Report On

FCC and Industry Canada Testing of the
Ericsson AB RRUS 11 B5 / KRC 161 285/2

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TÜV SÜD Product Service, Octagon House, Concorde Way, Segensworth North,
Fareham, Hampshire, United Kingdom, PO15 5RL
Tel: +44 (0) 1489 558100. Website: www.tuv-sud.co.uk

REPORT ON FCC and Industry Canada Testing of the Ericsson RRUS 11 B5 / KRC 161 285/2

Document 75922896 Report 01 Issue 2

June 2013

PREPARED FOR

Ericsson AB
Isafjordsgatan 10,
SE-164 80
Stockholm
Sweden

PREPARED BY

Zhao Guiying

G Zhao
Test Engineer

APPROVED BY

M Jenkins
Authorised Signatory

DATED 17 June 2013

This report has been up-issued to Issue 2 to include additional ITU designation of Emissions.

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);

Zhao Guiying — G Zhao

Zhang Liuying — X Zhang

UKAS TESTING 0141

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SECTION 1

REPORT SUMMARY

FCC and Industry Canada Testing of the
Ericsson RRUS 11 B5 / KRC 161 285/2

Product Service

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Ericsson RRUS 11 B5 / KRC 161 285/2 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 RRUS 11 B5 / KRC 161 285/2 to add the following new functionalities:

1) Support MSR (Multi Standard Radio) with combination of WCDMA and LTE;
2) Support Multi carriers for LTE;
3) Support MIMO (Multiple Input Multiple Output). This Remote Radio Unit (RRUS 11 B5) has 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	RRUS 11 B5
Product Number	KRC 161 285/2
IC Model Number	AS1612852
Serial Number(s)	CB4P404684
WCDMA Software	CXP9018350/1 Rev R12B07
LTE Software	CXP1040013/09 Rev R71H
PIS Software	CXP9017316/1 Rev R39UL
Hardware Version	R1F
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 22: 2012 Industry Canada RSS-132 Issue 3: 2013
Incoming Release Date	Declaration of Build Status 21 May 2013
Order Number Date	PTP 09 May 2013
Start of Test	21 May 2013
Finish of Test	04 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

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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 – Remote Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2 and 22	RSS-132 and RSS-GEN					
	22.913 (a)	5.4	Effective Radiated Power	869.7 MHz (L1.4) + 888.3 MHz (L1.4) 874.0 MHz (L10) + 884.0 MHz (L10)		N/A	No integral antenna.
				872.2 MHz (L1.4) + 890.8 MHz (L1.4) 873.0 MHz (L3) + 890.0 MHz (L3) 874.0 MHz (L5) + 889.0 MHz (L5) 876.5 MHz (L10) + 886.5 MHz (L10)		N/A	
				874.7 MHz (L1.4) + 893.3 MHz (L1.4) 879.0 MHz (L10) + 889.0 MHz (L10)		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	
				869.7 MHz (L1.4) + 888.3 MHz (L1.4) 874.0 MHz (L10) + 884.0 MHz (L10)	0	Pass	
				872.2 MHz (L1.4) + 890.8 MHz (L1.4) 873.0 MHz (L3) + 890.0 MHz (L3) 874.0 MHz (L5) + 889.0 MHz (L5) 876.5 MHz (L10) + 886.5 MHz (L10)	0	Pass	
				874.7 MHz (L1.4) + 893.3 MHz (L1.4) 879.0 MHz (L10) + 889.0 MHz (L10)	0	Pass	

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Configuration 1 – Remote Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2 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	
				869.7 MHz (L1.4) + 888.3 MHz (L1.4) 874.0 MHz (L10) + 884.0 MHz (L10)	0	Pass	
				872.2 MHz (L1.4) + 890.8 MHz (L1.4) 873.0 MHz (L3) + 890.0 MHz (L3) 874.0 MHz (L5) + 889.0 MHz (L5) 876.5 MHz (L10) + 886.5 MHz (L10)	0	Pass	
				874.7 MHz (L1.4) + 893.3 MHz (L1.4) 879.0 MHz (L10) + 889.0 MHz (L10)	0	Pass	
	2.1047 (d)	5.2	Modulation Characteristics	869.7 MHz (L1.4) + 888.3 MHz (L1.4) 874.0 MHz (L10) + 884.0 MHz (L10)		N/A	-
				872.2 MHz (L1.4) + 890.8 MHz (L1.4) 873.0 MHz (L3) + 890.0 MHz (L3) 874.0 MHz (L5) + 889.0 MHz (L5) 876.5 MHz (L10) + 886.5 MHz (L10)		N/A	
				874.7 MHz (L1.4) + 893.3 MHz (L1.4) 879.0 MHz (L10) + 889.0 MHz (L10)		N/A	

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Configuration 1 – Remote Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2 and 22	RSS-132 and RSS-GEN					
	2.1049, 22.917 (b)	RSS-Gen 4.6.1	Occupied Bandwidth	869.7 MHz (L1.4) + 888.3 MHz (L1.4) 874.0 MHz (L10) + 884.0 MHz (L10)		N/A	-
				872.2 MHz (L1.4) + 890.8 MHz (L1.4) 873.0 MHz (L3) + 890.0 MHz (L3) 874.0 MHz (L5) + 889.0 MHz (L5) 876.5 MHz (L10) + 886.5 MHz (L10)		N/A	
				874.7 MHz (L1.4) + 893.3 MHz (L1.4) 879.0 MHz (L10) + 889.0 MHz (L10)		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	
				871.4MHz (W) + 876.4MHz (W) + 879.7MHz (L1.4) + 881.1MHz (L1.4)	0	Pass	
				881.9MHz (L1.4) + 883.3MHz (L1.4) + 886.6MHz (W) + 891.6MHz (W)	0	Pass	
				869.7MHz (L1.4) + 871.1MHz (L1.4) 870.5MHz (L3) + 873.5MHz (L3)	0	Pass	
				891.9MHz (L1.4) + 893.3MHz (L1.4) 889.5MHz (L3) + 892.5MHz (L3)	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) 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	
				873.8 MHz (W) + 878.8 MHz (W) + 889.3 MHz (L1.4) + 890.7 MHz(L1.4)	0	Pass	
				872.2 MHz (L1.4) + 890.8 MHz (L1.4) 873.0 MHz (L3) + 890.0 MHz (L3) 874.0 MHz (L5) + 889.0 MHz (L5) 876.5 MHz (L10) + 886.5 MHz (L10)	0	Pass	

Product Service

Configuration 1 – Remote Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2 and 22	RSS-132 and RSS-GEN					
2.5	2.1051, 22.917 (a)	5.5	Conducted Spurious Emissions	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) 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	
				869.7 MHz (L1.4) + 888.3 MHz (L1.4) 874.0 MHz (L10) + 884.0 MHz (L10)	0	Pass	-
				872.2 MHz (L1.4) + 890.8 MHz (L1.4) 873.0 MHz (L3) + 890.0 MHz (L3) 874.0 MHz (L5) + 889.0 MHz (L5) 876.5 MHz (L10) + 886.5 MHz (L10)	0	Pass	
				874.7 MHz (L1.4) + 893.3 MHz (L1.4) 879.0 MHz (L10) + 889.0 MHz (L10)	0	Pass	
	2.1055, 22.355	5.3	Frequency Stability Under Temperature Variations	869.7 MHz (L1.4) + 888.3 MHz (L1.4) 874.0 MHz (L10) + 884.0 MHz (L10)		N/A	
				872.2 MHz (L1.4) + 890.8 MHz (L1.4) 873.0 MHz (L3) + 890.0 MHz (L3) 874.0 MHz (L5) + 889.0 MHz (L5) 876.5 MHz (L10) + 886.5 MHz (L10)		N/A	-
				874.7 MHz (L1.4) + 893.3 MHz (L1.4) 879.0 MHz (L10) + 889.0 MHz (L10)		N/A	
	2.1055, 22.355	5.3	Frequency Stability Under Voltage Variations	869.7 MHz (L1.4) + 888.3 MHz (L1.4) 874.0 MHz (L10) + 884.0 MHz (L10)		N/A	
				872.2 MHz (L1.4) + 890.8 MHz (L1.4) 873.0 MHz (L3) + 890.0 MHz (L3) 874.0 MHz (L5) + 889.0 MHz (L5) 876.5 MHz (L10) + 886.5 MHz (L10)		N/A	-
				874.7 MHz (L1.4) + 893.3 MHz (L1.4) 879.0 MHz (L10) + 889.0 MHz (L10)		N/A	

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

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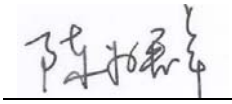
1.3 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Remote Radio Equipment
MANUFACTURER	Ericsson AB
PRODUCT NUMBER	RRUS 11 B5
PART NUMBER	KRC 161 285/2
IC Model NUMBER	AS1612852
SERIAL NUMBER	CB4P404684
HARDWARE VERSION	R1F
WCDMA Software	CXP9018350/1 Rev R11D02
LTE Software	CXP102051/16 Rev R32BD
PIS Software	CXP9013268/6 Rev R49AY
TRANSMITTER OPERATING RANGE	TX: 869MHz - 894MHz RX: 824MHz - 849MHz
MODULATIONS	WCDMA: QPSK, 16QAM, 64QAM LTE: QPSK, 16QAM, 64QAM
NUMBER OF CARRIERS	WCDMA: Maximum 4 carriers LTE: Maximum 2 carriers WCDMA/LTE MSR: Maximum 4 carriers (2 WCDMA carriers and 2 LTE carriers) (MIMO is supported for WCDMA, LTE and WCDMA/LTE MSR)
ITU DESIGNATION OF EMISSION	WCDMA: 5M00F9W LTE: 1M40F9W, 3M00F9W, 5M00F9W,10M0F9W,15M0F9W, 20M0F9W
OUTPUT POWER (RMS) (W or dBm)	2 x 46.0dBm (2 x 40W)
OUTPUT POWER TOLERANCE	± 1.0dB
INSTANTANEOUS BANDWIDTH	20MHz
CHANNEL BANDWIDTH	WCDMA: 4.2 MHz to 5MHz (configurable in steps of 100/200kHz) LTE: single carrier supports 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz and 20MHz, Multi carrier supports 1.4MHz, 3MHz, 5MHz and 10MHz according to 3GPP TS 36.141
NUMBER OF ANTENNA PORTS	2 TX/ RX ports
FCC ID	TA8AKRC161285-2
IC ID	287AB-AS1612852
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The equipment is the Remote Radio Part of WCDMA, LTE Base Station.

Signature 

Date 8 June 2013

D of B S Serial No 75922896/01

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

Product Service

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) RRUS 11 B5 / KRC 161 285/2 is an Ericsson Radio Equipment working in the public mobile service 850MHz band which provides communication connections to WCDMA and LTE network. The RRUS 11 B5 / KRC 161 285/2 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

Product Service

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 RRUS 11 B5 / KRC 161 285/2 supports WCDMA and LTE Single RAT with single carrier and multi carrier, it also supports MSR LTE/WCDMA access technology. MIMO is supported for both Single RAT and MSR.

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.

The EUT includes two TX/RX ports and it can be configured to transmit in MIMO mode, and MIMO mode was used for the TX measurements as the worst case.

The Maximum Output Power was tested on both TX/RX output connector RF A and RF B, all other TX measurements were performed on the combined TX/RX output connector RF A of the EUT. RX testing is not applicable due to the EUT does not have stand-by mode.

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

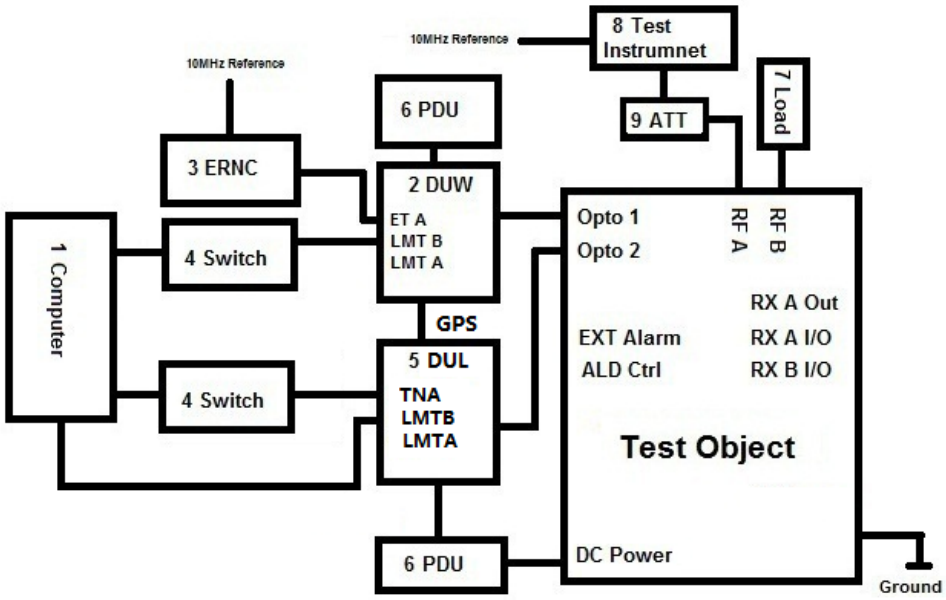
- LTE single RAT MIMO:

  Multi Carrier (1x2): Test E-TM1.1 (QPSK) in channel bandwidth 1.4MHz and 10MHz

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

Product Service

Test Setup, Conducted Measurement:

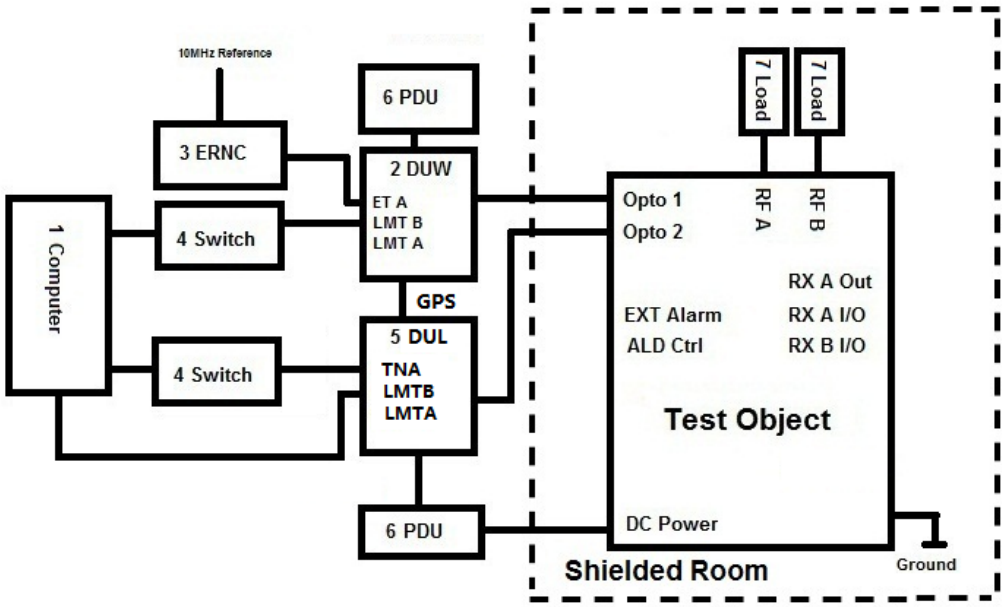


Product Name	Product Number	Version	Serial Number
RRUS 11 B5	KRC 161 285/2	R1F	CB4P404684

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 20 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	--	--
	DUL 20 01	KDU 137 533/4	R1C	CB4H365213
	SUP 6601	1/BFL 901 009/1	R3B	BR81262578
6	Power Supply	DH1716-5D	--	2008040041
	Power Supply	DH1716-5D		2008040050
7	Load	TF100	--	09121648
8	Power Meter	Rohde & Schwarz NRP	--	102625
	Power Sensor	Rohde & Schwarz NRP-Z51	--	102433
	Spectrum Analyzer	FSQ26	--	100244
9	40dB Attenuator	48-40-43-LIM	--	BR5020

Product Service

Test Setup, Radiated Measurement:



Product Name	Product Number	Version	Serial Number
RRUS 11 B5	KRC 161 285/2	R1F	CB4P404684

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 20 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	--	--
	DUL 20 01	KDU 137 533/4	R1C	CB4H365213
	SUP 6601	1/BFL 901 009/1	R3B	BR81262578
6	Power Supply	DH1716-5D	--	2008040041
	Power Supply	DH1716-5D		2008040050
7	Load	TF100	--	09121648
	Load	TF100	--	09121605

Product Service

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 (20W) + 1L (20W)

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 (2x10W) + 1L (1x20W)

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

MSR	Channel No.	Frequencies (MHz)
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 (2x10W) + 2L (2x10W)

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

MSR	Channel No.	Frequencies (MHz)
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

Mode 8 - W&W&L1.4&L1.4

MSR	Channel No.	Frequencies (MHz)
W&W & L1.4&L1.4	4357(W)&4382(W) & 2507(L)&2521(L)	871.4+876.4+879.7+881.1

Mode 9 - L1.4&L1.4&W&W

MSR	Channel No.	Frequencies (MHz)
L1.4&L1.4 & W&W	2529(L)&2543(L) & 4433(W)&4458(W)	881.9+883.3+886.6+891.6

LTE single RAT:

Multi-Carrier(x2): (2x20W)

Mode 10 - L1.4&L1.4, L10&L10

Multi-Carrier	Channel No.	Frequencies (MHz)
L1.4 & L1.4	2407&2593	869.7+888.3
L10 & L10	2450&2550	874.0+884.0

Mode 11 - L1.4&L1.4, L3&L3, L5&L5, L10&L10

Multi-Carrier	Channel No.	Frequencies (MHz)
L1.4 & L1.4	2432&2618	872.2+890.8
L3 & L3	2440&2610	873.0+890.0
L5 & L5	2450&2600	874.0+889.0
L10 & L10	2475&2575	876.5+886.5

Mode 12 - L1.4&L1.4, L10&L10

Multi-Carrier	Channel No.	Frequencies (MHz)
L1.4 & L1.4	2457&2643	874.7+893.3
L10 & L10	2500&2600	879.0+889.0

Mode 13 - L1.4&L1.4, L3&L3

Multi-Carrier	Channel No.	Frequencies (MHz)
L1.4 & L1.4	2407&2421	869.7+871.1
L3 & L3	2415&2445	870.5+873.5

Mode 14 - L1.4&L1.4, L3&L3

Multi-Carrier	Channel No.	Frequencies (MHz)
L1.4 & L1.4	2629&2643	891.9+893.3
L3 & L3	2605&2635	889.5+892.5

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 RRUS 11 B5 / KRC 161 285/2

2.1 MAXIMUM PEAK OUTPUT POWER - CONDUCTED

2.1.1 Specification Reference

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

2.1.2 Equipment Under Test

RRUS 11 B5 / KRC 161 285/2, S/N: CB4P404684

2.1.3 Date of Test and Modification State

22, 23, 29, 31 May and 03 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 EUT was measured at the antenna terminal.

Since the EUT transmits on two antennas simultaneously in the same frequency range, i.e, MIMO, using the Measure-and-Sum approach, the output power at both antennas 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
- Mode 10 - L1.4&L1.4, L10&L10
- Mode 11 - L1.4&L1.4, L3&L3, L5&L5, L10&L10
- Mode 12 - L1.4&L1.4, L10&L10

2.1.6 Environmental Conditions

	22 May 2013	23 May 2013	29 May 2013	31 May 2013	03 June 2013
Ambient Temperature	25.2°C	24.5°C	25.0°C	24.8°C	24.5°C
Relative Humidity	42.0%	43.0%	40.0%	42.0%	44.0%

Product Service

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 A and B

WCDMA/LTE MSR:

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 A		Antenna B		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	45.54	35.81	45.55	35.89	48.56	71.70
W & L3	871.4+887.5	45.55	35.89	45.63	36.56	48.60	72.45
W & L5	871.4+886.5	45.57	36.06	45.63	36.56	48.61	72.62
W & L10	871.4+884.0	45.59	36.22	45.64	36.64	48.62	72.86

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

MSR	Frequency(MHz)	Antenna A		Antenna B		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	45.51	35.56	45.59	36.22	48.56	71.78
W & L3	871.4+887.5	45.52	35.65	45.62	36.48	48.58	72.13
W & L5	871.4+886.5	45.55	35.89	45.64	36.64	48.61	72.53
W & L10	871.4+884.0	45.57	36.06	45.64	36.64	48.62	72.70

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

MSR	Frequency(MHz)	Antenna A		Antenna B		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	45.42	34.83	45.47	35.24	48.46	70.07
W & L3	871.4+887.5	45.47	35.24	45.52	35.65	48.51	70.89
W & L5	871.4+886.5	45.50	35.48	45.57	36.06	48.55	71.54
W & L10	871.4+884.0	45.50	35.48	45.56	35.97	48.54	71.45

Product Service

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

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

MSR	Frequency(MHz)	Antenna A		Antenna B		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	45.56	35.97	45.52	35.65	48.55	71.62
W & L3	873.8+889.9	45.55	35.89	45.57	36.06	48.57	71.95
W & L5	873.8+888.9	45.57	36.06	45.60	36.31	48.60	72.37
W & L10	873.8+886.4	45.59	36.22	45.65	36.73	48.63	72.95

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

MSR	Frequency(MHz)	Antenna A		Antenna B		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	45.49	35.40	45.57	36.06	48.54	71.46
W & L3	873.8+889.9	45.55	35.89	45.62	36.48	48.60	72.37
W & L5	873.8+888.9	45.56	35.97	45.66	36.81	48.62	72.78
W & L10	873.8+886.4	45.61	36.39	45.66	36.81	48.65	73.20

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

MSR	Frequency(MHz)	Antenna A		Antenna B		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	45.36	34.36	45.43	34.91	48.41	69.27
W & L3	873.8+889.9	45.45	35.08	45.49	35.40	48.48	70.48
W & L5	873.8+888.9	45.49	35.40	45.56	35.97	48.54	71.37
W & L10	873.8+886.4	45.49	35.40	45.56	35.97	48.54	71.37

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

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

MSR	Frequency(MHz)	Antenna A		Antenna B		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	45.55	35.89	45.54	35.81	48.56	71.70
L3 & W	875.5+891.6	45.57	36.06	45.57	36.06	48.58	72.12
L5 & W	876.5+891.6	45.59	36.22	45.59	36.22	48.60	72.44
L10 & W	879.0+891.6	45.60	36.31	45.59	36.22	48.61	72.53

Product Service

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

MSR	Frequency(MHz)	Antenna A		Antenna B		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	45.52	35.65	45.55	35.89	48.55	71.54
L3 & W	875.5+891.6	45.54	35.81	45.59	36.22	48.58	72.03
L5 & W	876.5+891.6	45.58	36.14	45.61	36.39	48.61	72.53
L10 & W	879.0+891.6	45.57	36.06	45.60	36.31	48.60	72.37

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

MSR	Frequency(MHz)	Antenna A		Antenna B		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	45.42	34.83	45.44	34.99	48.44	69.82
L3 & W	875.5+891.6	45.47	35.24	45.47	35.24	48.48	70.48
L5 & W	876.5+891.6	45.52	35.65	45.54	35.81	48.54	71.46
L10 & W	879.0+891.6	45.50	35.48	45.52	35.65	48.52	71.13

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 A		Antenna B		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	45.53	35.73	45.55	35.89	48.55	71.62
W&W & L3	873.8+878.8+889.9	45.60	36.31	45.60	36.31	48.61	72.62
W&W & L5	873.8+878.8+888.9	45.58	36.14	45.64	36.64	48.62	72.78
W&W & L10	873.8+878.8+886.4	45.63	36.56	45.67	36.90	48.66	73.46

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 A		Antenna B		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	45.56	35.97	45.60	36.31	48.59	72.28
W&W & L3&L3	873.8+878.8+886.9+889.9	45.62	36.48	45.63	36.56	48.64	73.04
W&W & L5&L5	873.8+878.8+883.9+888.9	45.61	36.39	45.64	36.64	48.64	73.03

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

MSR	Frequency(MHz)	Antenna A		Antenna B		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	45.55	35.89	45.61	36.39	48.59	72.28
W&W & L3&L3	873.8+878.8+886.9+889.9	45.60	36.31	45.66	36.81	48.64	73.12
W&W & L5&L5	873.8+878.8+883.9+888.9	45.60	36.31	45.66	36.81	48.64	73.12

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

MSR	Frequency(MHz)	Antenna A		Antenna B		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	45.44	34.99	45.49	35.40	48.48	70.39
W&W & L3&L3	873.8+878.8+886.9+889.9	45.49	35.40	45.57	36.06	48.54	71.46
W&W & L5&L5	873.8+878.8+883.9+888.9	45.55	35.89	45.61	36.39	48.59	72.28

LTE single RAT:

Multi-Carrier(x2):

Configuration 1 - Mode 10 - L1.4&L1.4, L10&L10

E-TM1.1

Multi-Carrier	Frequency(MHz)	Antenna A		Antenna B		Total (dBm) RMS	Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
L1.4 & L1.4	869.7+888.3	44.84	30.48	44.91	30.97	47.89	61.45
L10 & L10	874.0+884.0	45.62	36.48	45.67	36.90	48.66	73.38

Configuration 1 - Mode 11 - L1.4&L1.4, L3&L3, L5&L5, L10&L10

E-TM1.1

Multi-Carrier	Frequency(MHz)	Antenna A		Antenna B		Total (dBm) RMS	Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
L1.4 & L1.4	872.2+890.8	44.90	30.90	44.96	31.33	47.94	62.23
L3 & L3	873.0+890.0	44.99	31.55	45.03	31.84	48.02	63.39
L5 & L5	874.0+889.0	45.02	31.77	45.07	32.14	48.06	63.91
L10 & L10	876.5+886.5	45.60	36.31	45.64	36.64	48.63	72.95

E-TM3.2

Multi-Carrier	Frequency(MHz)	Antenna A		Antenna B		Total (dBm) RMS	Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
L1.4 & L1.4	872.2+890.8	44.85	30.55	44.91	30.97	47.89	61.52
L10 & L10	876.5+886.5	45.52	35.65	45.57	36.06	48.56	71.71

E-TM3.1

Multi-Carrier	Frequency(MHz)	Antenna A		Antenna B		Total (dBm) RMS	Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
L1.4 & L1.4	872.2+890.8	44.82	30.34	44.88	30.76	47.86	61.10
L10 & L10	876.5+886.5	45.55	35.89	45.64	36.64	48.61	72.53

Configuration 1 - Mode 12 - L1.4&L1.4, L10&L10

E-TM1.1

Multi-Carrier	Frequency(MHz)	Antenna A		Antenna B		Total (dBm) RMS	Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
L1.4 & L1.4	874.7+893.3	44.82	30.34	44.83	30.41	47.84	60.75
L10 & L10	879.0+889.0	45.65	36.73	45.66	36.81	48.67	73.54

Limit	≤500W or ≤+57dBm

Remarks

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

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

RRUS 11 B5 / KRC 161 285/2, S/N: CB4P404684

2.2.3 Date of Test and Modification State

22, 23, 29, 31 May and 03 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 measurment is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determined 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 - 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
- Mode 10 - L1.4&L1.4, L10&L10
- Mode 11 - L1.4&L1.4, L3&L3, L5&L5, L10&L10
- Mode 12 - L1.4&L1.4, L10&L10

2.2.6 Environmental Conditions

	22 May 2013	23 May 2013	29 May 2013	31 May 2013	03 June 2013
Ambient Temperature	25.2°C	24.5°C	25.0°C	24.8°C	24.5°C
Relative Humidity	42.0%	43.0%	40.0%	42.0%	44.0%

Product Service

2.2.7 Test Results

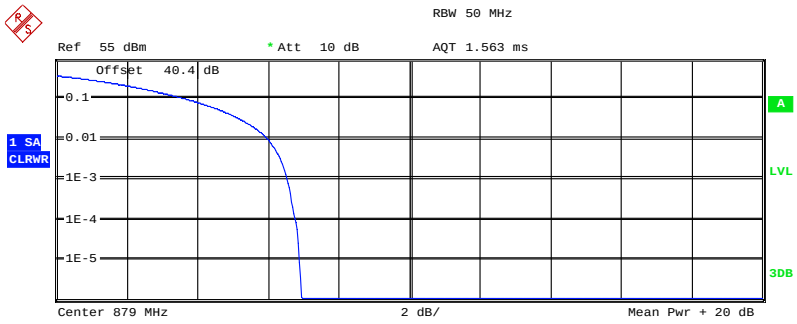
For the period of test the EUT met the requirements of FCC CFR 47 Part 22 Peak – Average Ratio.

The test results are shown below.

WCDMA/LTE MSR:

Mix Carrier(x2): 1W+1L

Configuration 1 - Mode 1 - W&L1.4



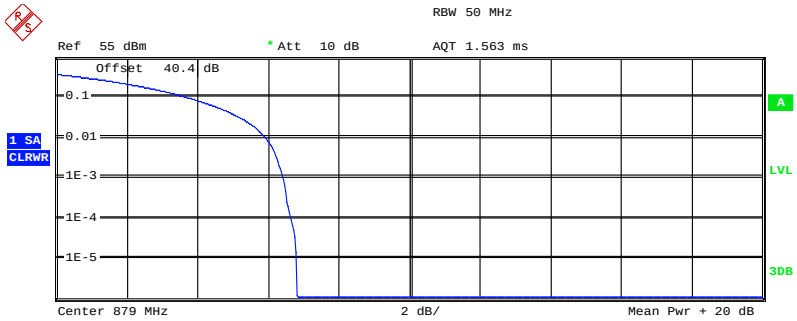
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.70 dBm
Peak	52.64 dBm
Crest	6.94 dB
10 %	3.69 dB
1 %	5.96 dB
.1 %	6.54 dB
.01 %	6.76 dB

Date: 22.MAY.2013 12:53:36

Product Service

Configuration 1 - Mode 1 - W&L3

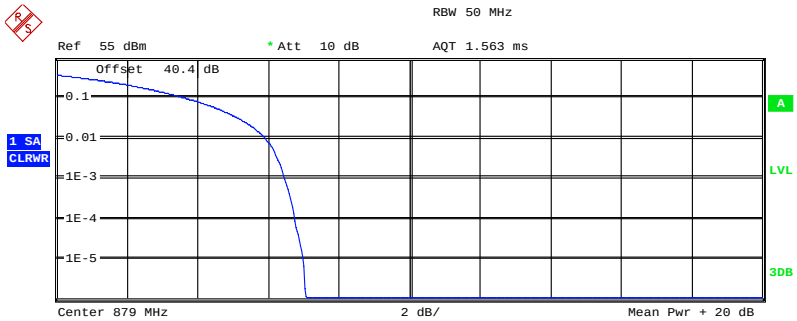


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.76 dBm
Peak	52.57 dBm
Crest	6.81 dB
10 %	3.72 dB
1 %	5.90 dB
.1 %	6.41 dB
.01 %	6.63 dB

Date: 22.MAY.2013 13:58:28

Configuration 1 - Mode 1 - W&L5



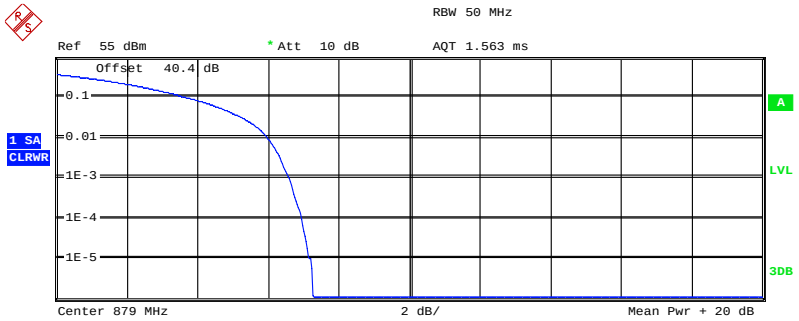
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.73 dBm
Peak	52.78 dBm
Crest	7.05 dB
10 %	3.69 dB
1 %	5.90 dB
.1 %	6.47 dB
.01 %	6.76 dB

Date: 22.MAY.2013 14:36:15

Product Service

Configuration 1 - Mode 1 - W&L10

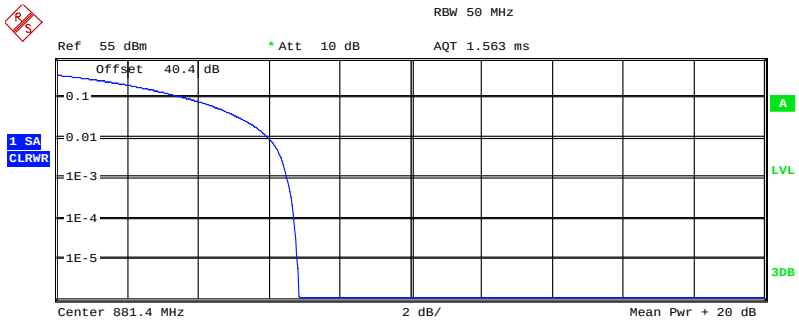


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.72 dBm
Peak	52.99 dBm
Crest	7.27 dB
10 %	3.72 dB
1 %	5.96 dB
.1 %	6.57 dB
.01 %	6.96 dB

Date: 22.MAY.2013 14:52:04

Configuration 1 - Mode 2 - W&L1.4



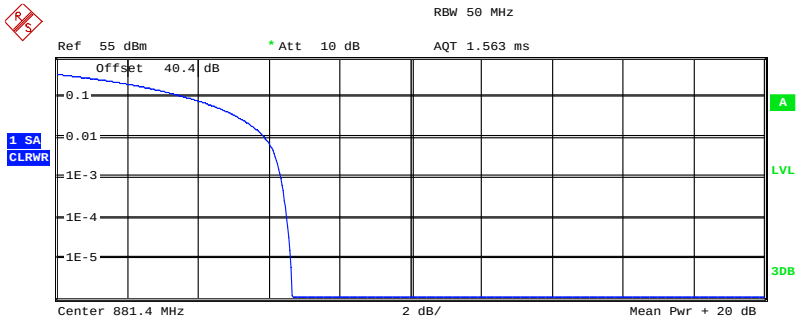
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.72 dBm
Peak	52.57 dBm
Crest	6.85 dB
10 %	3.69 dB
1 %	5.99 dB
.1 %	6.51 dB
.01 %	6.70 dB

Date: 22.MAY.2013 16:19:36

Product Service

Configuration 1 - Mode 2 - W&L3

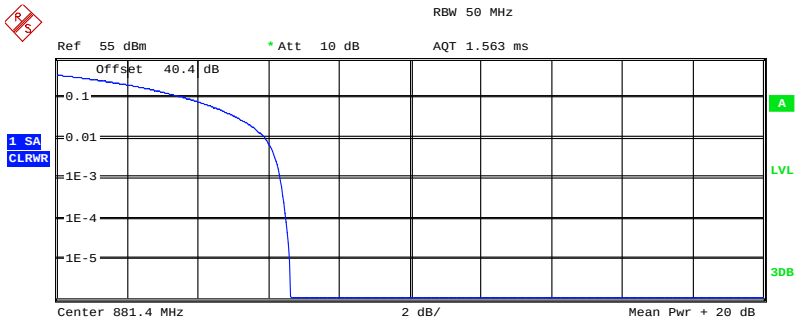


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.79 dBm
Peak	52.43 dBm
Crest	6.64 dB
10 %	3.69 dB
1 %	5.87 dB
.1 %	6.35 dB
.01 %	6.51 dB

Date: 22.MAY.2013 16:45:04

Configuration 1 - Mode 2 - W&L5



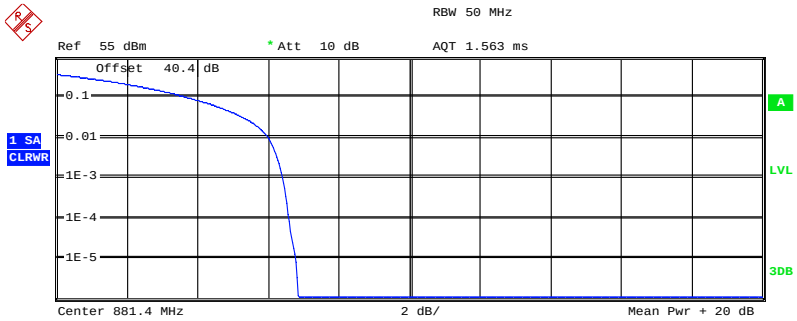
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.75 dBm
Peak	52.36 dBm
Crest	6.61 dB
10 %	3.72 dB
1 %	5.90 dB
.1 %	6.35 dB
.01 %	6.51 dB

Date: 22.MAY.2013 16:54:07

Product Service

Configuration 1 - Mode 2 - W&L10

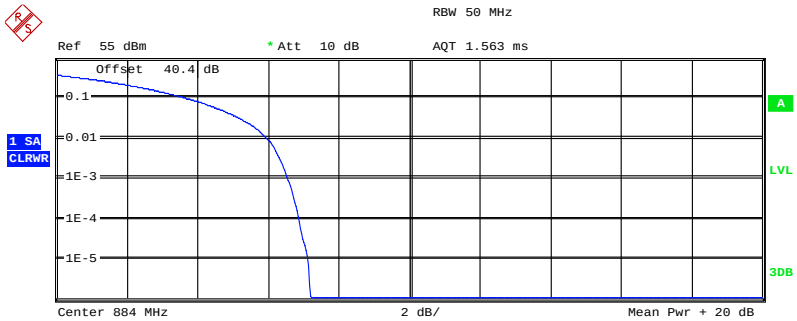


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.73 dBm
Peak	52.57 dBm
Crest	6.84 dB
10 %	3.75 dB
1 %	5.99 dB
.1 %	6.41 dB
.01 %	6.57 dB

Date: 22.MAY.2013 17:22:11

Configuration 1 - Mode 3 - L1.4&W



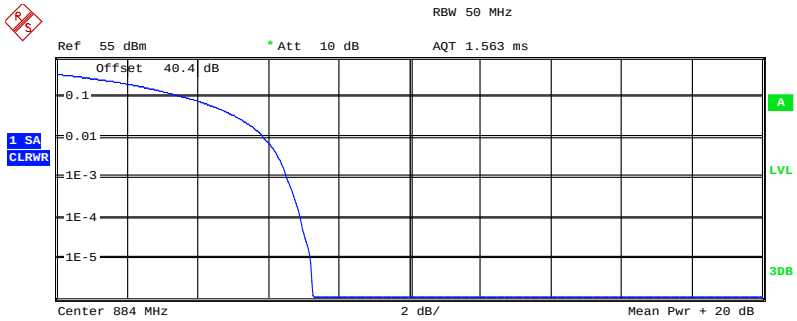
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.75 dBm
Peak	52.93 dBm
Crest	7.18 dB
10 %	3.72 dB
1 %	5.96 dB
.1 %	6.54 dB
.01 %	6.86 dB

Date: 23.MAY.2013 09:48:18

Product Service

Configuration 1 - Mode 3 - L3&W

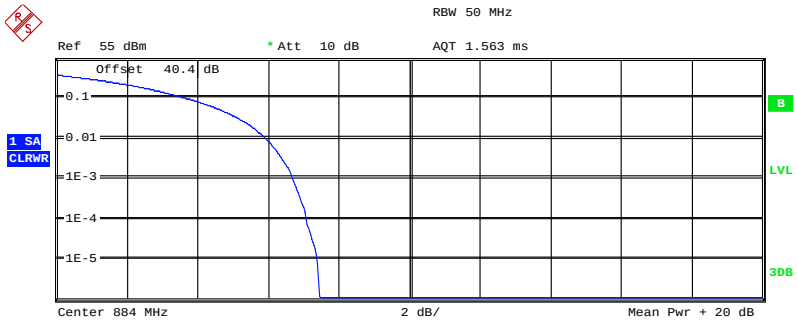


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.75 dBm
Peak	53.00 dBm
Crest	7.25 dB
10 %	3.69 dB
1 %	5.87 dB
.1 %	6.54 dB
.01 %	6.92 dB

Date: 23.MAY.2013 10:29:29

Configuration 1 - Mode 3 - L5&W



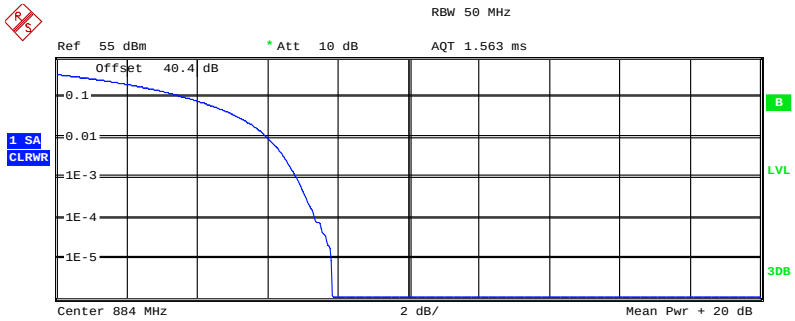
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.77 dBm
Peak	53.21 dBm
Crest	7.44 dB
10 %	3.69 dB
1 %	5.90 dB
.1 %	6.70 dB
.01 %	7.08 dB

Date: 23.MAY.2013 10:54:14

Product Service

Configuration 1 - Mode 3 - L10&W



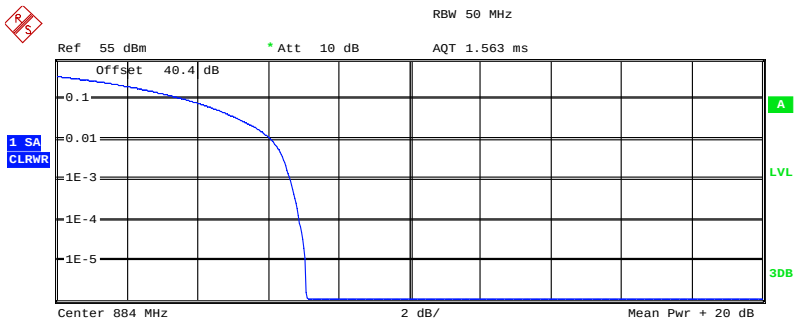
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.80 dBm
Peak	53.64 dBm
Crest	7.84 dB
10 %	3.69 dB
1 %	5.99 dB
.1 %	6.83 dB
.01 %	7.34 dB

Date: 23.MAY.2013 14:21:58

Mix Carrier(x3): 2W+1L

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



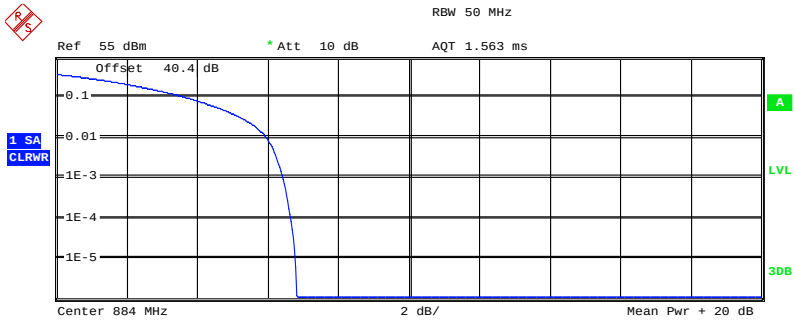
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.71 dBm
Peak	52.79 dBm
Crest	7.08 dB
10 %	3.69 dB
1 %	6.06 dB
.1 %	6.63 dB
.01 %	6.89 dB

Date: 31.MAY.2013 13:12:54

Product Service

Configuration 1 - Mode 6 - W&W&L3

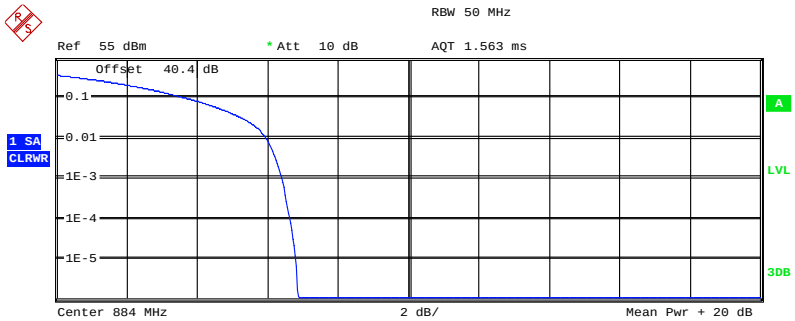


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.77 dBm
Peak	52.58 dBm
Crest	6.80 dB
10 %	3.69 dB
1 %	5.96 dB
.1 %	6.44 dB
.01 %	6.63 dB

Date: 31.MAY.2013 13:00:35

Configuration 1 - Mode 6 - W&W&L5



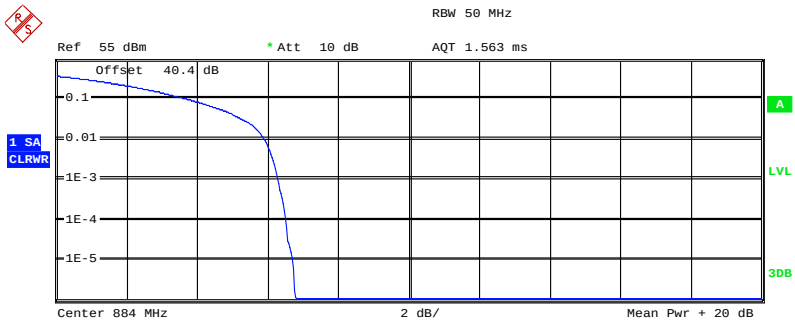
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.72 dBm
Peak	52.58 dBm
Crest	6.86 dB
10 %	3.72 dB
1 %	5.96 dB
.1 %	6.41 dB
.01 %	6.63 dB

Date: 31.MAY.2013 12:57:36

Product Service

Configuration 1 - Mode 6 - W&W&L10



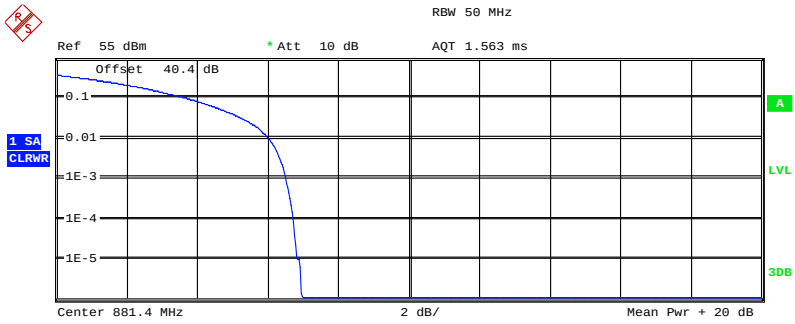
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.74 dBm
Peak	52.51 dBm
Crest	6.76 dB
10 %	3.72 dB
1 %	5.90 dB
.1 %	6.28 dB
.01 %	6.51 dB

Date: 31.MAY.2013 12:47:23

Mix Carrier(x4): 2W+2L

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



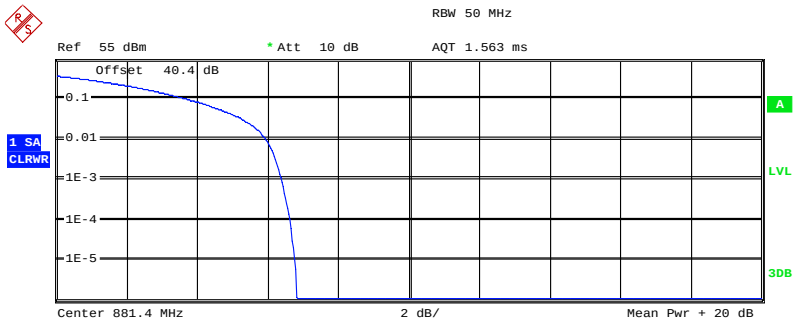
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.76 dBm
Peak	52.71 dBm
Crest	6.95 dB
10 %	3.72 dB
1 %	6.03 dB
.1 %	6.51 dB
.01 %	6.73 dB

Date: 29.MAY.2013 15:16:27

Product Service

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

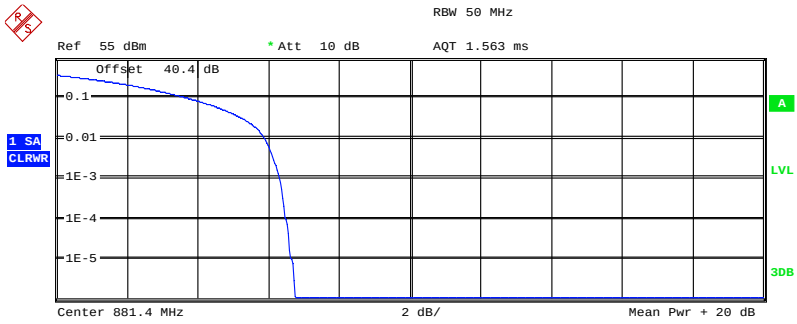


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.82 dBm
Peak	52.64 dBm
Crest	6.82 dB
10 %	3.72 dB
1 %	5.93 dB
.1 %	6.38 dB
.01 %	6.63 dB

Date: 29.MAY.2013 15:10:43

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



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

	Trace 1
Mean	45.76 dBm
Peak	52.50 dBm
Crest	6.74 dB
10 %	3.75 dB
1 %	5.87 dB
.1 %	6.31 dB
.01 %	6.47 dB

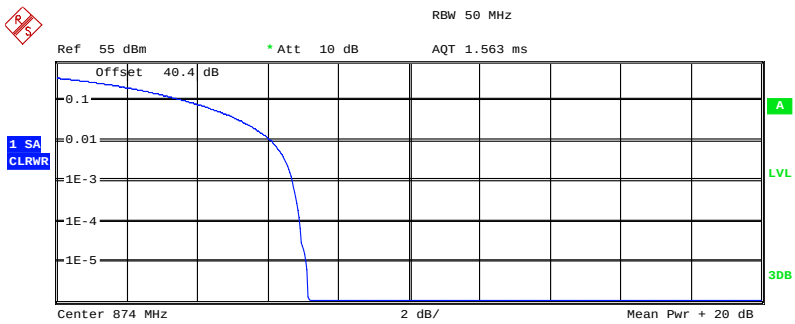
Date: 29.MAY.2013 14:59:55

Product Service

LTE Single RAT:

Multi-Carrier(x2)

Configuration 1 - Mode 10 - L1.4 &L1.4

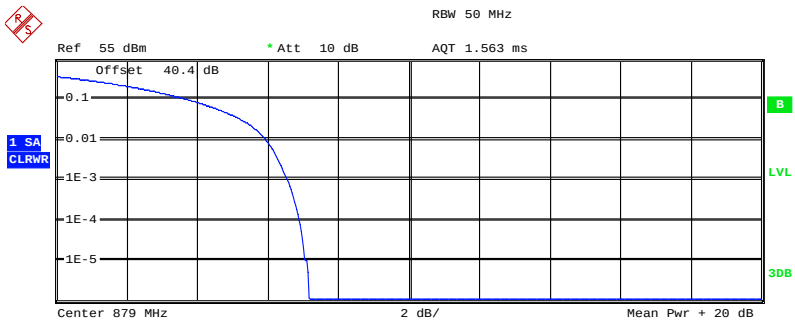


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.13 dBm
Peak	52.27 dBm
Crest	7.14 dB
10 %	3.69 dB
1 %	6.09 dB
.1 %	6.70 dB
.01 %	6.89 dB

Date: 31.MAY.2013 16:48:26

Configuration 1 - Mode 10 - L10&L10



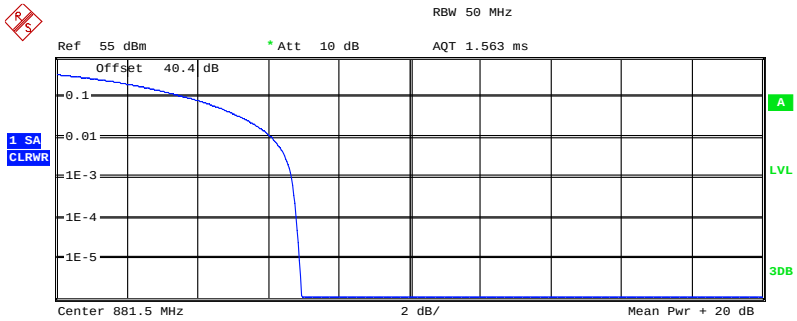
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.75 dBm
Peak	52.92 dBm
Crest	7.17 dB
10 %	3.75 dB
1 %	5.93 dB
.1 %	6.57 dB
.01 %	6.89 dB

Date: 3.JUN.2013 13:39:24

Product Service

Configuration 1 - Mode 11 - L1.4&L1.4

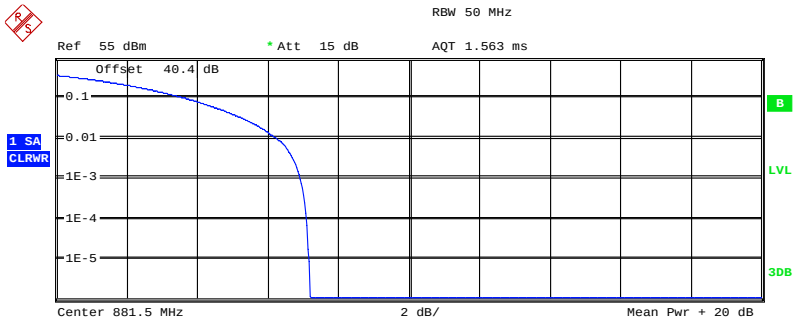


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.00 dBm
Peak	51.94 dBm
Crest	6.94 dB
10 %	3.72 dB
1 %	6.09 dB
.1 %	6.67 dB
.01 %	6.79 dB

Date: 3.JUN.2013 09:51:29

Configuration 1 - Mode 11 - L3&L3



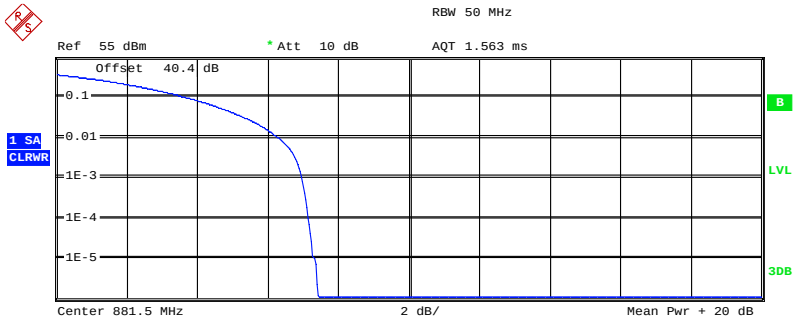
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.08 dBm
Peak	52.28 dBm
Crest	7.20 dB
10 %	3.69 dB
1 %	6.22 dB
.1 %	6.92 dB
.01 %	7.12 dB

Date: 3.JUN.2013 12:22:47

Product Service

Configuration 1 - Mode 11 - L5&L5

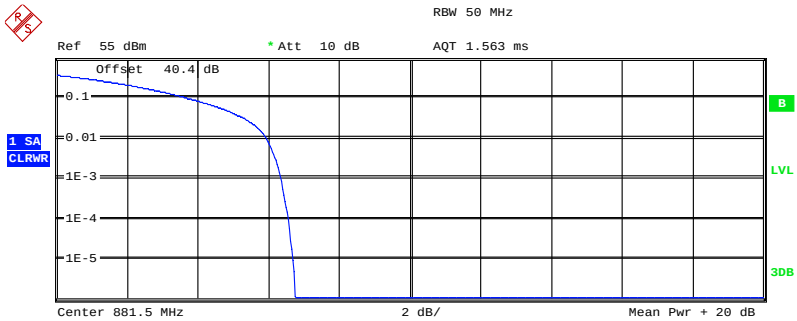


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.17 dBm
Peak	52.57 dBm
Crest	7.41 dB
10 %	3.72 dB
1 %	6.28 dB
.1 %	6.96 dB
.01 %	7.15 dB

Date: 3.JUN.2013 12:44:28

Configuration 1 - Mode 11 - L10&L10



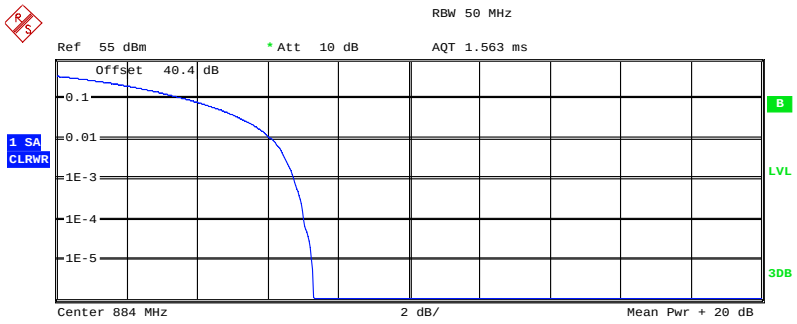
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	45.68 dBm
Peak	52.43 dBm
Crest	6.75 dB
10 %	3.75 dB
1 %	5.93 dB
.1 %	6.35 dB
.01 %	6.57 dB

Date: 3.JUN.2013 13:49:31

Product Service

Configuration 1 - Mode 12 - L1.4&L1.4

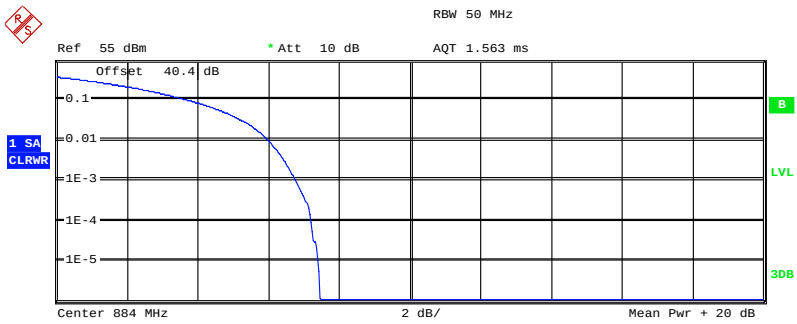


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	44.99 dBm
Peak	52.30 dBm
Crest	7.30 dB
10 %	3.69 dB
1 %	6.09 dB
.1 %	6.73 dB
.01 %	7.02 dB

Date: 3.JUN.2013 10:28:01

Configuration 1 - Mode 12 - L10&L10



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

	Trace 1
Mean	45.75 dBm
Peak	53.21 dBm
Crest	7.46 dB
10 %	3.72 dB
1 %	5.99 dB
.1 %	6.76 dB
.01 %	7.21 dB

Date: 3.JUN.2013 13:28:00

Limit	13dB

Remarks

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

2.3 SPURIOUS EMISSIONS AT ANTENNA TERMINALS (±1MHz)

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

RRUS 11 B5 / KRC 161 285/2, S/N: CB4P404684

2.3.3 Date of Test and Modification State

24, 27 May and 03 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 bandwith should be used for the frequencies offset up to 1MHz away from the block edge. For WCDMA/LTE mix carrier, with WCDMA signal at the edge, 50kHz resolution bandwidth was used. For LTE single RAT, 20kHz RBW was used when the multi-carrier of LTE bandwidth is 1.4MHz, 30kHz RBW was used when the multi-carrier of LTE banwidth is 3MHz, 50kHz RBW was used when LTE banwidth is 5MHz, and 100kHz RBW was used when the multi-carrier of LTE banwidth is 10MHz. As the FCC rules specify a RBW of 100kHz or greater for measurements of emissions > 1MHz away from the band edges, a resolution bandwidth of 100kHz was used between1MHz to 5MHz away from the band edge. Spectrum analyser detector was set as RMS.

Since the EUT transmits on two antennas simultaneously in the same frequency range, i.e, MIMO using the Measure and Add 10log(N) dB technique, the limit was adjusted with a correction of 10log2 to -16dBm.

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
- Mode 8 - W&W&L1.4&L1.4
- Mode 9 - L1.4&L1.4&W&W
- Mode 13 - L1.4&L1.4, L3&L3
- Mode 14 - L1.4&L1.4, L3&L3

Product Service

2.3.6 Environmental Conditions

	24 May 2013	27 May 2013	03 June 2013
Ambient Temperature	24.0°C	23.8°C	24.5°C
Relative Humidity	45.0%	48.0%	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 (±1MHz).

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

WCDMA/LTE MSR:

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	50 / 500	-16
Top 894MHz	Channel: 4458 Frequency: 891.6 MHz	50 / 500	-16

Mix Carrier(x4): 2W+2L

Configuration 1 - Mode 8 - W&W&L1.4&L1.4 and 9 - L1.4&L1.4&W&W

Band Edge Frequency	Edge Test with WCDMA Channel No./Frequencies	RBW / VBW (kHz)	Limit (dB)
Bottom 869MHz	Channel: 4357 Frequency: 871.4MHz	50 / 500	-16
Top 894MHz	Channel: 4458 Frequency: 891.6 MHz	50 / 500	-16

LTE Single RAT:

Multi-Carrier(x2):

Configuration 1 - Mode 13 - L1.4&L1.4 and 14 - L1.4&L1.4

Band Edge Frequency	Edge Test with 1.4MHz Bandwidth Channel No./Frequencies	RBW / VBW (kHz)	Limit (dB)
Bottom 869MHz	Channel: 2407 Frequency: 869.7MHz	20 / 200	-16
Top 894MHz	Channel: 2643 Frequency: 893.3 MHz	20 / 200	-16

Configuration 1 - Mode 13 - L3&L3 and 14 - L3&L3

Band Edge Frequency	Edge Test with 3.0MHz Bandwidth Channel No./Frequencies	RBW / VBW (kHz)	Limit (dB)
Bottom 869MHz	Channel: 2415 Frequency: 870.5MHz	30 / 300	-16
Top 894MHz	Channel: 2635 Frequency: 892.5MHz	30 / 300	-16

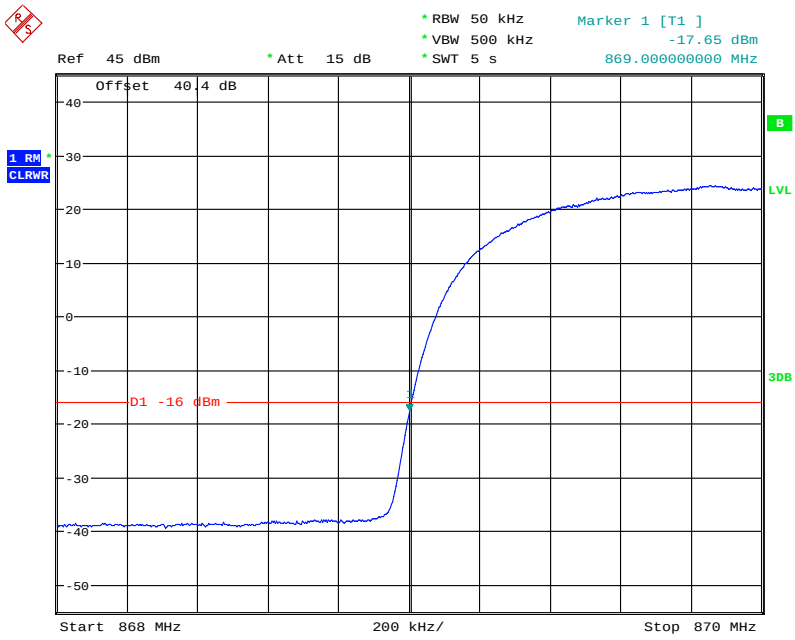
The channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels used outside of those stated and power levels used beyond those stated in the table exceed the specification limits, thus they cannot be used.

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.

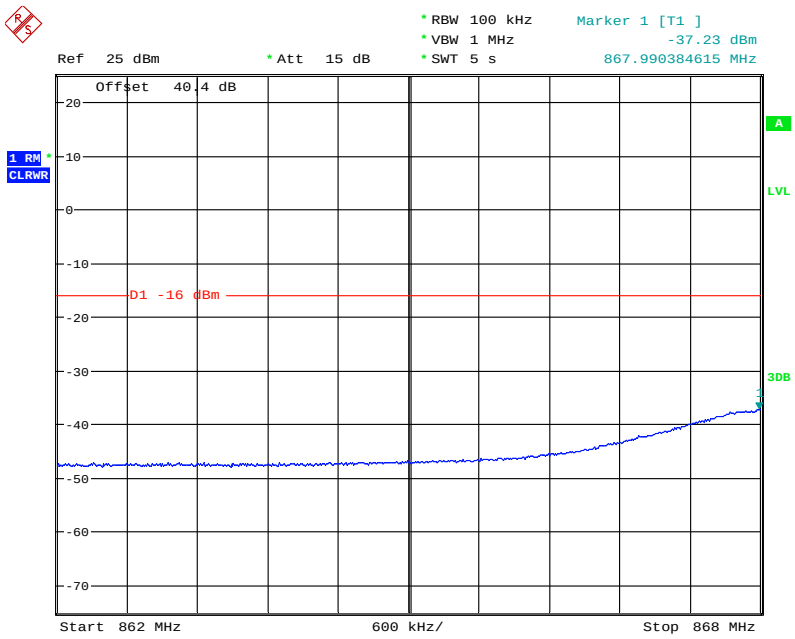
The test results are shown below

Mix Carrier(x2): 1W+1L

Configuration 1 - Mode 4 - W&L1.4



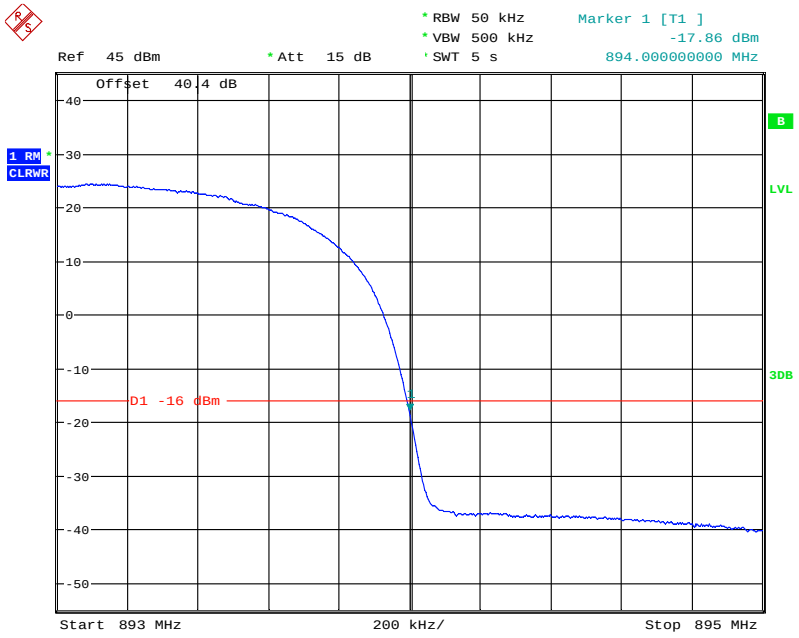
Date: 24.MAY.2013 11:49:34



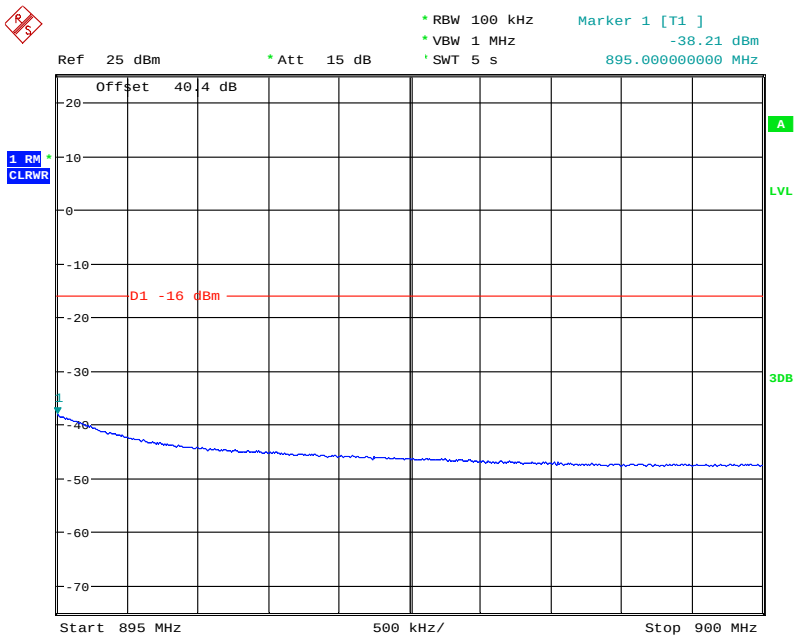
Date: 24.MAY.2013 11:50:52

Product Service

Configuration 1 - Mode 5 - L1.4&W



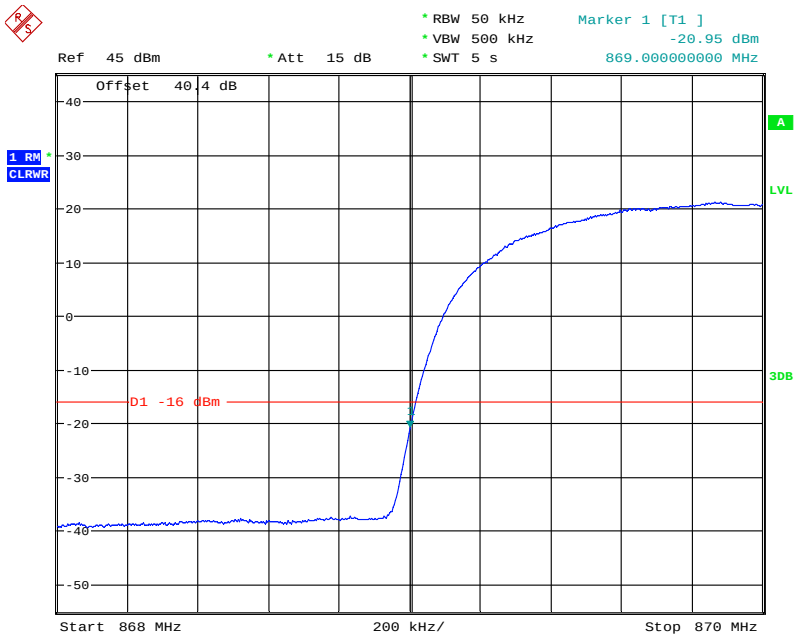
Date: 24.MAY.2013 11:24:11



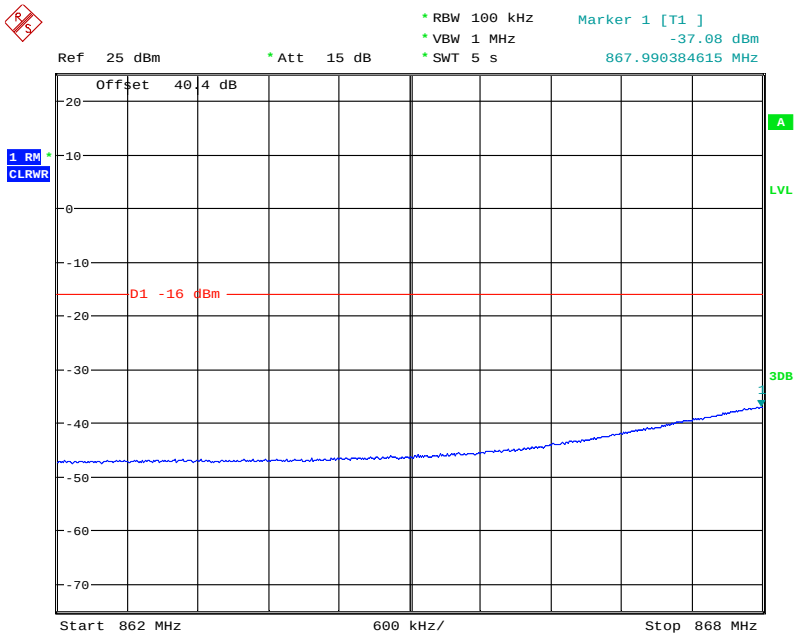
Date: 24.MAY.2013 11:25:41

Mix Carrier(x4): 2W+2L

Configuration 1 - Mode 8 - W&W&L1.4&L1.4



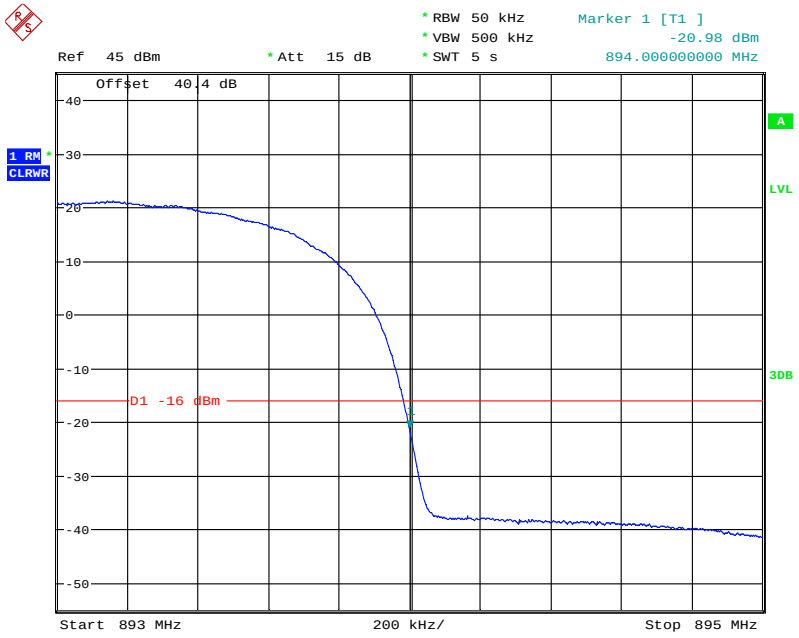
Date: 27.MAY.2013 11:22:11



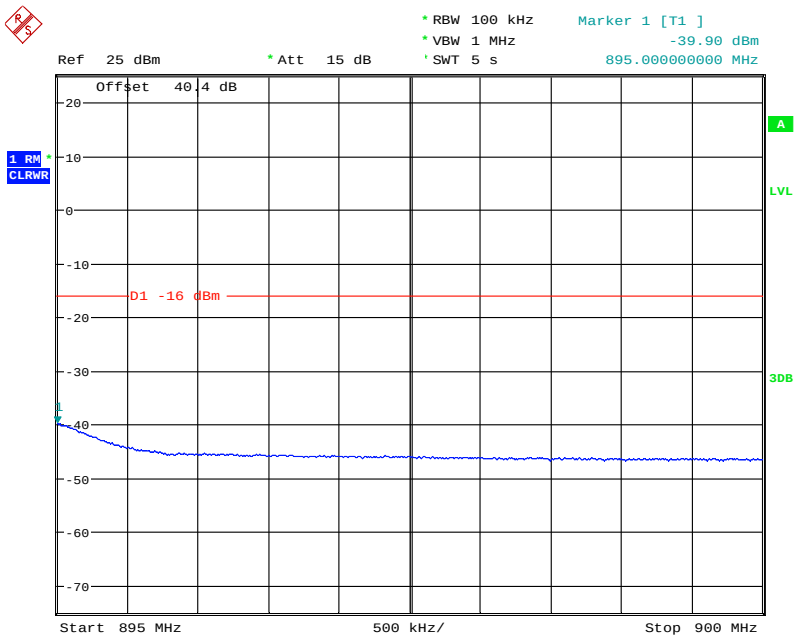
Date: 27.MAY.2013 11:22:56

Product Service

Configuration 1 - Mode 9 - L1.4&L1.4&W&W



Date: 27.MAY.2013 16:58:05



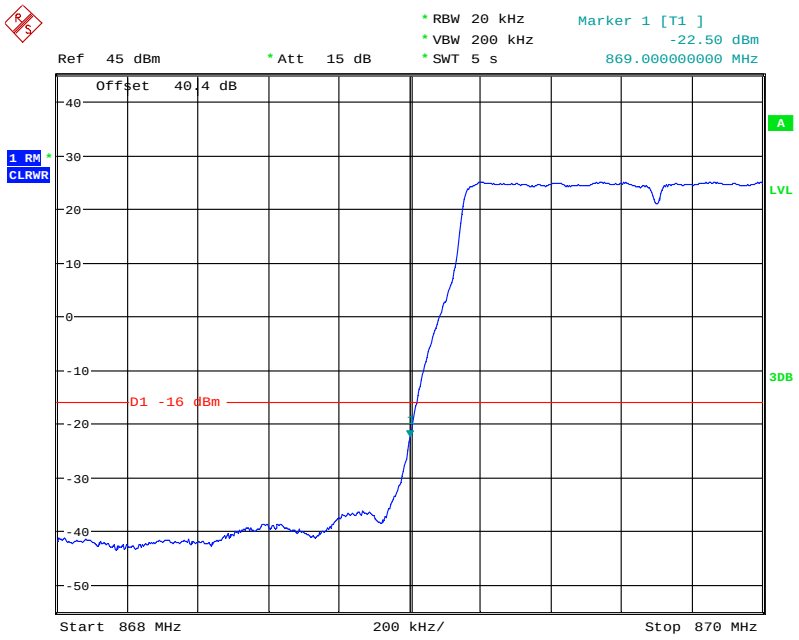
Date: 27.MAY.2013 16:57:17

Product Service

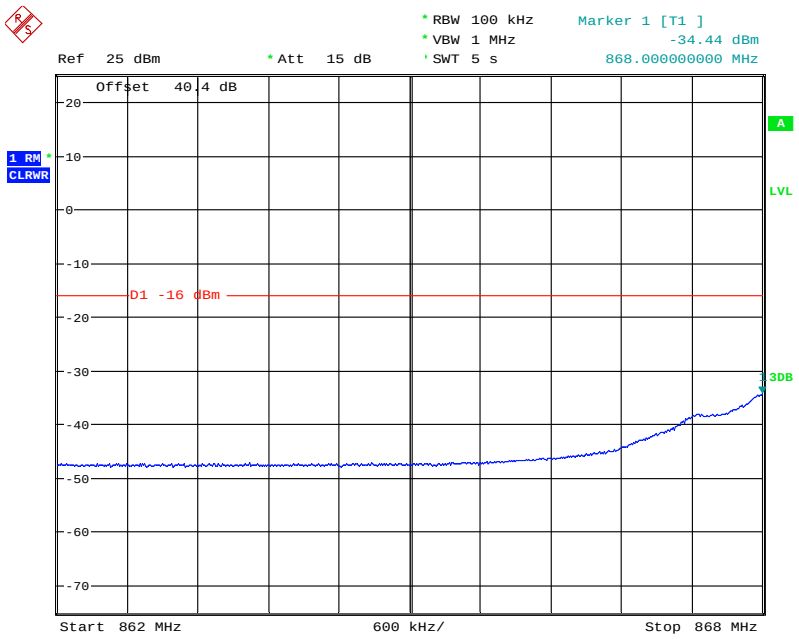
LTE Single RAT:

Multi-Carrier(x2):

Configuration 1 - Mode 13 - L1.4&L1.4



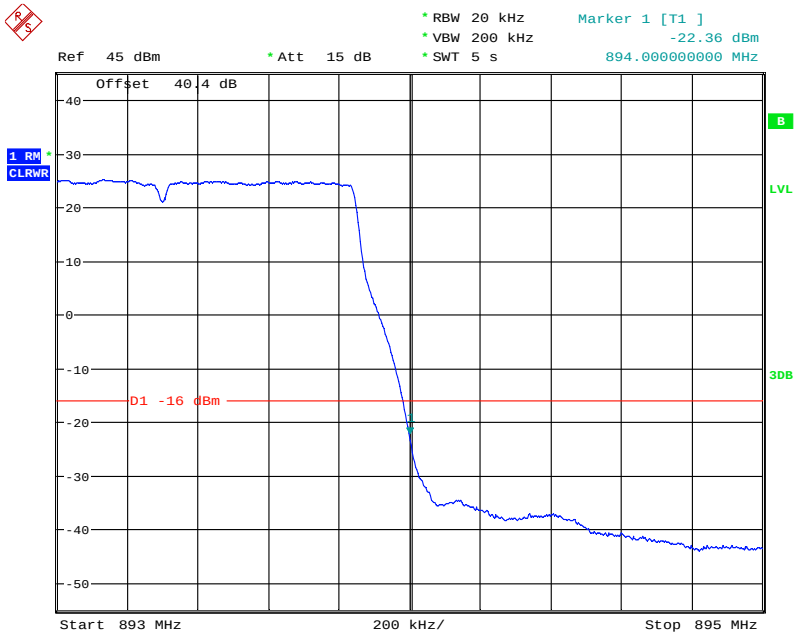
Date: 31.MAY.2013 17:23:53



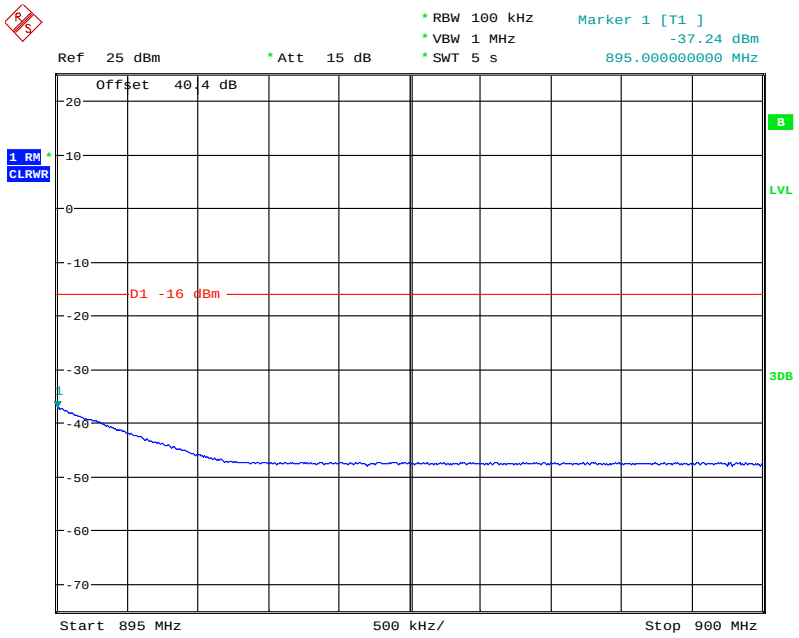
Date: 31.MAY.2013 17:22:09

Product Service

Configuration 1 - Mode 14 - L1.4&L1.4



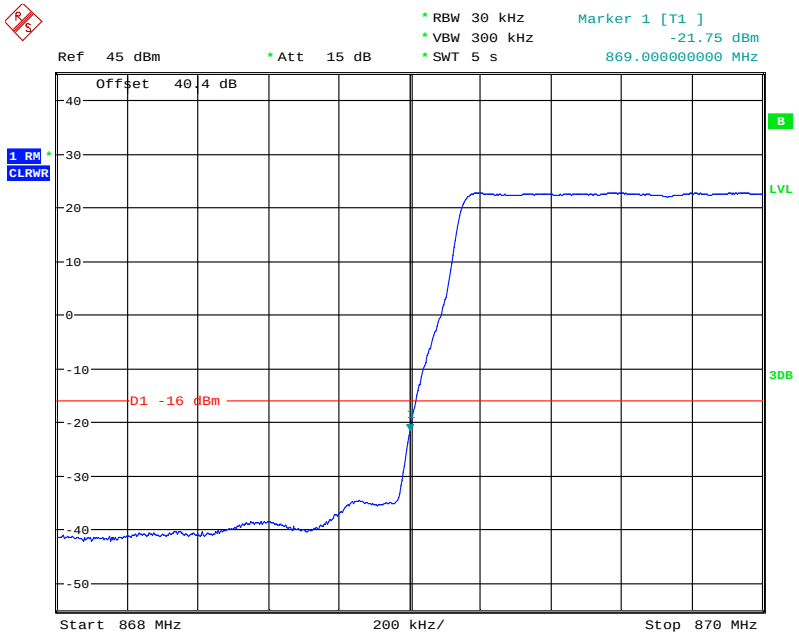
Date: 3.JUN.2013 11:29:27



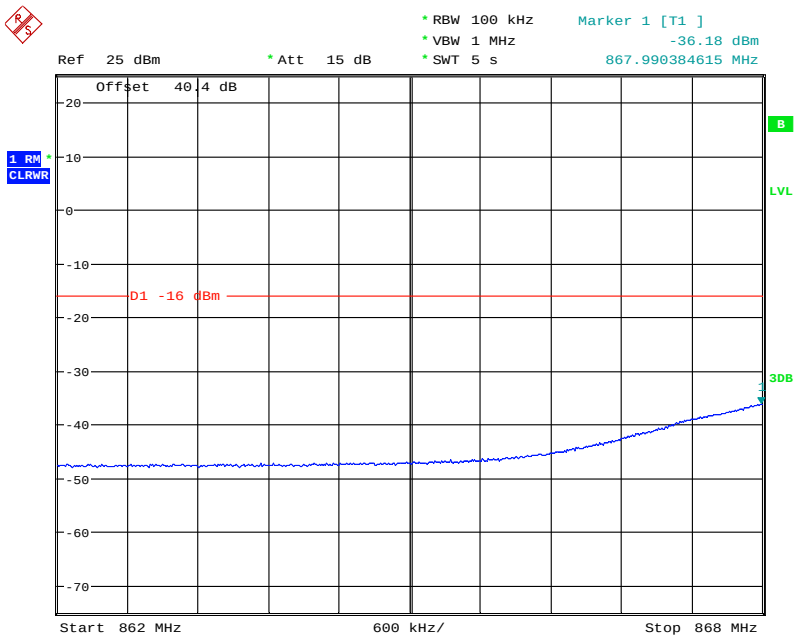
Date: 3.JUN.2013 11:30:25

Product Service

Configuration 1 - Mode 13 - L3&L3



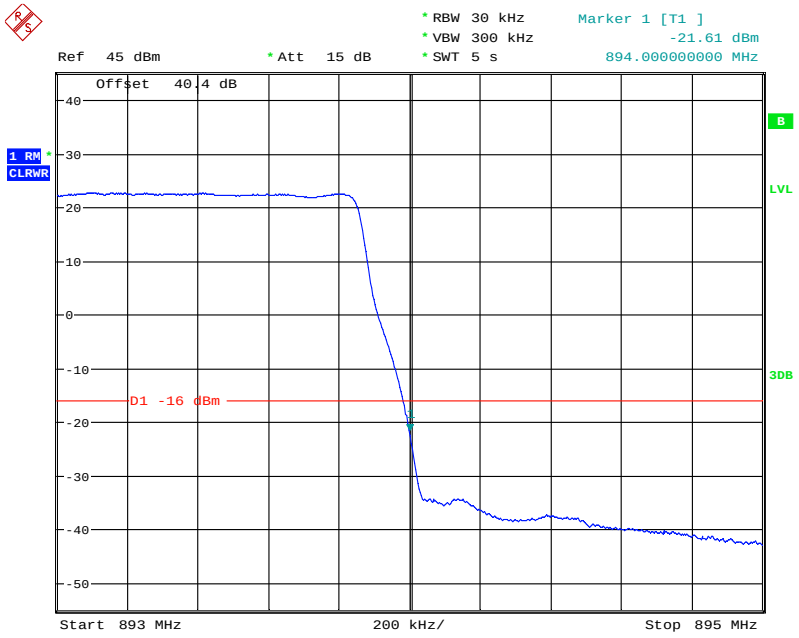
Date: 3.JUN.2013 11:41:37



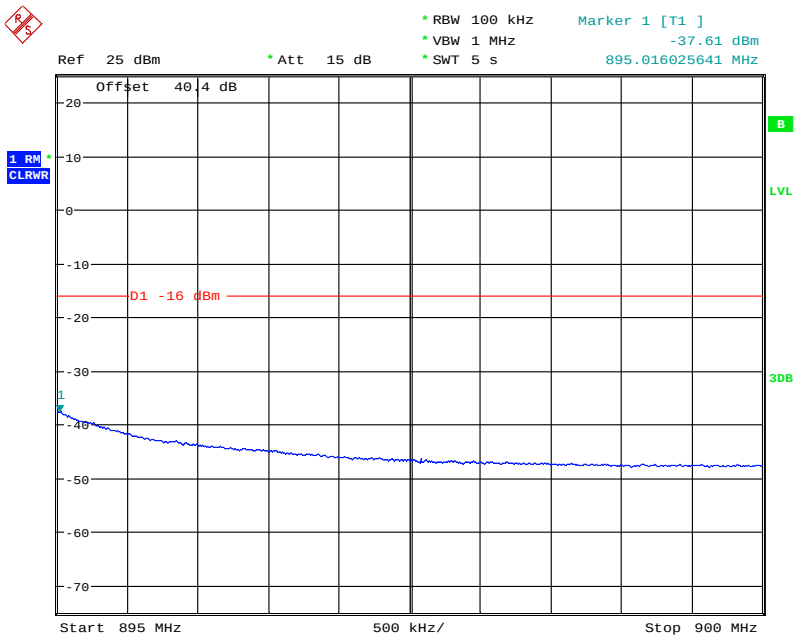
Date: 3.JUN.2013 11:42:27

Product Service

Configuration 1 - Mode 14 - L3&L3



Date: 3.JUN.2013 12:21:11



Date: 3.JUN.2013 12:20:01

Limit

The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least 43 + 10logP 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 22, Clause 22.917 (a)
Industry Canada RSS-132, Clause 5.5

2.4.2 Equipment Under Test

RRUS 11 B5 / KRC 161 285/2, S/N: CB4P404684

2.4.3 Date of Test and Modification State

21, 28 May and 04 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.

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 + 10Log (P)) dB

Where:
Field Strength is measured in dBµV/m
P is measured Transmitter Power in Watts

Product Service

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:

$E_{(v/m)}=(30 \times 1.64 \times 60.75)^{0.5} / 3 = 18.22 V/m = 145.2 dB\mu V/m$

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

43 + 10log(60.75) = 60.8dB

Therefore the limit at 3m measurement distance is:

145.2 – 60.8 = 84.4 dBµV/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
- Mode 11 - L1.4&L1.4, L3&L3, L5&L5, L10&L10

2.4.6 Environmental Conditions

	21 May 2013	28 May 2013	04 June 2013
Ambient Temperature	24.0°C	24.5°C	27.8°C
Relative Humidity	40.0%	52.0%	50.0%

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.

WCDMA/LTE MSR:

QPSK (W) and QPSK (L)

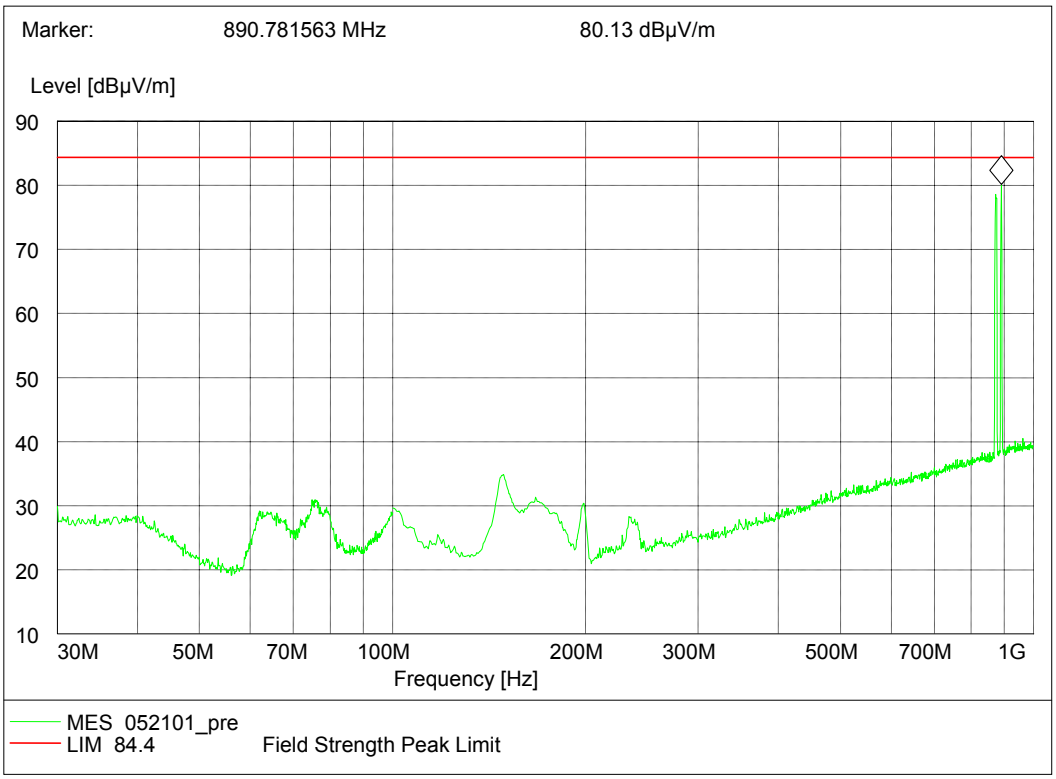
Mix Carrier(x2): 1W+1L

Configuration 1 - Mode 1 - W&L1.4

No emissions were detected within 20dB of the limit.

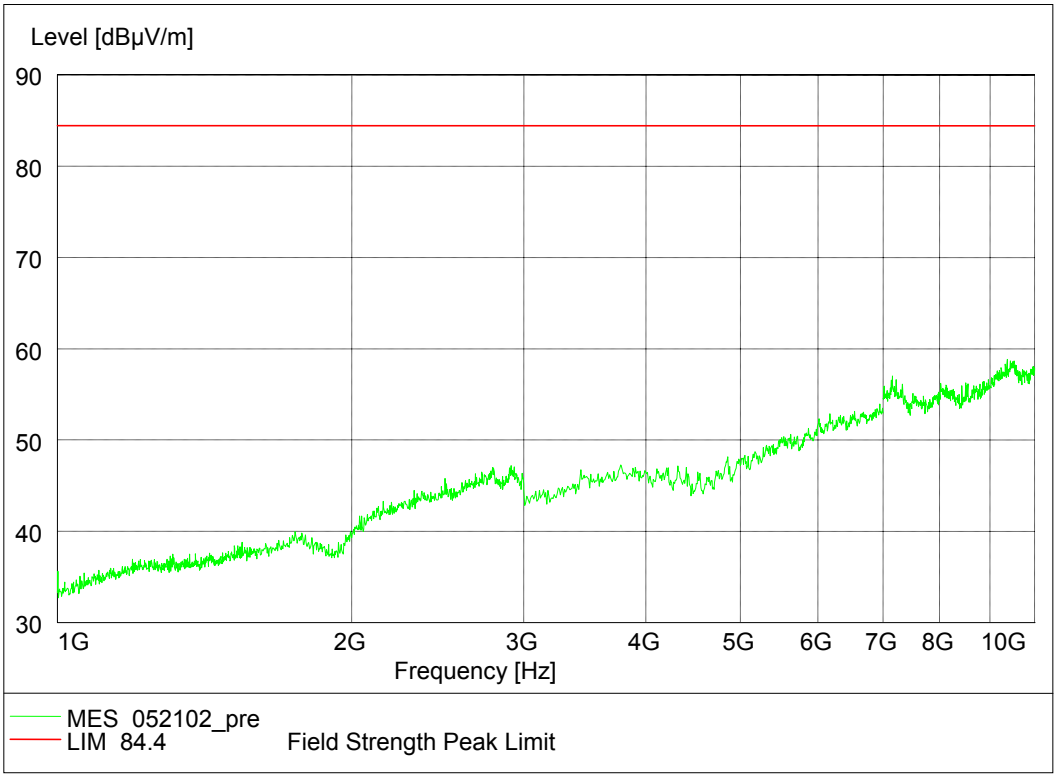
Configuration 1 - Mode 2 - W&L1.4

30MHz - 1GHz



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

1GHz - 10GHz



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.

Configuration 1 - Mode 3 - L1.4&W

No emissions were detected within 20dB of the limit.

16QAM (W) and 16QAM (L)

Mix Carrier(x2): 1W+1L

Configuration 1 - Mode 2 - W&L1.4

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.

QPSK (W) and QPSK (L)

Mix Carrier(x3): 2W+1L

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

No emissions were detected within 20dB of the limit.

64QAM (W) and 64QAM (L)

Mix Carrier(x3): 2W+1L

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

No emissions were detected within 20dB of the limit.

QPSK (W) and QPSK (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.

64QAM (W) and 64QAM (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.

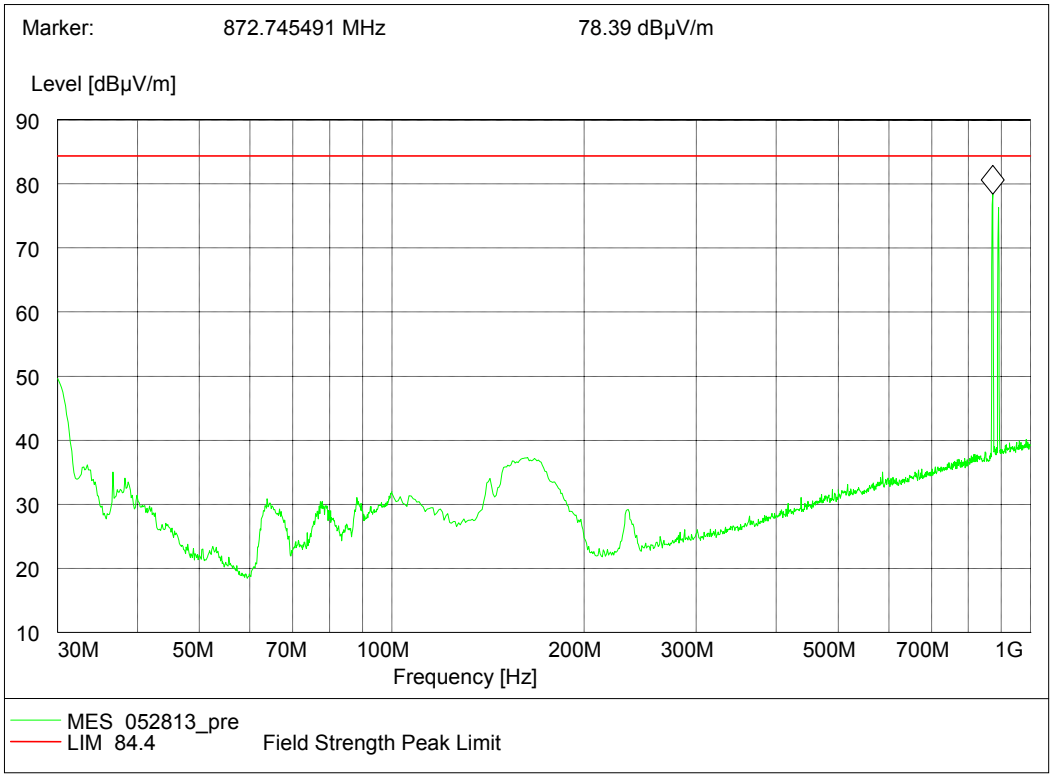
LTE Single RAT:

Multi-Carrier(x2):

E-TM1.1:

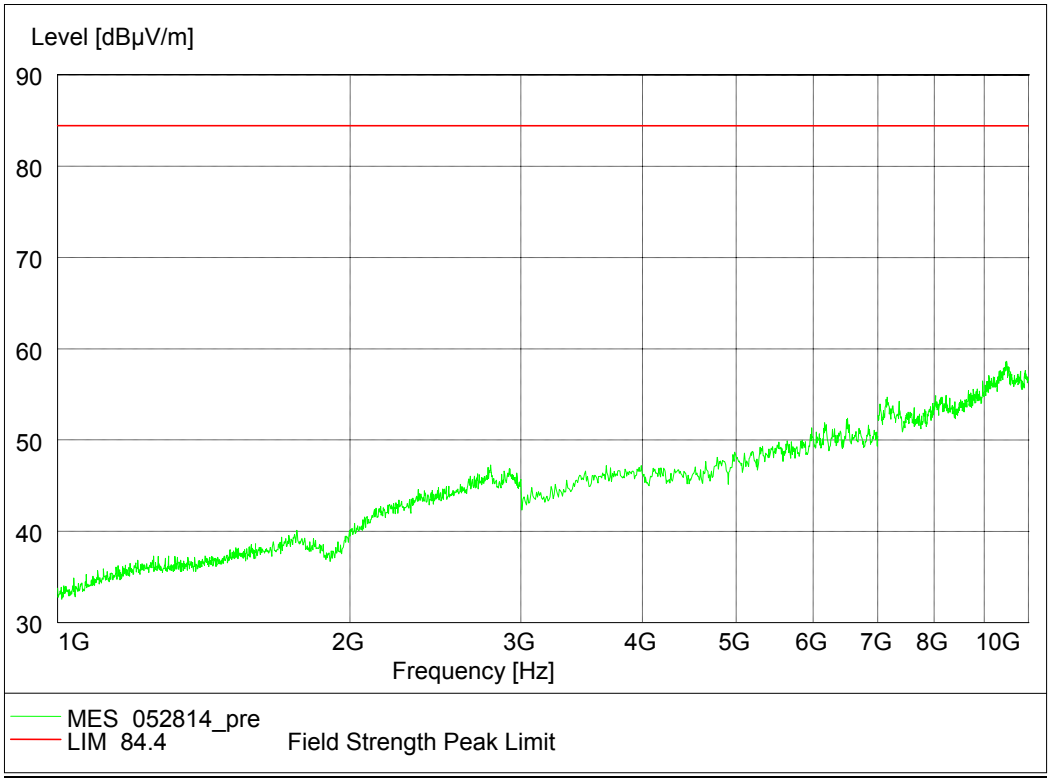
Configuration 1 - Mode 11 - L1.4&L1.4,

30MHz - 1GHz



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

1GHz - 10GHz



Configuration 1 - Mode 11 - L3&L3, L5&L5, L10&L10

No emissions were detected within 20dB of the limit.

E-TM3.2:

Configuration 1 - Mode 11 - L1.4&L1.4,

No emissions were detected within 20dB of the limit.

E-TM3.1:

Configuration 1 - Mode 11 - L1.4&L1.4,

No emissions were detected within 20dB of the limit.

Limit	-13dBm or 84.4dBµV/m

Remarks

The EUT does not exceed -13dBm or 84.4dBµV/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

RRUS 11 B5 / KRC 161 285/2, S/N: CB4P404684

2.5.3 Date of Test and Modification State

22, 23, 29, 31 May and 03 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 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^{th} 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
- Mode 10 - L1.4&L1.4, L10&L10
- Mode 11 - L1.4&L1.4, L3&L3, L5&L5, L10&L10
- Mode 12 - L1.4&L1.4, L10&L10

Product Service

2.5.6 Environmental Conditions

	22 May 2013	23 May 2013	29 May 2013	31 May 2013	03 June 2013
Ambient Temperature	25.2°C	24.5°C	25.0°C	24.8°C	24.5°C
Relative Humidity	42.0%	43.0%	40.0%	42.0%	44.0%

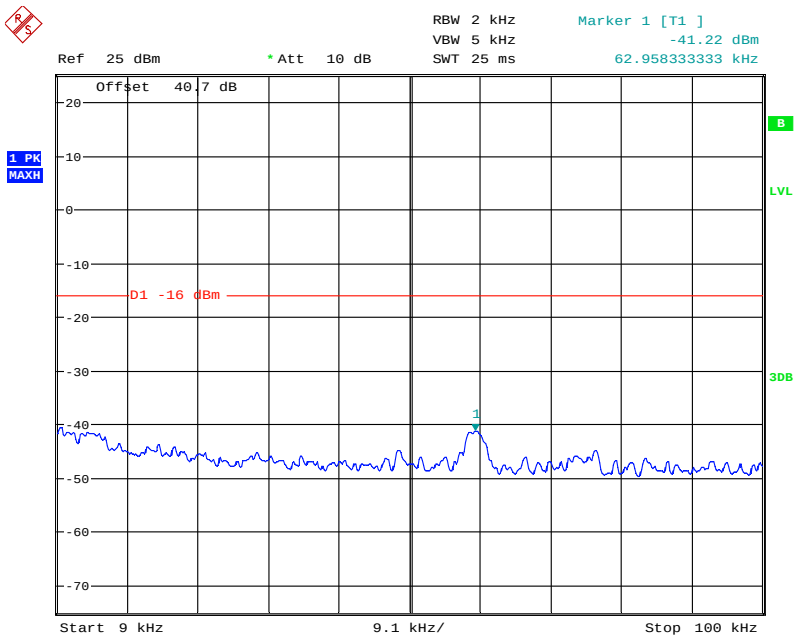
2.5.7 Test Results

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: 29.MAY.2013 14:24:00

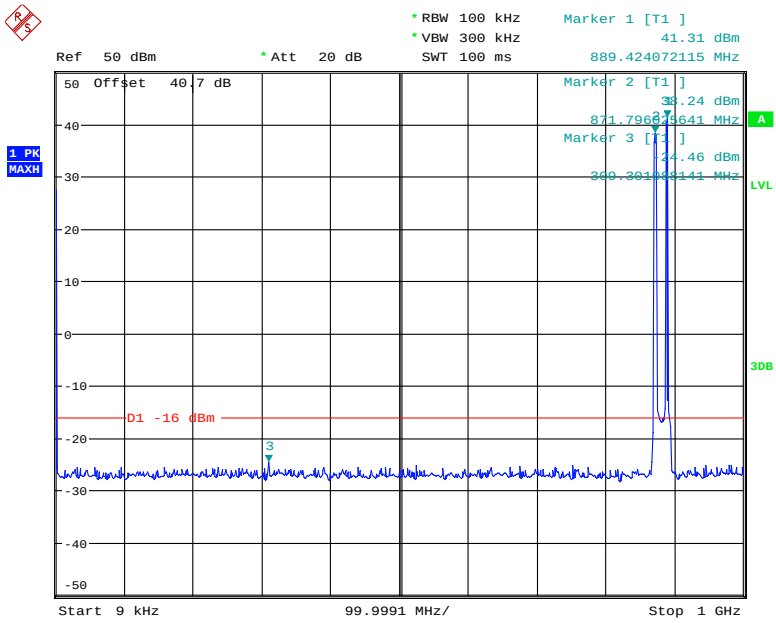
Product Service

WCDMA/LTE MSR:

Mix Carrier(x2): 1W+1L

Configuration 1 - Mode 1 - W&L1.4

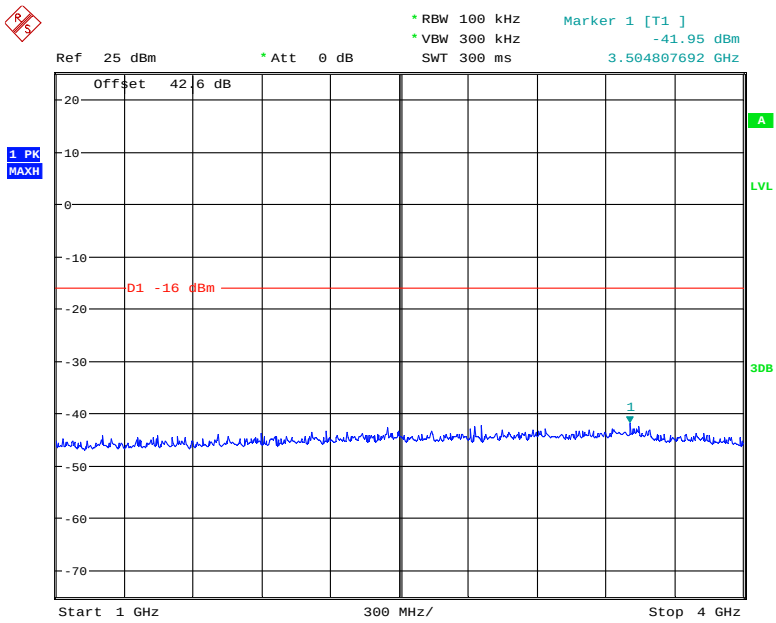
9kHz to 1GHz



Date: 22.MAY.2013 15:34:28

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

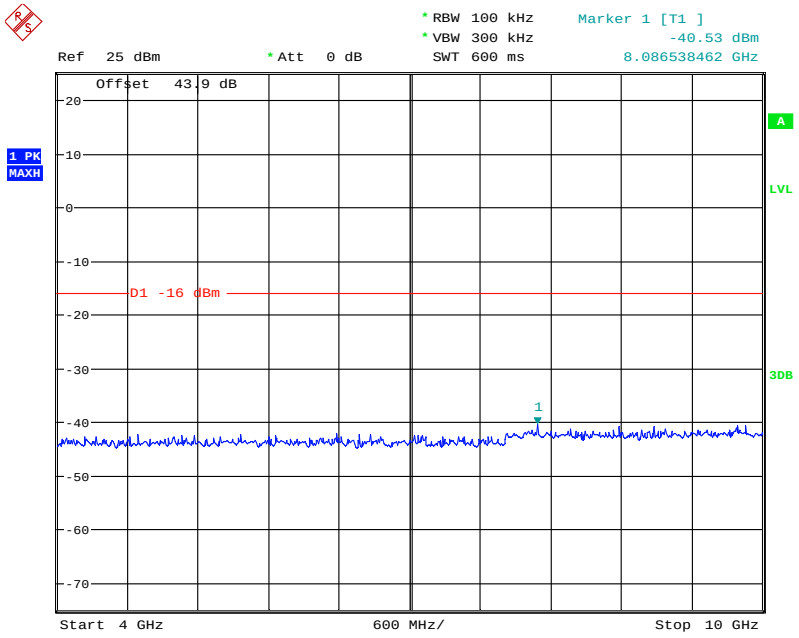
1GHz to 4GHz



Date: 22.MAY.2013 14:11:32

Product Service

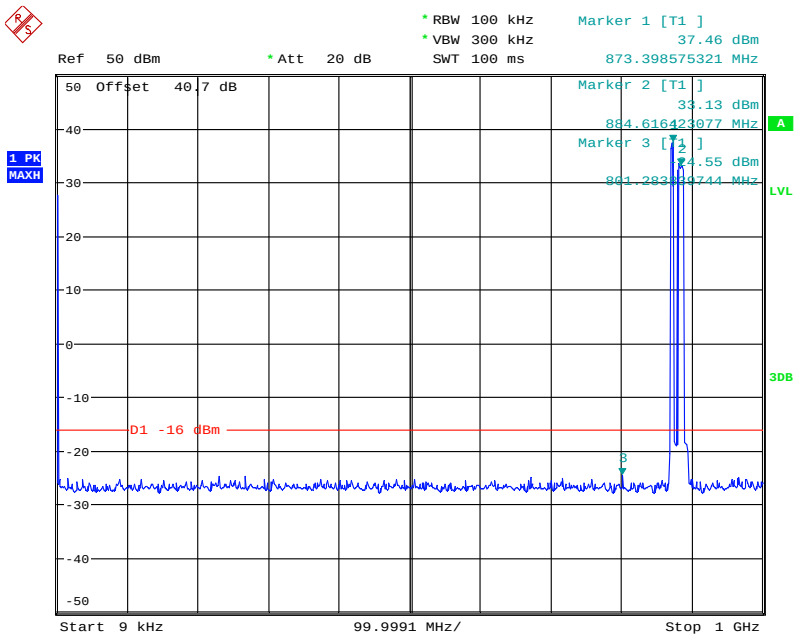
4GHz to 10GHz



Date: 22.MAY.2013 13:08:52

Configuration 1 - Mode 1 - W&L10

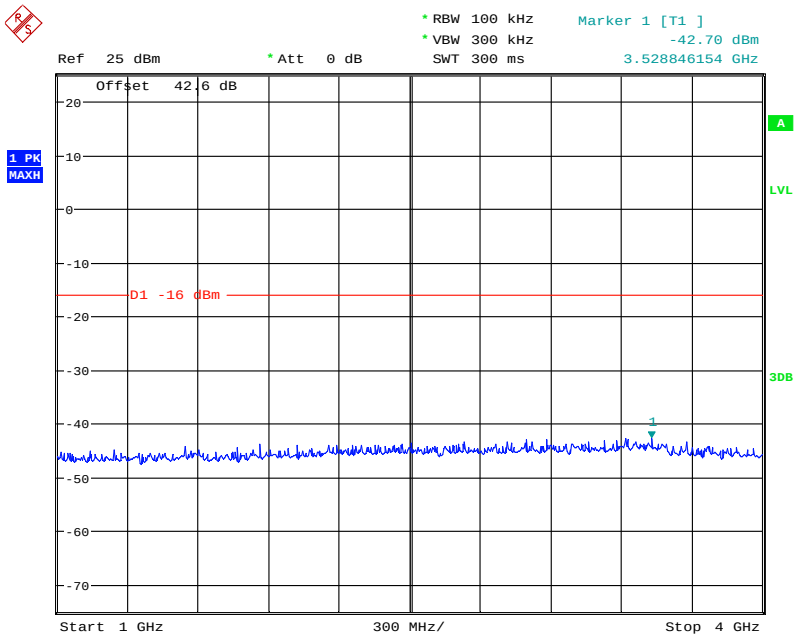
9kHz to 1GHz



Date: 22.MAY.2013 15:05:32

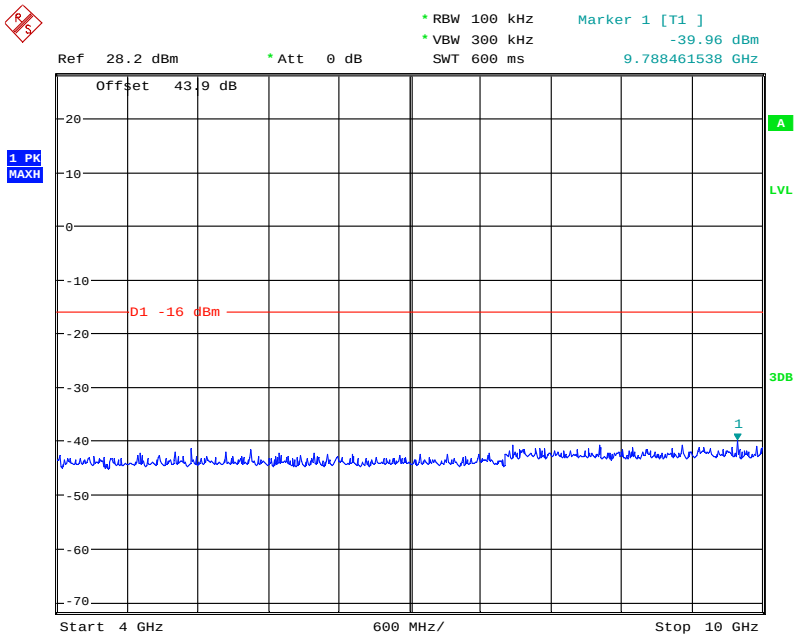
Note: The emissions beyond the limit are the operating frequencies.

1GHz to 4GHz



Date: 22.MAY.2013 15:11:17

4GHz to 10GHz

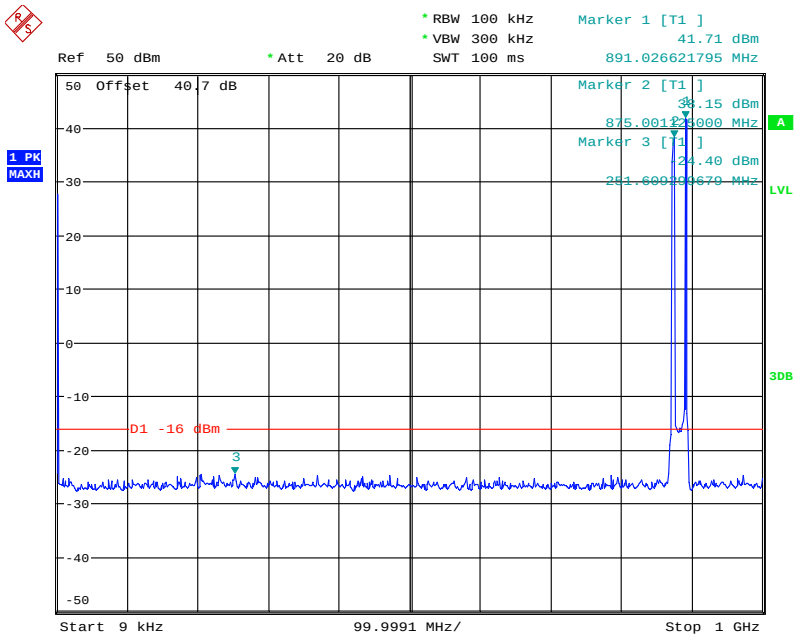


Date: 22.MAY.2013 15:08:23

Product Service

Configuration 1 - Mode 2 - W&L1.4

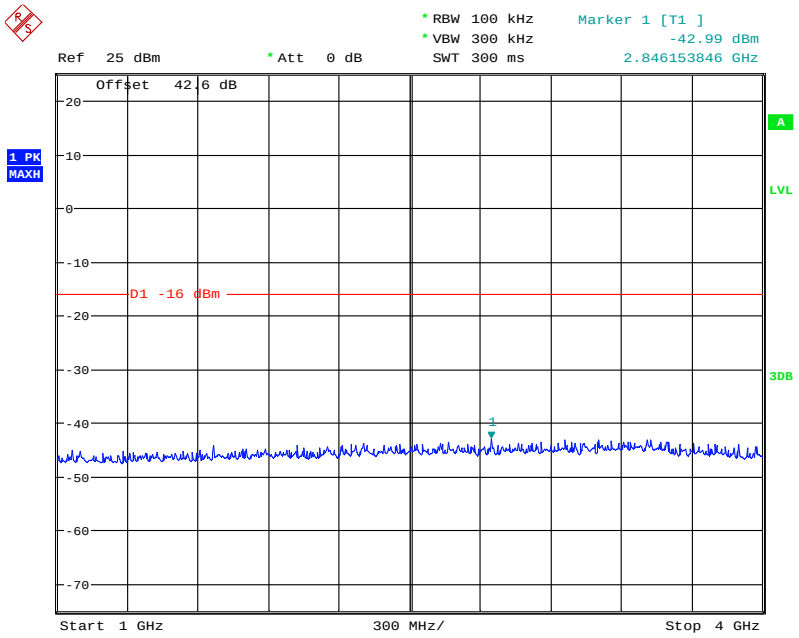
9kHz to 1GHz



Date: 22.MAY.2013 16:13:27

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

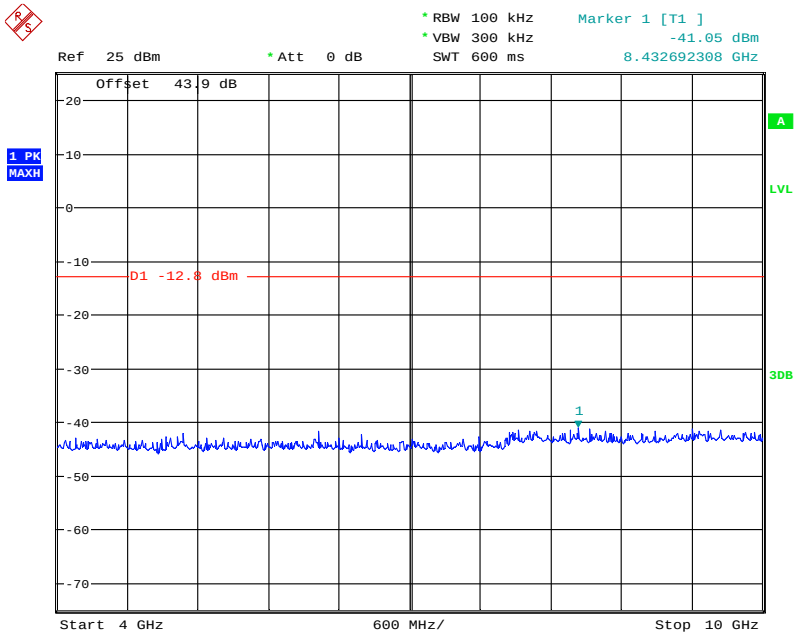
1GHz to 4GHz



Date: 22.MAY.2013 16:23:35

Product Service

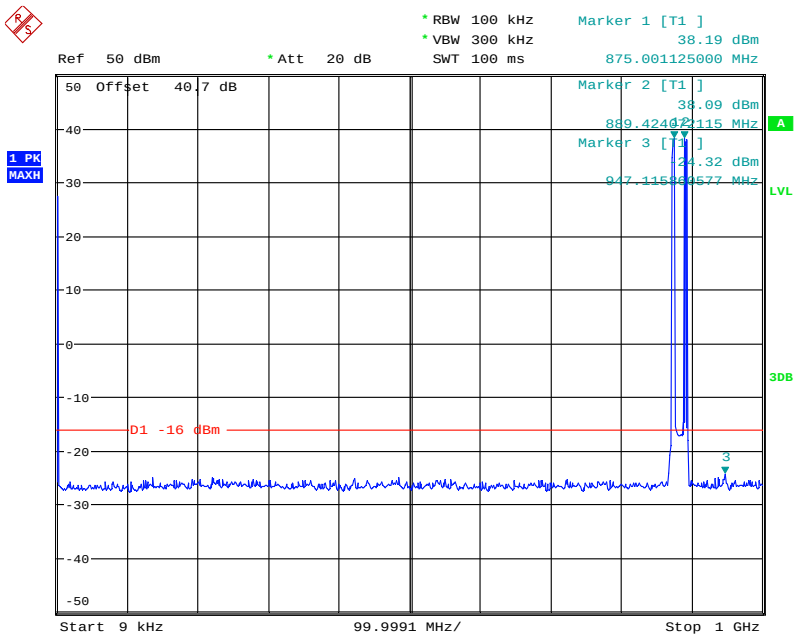
4GHz to 10GHz



Date: 22.MAY.2013 16:17:11

Configuration 1 - Mode 2 - W&L3

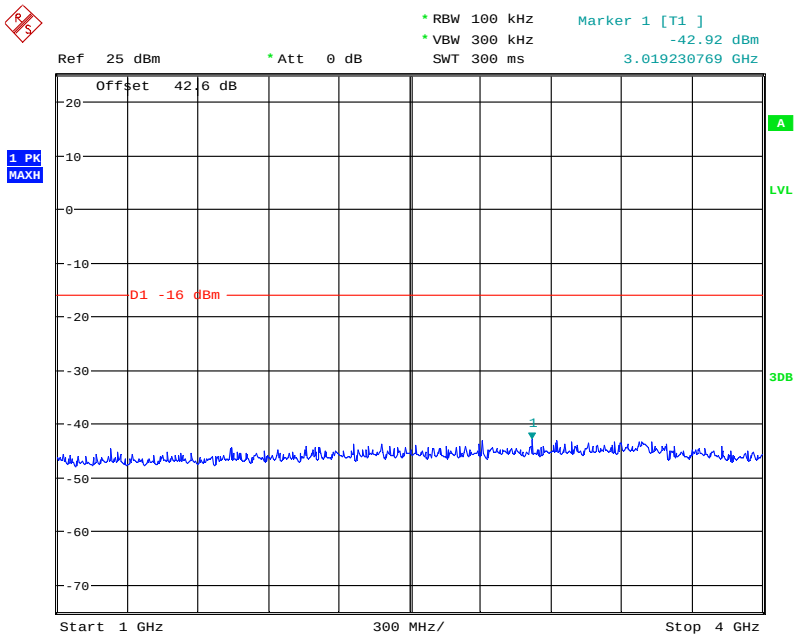
9kHz to 1GHz



Date: 22.MAY.2013 16:35:01

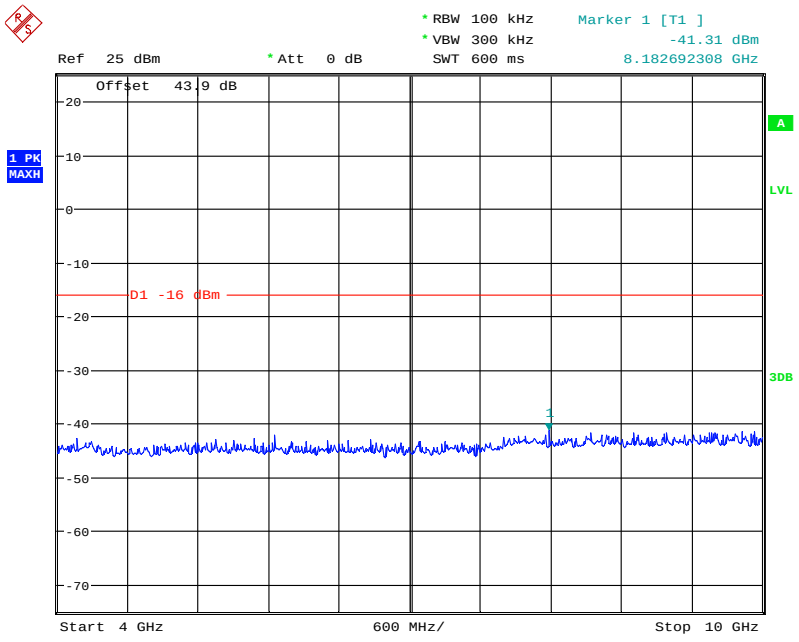
Note: The emissions beyond the limit are the operating frequencies.

1GHz to 4GHz



Date: 22.MAY.2013 16:30:23

4GHz to 10GHz

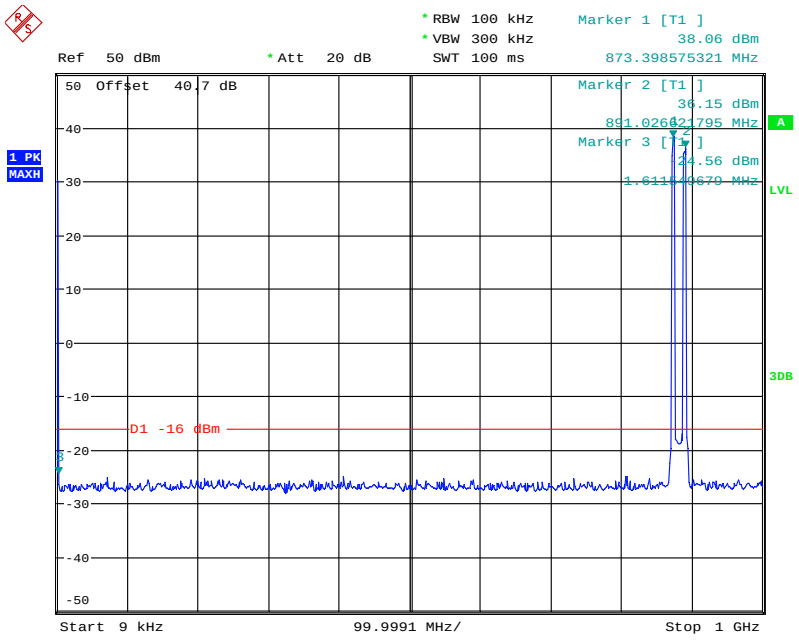


Date: 22.MAY.2013 16:36:23

Product Service

Configuration 1 - Mode 2 - W&L5

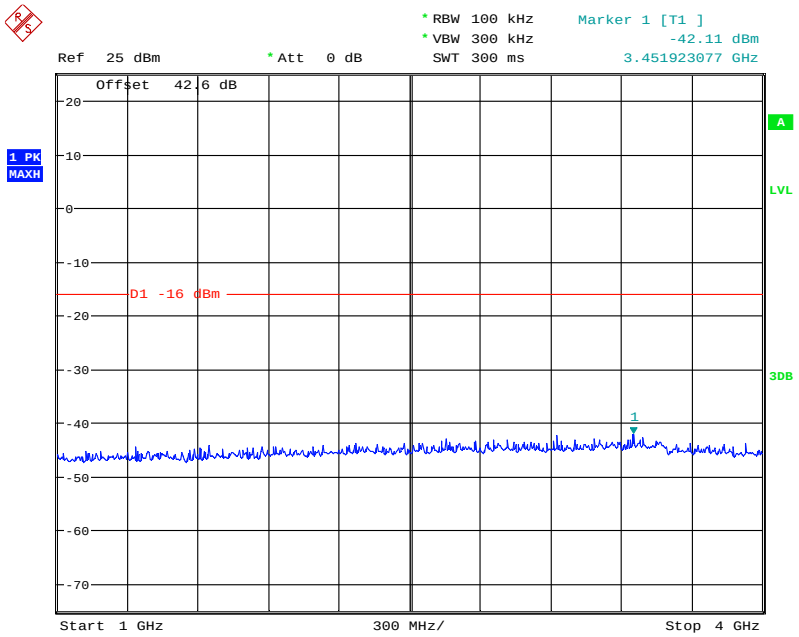
9kHz to 1GHz



Date: 22.MAY.2013 16:57:29

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

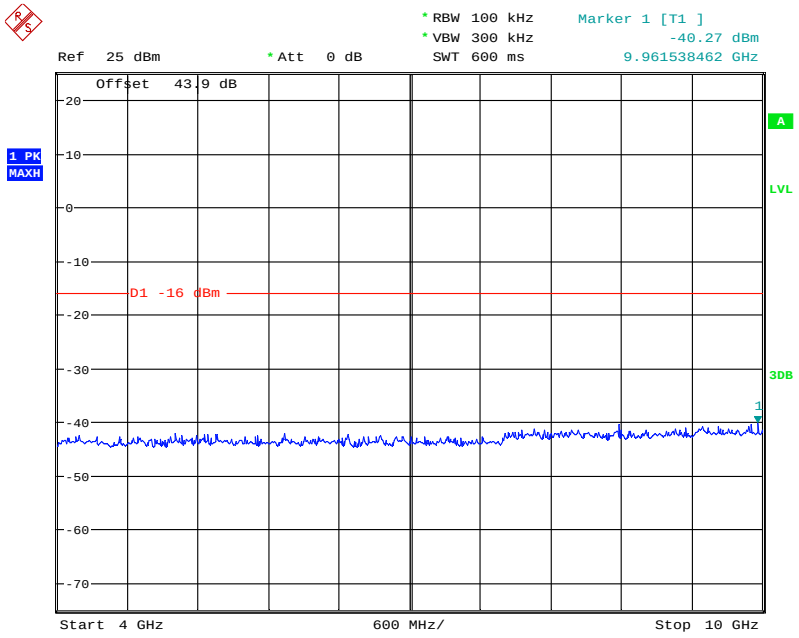
1GHz to 4GHz



Date: 22.MAY.2013 17:03:18

Product Service

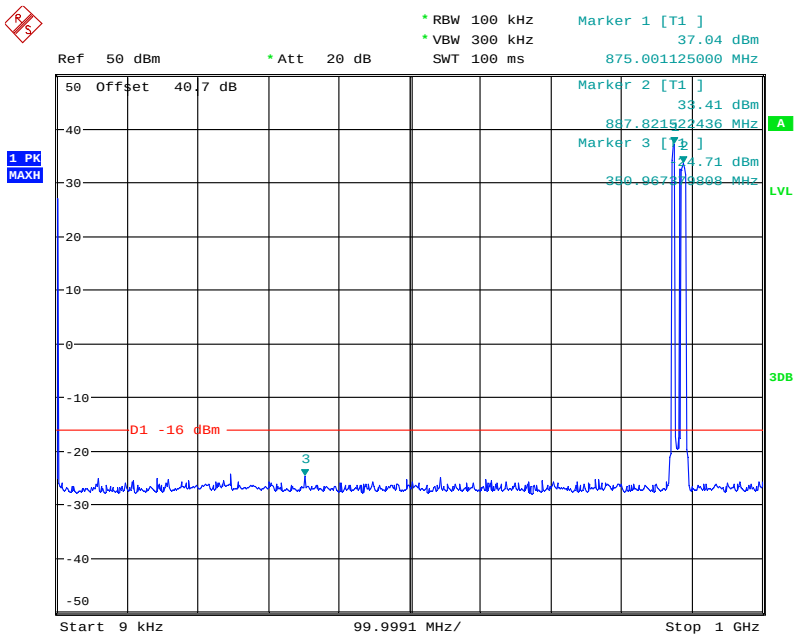
4GHz to 10GHz



Date: 22.MAY.2013 17:00:48

Configuration 1 - Mode 2 - W&L10

9kHz to 1GHz

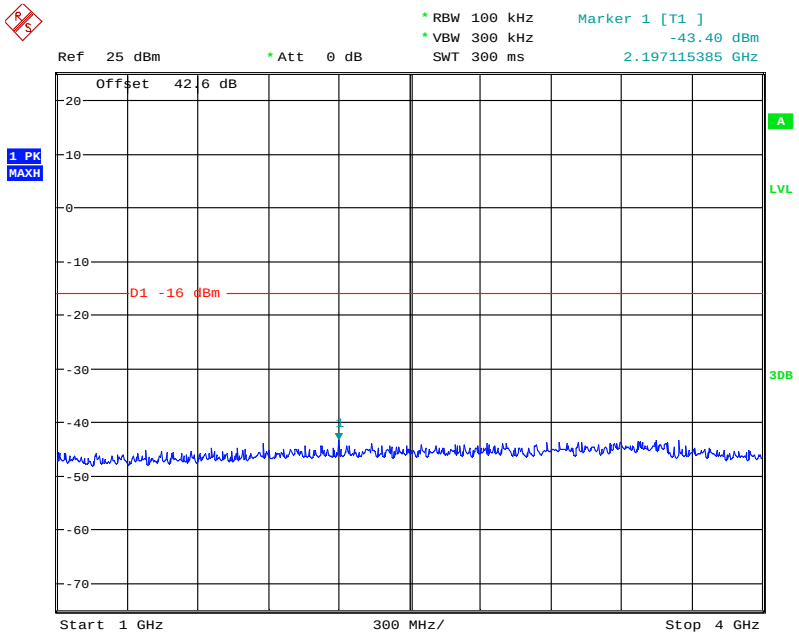


Date: 22.MAY.2013 17:24:05

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

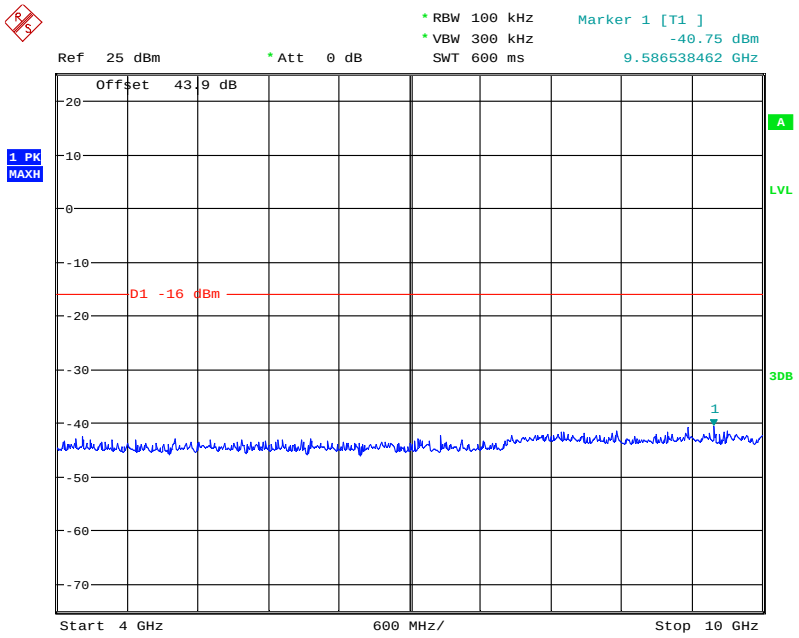
Product Service

1GHz to 4GHz



Date: 22.MAY.2013 17:27:27

4GHz to 10GHz

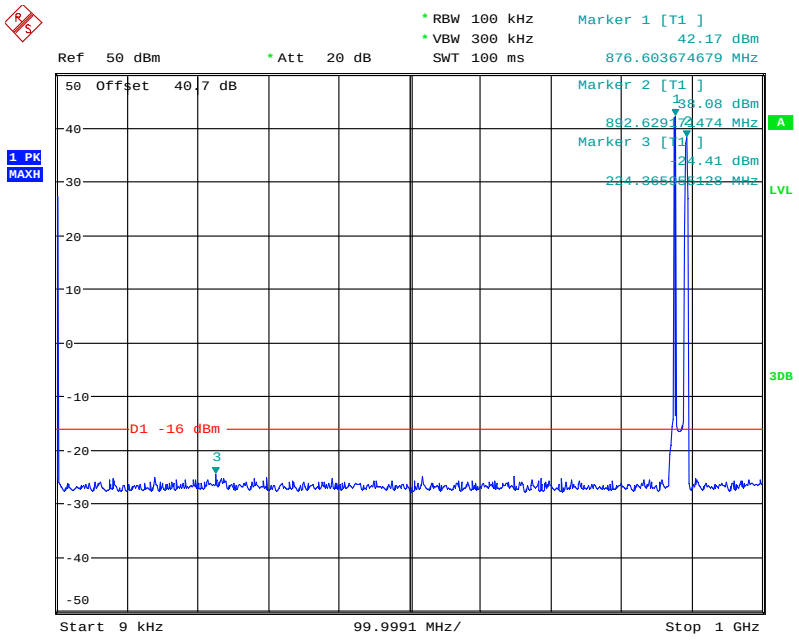


Date: 22.MAY.2013 17:25:09

Product Service

Configuration 1 - Mode 3 - L1.4&W

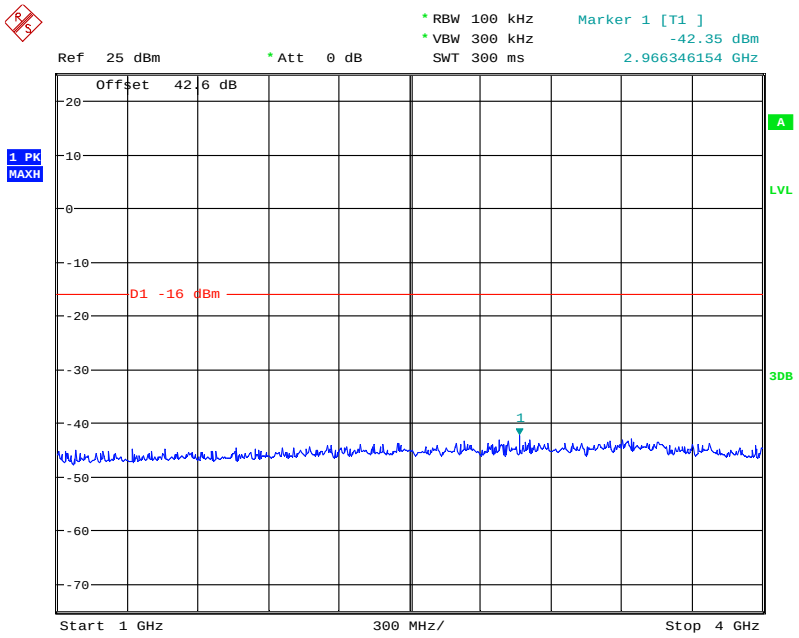
9kHz to 1GHz



Date: 23.MAY.2013 09:41:41

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

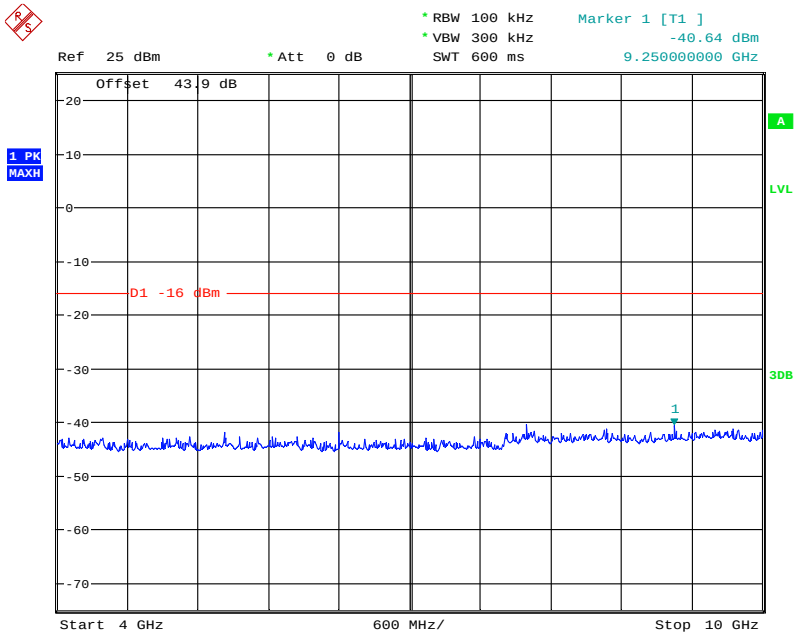
1GHz to 4GHz



Date: 23.MAY.2013 09:34:21

Product Service

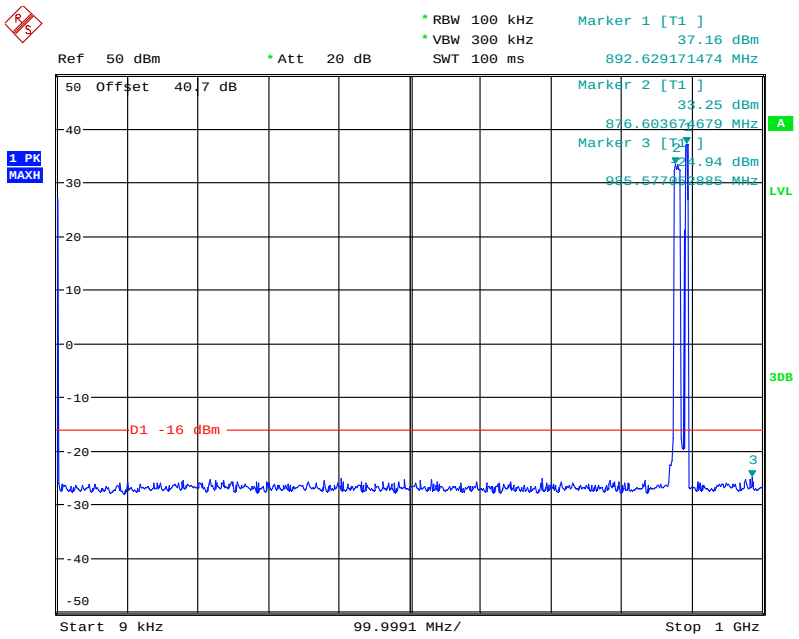
4GHz to 10GHz



Date: 23.MAY.2013 09:37:30

Configuration 1 - Mode 3 - L10&W

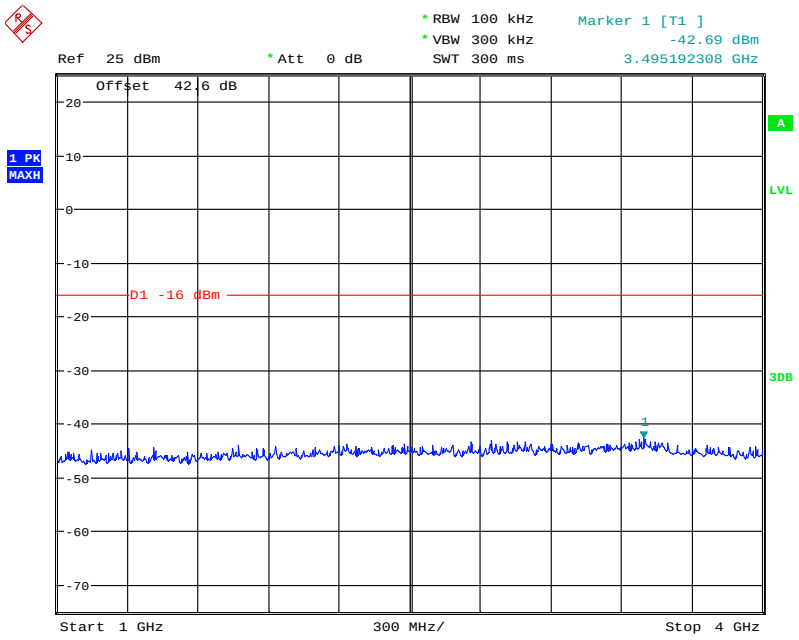
9kHz to 1GHz



Date: 23.MAY.2013 14:19:16

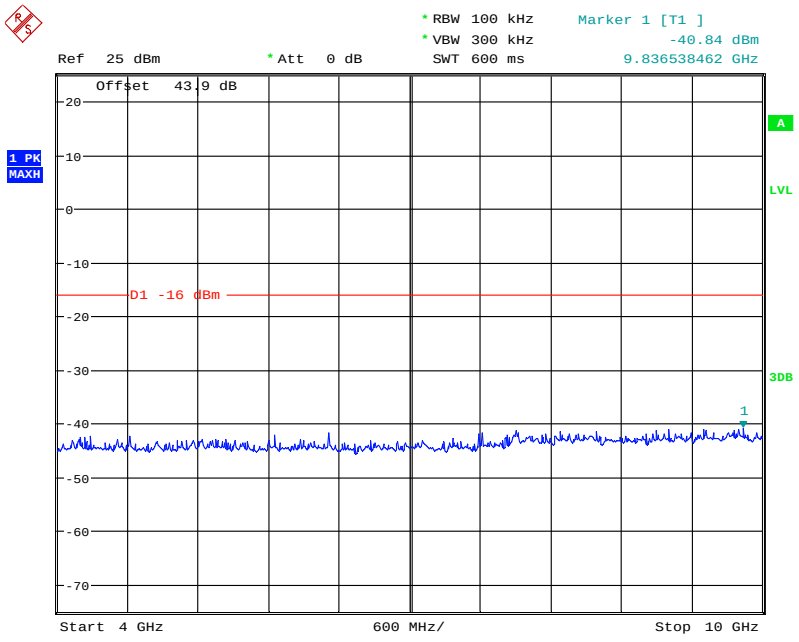
Note: The emissions beyond the limit are the operating frequencies.

1GHz to 4GHz



Date: 23.MAY.2013 14:14:31

4GHz to 10GHz



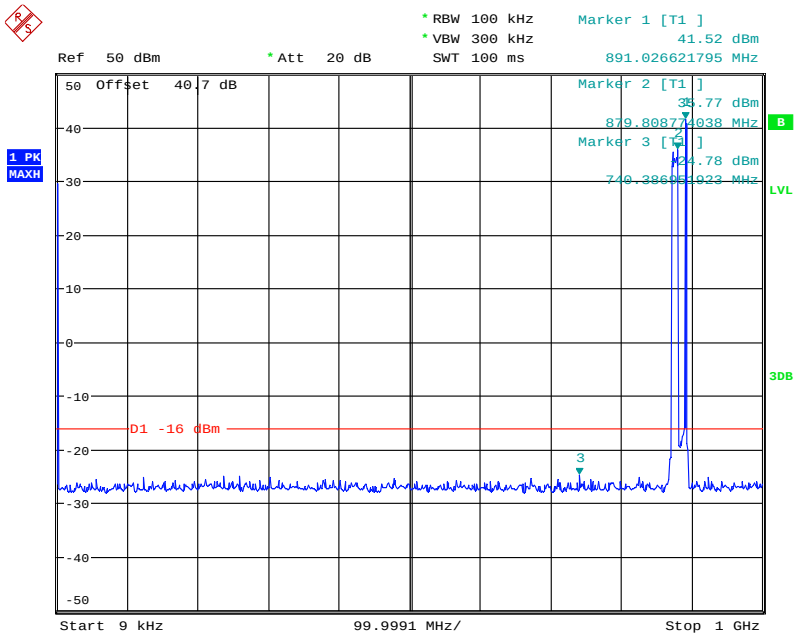
Date: 23.MAY.2013 14:17:23

Product Service

Mix Carrier(x3): 2W+1L

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

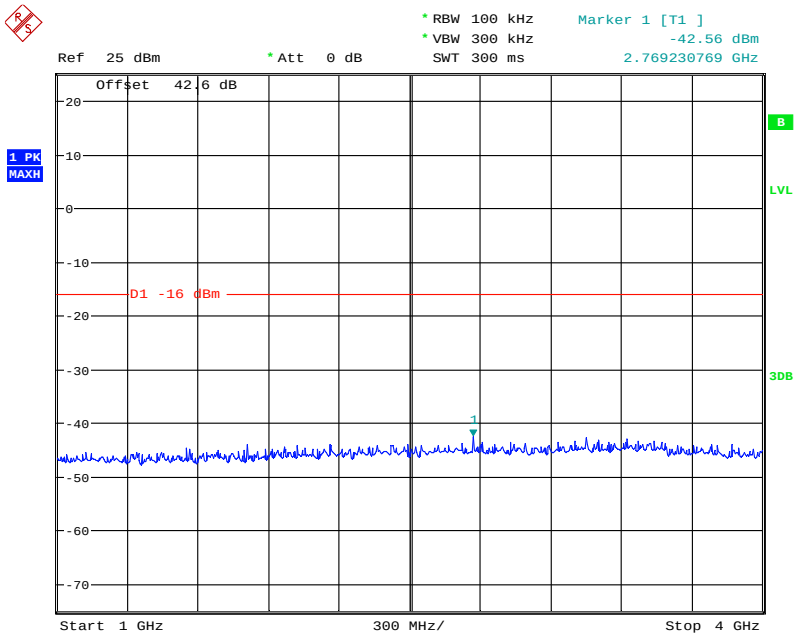
9kHz to 1GHz



Date: 31.MAY.2013 13:12:15

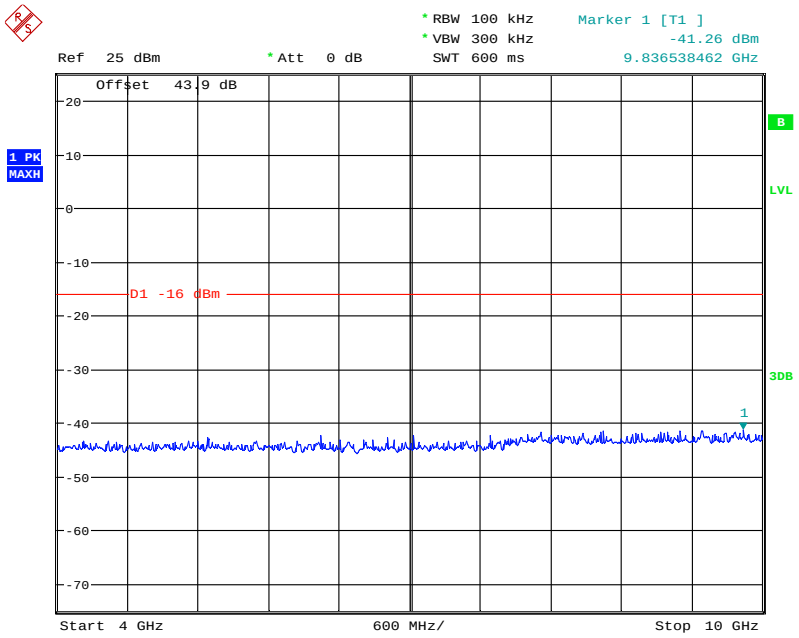
Note: The emissions beyond the limit are the operating frequencies.

1GHz to 4GHz



Date: 31.MAY.2013 13:09:52

4GHz to 10GHz

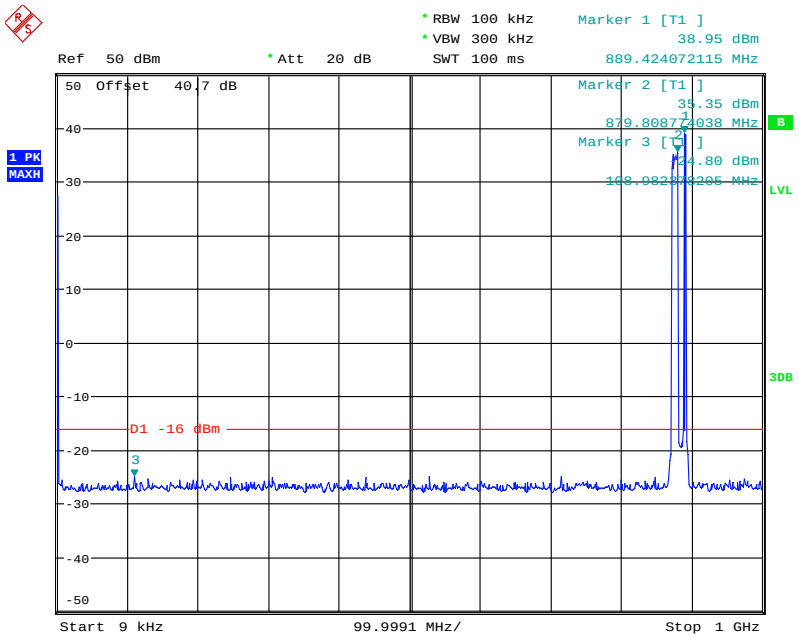


Date: 31.MAY.2013 13:10:49

Mix Carrier(x4): 2W+2L

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

9kHz to 1GHz

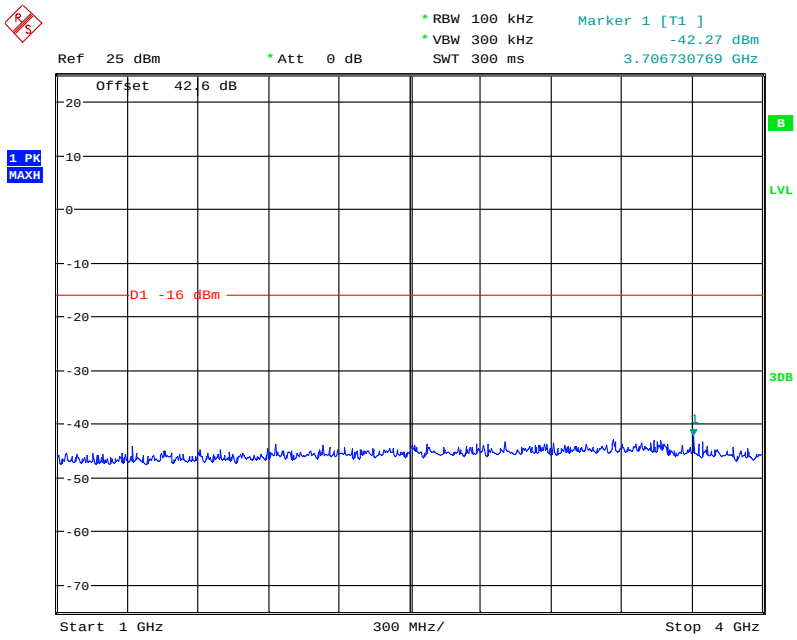


Date: 29.MAY.2013 15:17:52

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

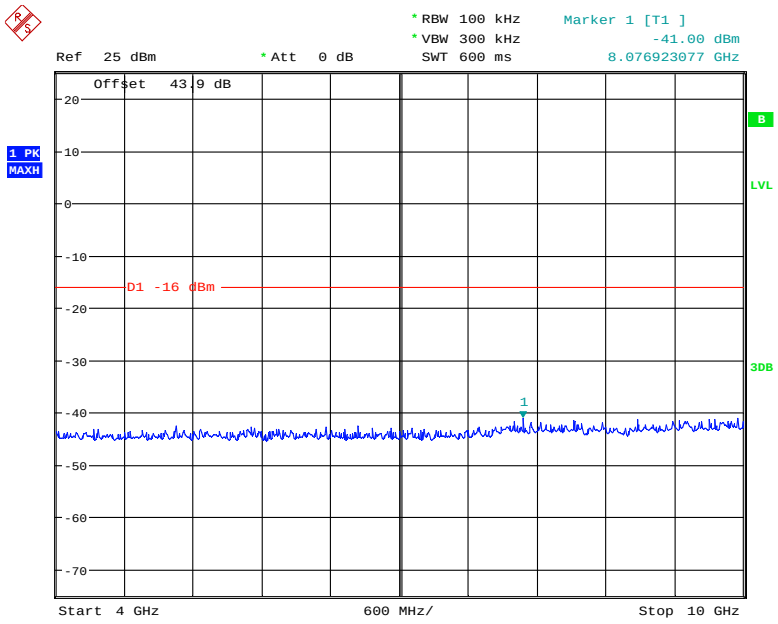
Product Service

1GHz to 4GHz



Date: 29.MAY.2013 15:21:57

4GHz to 10GHz



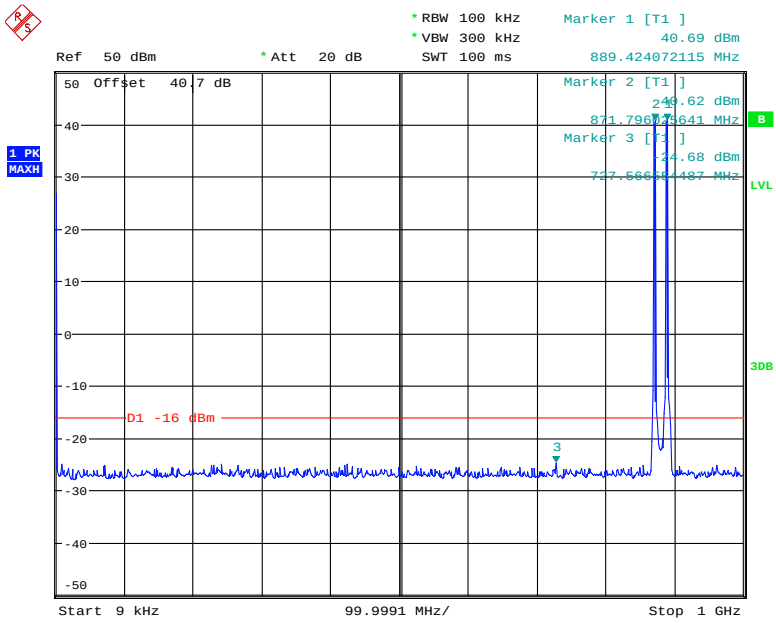
Date: 29.MAY.2013 15:20:25

LTE Single RAT:

Multi-Carrier(x2):

Configuration 1 - Mode 10 - L1.4&L1.4

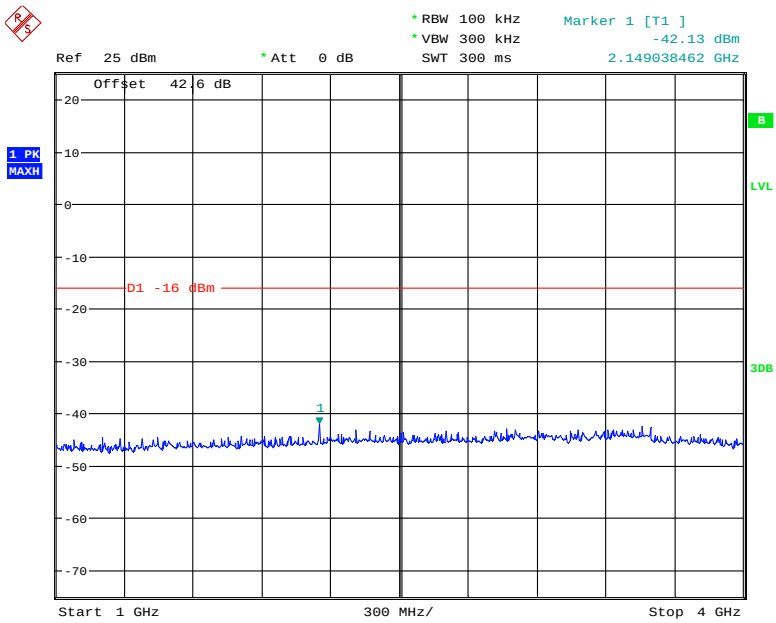
9kHz to 1GHz



Date: 31.MAY.2013 16:52:43

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

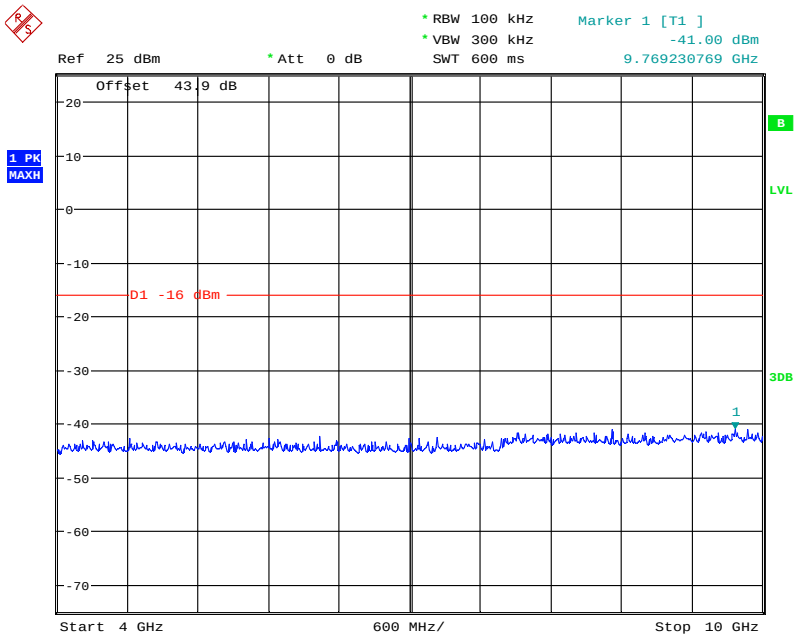
1GHz to 4GHz



Date: 31.MAY.2013 17:01:12

Product Service

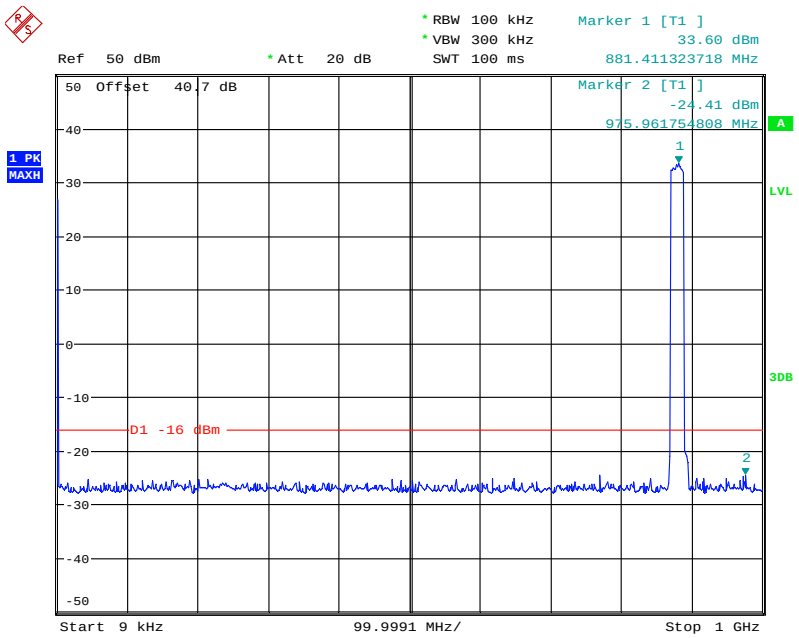
4GHz to 10GHz



Date: 31.MAY.2013 16:55:49

Configuration 1 - Mode 10 - L10&L10

9kHz to 1GHz

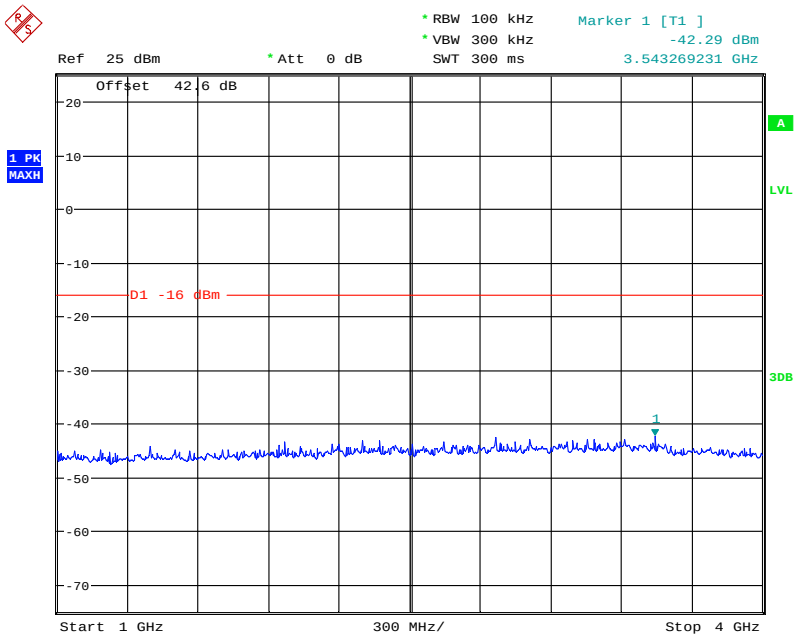


Date: 3.JUN.2013 13:18:21

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

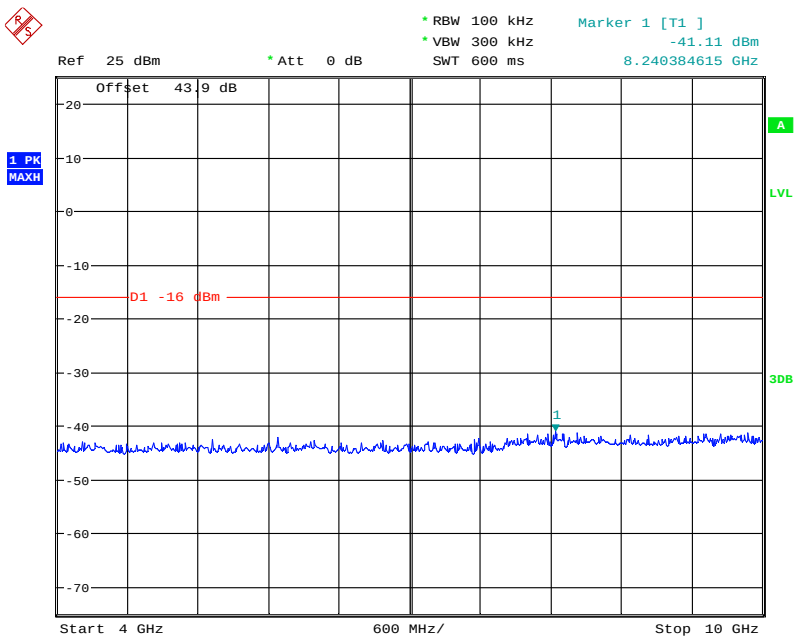
Product Service

1GHz to 4GHz



Date: 3.JUN.2013 13:13:36

4GHz to 10GHz

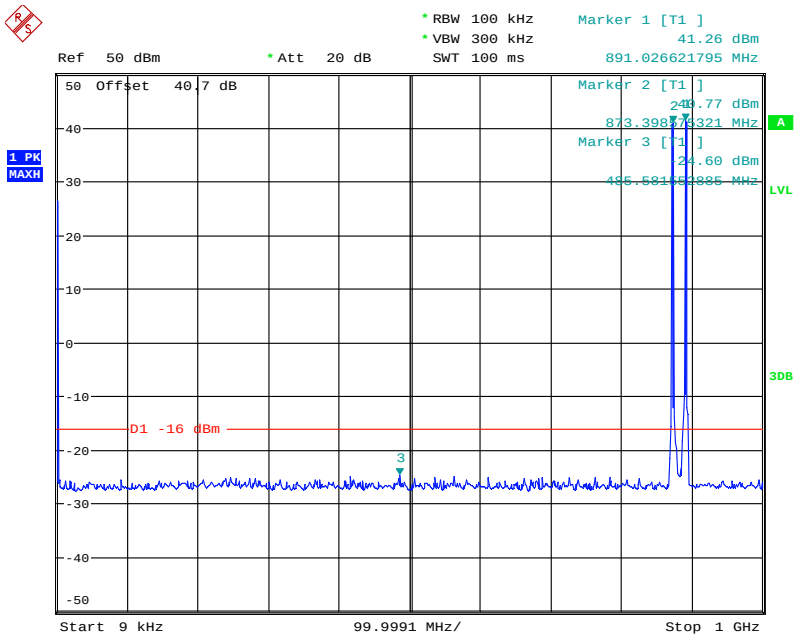


Date: 3.JUN.2013 13:15:35

Product Service

Configuration 1 - Mode 11 - L1.4&L1.4

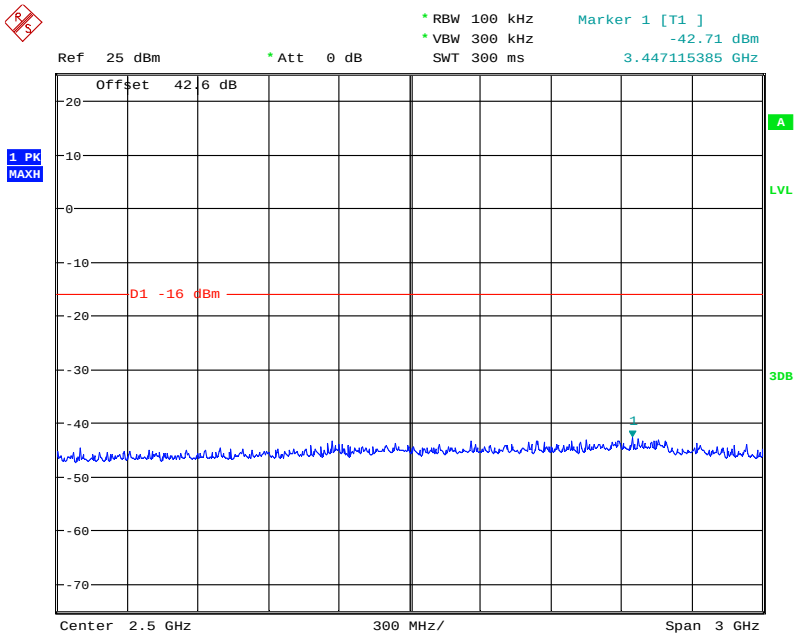
9kHz to 1GHz



Date: 3.JUN.2013 10:07:21

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

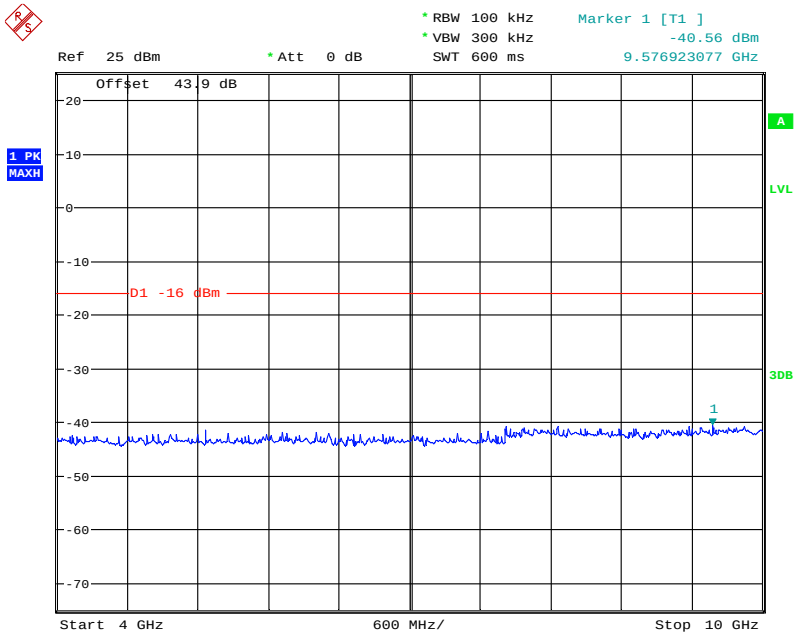
1GHz to 4GHz



Date: 3.JUN.2013 10:13:30

Product Service

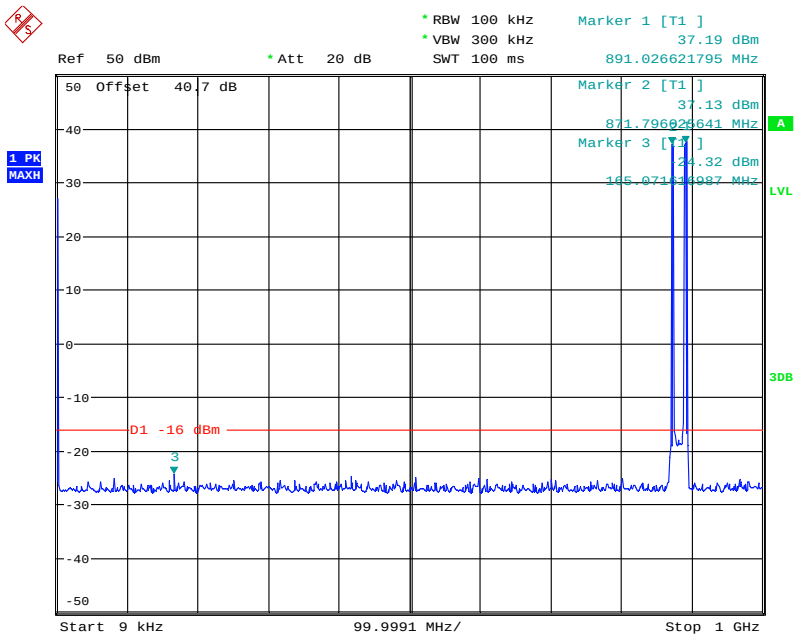
4GHz to 10GHz



Date: 3.JUN.2013 10:12:36

Configuration 1 - Mode 11 - L3&L3

9kHz to 1GHz

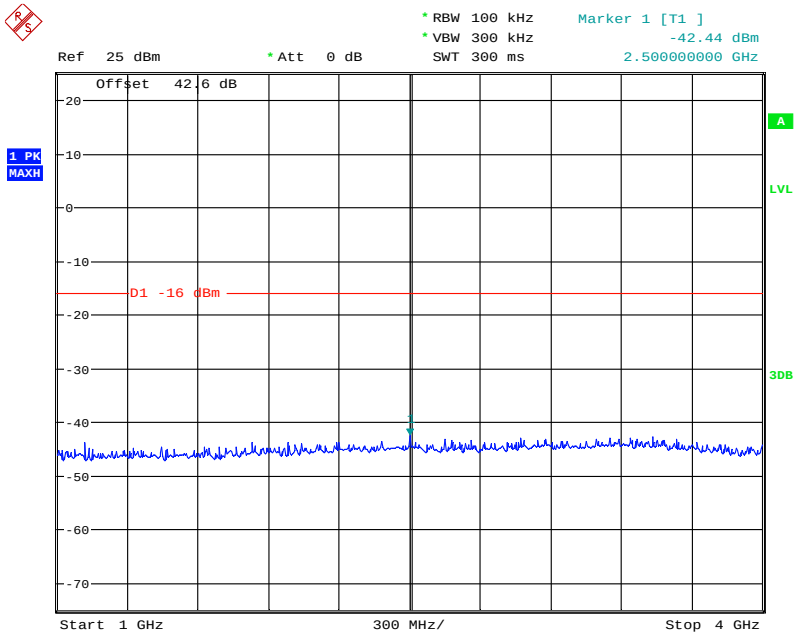


Date: 3.JUN.2013 12:26:39

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

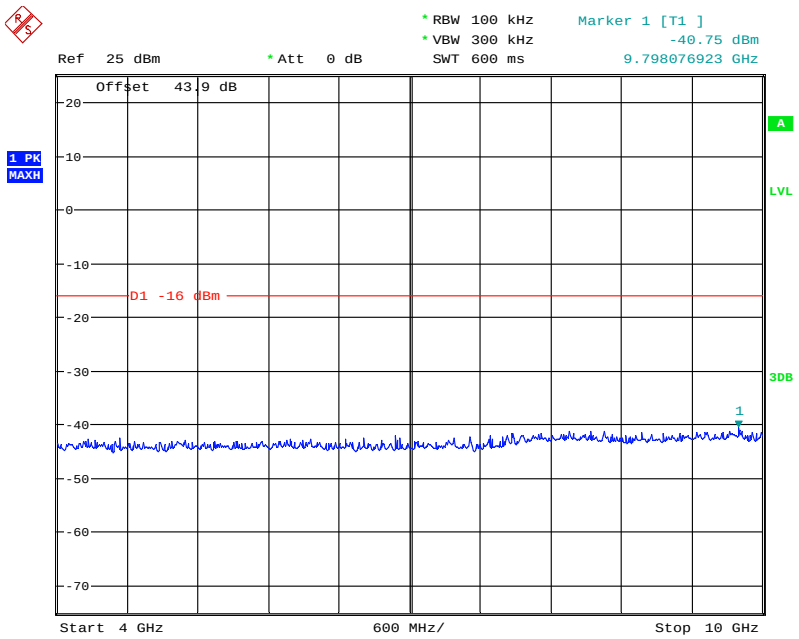
Product Service

1GHz to 4GHz



Date: 3.JUN.2013 12:32:37

4GHz to 10GHz

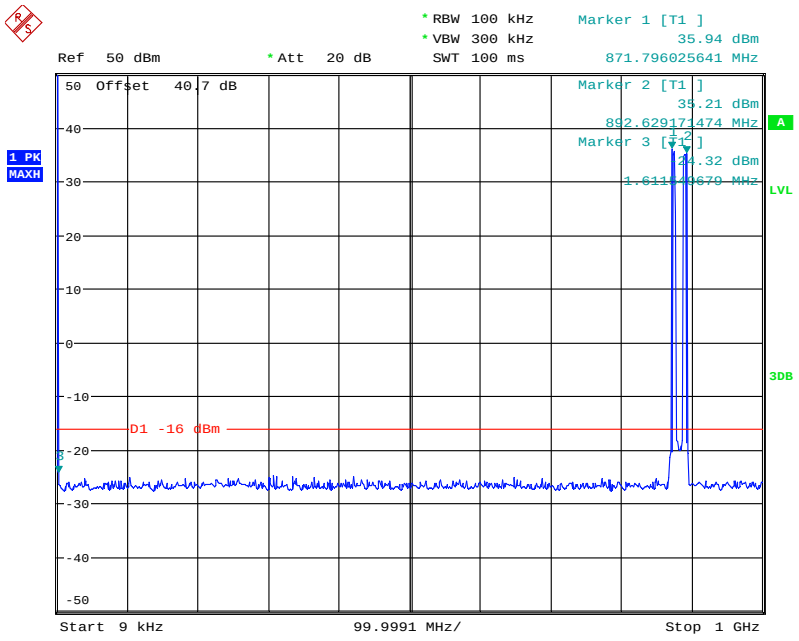


Date: 3.JUN.2013 12:30:18

Product Service

Configuration 1 - Mode 11 - L5&L5

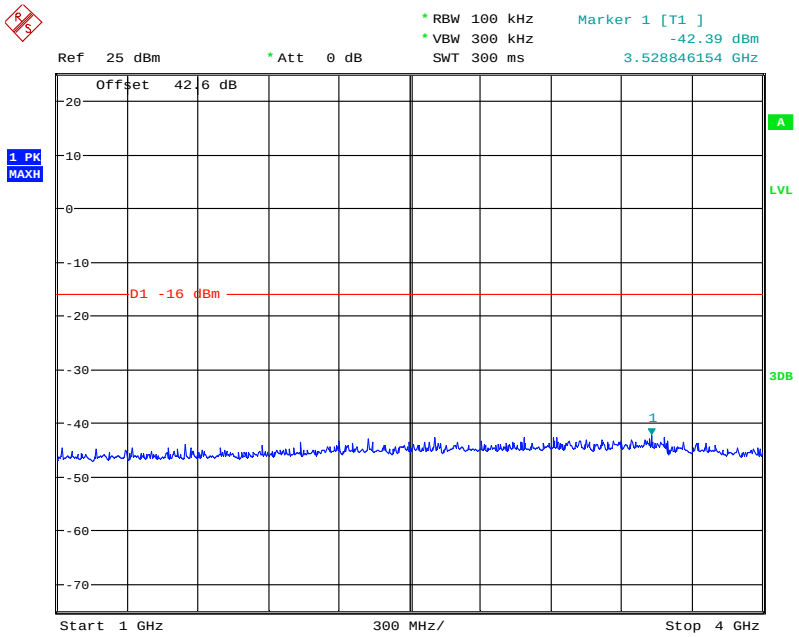
9kHz to 1GHz



Date: 3.JUN.2013 12:48:18

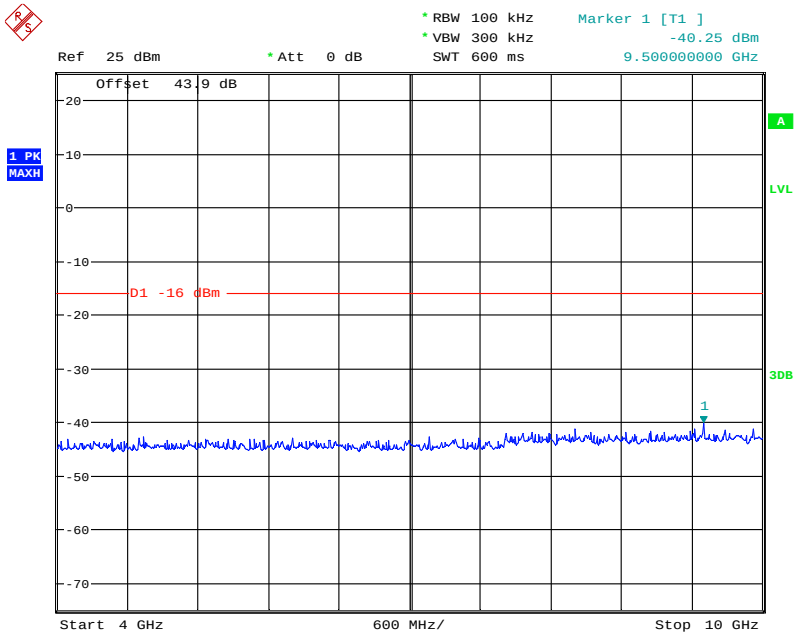
Note: The emissions beyond the limit are the operating frequencies.

1GHz to 4GHz



Date: 3.JUN.2013 12:51:27

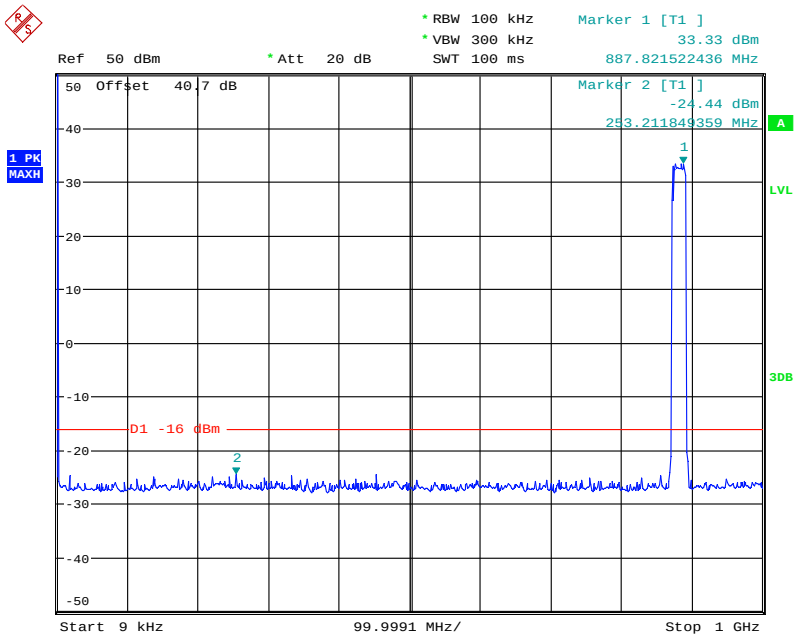
4GHz to 10GHz



Date: 3.JUN.2013 12:45:35

Configuration 1 - Mode 11 - L10&L10

9kHz to 1GHz

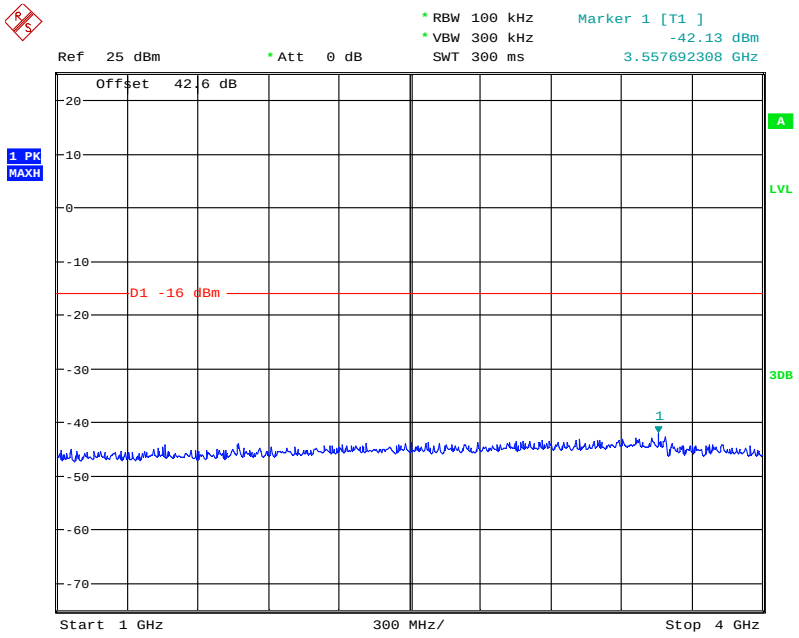


Date: 3.JUN.2013 13:54:31

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

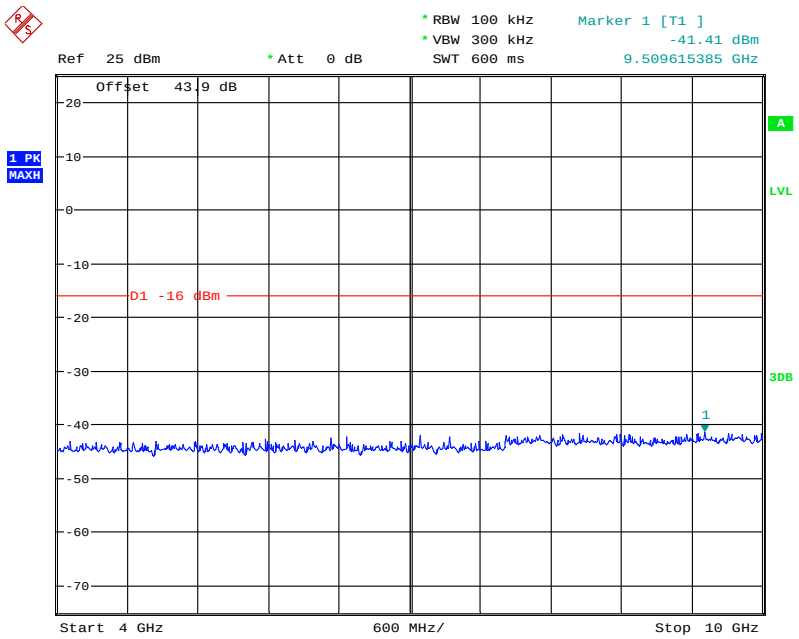
Product Service

1GHz to 4GHz



Date: 3.JUN.2013 13:50:54

4GHz to 10GHz

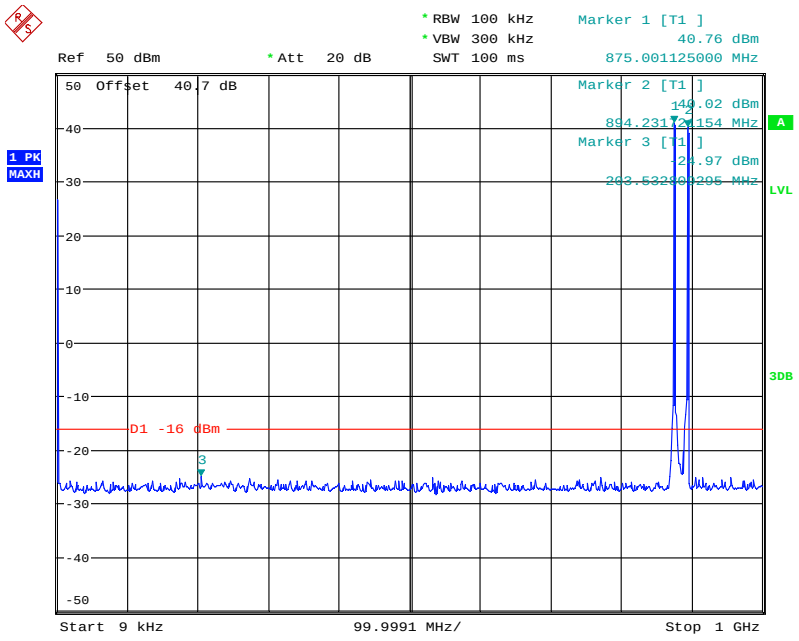


Date: 3.JUN.2013 13:52:21

Product Service

Configuration 1 - Mode 12 - L1.4&L1.4

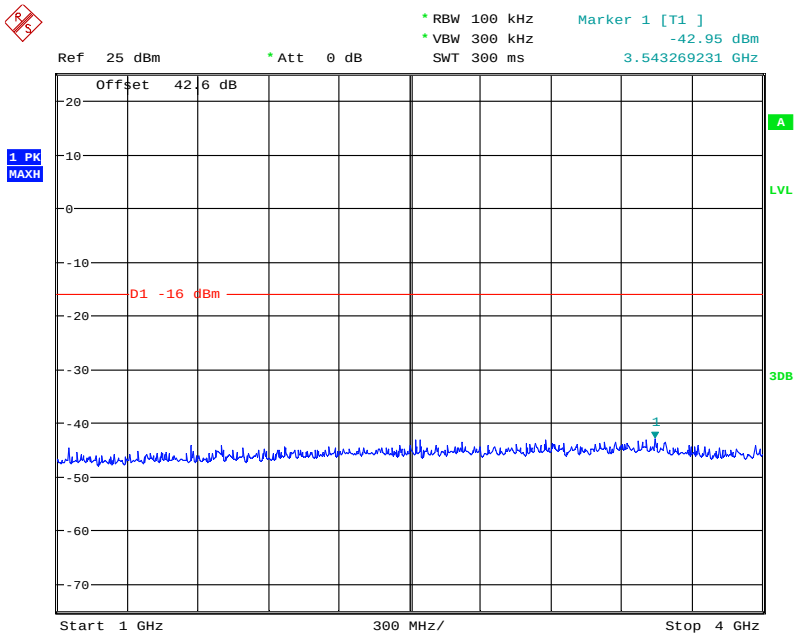
9kHz to 1GHz



Date: 3.JUN.2013 14:23:24

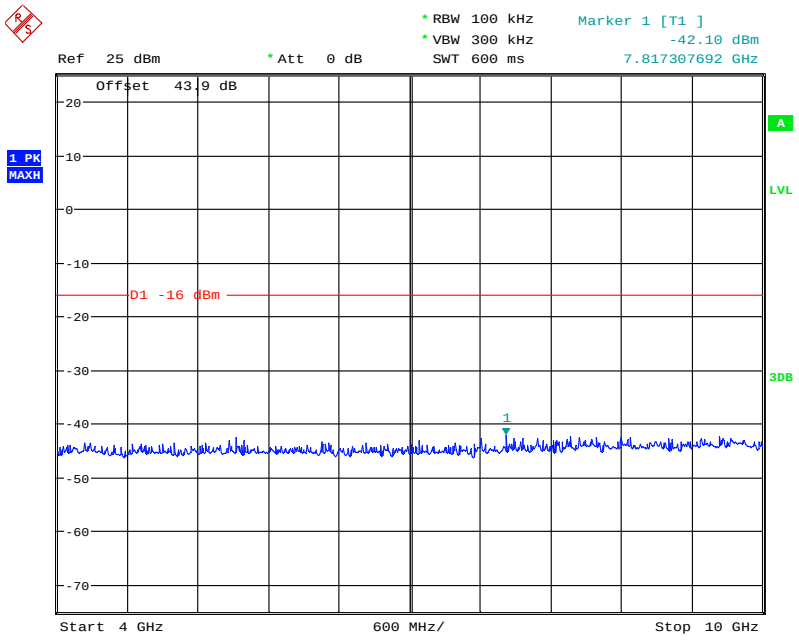
Note: The emissions beyond the limit are the operating frequencies.

1GHz to 4GHz



Date: 3.JUN.2013 10:20:19

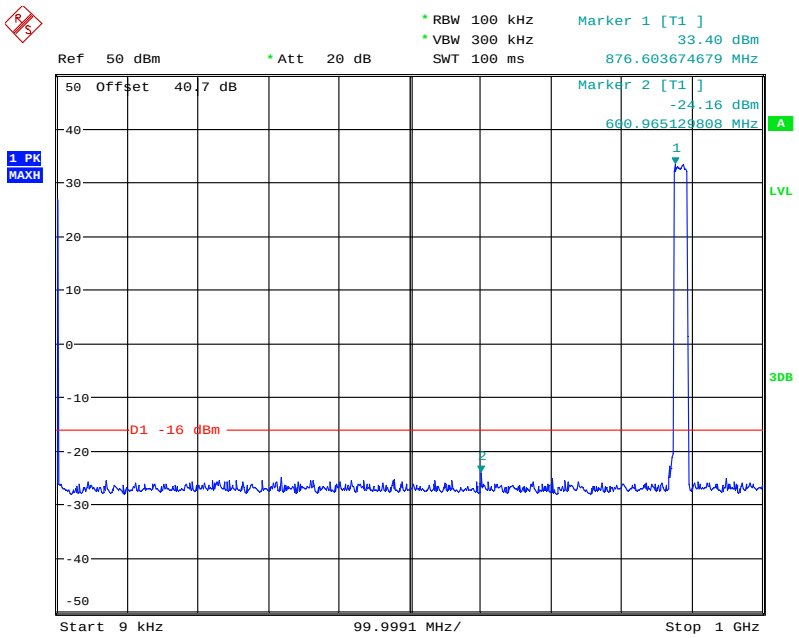
4GHz to 10GHz



Date: 3.JUN.2013 10:22:06

Configuration 1 - Mode 12 - L10&L10

9kHz to 1GHz

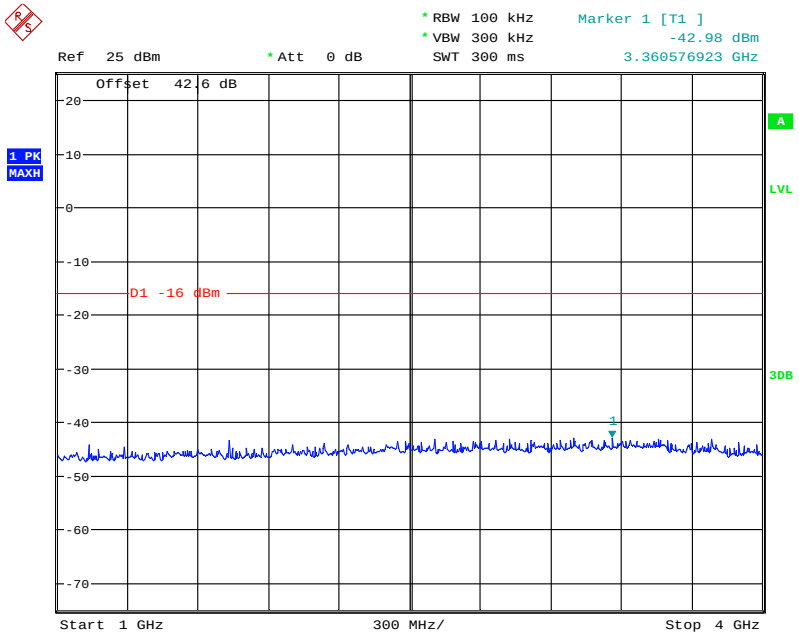


Date: 3.JUN.2013 13:31:24

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

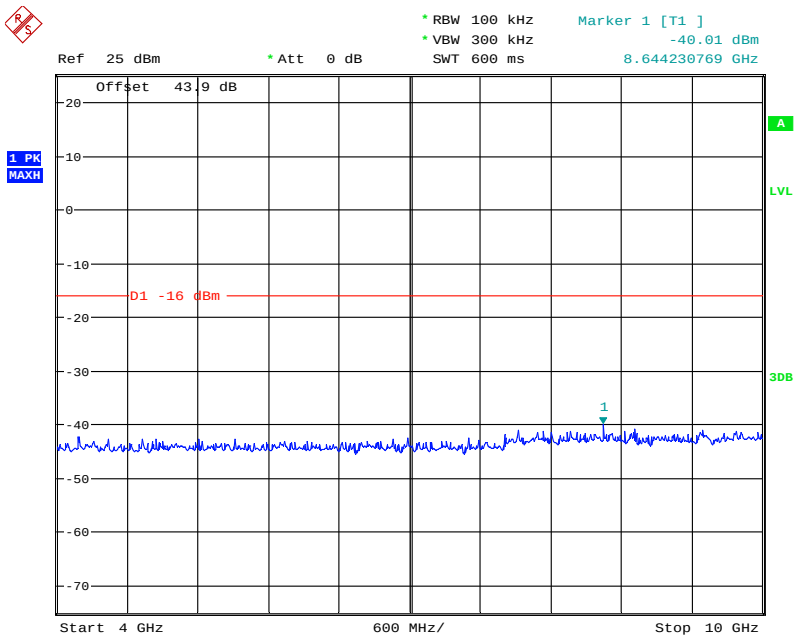
Product Service

1GHz to 4GHz



Date: 3.JUN.2013 13:34:09

4GHz to 10GHz



Date: 3.JUN.2013 13:33:08

Remarks

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

Product Service

SECTION 3

TEST EQUIPMENT USED

Product Service

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	100244	12	07-Apr-2014
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
Pass Filter	K&L	ULK 904 098/2	16	-	O/P MON
Load	Shanghai Huaxiang	TF100	09121648	-	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

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

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 (Not UKAS Accredited).