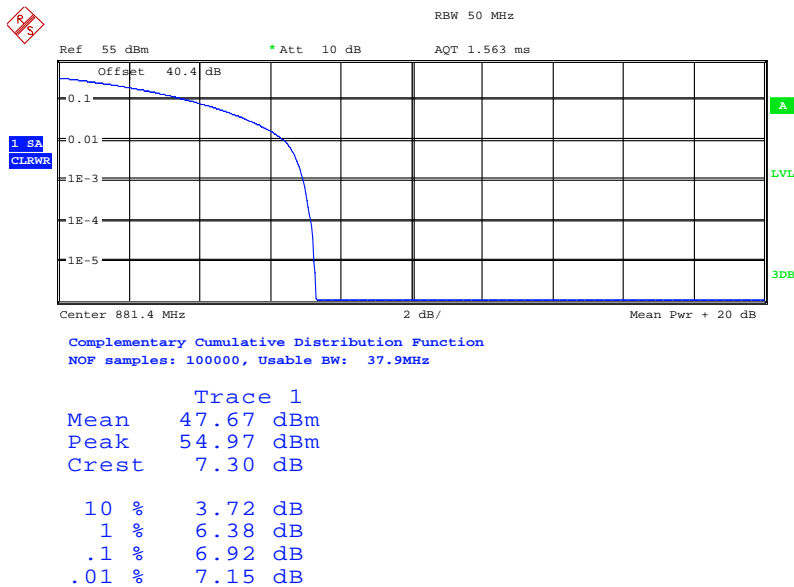
Product Service

**Configuration 1 - Mode 7 - W&W&L3&L3**



Date: 13.JUN.2013 13:48:03

**Configuration 1 - Mode 7 - W&W&L5&L5**



Date: 13.JUN.2013 13:27:16

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 ( $\pm 1$ MHz)**

**2.3.1 Specification Reference**

FCC CFR 47 Part 2, Clause 2.1051  
 FCC CFR 47 Part 22, Clause 22.917(b)  
 Industry Canada RSS-132 Clause 5.5

**2.3.2 Equipment Under Test**

RUS 01 B5 / KRC 118 64/2, S/N: C824937848 / C824937852

**2.3.3 Date of Test and Modification State**

17 and 18 June 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 22 and Industry Canada RSS-132.

In accordance with 22.917(b), at least 1% of the emission bandwidth should be used for the frequencies offset up to 1MHz away from the block edge. For WCDMA/LTE mix carrier 1W+1L, with WCDMA signal at the edge, which is selected as the worst case, 30kHz resolution bandwidth was used. 30kHz is <1% of the Emission Bandwidth (4.7MHz), to compensate for the reduced measurement bandwidth, at the frequency range up to 1MHz away from the band edges, the limit was adjusted from -13dBm to -14.9dBm. According to the FCC rules, a RBW of 100kHz for measurements of emissions > 1MHz away from the band edges. Spectrum analyser detector was set as RMS.

The limit was adjusted with a correction of -3dB [10Log(2)] by using the Measure and Add 10Log(N) dB technique according to FCC KDB662911 D01 accounting for simultaneous transmission from antenna ports RF A1 and RF A2.

The EUT was tested at it's maximum 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 4 - W&L1.4
- Mode 5 - L1.4&W

**2.3.6 Environmental Conditions**

	17 June 2013	18 June 2013
Ambient Temperature	21.8°C	24.4°C
Relative Humidity	60.5%	44.0%



### 2.3.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 2 and Part 22 and Industry Canada RSS-132 for Spurious Emissions Antenna Terminals ( $\pm 1$ MHz).

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

#### **Mix Carrier(x2): 1W+1L**

Configuration 1 - Mode 4 - W&L1.4 and 5 - L1.4&W

Band Edge Frequency	Edge Test with WCDMA Channel No./Frequencies	RBW / VBW (kHz)	Limit (dB)
Bottom 869MHz	Channel: 4357 Frequency: 871.4MHz	30 / 300	-17.9
Top 894MHz	Channel: 4458 Frequency: 891.6 MHz	30 / 300	-17.9

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.

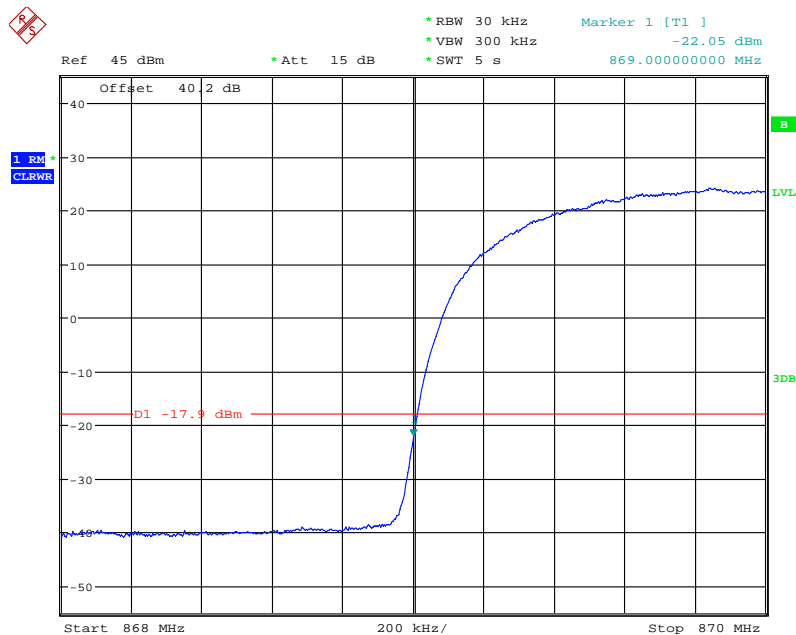


The test results are shown below

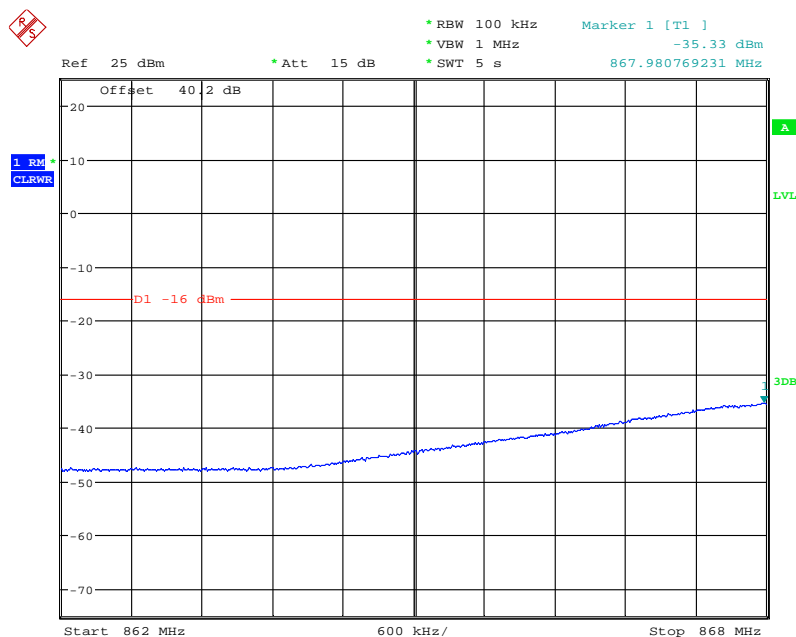
**Mix Carrier(x2): 1W+1L**

**LTE (E-TM1.1) & WCDMA (QPSK)**

**Configuration 1 - Mode 4 - W&L1.4**



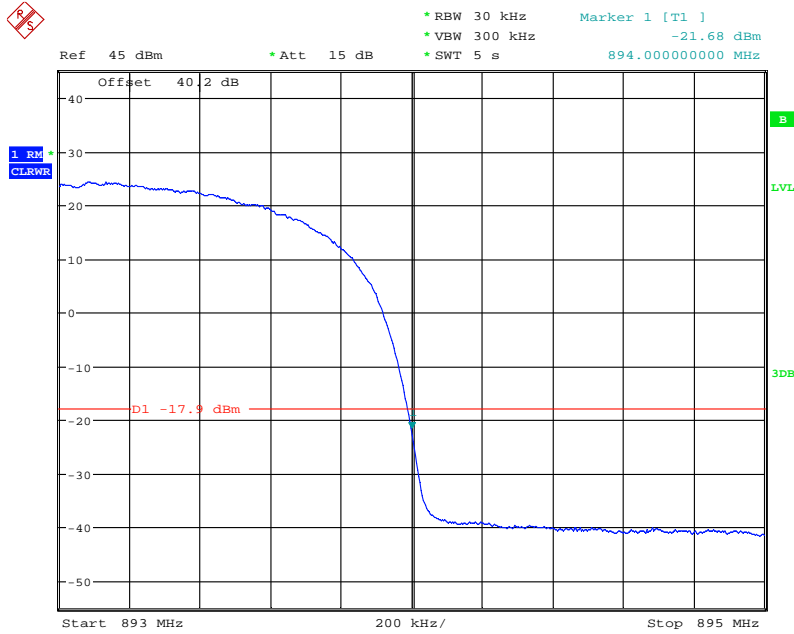
Date: 17.JUN.2013 16:02:13



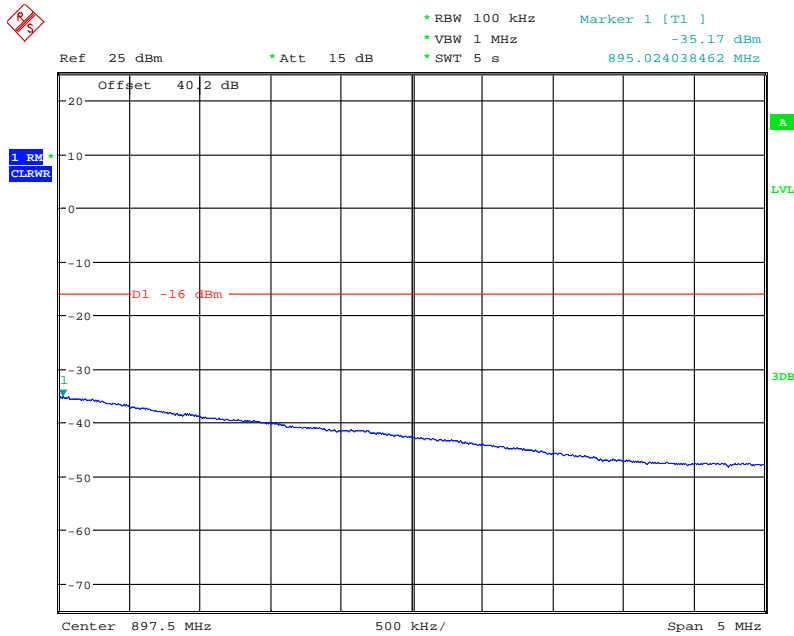
Date: 17.JUN.2013 16:02:50



Configuration 1 - Mode 5 - L1.4&W



Date: 17.JUN.2013 16:30:18



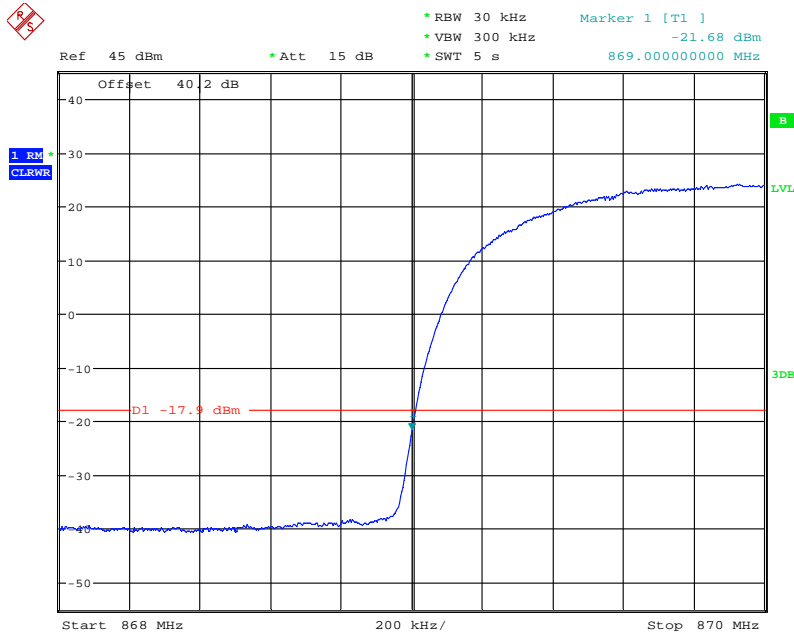
Date: 17.JUN.2013 16:31:04



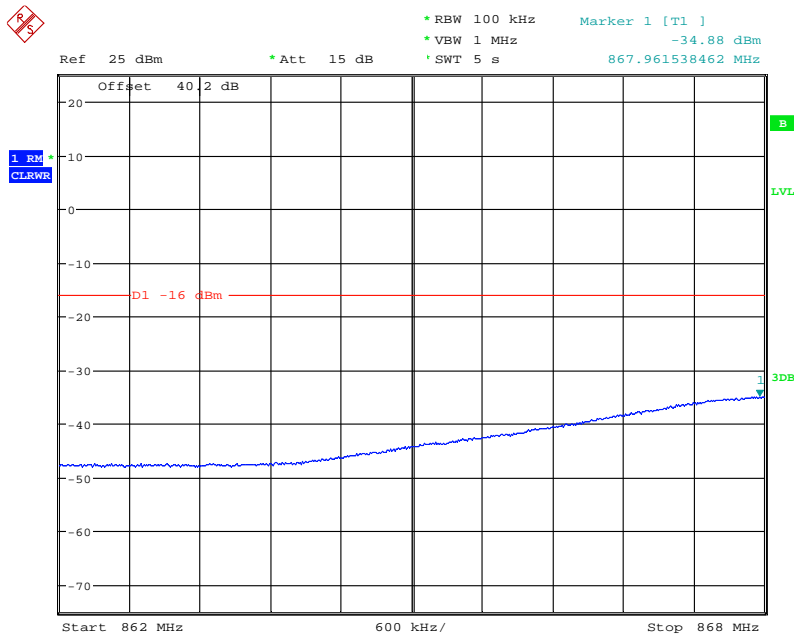


**LTE (E-TM3.2) & WCDMA (16QAM)**

**Configuration 1 - Mode 4 - W&L1.4**



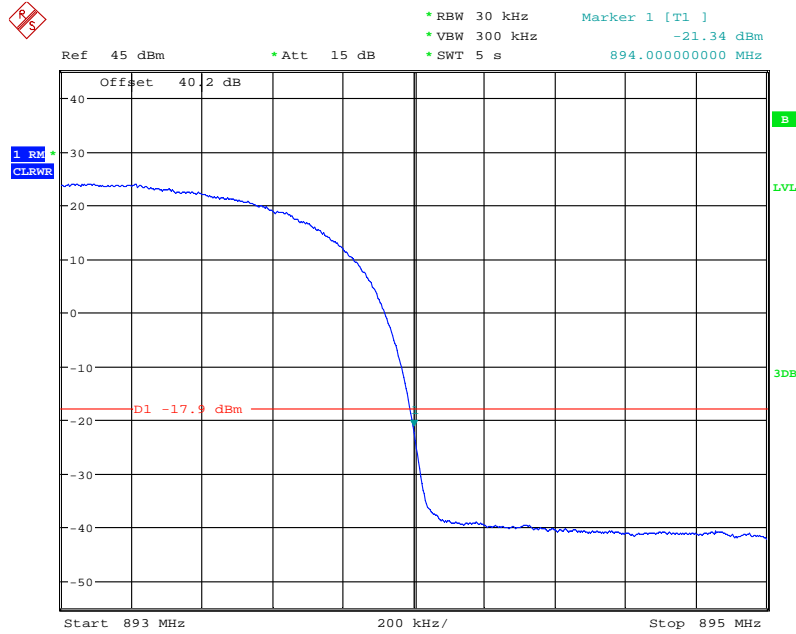
Date: 18.JUN.2013 14:13:31



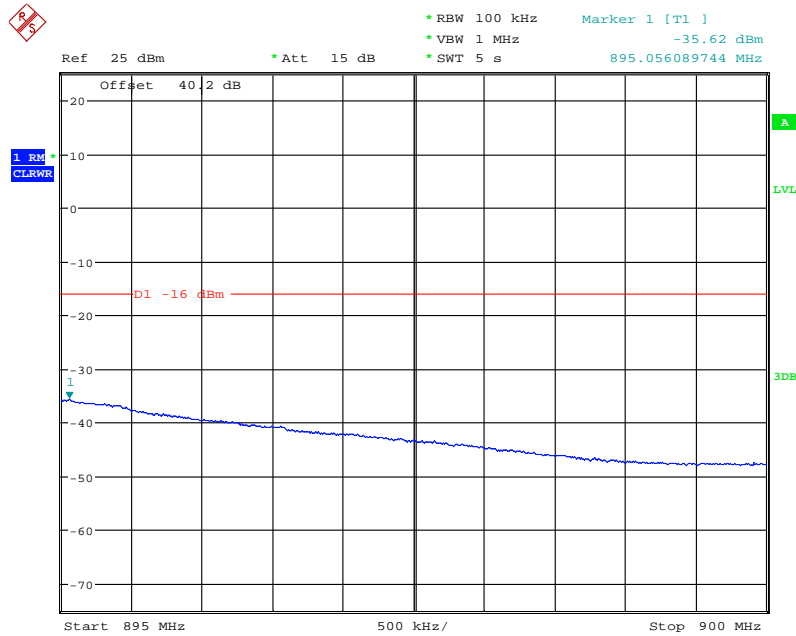
Date: 18.JUN.2013 14:12:14



Configuration 1 - Mode 5 - L1.4&W



Date: 17.JUN.2013 17:19:01

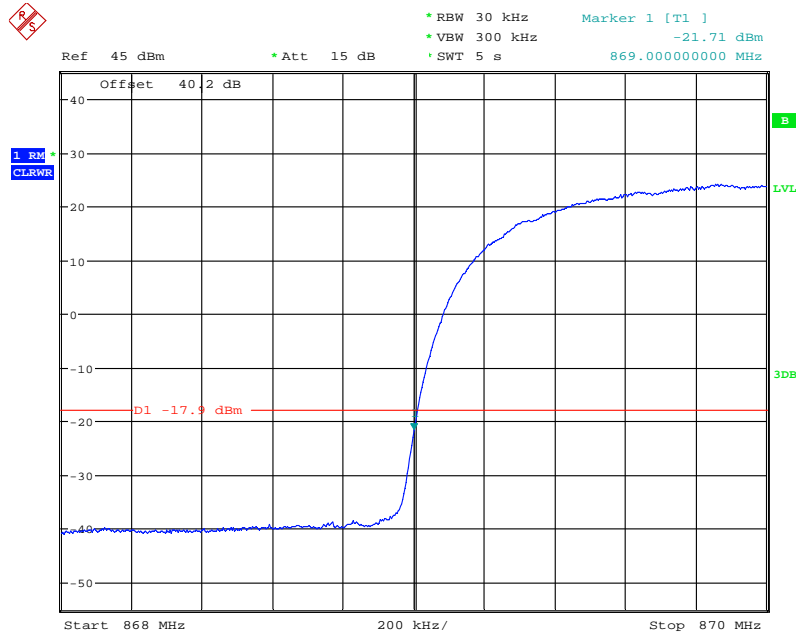


Date: 17.JUN.2013 17:19:27

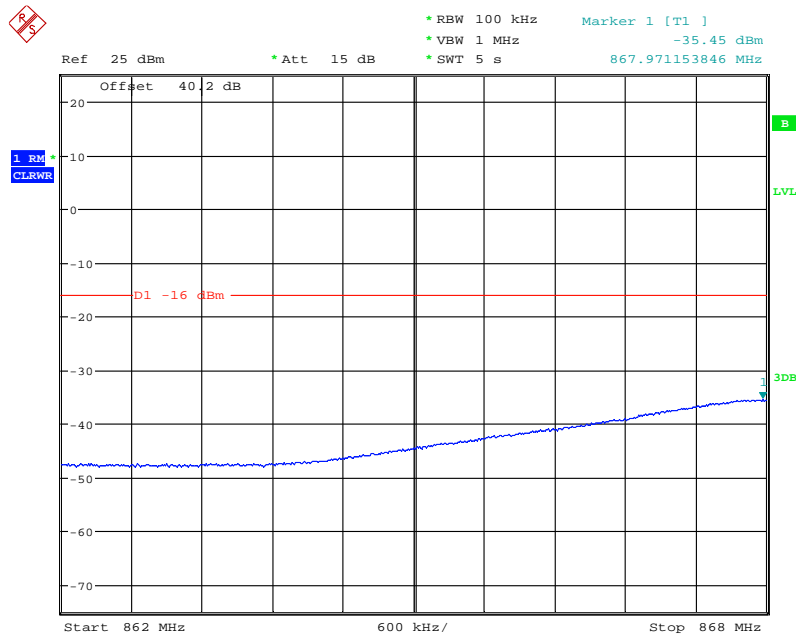


**LTE (E-TM3.2) & WCDMA (16QAM)**

**Configuration 1 - Mode 4 - W&L1.4**



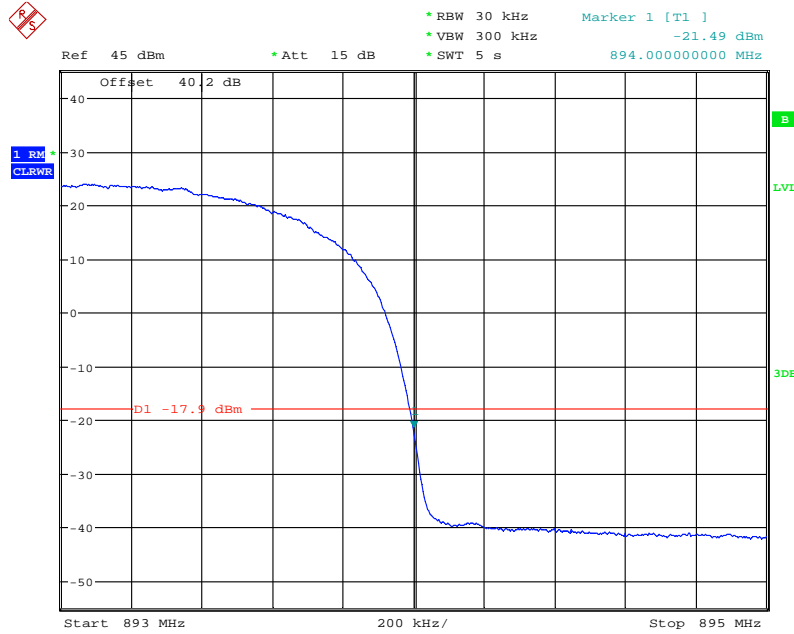
Date: 18.JUN.2013 13:07:11



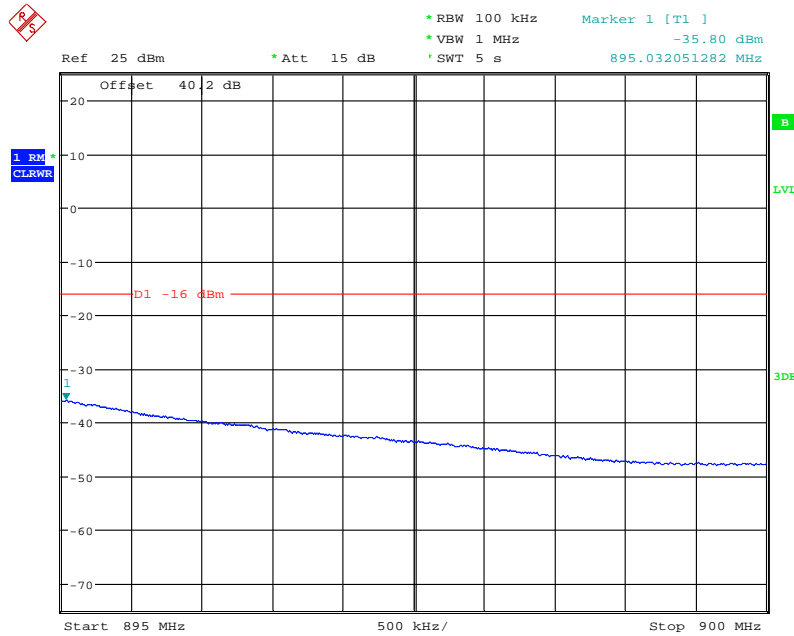
Date: 18.JUN.2013 13:08:22



**Configuration 1 - Mode 5 – L1.4&W**



Date: 18.JUN.2013 12:43:06



Date: 18.JUN.2013 12:40:57

**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.



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## **2.4 RADIATED SPURIOUS EMISSIONS**

### **2.4.1 Specification Reference**

FCC CFR 47 Part 2, Clause 2.1053  
FCC CFR 47 Part 22, Clause 22.917 (a)  
Industry Canada RSS-132, Clause 5.5

### **2.4.2 Equipment Under Test**

RUS 01 B5 / KRC 118 64/2, S/N: C824937848 / C824937852

### **2.4.3 Date of Test and Modification State**

15 and 25 June 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 22 and Industry Canada RSS-132.

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 polarisations.

Emissions identified within the range 30MHz – 10GHz were then formally measured using a Peak detector as the worst case.

In the frequency Range 30MHz – 10GHz, the measurement was performed with a resolution bandwidth of 1MHz as the worst case.

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 -  $(43 + 10\text{Log}(P))$  dB

Where:

Field Strength is measured in dB $\mu$ 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:

$$E_{(v/m)} = (30 \times 1.64 \times 96.39)^{0.5} / 3 = 22.95 \text{V/m} = 147.2 \text{dB}\mu\text{V/m}$$

As per 22.917 (a) the spurious emission must be attenuated by  $43 + 10\log(P_o)$  dB this gives:

$$43 + 10\log(96.39) = 62.8 \text{dB}$$

Therefore the limit at 3m measurement distance is:

$$147.2 - 62.8 = 84.4 \text{dB}\mu\text{V/m}$$

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 - W&L1.4  
 - Mode 2 - W&L1.4, W&L3, W&L5, W&L10  
 - Mode 3 - L1.4&W  
 - Mode 6 - W&W&L1.4  
 - Mode 7 - W&W&L1.4&L1.4

### 2.4.6 Environmental Conditions

	15 June 2013	25 June 2013
Ambient Temperature	27.1°C	26.1°C
Relative Humidity	49.0%	49.0%



Product Service

#### 2.4.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 2 & Part 22 and Industry Canada RSS-132 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 QPSK (L)**

##### **Mix Carrier(x2): 1W+1L**

##### Configuration 1 - Mode 2 - W&L1.4

No emissions were detected within 20dB of the limit.

##### Configuration 1 - Mode 2 - W&L3

No emissions were detected within 20dB of the limit.

##### Configuration 1 - Mode 2 - W&L5

No emissions were detected within 20dB of the limit.

##### Configuration 1 - Mode 2 - W&L10

No emissions were detected within 20dB of the limit.

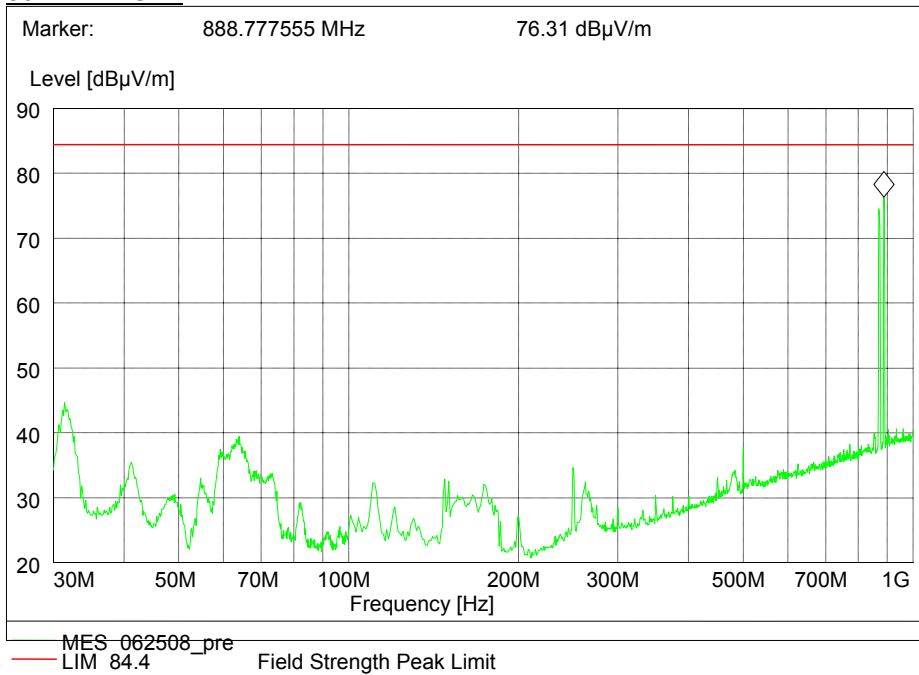


**16QAM (W) and 16QAM (L)**

**Mix Carrier(x2): 1W+1L**

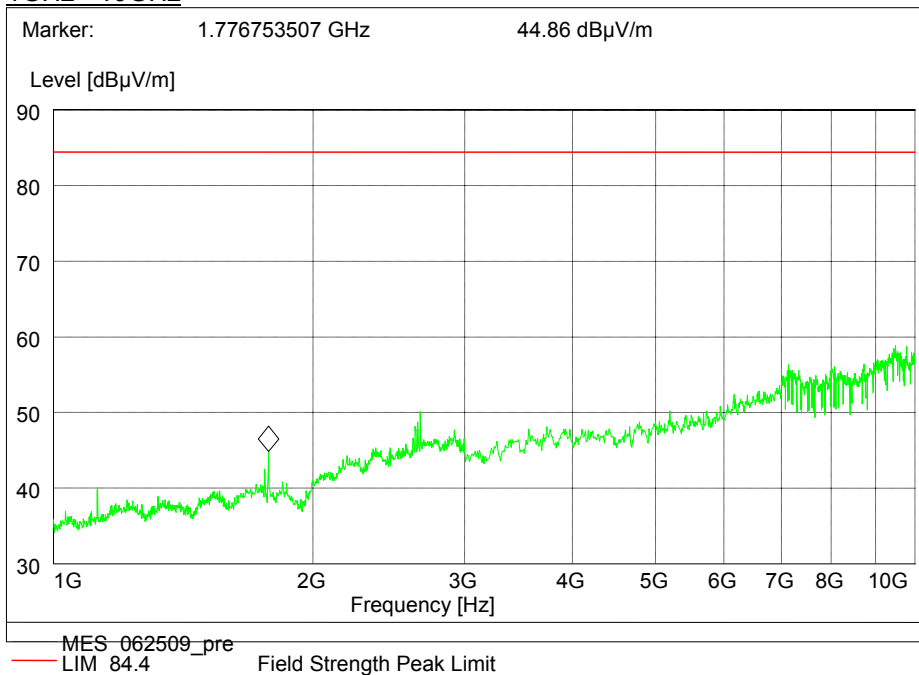
**Configuration 1 - Mode 1 - W&L1.4**

**30MHz - 1GHz**



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

**1GHz - 10GHz**



**Configuration 1 - Mode 2 - W&L1.4**

No emissions were detected within 20dB of the limit.





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Configuration 1 - Mode 3 - L1.4&W

No emissions were detected within 20dB of the limit.

**64QAM (W) and 64QAM (L)**

**Mix Carrier(x2): 1W+1L**

Configuration 1 - Mode 2 - W&L1.4

No emissions were detected within 20dB of the limit.

**16QAM (W) and 16QAM (L)**

**Mix Carrier(x3): 2W+1L**

Configuration 1 - Mode 6 - W&W&L1.4

No emissions were detected within 20dB of the limit.

**16QAM (W) and 16QAM (L)**

**Mix Carrier(x4): 2W+2L**

Configuration 1 - Mode 7 - W&W&L1.4&L1.4

No emissions were detected within 20dB of the limit.

Limit	-13dBm or 84.4dB $\mu$ V/m
-------	----------------------------

Remarks

The EUT does not exceed -13dBm or 84.4dB $\mu$ V/m at the measured frequencies.



## 2.5 CONDUCTED SPURIOUS EMISSIONS

### 2.5.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051  
FCC CFR 47 Part 22, Clause 22.917 (a)  
Industry Canada RSS-132, Clause 5.5

### 2.5.2 Equipment Under Test

RUS 01 B5 / KRC 118 64/2, S/N: C824937848 / C824937852

### 2.5.3 Date of Test and Modification State

8, 9, 13 and 19 June 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 22 and Industry Canada RSS-132.

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 10GHz. The EUT was set to transmit on maximum power. The resolution was set to 100kHz for 9kHz to 10GHz thus meeting the requirements of FCC CFR 47 Part 22, Clause 22.917 (a) and Industry Canada RSS-132, Clause 5.5. The spectrum analyser detector was set to peak and trace was kept on Max Hold.

The limit was adjusted with a correction of -3dB [10Log(2)] by using the Measure and Add 10Log(N) dB technique according to FCC KDB662911 D01 accounting for simultaneous transmission from antenna ports RF A1 and RF A2.

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 10<sup>th</sup> 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 - W&L1.4, W&L10
- Mode 2 - W&L1.4, W&L3, W&L5, W&L10
- Mode 3 - L1.4&W, L10&W
- Mode 6 - W&W&L1.4
- Mode 7 - W&W&L1.4&L1.4



Product Service

**2.5.6 Environmental Conditions**

	8 June 2013	9 June 2013	13 June 2013	19 June 2013
Ambient Temperature	24.8°C	24.5°C	23.5°C	22.0°C
Relative Humidity	46.0%	46.0%	48.0%	59.0%

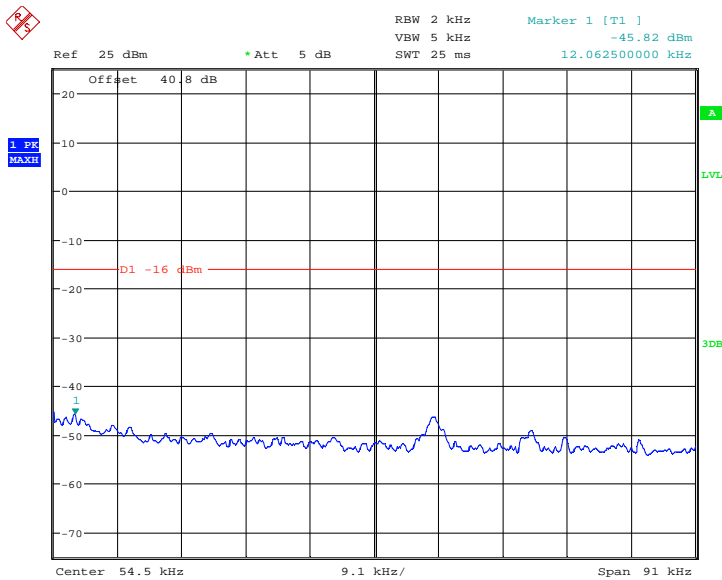
**2.5.7 Test Results**

For the period of test the EUT met the requirements of FCC CFR 47 Part 2 and Part 22 and Industry Canada RSS-132 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: 9.JUN.2013 13:49:51



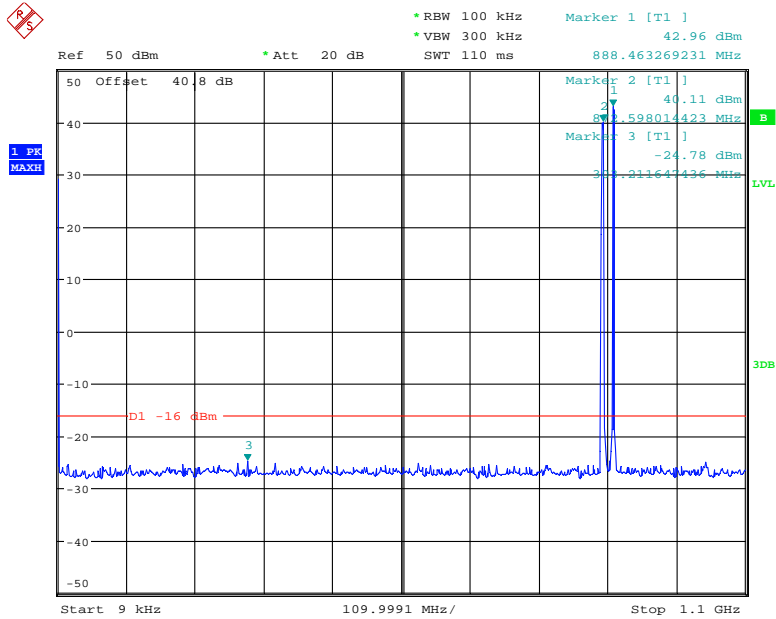
Product Service

**WCDMA/LTE MSR:**

**Mix Carrier(x2): 1W+1L**

**Configuration 1 - Mode 1 - W&L1.4**

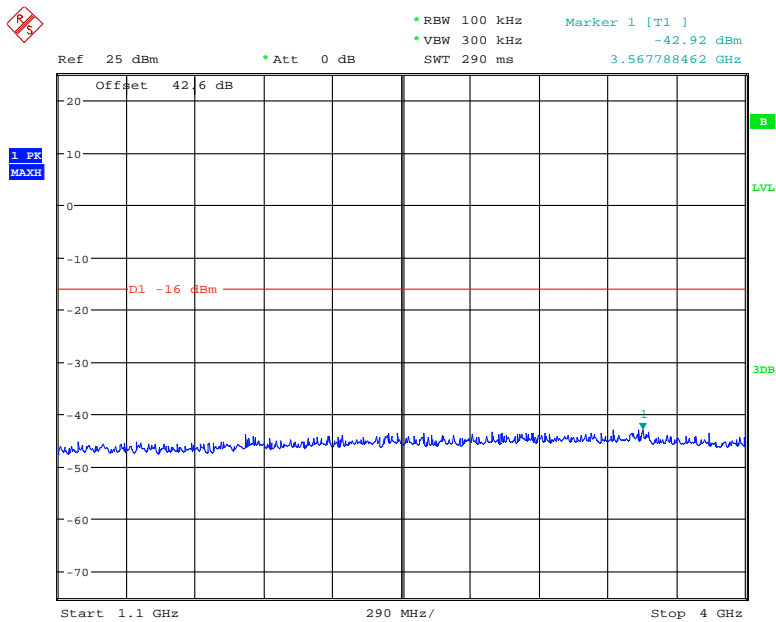
**9kHz to 1.1GHz**



Date: 8.JUN.2013 12:58:56

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

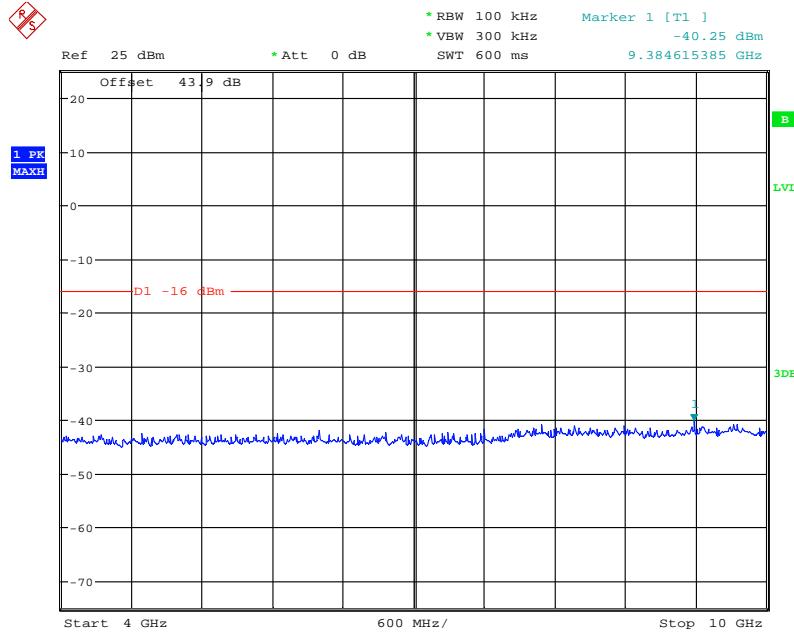
**1.1GHz to 4GHz**



Date: 8.JUN.2013 13:06:15



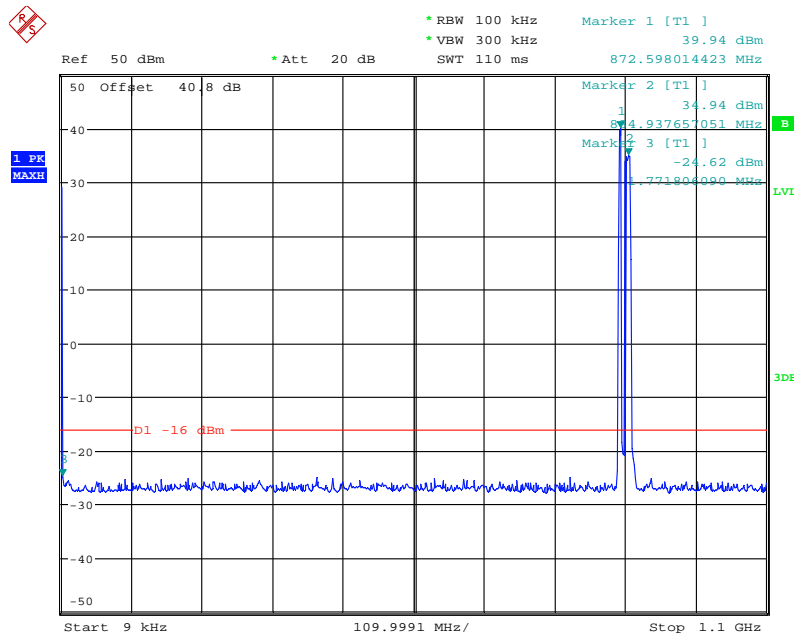
4GHz to 10GHz



Date: 8.JUN.2013 13:04:11

Configuration 1 - Mode 1 - W&L10

9kHz to 1.1GHz

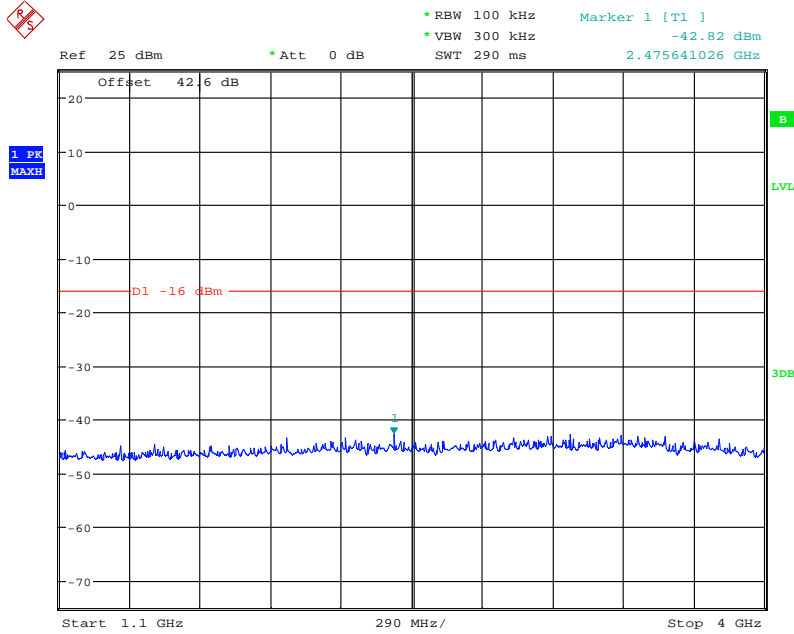


Date: 8.JUN.2013 15:41:44

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

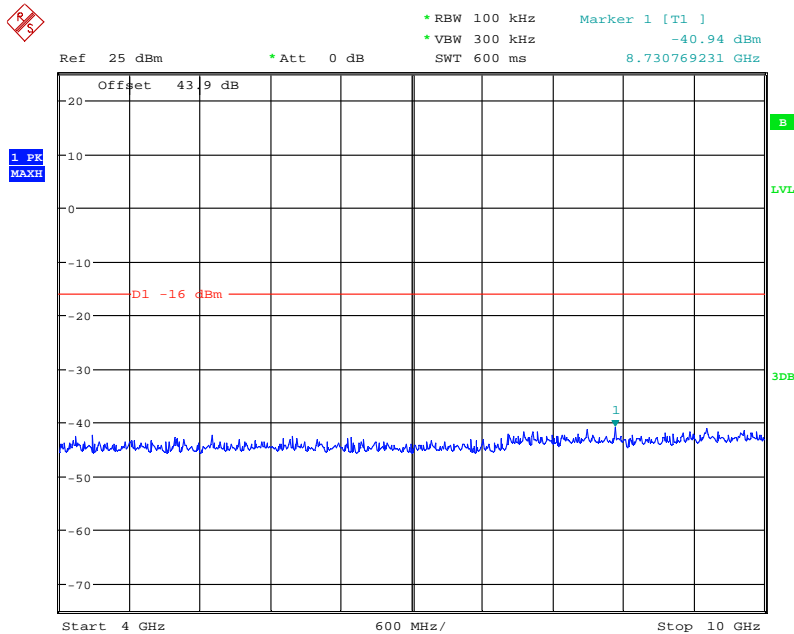


1.1GHz to 4GHz



Date: 8.JUN.2013 15:44:50

4GHz to 10GHz



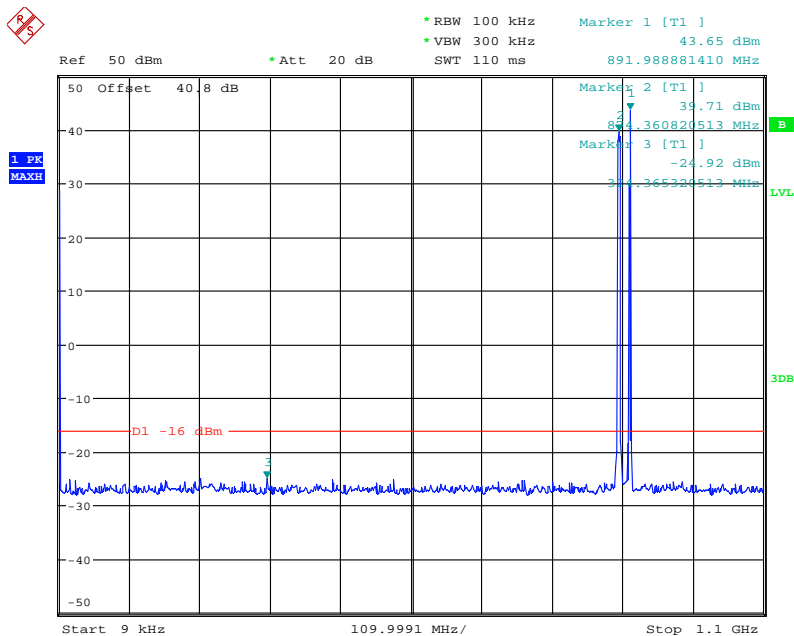
Date: 8.JUN.2013 15:43:37



Product Service

Configuration 1 - Mode 2 - W&L1.4

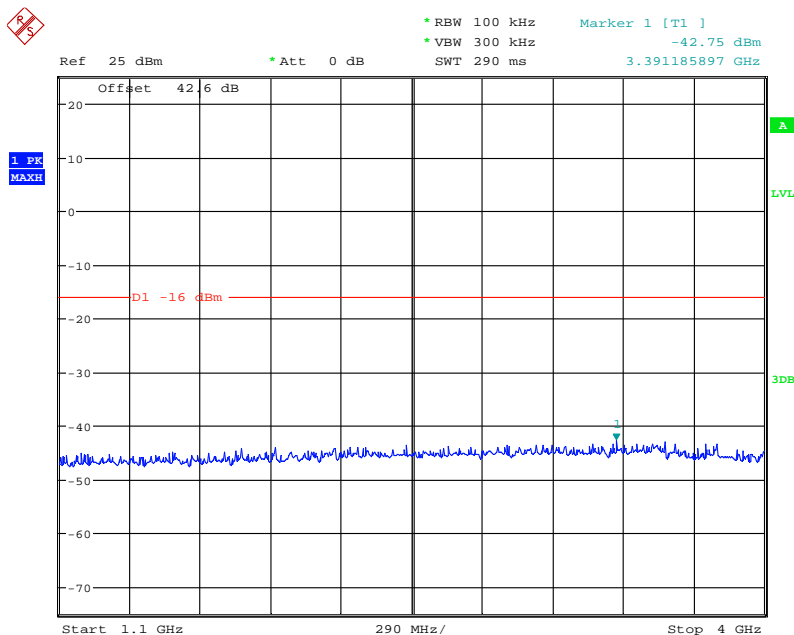
9kHz to 1.1GHz



Date: 9.JUN.2013 14:00:20

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

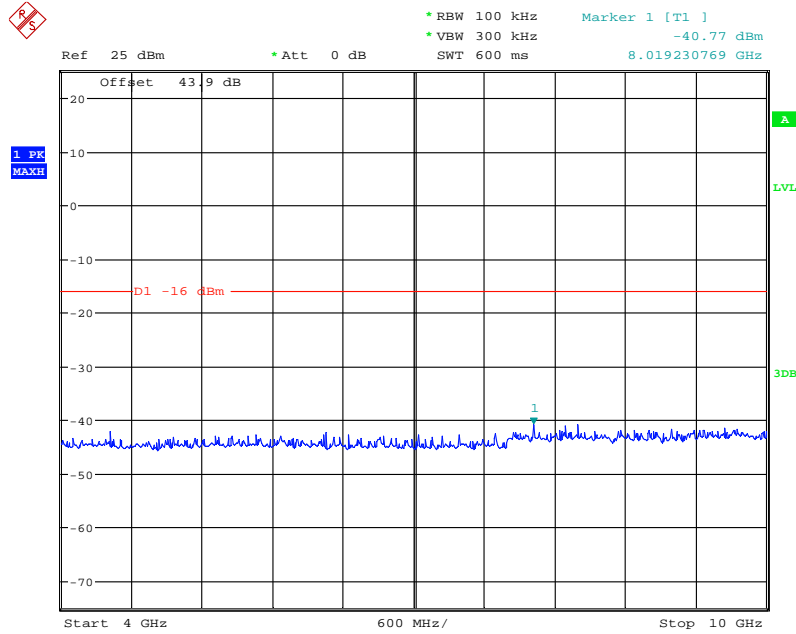
1.1GHz to 4GHz



Date: 9.JUN.2013 14:04:07



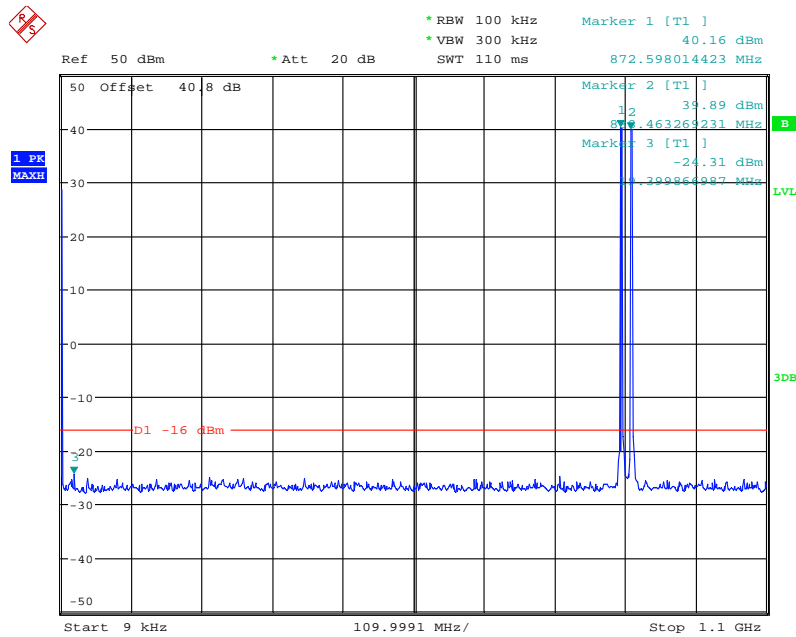
4GHz to 10GHz



Date: 9.JUN.2013 14:01:36

Configuration 1 - Mode 2 - W&L3

9kHz to 1.1GHz



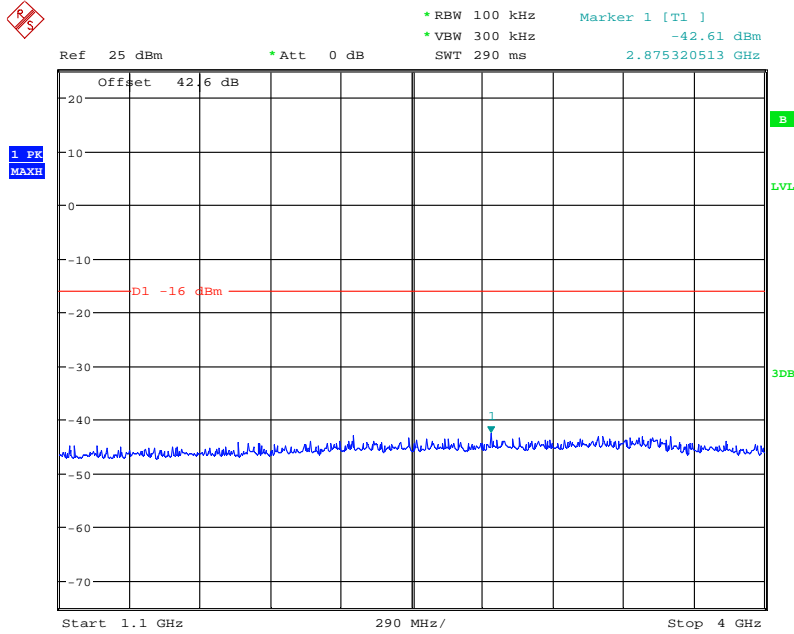
Date: 9.JUN.2013 13:40:09

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



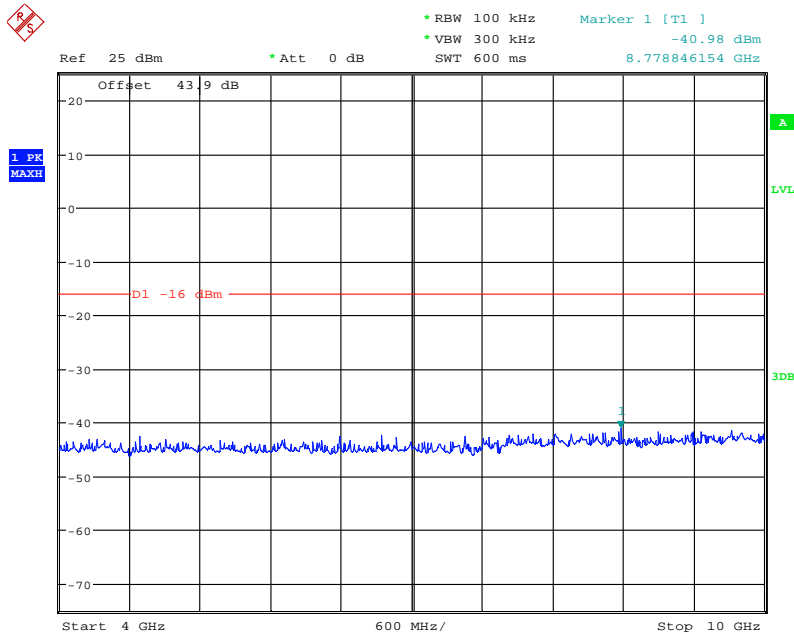


1.1GHz to 4GHz



Date: 9.JUN.2013 10:42:27

4GHz to 10GHz

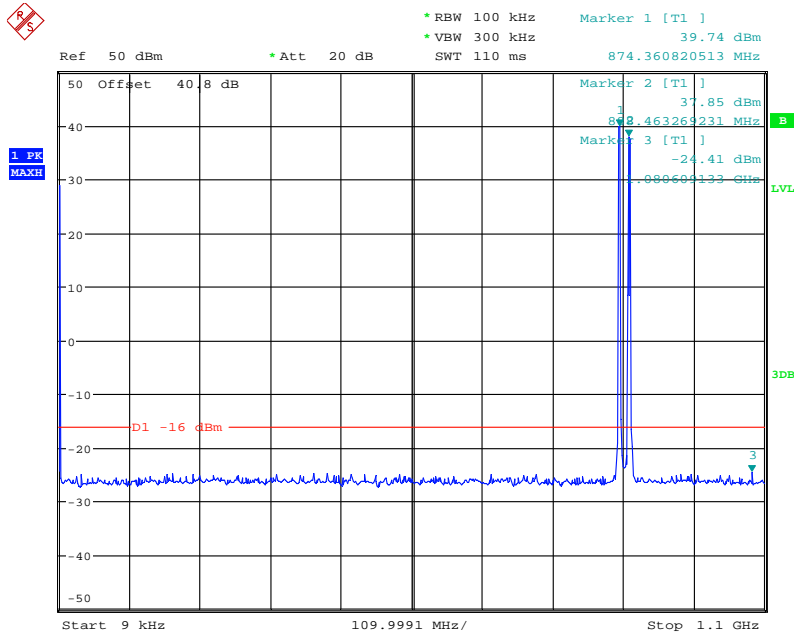


Date: 9.JUN.2013 13:36:07



Configuration 1 - Mode 2 - W&L5

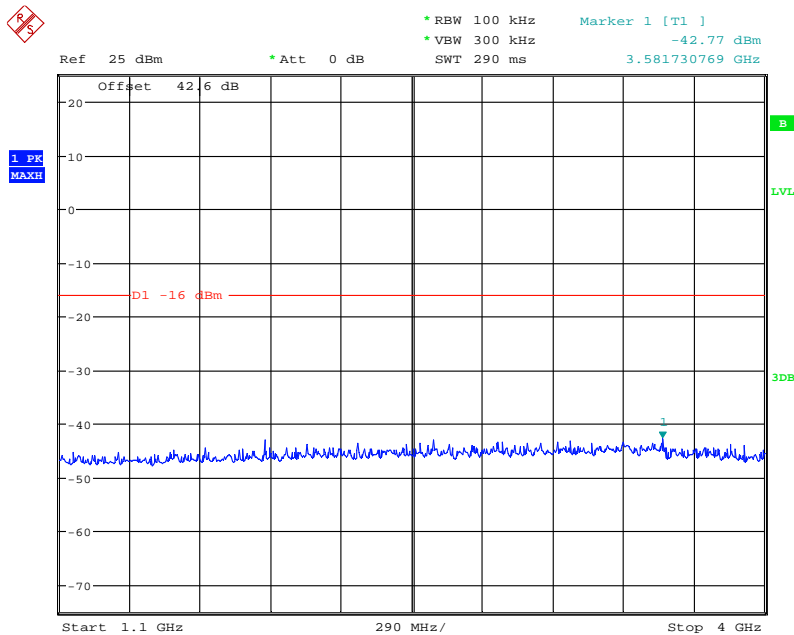
9kHz to 1.1GHz



Date: 9.JUN.2013 13:09:44

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

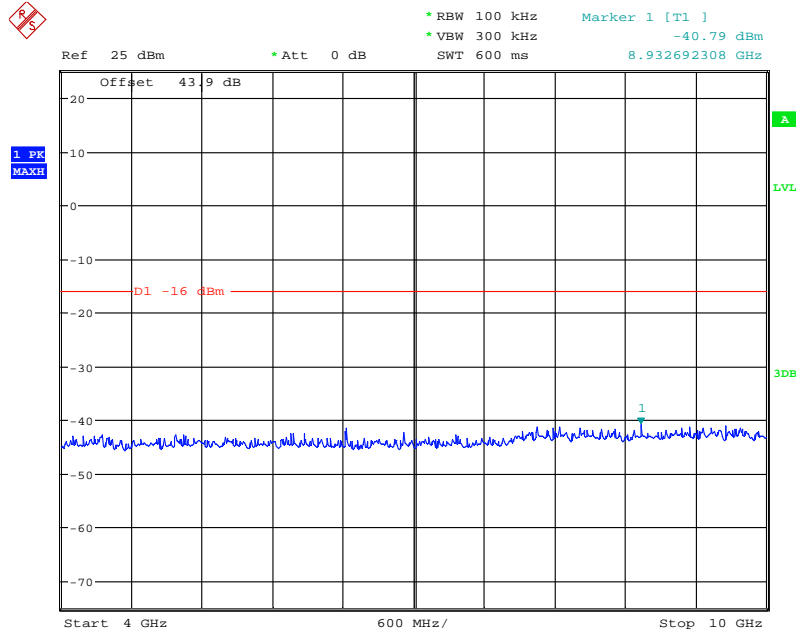
1.1GHz to 4GHz



Date: 9.JUN.2013 16:45:59



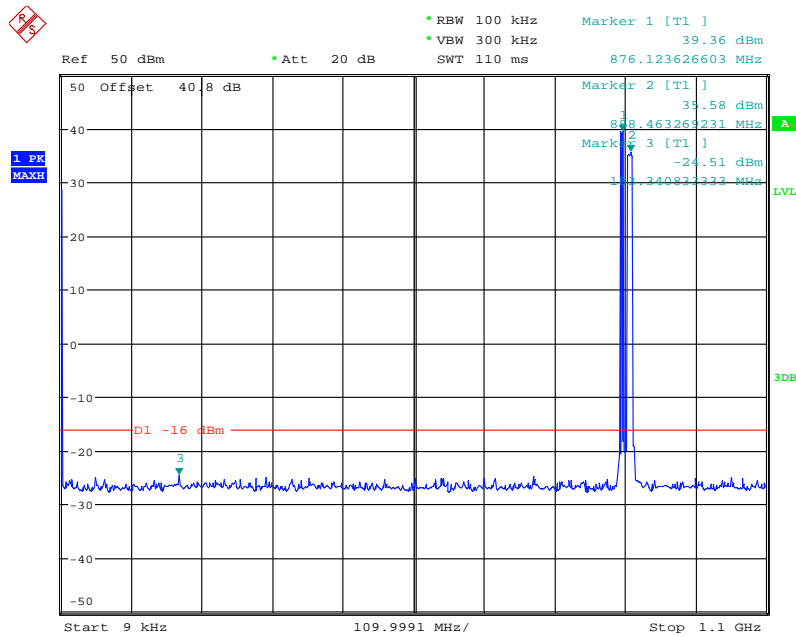
4GHz to 10GHz



Date: 9.JUN.2013 13:10:41

Configuration 1 - Mode 2 - W&L10

9kHz to 1.1GHz



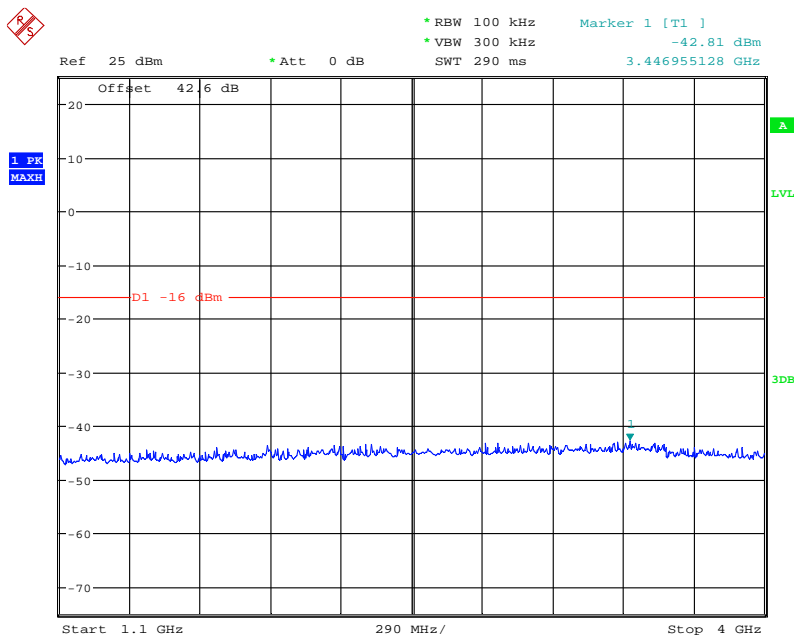
Date: 9.JUN.2013 12:13:07

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



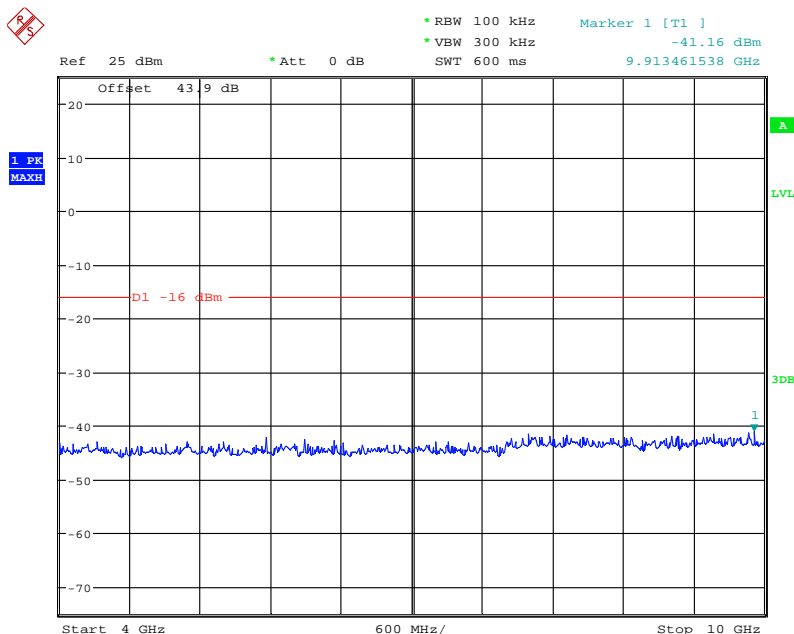
Product Service

1.1GHz to 4GHz



Date: 9.JUN.2013 12:21:16

4GHz to 10GHz

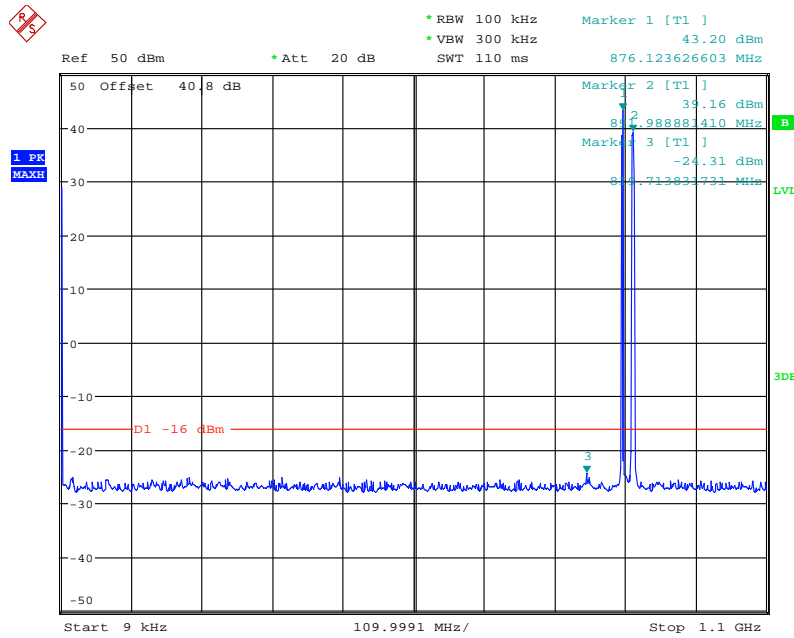


Date: 9.JUN.2013 12:14:39



Configuration 1 - Mode 3 - L1.4&W

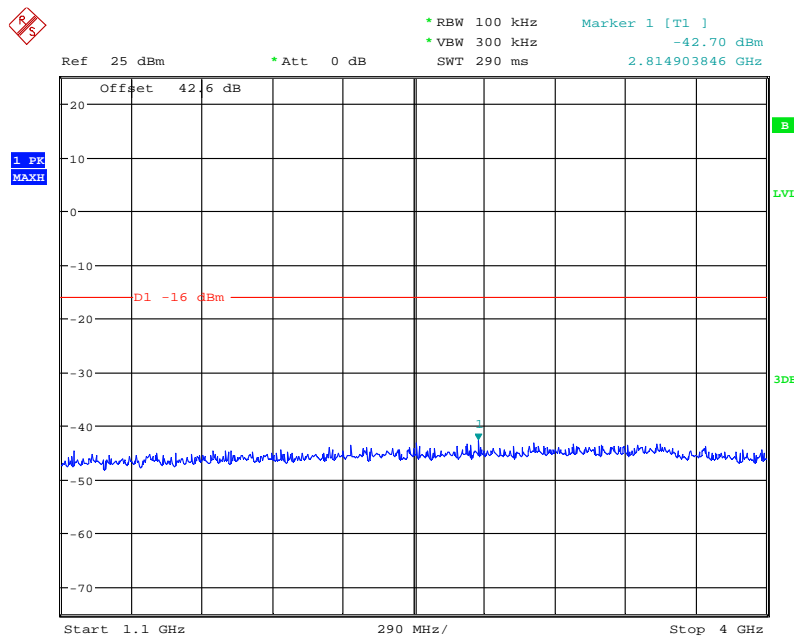
9kHz to 1.1GHz



Date: 8.JUN.2013 17:09:05

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

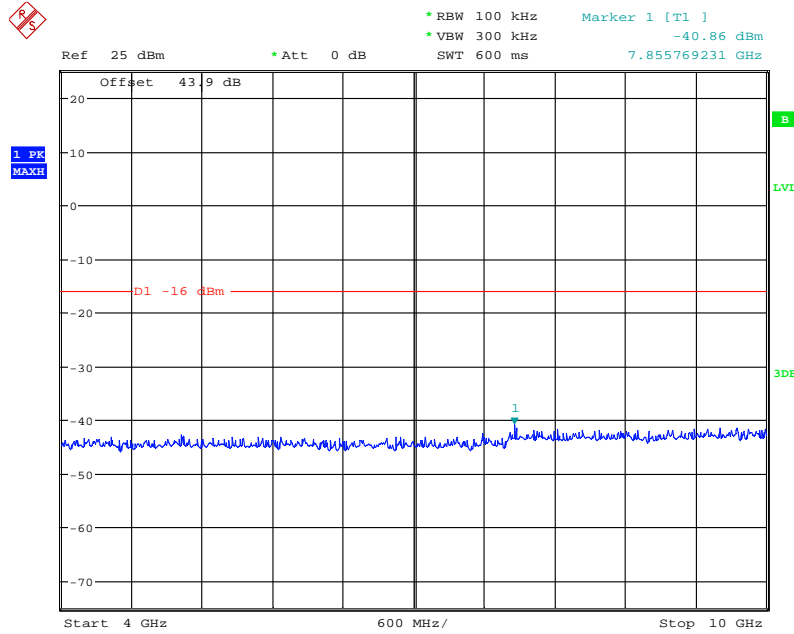
1.1GHz to 4GHz



Date: 8.JUN.2013 17:18:50



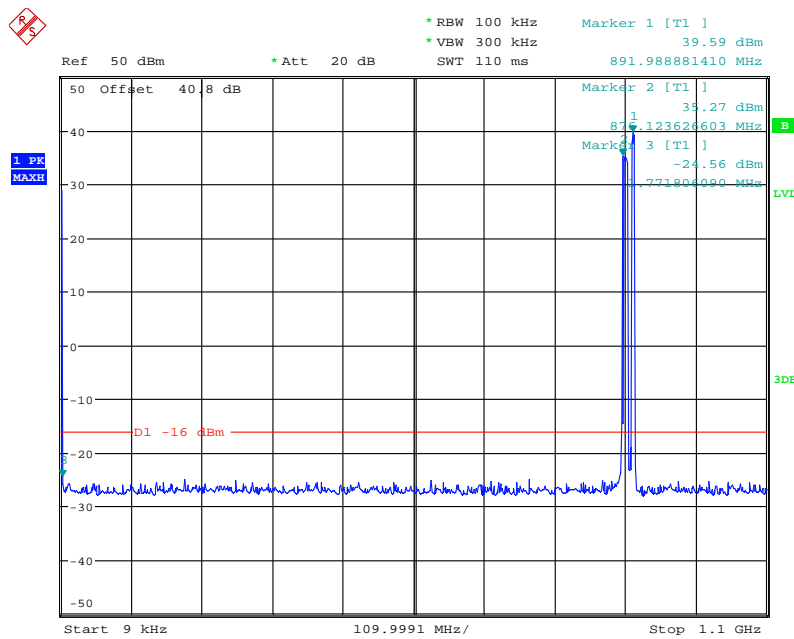
4GHz to 10GHz



Date: 8.JUN.2013 17:10:51

Configuration 1 - Mode 3 - L10&W

9kHz to 1.1GHz



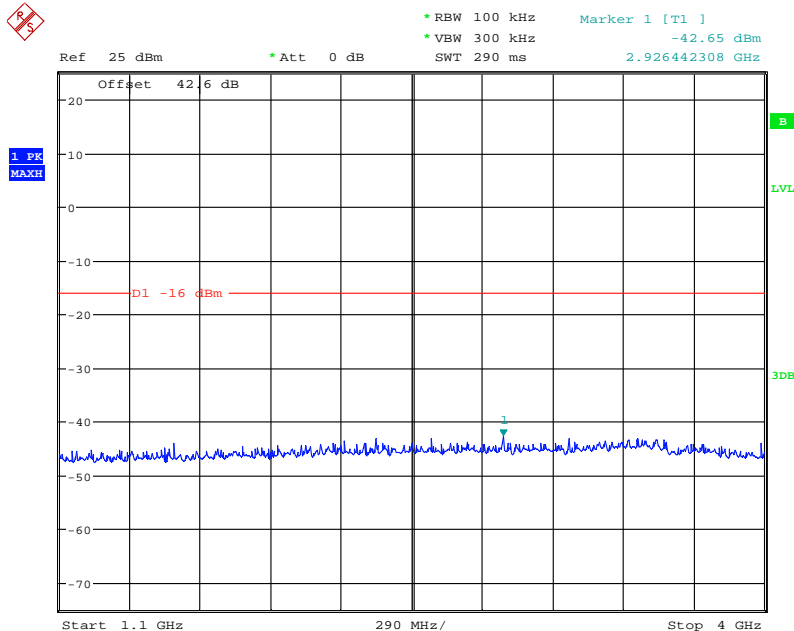
Date: 9.JUN.2013 10:57:11

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



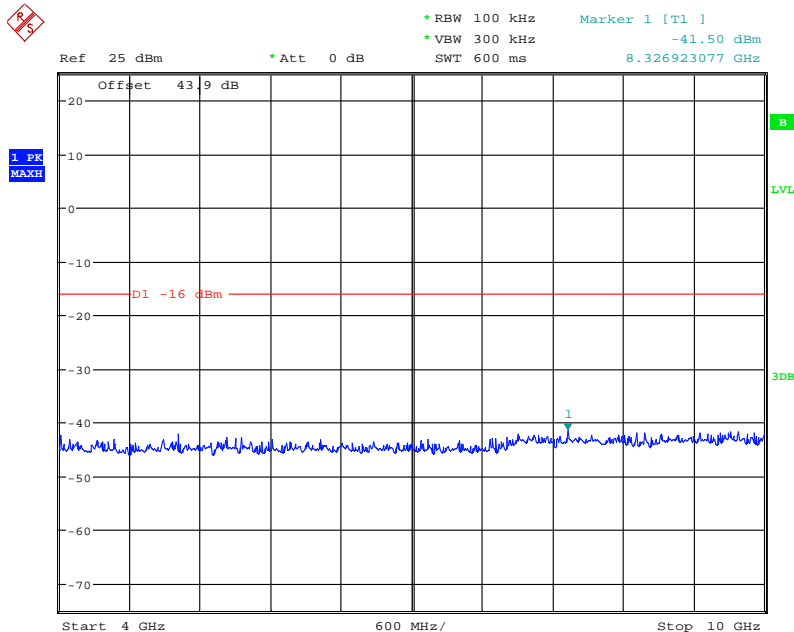
Product Service

### 1.1GHz to 4GHz



Date: 9.JUN.2013 16:07:47

### 4GHz to 10GHz



Date: 9.JUN.2013 10:58:31

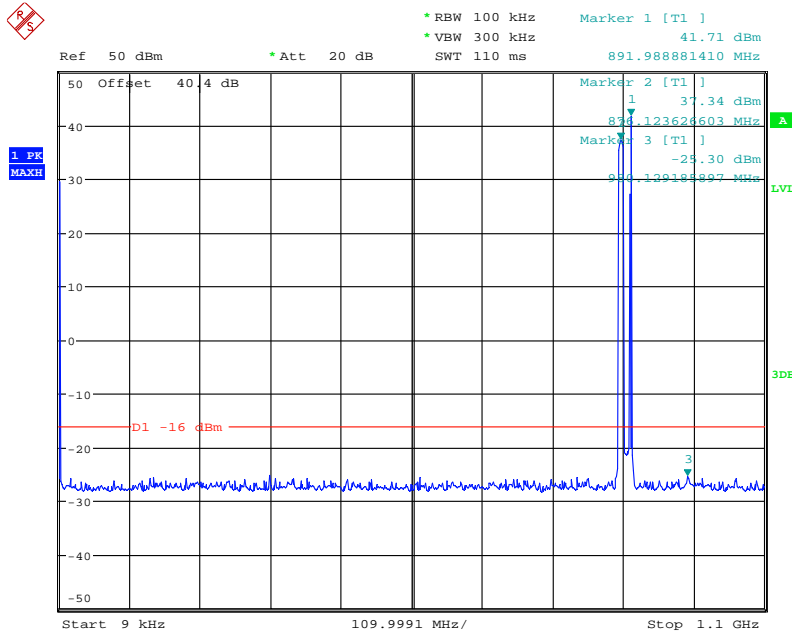


Product Service

**Mix Carrier(x3): 2W+1L**

**Configuration 1 - Mode 6 - W&W&L1.4**

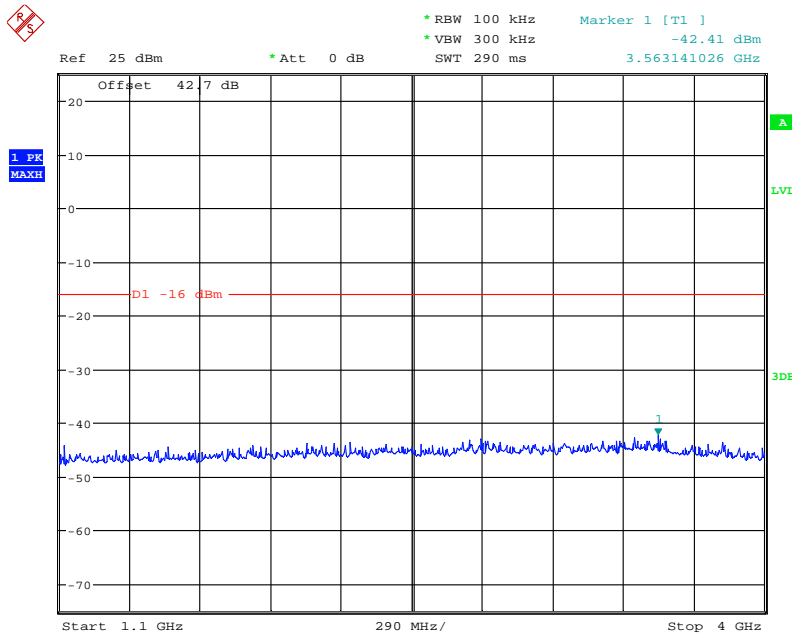
**9kHz to 1.1GHz**



Date: 19.JUN.2013 14:31:18

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

**1.1GHz to 4GHz**



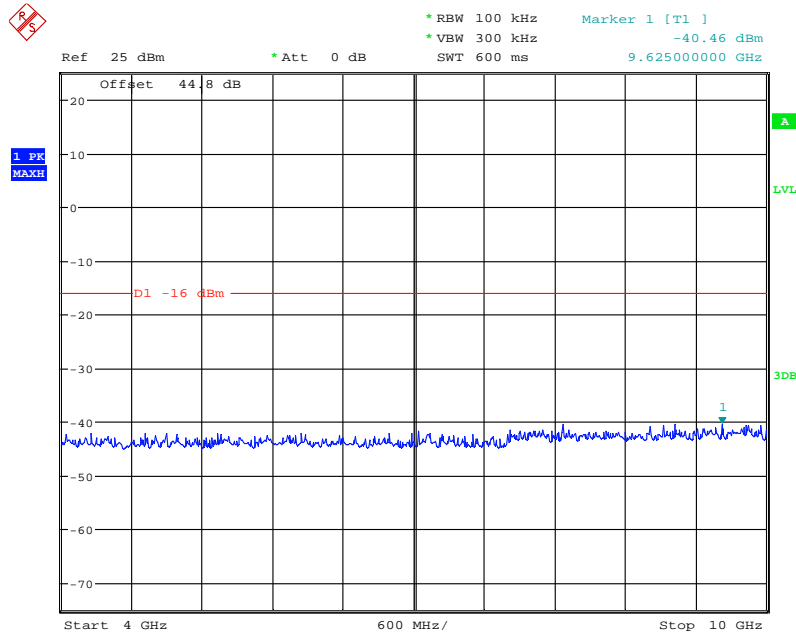
Date: 19.JUN.2013 14:29:23





Product Service

**4GHz to 10GHz**

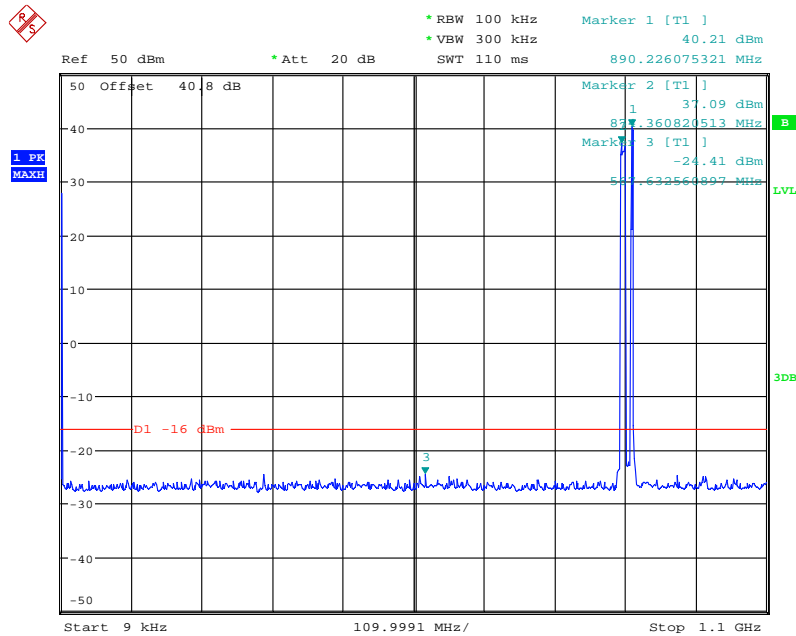


Date: 19.JUN.2013 14:30:02

**Mix Carrier(x4): 2W+2L**

**Configuration 1 - Mode 7 - W&W&L1.4&L1.4**

**9kHz to 1.1GHz**

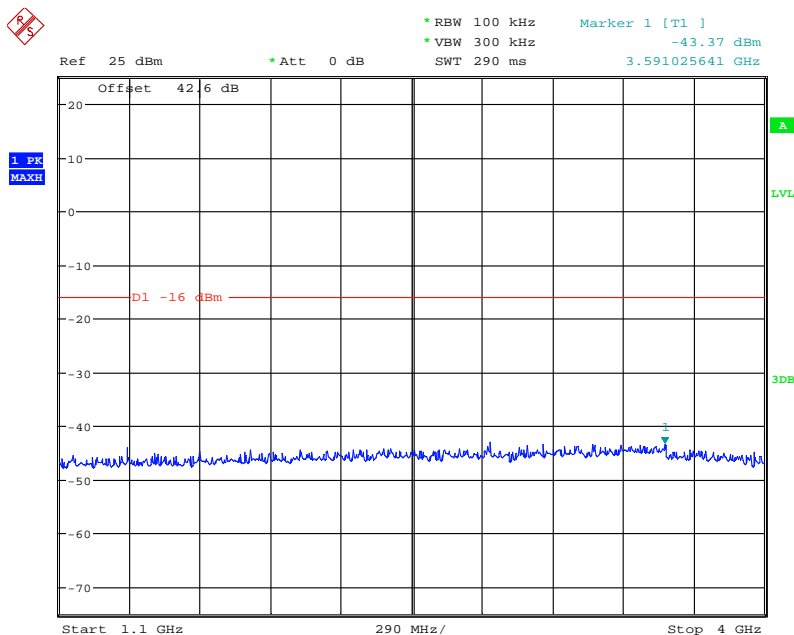


Date: 13.JUN.2013 13:54:24

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

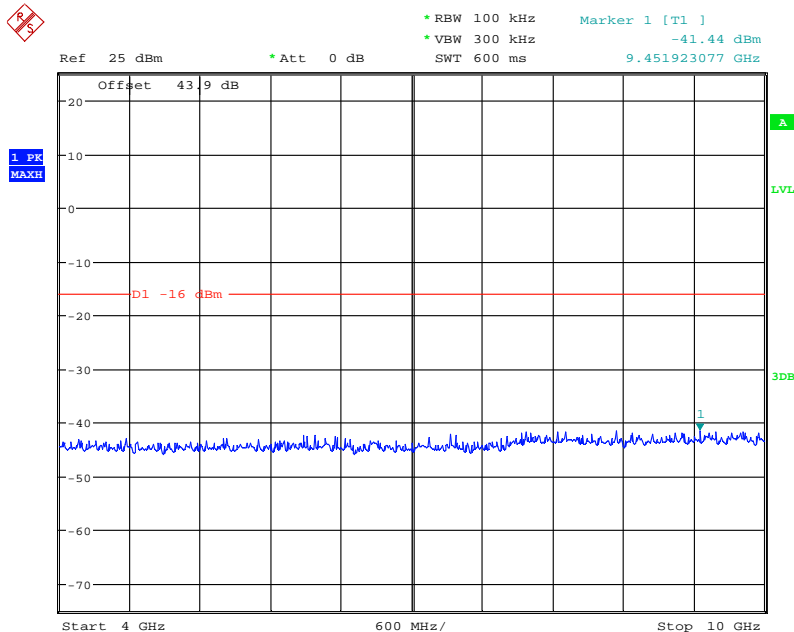


1.1GHz to 4GHz



Date: 13.JUN.2013 13:55:50

4GHz to 10GHz



Date: 13.JUN.2013 13:51:31

Remarks

The EUT does not exceed -16dBm at the frequency range of 9kHz to 10GHz.



Product Service

## **2.6 RECEIVER SPURIOUS EMISSIONS**

### **2.6.1 Specification Reference**

FCC CFR 47 Part 15, Clause 15.111

### **2.6.2 Equipment Under Test**

RUS 01 B5 / KRC 118 64/2, S/N: C824937848

### **2.6.3 Date of Test and Modification State**

8 and 9 June 2013 – Modification State 0

### **2.6.4 Test Equipment Used**

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

### **2.6.5 Test Method and Operating Modes**

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

In accordance with FCC CFR 47 Part 15 Clause 15.111, the receiver spurious emissions from the antenna terminal were measured. Measurements were performed on the receiver antenna connector RF B1. The EUT was set to transmitter mode on the TX connector RF A1 and during the measurement the RF A1 was terminated with match load, (50 Ohm).

The resolution was set to 1MHz in the frequency range 9kHz to 15GHz. The spectrum analyzer detector was set to peak and trace was kept on Max Hold to give the worst case. The limit line that apply is -57dBm, 2 nanowatts in band 9kHz to 15GHz.

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

Measurements were made from 9kHz up to at least 5<sup>th</sup> harmonic of the highest internal frequency.

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

- Configuration 1 - Mode 1 - W&L1.4
- Mode 2 - W&L1.4
- Mode 3 - L1.4&W



Product Service

**2.6.6 Environmental Conditions**

	8 June 2013	9 June 2013
Ambient Temperature	24.8°C	24.5°C
Relative Humidity	46.0%	46.0%

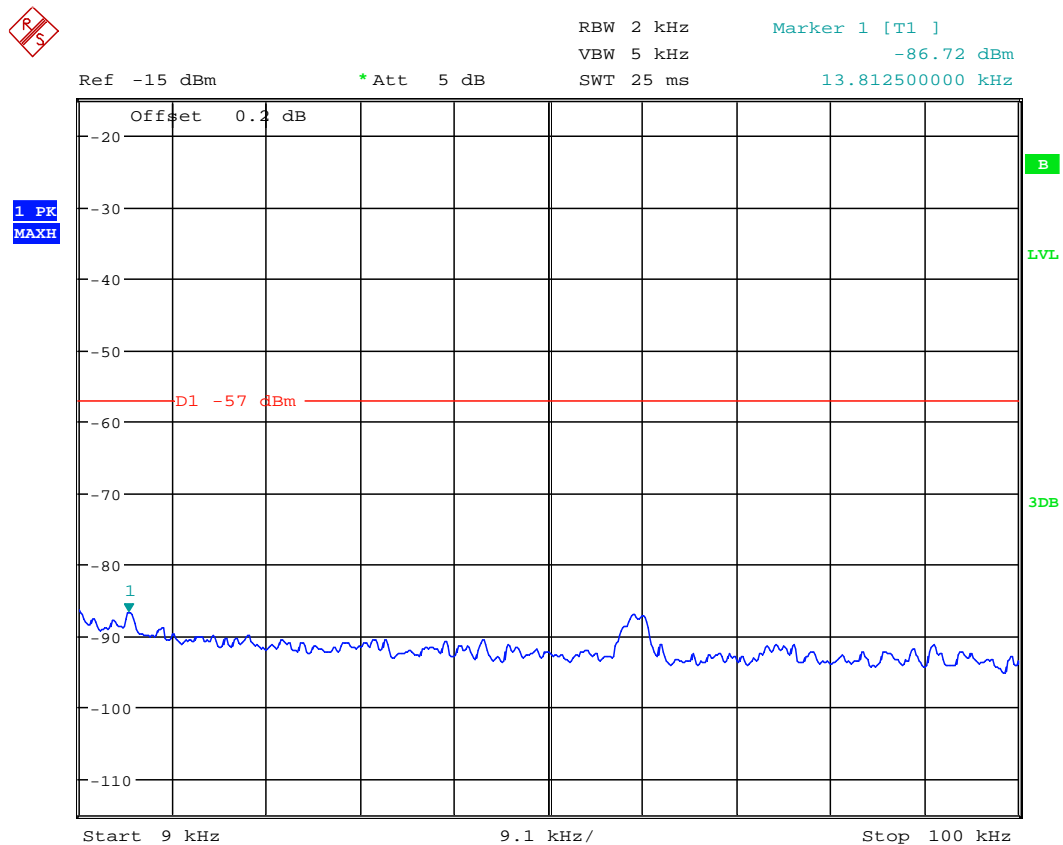
**2.6.7 Test Results**

For the period of test the EUT met the requirements of FCC CFR 47 Part 15 for Receiver 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.

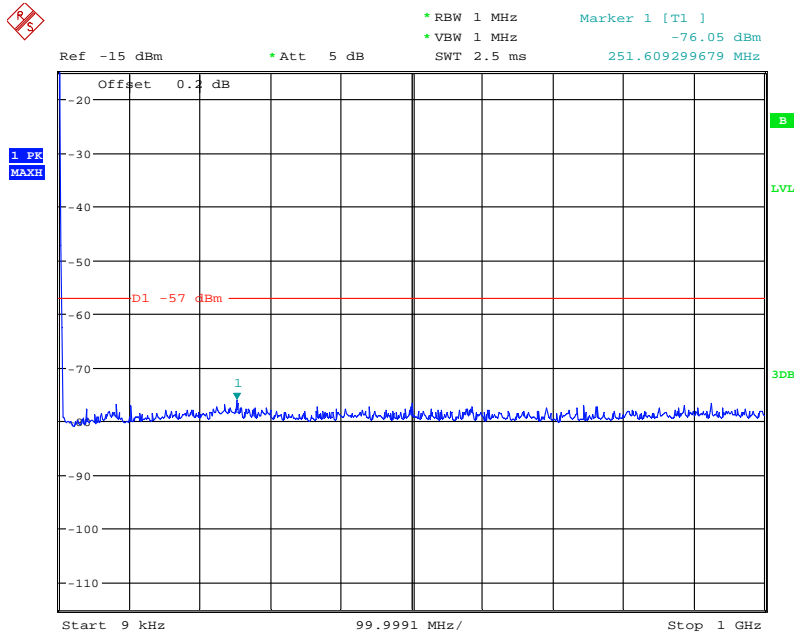


Date: 8.JUN.2013 14:41:49



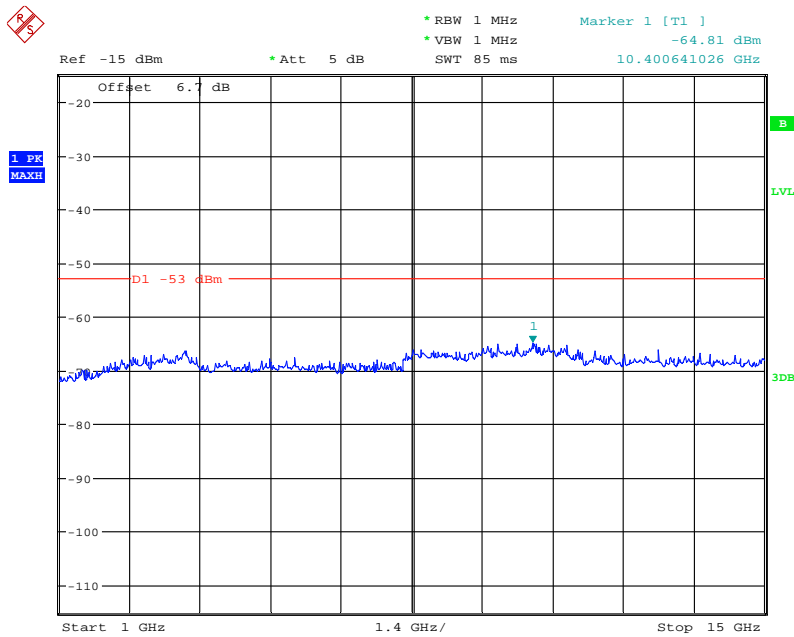
Configuration 1 - Mode 1 - W&L1.4

9kHz to 1GHz



Date: 8.JUN.2013 13:14:57

1GHz to 15GHz



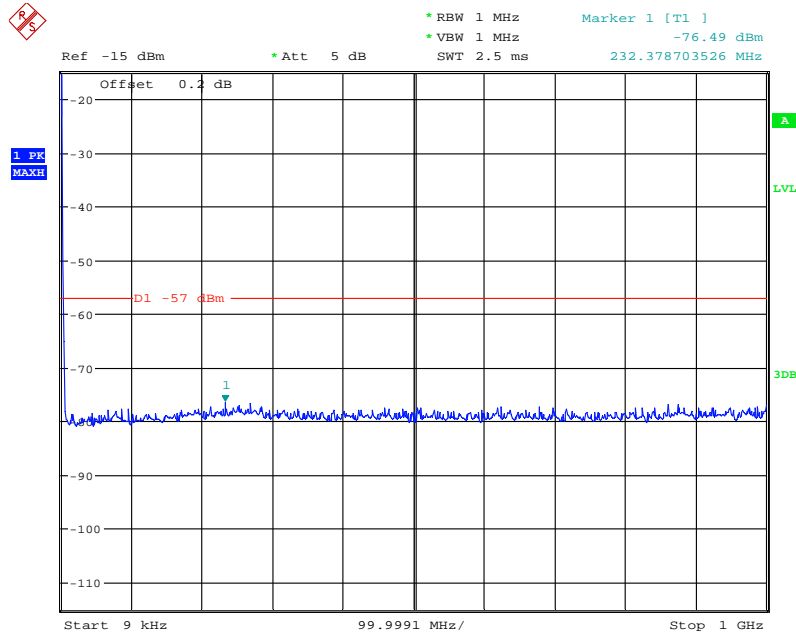
Date: 8.JUN.2013 13:17:45

Note: The results above 1 GHz should be compared to a limit of -57dBm.



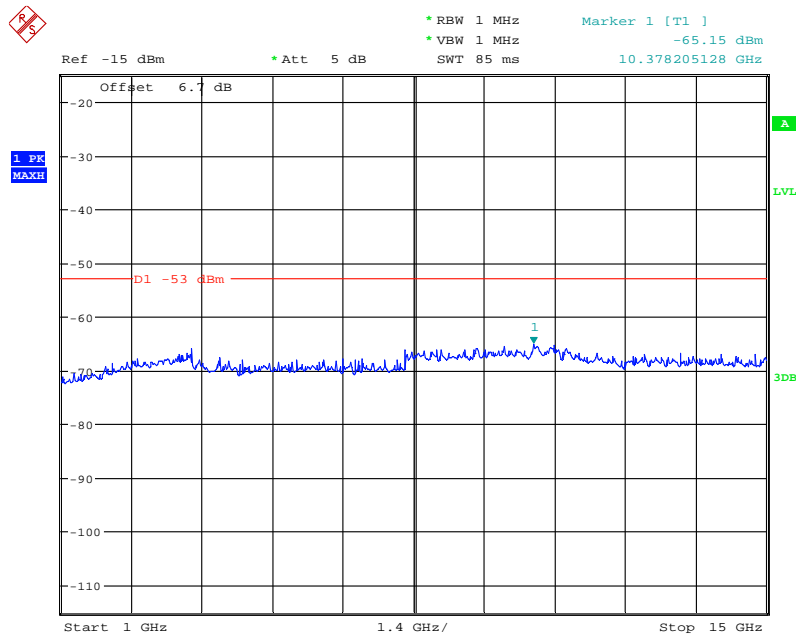
Configuration 1 - Mode 2 - W&L1.4

9kHz to 1GHz



Date: 9.JUN.2013 14:08:25

1GHz to 15GHz



Date: 9.JUN.2013 14:09:33

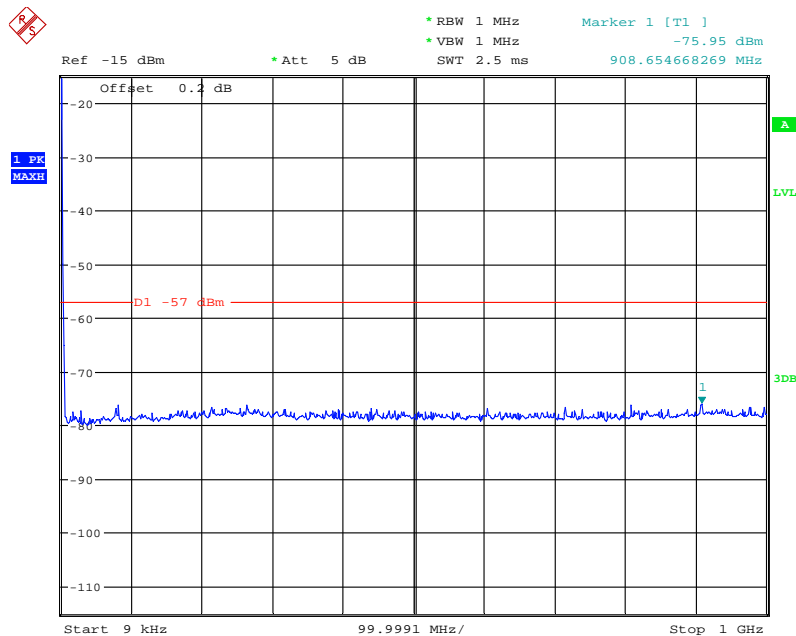
Note: The results above 1 GHz should be compared to a limit of -57dBm.



Product Service

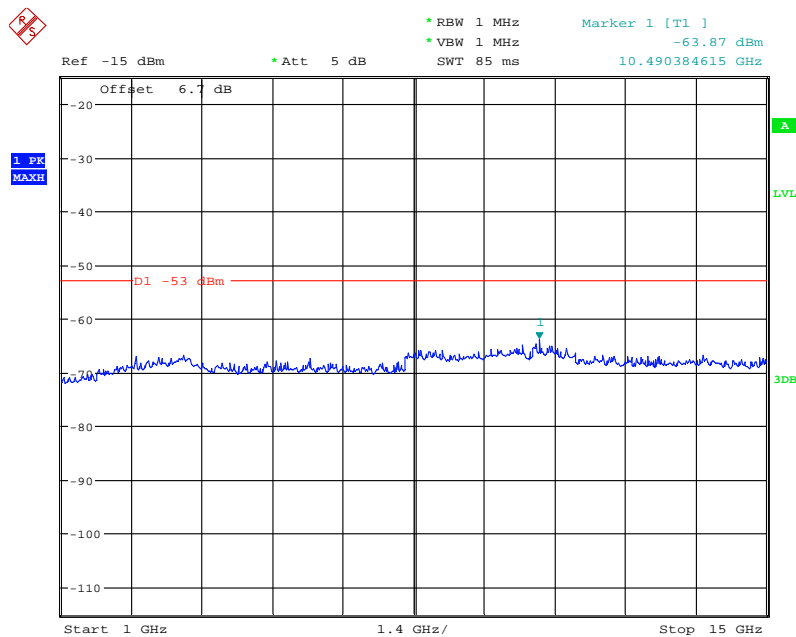
Configuration 1 - Mode 3 - L1.4&W

9kHz to 1GHz



Date: 8.JUN.2013 17:15:46

1GHz to 15GHz



Date: 8.JUN.2013 17:17:03

Note: The results above 1 GHz should be compared to a limit of -57dBm.



Product Service

Limit

Receiver spurious emissions shall not exceed -57dBm / 2 nanowatts in the band 9kHz to 15GHz.

Remarks

The EUT does not exceed the limit at the frequency range of 9kHz to 15GHz.





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
<b>Section 2.1, 2.2, 2.3, 2.5, 2.6 – Maximum Conducted Output Power, Peak – Average Ratio, Spurious Emissions at Antenna Terminals (<math>\pm 1</math>MHz), Conducted Spurious Emissions and Receiver Spurious Emissions.</b>					
Spectrum Analyser	Rohde & Schwarz	FSQ26	100244	12	07-Apr-2014
Spectrum Analyser	Rohde & Schwarz	FSQ26	200235	12	06-Sep-2013
Power Meter	Rohde & Schwarz	NRP	102625	12	12-Aug-2013
Power Sensor	Rohde & Schwarz	NRP-Z51	102433	12	12-Aug-2013
Network Analyzer	Agilent	8720D	US36140166	12	06-Sep-2013
40dB Attenuator	Aeroflex / Weinschel	48-40-43-LIM	BR5020	-	O/P MON
30dB Attenuator	XHS	DTS100	04081801	-	O/P MON
10dB Attenuator	Weinschel Crop	48-10-43	BB8290	-	O/P MON
Pass Filter	K&L	ULK 904 098/2	16	-	O/P MON
Load	Shanghai Huaxiang	TF100	09121648	-	O/P MON
Load	Shanghai Huaxiang	TFE5-3	090323194	-	O/P MON
Load	Shanghai Huaxiang	TFE5-3	090323220	-	O/P MON
Power Supply	Dahua	DH1716-5D	2008040041	-	O/P MON
Power Supply	Dahua	DH1716-5D	2008040050	-	O/P MON
Power Supply	Dahua	DH1716-5D	20030062	-	O/P MON
Digital Multi-meter	FLUKE	179	91820401	12	13-Dec-2013
Thermo-hygrometer	AZ Instruments	8705	9151655	12	16-Dec-2013



Instrument	Manufacturer	Type No.	Serial No.	Calibration Period (months)	Calibration Due
<b>Section 2.4 – Radiated Spurious Emissions</b>					
Load	Shanghai Huaxiang	TF100	09121648	-	O/P MON
Load	Shanghai Huaxiang	TF100	09121605	-	O/P MON
Load	Shanghai Huaxiang	TFE5-3	090323194	-	O/P MON
Load	Shanghai Huaxiang	TFE5-3	090323220	-	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
Power Supply	Dahua	DH1716-5D	20030062	-	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 <sup>6</sup>		

\* In accordance with CISPR 16-4



Product Service

## **SECTION 4**

### **ACCREDITATION, DISCLAIMERS AND COPYRIGHT**



Product Service

#### 4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



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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).

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