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Report On

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

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FCC ID: TA8AKRC11864-2
IC ID: 287AB-AS118642

Document 75923085 Report 02 Issue 1 July 2013

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REPORT ON

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

Document 75923085 Report 02 Issue 1

July 2013

PREPARED FOR

Ericsson AB
Isafjordsgatan 10
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PREPARED BY

G Zhao
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

Product Service

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Product Service

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 Multi-carrier and MIMO support in LTE mode.

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
Part Number	KRC 118 64/2
IC Model Number	AS118642
Serial Number(s)	C824937848 C824937852
LTE Software Version	CXP102051/16 Rev R32BD
PIS Software Version	CXP 9013268/6 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 03 June 2013
Order Number Date	PTP 30 May 2013
Start of Test	04 June 2013
Finish of Test	20 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

Product Service

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	869.7MHz (1.4MHz OBW) / 879.0MHz (20.0MHz OBW)		N/A	No integral antenna.
				881.5MHz (1.4MHz, 3.0MHz, 5.0MHz, 10.0MHz, 15.0MHz, 20.0MHz OBW)		N/A	
				893.3MHz (1.4MHz OBW) / 884.0MHz (20.0MHz OBW)		N/A	
				869.7MHz + 888.3MHz (1.4MHz OBW) / 874.0MHz + 884.0MHz (10MHz OBW)		N/A	
				872.2MHz + 890.8MHz (1.4MHz OBW) / 876.5MHz + 886.5MHz (10MHz OBW)		N/A	
				893.3MHz + 874.7MHz (1.4MHz OBW) / 889.0MHz + 879.0MHz (10MHz OBW)		N/A	
2.1	2.1046, 22.913 (a)	5.4	Maximum Peak Output Power - Conducted	869.7MHz (1.4MHz OBW) / 879.0MHz (20.0MHz OBW)	0	Pass	-
				881.5MHz (1.4MHz, 3.0MHz, 5.0MHz, 10.0MHz, 15.0MHz, 20.0MHz OBW)	0	Pass	
				893.3MHz (1.4MHz OBW) / 884.0MHz (20.0MHz OBW)	0	Pass	
				869.7MHz + 888.3MHz (1.4MHz OBW) / 874.0MHz + 884.0MHz (10MHz OBW)	0	Pass	
				872.2MHz + 890.8MHz (1.4MHz OBW) / 873.0MHz + 890.0MHz (3.0MHz OBW) / 874.0MHz + 889.0MHz (5.0MHz OBW) / 876.5MHz + 886.5MHz (10MHz OBW)	0	Pass	
				893.3MHz + 874.7MHz (1.4MHz OBW) / 889.0MHz + 879.0MHz (10MHz OBW)	0	Pass	

Product Service

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	869.7MHz (1.4MHz OBW) / 879.0MHz (20.0MHz OBW)	0	Pass	-
				881.5MHz (1.4MHz, 3.0MHz, 5.0MHz, 10.0MHz, 15.0MHz, 20.0MHz OBW)	0	Pass	
				893.3MHz (1.4MHz OBW) / 884.0MHz (20.0MHz OBW)	0	Pass	
				869.7MHz + 888.3MHz (1.4MHz OBW) / 874.0MHz + 884.0MHz (10MHz OBW)	0	Pass	
				872.2MHz + 890.8MHz (1.4MHz OBW) / 873.0MHz + 890.0MHz (3.0MHz OBW) / 874.0MHz + 889.0MHz (5.0MHz OBW) / 876.5MHz + 886.5MHz (10MHz OBW)	0	Pass	
				893.3MHz + 874.7MHz (1.4MHz OBW) / 889.0MHz + 879.0MHz (10MHz OBW)	0	Pass	
	2.1047 (d)	5.2	Modulation Characteristics	871.5MHz (5.0MHz OBW)		N/A	-
				881.5MHz (5.0MHz OBW)		N/A	
				891.5MHz (5.0MHz OBW)		N/A	
				869.7MHz + 888.3MHz (1.4MHz OBW) / 874.0MHz + 884.0MHz (10MHz OBW)		N/A	
				872.2MHz + 890.8MHz (1.4MHz OBW) / 876.5MHz + 886.5MHz (10MHz OBW)		N/A	
				893.3MHz + 874.7MHz (1.4MHz OBW) / 889.0MHz + 879.0MHz (10MHz OBW)		N/A	
	2.1049, 22.917 (b)	RSS-Gen 4.6.1	Occupied Bandwidth	869.7MHz (1.4MHz OBW) / 879.0MHz (20.0MHz OBW)		N/A	-
				881.5MHz (1.4MHz, 3.0MHz, 5.0MHz, 10.0MHz, 15.0MHz, 20.0MHz OBW)		N/A	
				893.3MHz (1.4MHz OBW) / 884.0MHz (20.0MHz OBW)		N/A	
				869.7MHz + 888.3MHz (1.4MHz OBW) / 874.0MHz + 884.0MHz (10MHz OBW)		N/A	
				872.2MHz + 890.8MHz (1.4MHz OBW) / 876.5MHz + 886.5MHz (10MHz OBW)		N/A	
				893.3MHz + 874.7MHz (1.4MHz OBW) / 889.0MHz + 879.0MHz (10MHz OBW)		N/A	

Product Service

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					
2.3	2.1051, 22.917 (b)	5.5	Spurious Emissions at Antenna Terminals (±1MHz)	869.7MHz (1.4MHz OBW) / 870.5MHz (3.0MHz OBW) 871.5MHz (5.0MHz OBW) / 874.0MHz (10.0MHz OBW) 876.5MHz (15.0MHz OBW) / 879.0MHz (20.0MHz OBW)	0	Pass	-
				881.5MHz		N/A	
				893.3MHz (1.4MHz OBW) / 892.5MHz (3.0MHz OBW) 891.5MHz (5.0MHz OBW) / 889.0MHz (10.0MHz OBW) 886.5MHz (15.0MHz OBW) / 884.0MHz (20.0MHz OBW)	0	Pass	
				869.7MHz + 871.1MHz (1.4MHz OBW) / 870.5MHz + 873.5.0MHz (3MHz OBW) / 871.5MHz + 876.5MHz (5MHz OBW) / 874.0MHz + 884.0MHz (10MHz OBW)	0	Pass	
				-		N/A	
				893.3MHz + 891.9MHz (1.4MHz OBW) / 892.5MHz + 889.5MHz (3MHz OBW) / 891.5MHz + 886.5MHz (5MHz OBW) / 889.0MHz + 879.0MHz (10MHz OBW)	0	Pass	
2.4	2.1053, 22.917 (a)	5.5	Radiated Spurious Emissions	869.7MHz (1.4MHz OBW)	0	Pass	-
				881.5MHz (1.4MHz, 3.0MHz, 5.0MHz, 10.0MHz, 15MHz, 20.0MHz OBW)	0	Pass	
				893.3MHz (1.4MHz OBW)	0	Pass	
				869.7MHz + 888.3MHz (1.4MHz OBW)	0	Pass	
				872.2MHz + 890.8MHz (1.4MHz OBW) / 873.0MHz + 890.0MHz (3MHz OBW) / 874.0MHz + 889.0MHz (5MHz OBW) / 876.5MHz + 886.5MHz (10MHz OBW)	0	Pass	
				893.3MHz + 874.7MHz (1.4MHz OBW)	0	Pass	
2.5	2.1051, 22.917 (a)	5.5	Conducted Spurious Emissions	869.7MHz (1.4MHz OBW) / 879.0MHz (20.0MHz OBW)	0	Pass	-
				881.5MHz (1.4MHz, 20.0MHz OBW)	0	Pass	
				893.3MHz (1.4MHz OBW) / 884.0MHz (20.0MHz OBW)	0	Pass	
				869.7MHz + 888.3MHz (1.4MHz OBW) / 874.0MHz + 884.0MHz (10MHz OBW)	0	Pass	
				872.2MHz + 890.8MHz (1.4MHz OBW) / 876.5MHz + 886.5MHz (10MHz OBW)	0	Pass	
				893.3MHz + 874.7MHz (1.4MHz OBW) / 889.0MHz + 879.0MHz (10MHz OBW)	0	Pass	

Product Service

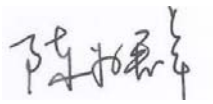
Configuration 1 – Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2, 15 and 22	RSS-132 and RSS-GEN					
	2.1055, 22.355	5.3	Frequency Stability Under Temperature Variations	871.5MHz (5.0MHz OBW)		N/A	-
				881.5MHz (5.0MHz OBW)		N/A	
				891.5MHz (5.0MHz OBW)		N/A	
				869.7MHz + 888.3MHz (1.4MHz OBW) / 874.0MHz + 884.0MHz (10MHz OBW)			
				872.2MHz + 890.8MHz (1.4MHz OBW) / 876.5MHz + 886.5MHz (10MHz OBW)			
				893.3MHz + 874.7MHz (1.4MHz OBW) / 889.0MHz + 879.0MHz (10MHz OBW)			
	2.1055, 22.355	5.3	Frequency Stability Under Voltage Variations	871.5MHz (5.0MHz OBW)		N/A	-
				881.5MHz (5.0MHz OBW)		N/A	
				891.5MHz (5.0MHz OBW)		N/A	
				869.7MHz + 888.3MHz (1.4MHz OBW) / 874.0MHz + 884.0MHz (10MHz OBW)		N/A	
				872.2MHz + 890.8MHz (1.4MHz OBW) / 876.5MHz + 886.5MHz (10MHz OBW)		N/A	
				893.3MHz + 874.7MHz (1.4MHz OBW) / 889.0MHz + 879.0MHz (10MHz OBW)		N/A	
2.6	15.111	-	Receiver Spurious Emissions	881.5MHz (1.4MHz OBW)	0	Pass	-
				872.2MHz + 890.8MHz (1.4MHz OBW)	0	Pass	

N/A – Not Applicable

Product Service

1.3 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Radio Equipment
MANUFACTURER	Ericsson AB
PRODUCT NAME	RUS 01 B5
PART NUMBER	KRC 118 64/2
IC Model Number	AS118642
SERIAL NUMBER	C824937848 C824937852
HARDWARE VERSION	R2A
LTE SOFTWARE	CXP102051/16 Rev R32BD
PIS SOFTWARE	CXP9013268/6 Rev R49DT
TRANSMITTER OPERATING RANGE	TX: 869MHz - 894MHz RX: 824MHz - 849MHz
MODULATIONS	QPSK, 16QAM, 64QAM
NUMBER OF CARRIERS	Maximum 2 carriers
ITU DESIGNATION OF EMISSION	1M40F9W, 3M00F9W, 5M00F9W, 10M0F9W, 15M0F9W, 20M0F9W
OUTPUT POWER (RMS) (W or dBm)	47.8dBm per port (60W per port)
OUTPUT POWER TOLERANCE	± 2dB
INSTANTANEOUS BANDWIDTH	20MHz
CHANNEL BANDWIDTH	Single carrier supports 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz and 20MHz, Multi carrier supports1.4MHz, 3MHz, 5MHz and 10MHz according to 3GPP TS 36.141
NUMBER OF ANTENNA PORTS	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.
FCC ID	TA8AKRC11864-2
IC ID	287AB-AS118642
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The equipment is the Radio Part of LTE Base Station.

Signature 

Date 27 June 2013

D of B S Serial No 75923085/02

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

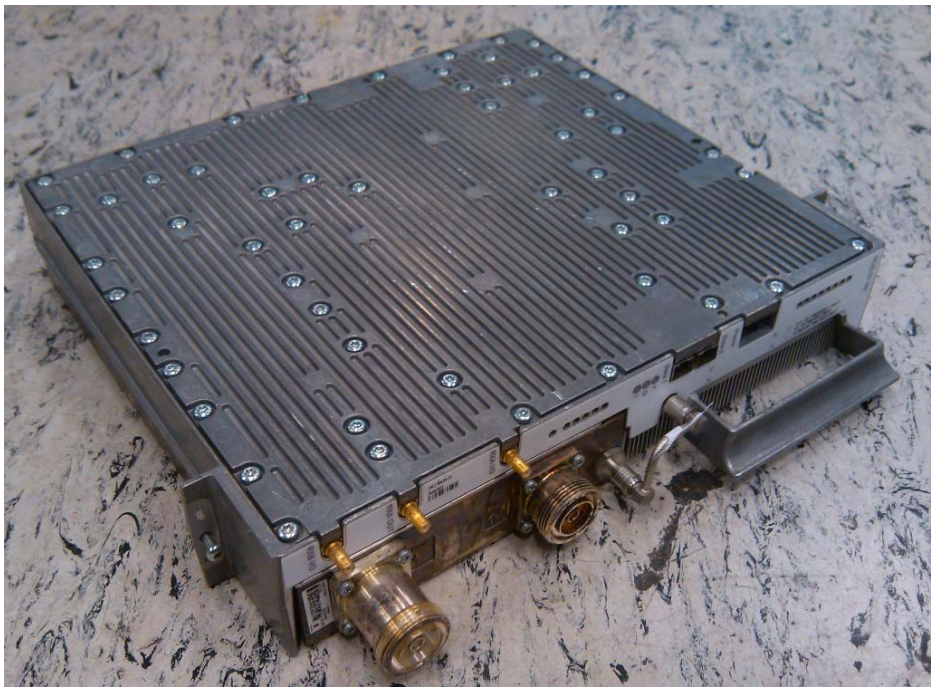
Product Service

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) RUS 01 B5 / KRC 118 64/2 is an Ericsson Radio Equipment working in the public mobile service 850MHz band which operates in LTE mode. 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

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 RUS 01 B5 / KRC 118 64/2 supports Test Models E-TM1.1, E-TM3.2 and E-TM3.1 at 850MHz defined in 3GPP TS 36.141. Test Model E-TM1.1 is used to represent QPSK modulation only, Test Model E-TM3.2 is used to represent 16QAM modulation, and Test Model E-TM3.1 is used to represent 64QAM modulation.

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 selected as the worst configuration.

The settings below were found to be representative for all traffic scenarios when several settings with the different modulations, channel bandwidths were tested to find the worst case setting. These settings were used for all measurements if not otherwise noted:

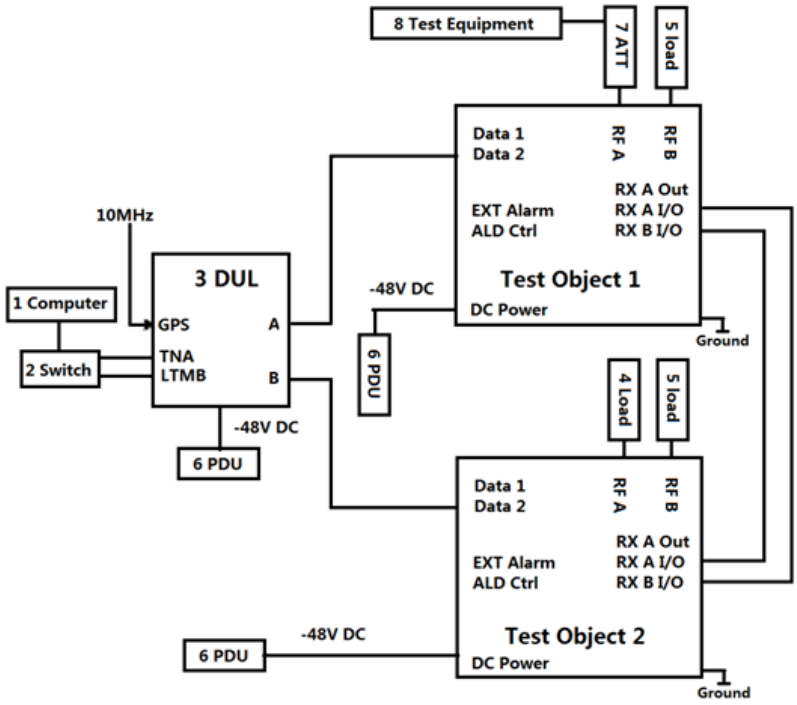
- Single Carrier: Test Model E-TM1.1 in channel bandwidth 1.4MHz and 20MHz.
- Multi Carrier (x2): Test Model E-TM1.1 in channel bandwidth 1.4MHz and 10MHz.

The Output Power was tested on the TX/RX output connectors RF A1 and RF A2, all other cases were tested on the TX/RX output connector RF A1 as the representative port. RX antenna ports were terminated. RX testing was performed on the RX connector RF B1 of the EUT.

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

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

Test Setup, Conducted Measurement:

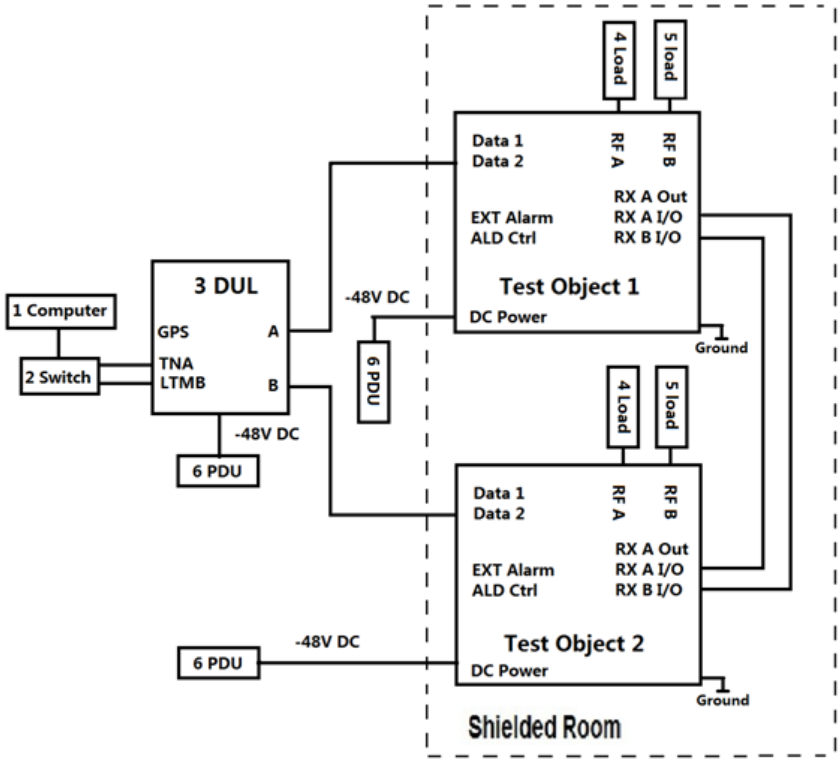


Product Name	Product Number	Version	Serial Number
RUS 01 B5	KRC 118 64/2	R2A	C824937848
RUS 01 B5	KRC 118 64/2	R2A	C824937852

No.	Auxiliary Equipment	Part Number / Model Type	Version	Serial Number
1	Computer	HP EliteBook 8530w	--	AP103078
2	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	Load	TF100	--	09121648
5	Load	TFE5-3	--	090323194
	Load	TFE5-3	--	090323220
6	Power Supply	DH1716-5D	--	2008040041
	Power Supply	DH1716-5D	--	2008040050
7	30dB Attenuator	DTS100	--	04081801
	10dB Attenuator	48-10-43	--	BB8290
8	Power Meter	Rohde & Schwarz NRP	--	102625
	Power Sensor	Rohde & Schwarz NRP-Z51	--	102433
	Spectrum Analyzer	FSQ26	--	100244

Product Service

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
2	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	Load	TF100	--	09121648
	Load	TF100	--	09121605
5	Load	TFE5-3	--	090323194
	Load	TFE5-3	--	090323220
6	Power Supply	DH1716-5D	--	2008040041
	Power Supply	DH1716-5D	--	2008040050

Product Service

1.4.3 Modes of Operation

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

Single Carrier :

Bottom Channel :

Mode 1 - 1.4 : EARFCN 2407: 869.7MHz (1.4MHz Bandwidth)

Mode 1 - 3 : EARFCN 2415: 870.5MHz (3.0MHz Bandwidth)

Mode 1 - 5 : EARFCN 2425: 871.5MHz (5.0MHz Bandwidth)

Mode 1 - 10 : EARFCN 2450: 874.0MHz (10.0MHz Bandwidth)

Mode 1 - 15 : EARFCN 2475: 876.5MHz (15.0MHz Bandwidth)

Mode 1 - 20 : EARFCN 2500: 879.0MHz (20.0MHz Bandwidth)

Middle Channel :

Mode 2 : EARFCN 2525: 881.5MHz

Top Channel :

Mode 3 - 1.4 : EARFCN 2643: 893.3MHz (1.4MHz Bandwidth)

Mode 3 - 3 : EARFCN 2635: 892.5MHz (3.0MHz Bandwidth)

Mode 3 - 5 : EARFCN 2625: 891.5MHz (5.0MHz Bandwidth)

Mode 3 - 10 : EARFCN 2600: 889.0MHz (10.0MHz Bandwidth)

Mode 3 - 15 : EARFCN 2575: 886.5MHz (15.0MHz Bandwidth)

Mode 3 - 20 : EARFCN 2550: 884.0MHz (20.0MHz Bandwidth)

Multi Carrier (x2):

Bottom Channel :

Mode 4 - 1.4 : EARFCN 2407 + 2593: 869.7MHz + 888.3MHz (1.4MHz Bandwidth)

Mode 4 - 3 : EARFCN 2415 + 2585: 870.5MHz + 887.5MHz (3.0MHz Bandwidth)

Mode 4 - 5 : EARFCN 2425 + 2575: 871.5MHz + 886.5MHz (5.0MHz Bandwidth)

Mode 4 - 10 : EARFCN 2450 + 2550: 874.0MHz + 884.0MHz (10.0MHz Bandwidth)

Mode 4' - 1.4 : EARFCN 2407 + 2421: 869.7MHz + 871.1MHz (1.4MHz Bandwidth)

Mode 4' - 3 : EARFCN 2415 + 2445: 870.5MHz + 873.5MHz (3.0MHz Bandwidth)

Mode 4' - 5 : EARFCN 2425 + 2475: 871.5MHz + 876.5MHz (5.0MHz Bandwidth)

Middle Channel :

Mode 5 - 1.4 : EARFCN 2432 + 2618: 872.2MHz + 890.8MHz (1.4MHz Bandwidth)

Mode 5 - 3 : EARFCN 2440 + 2610: 873.0MHz + 890.0MHz (3.0MHz Bandwidth)

Mode 5 - 5 : EARFCN 2450 + 2600: 874.0MHz + 889.0MHz (5.0MHz Bandwidth)

Mode 5 - 10 : EARFCN 2475 + 2575: 876.5MHz + 886.5MHz (10.0MHz Bandwidth)

Top Channel :

Mode 6 - 1.4 : EARFCN 2643 + 2457: 893.3MHz + 874.7MHz (1.4MHz Bandwidth)

Mode 6 - 3 : EARFCN 2635 + 2465: 892.5MHz + 875.5MHz (3.0MHz Bandwidth)

Mode 6 - 5 : EARFCN 2625 + 2475: 891.5MHz + 876.5MHz (5.0MHz Bandwidth)

Mode 6 - 10 : EARFCN 2600 + 2500: 889.0MHz + 879.0MHz (10.0MHz Bandwidth)

Mode 6' - 1.4 : EARFCN 2643 + 2629: 893.3MHz + 891.9MHz (1.4MHz Bandwidth)

Mode 6' - 3 : EARFCN 2635 + 2605: 892.5MHz + 889.5MHz (3.0MHz Bandwidth)

Mode 6' - 5 : EARFCN 2625 + 2575: 891.5MHz + 886.5MHz (5.0MHz Bandwidth)

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

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

19 and 20 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. The carrier power was measured with E-TM1.1, E-TM3.2 and E-TM3.1 test models.

Since when working in MIMO mode, the EUT transmits on two antennas simutaneoulsy in the same frequency range, the output power at both antennas were tested and the total power were then summed mathematically in linear power units by using the Measure and Sum approach.

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 - 1.4, Mode 1 - 20
- Mode 2 (1.4MHz, 3.0MHz, 5.0MHz, 10.0MHz, 15.0MHz, 20MHz OBW)
- Mode 3 - 1.4, Mode 3 - 20
- Mode 4 - 1.4, Mode 4 - 10
- Mode 5 - 1.4, Mode 5 - 3, Mode 5 - 5, Mode 5 - 10
- Mode 6 - 1.4, Mode 6 - 10

2.1.6 Environmental Conditions

	19 June 2013	20 June 2013
Ambient Temperature	22.0°C	22.3°C
Relative Humidity	59.0%	60.0%

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

Single Carrier

E-TM1.1: 1.4MHz Bandwidth

Configuration 1 - Mode 1 - 1.4, Mode 2 and Mode 3 - 1.4

EARFCN	Frequency (MHz)	RF A1		RF A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
2407 (Bottom)	869.7	47.42	55.21	47.29	53.58	50.37	108.79
2525 (Middle)	881.5	47.60	57.54	47.61	57.68	50.46	111.12
2643 (Top)	893.3	47.36	54.45	47.37	54.58	50.50	112.13

E-TM1.1: 20.0MHz Bandwidth

Configuration 1 - Mode 1 - 20, Mode 2 and Mode 3 - 20

EARFCN	Frequency (MHz)	RF A1		RF A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
2500 (Bottom)	879.0	47.66	58.34	47.65	58.21	50.67	116.55
2525 (Middle)	881.5	47.65	58.21	47.64	58.08	50.66	116.29
2550 (Top)	884.0	47.69	58.75	47.64	58.08	50.68	116.83

E-TM1.1: 3.0MHz, 5.0MHz, 10.0MHz and 15.0MHz Bandwidth

Configuration 1 - Mode 2

EARFCN / Frequency (MHz)	BW Config (MHz)	RF A1		RF A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
2525 (Middle) / 881.5	3.0	47.65	58.21	47.67	58.48	50.67	116.69
	5.0	47.63	57.94	47.67	58.48	50.66	116.42
	10.0	47.60	57.54	47.61	57.68	50.62	115.22
	15.0	47.64	58.08	47.66	58.34	50.66	116.42

Product Service

E-TM3.2 and E-TM3.1: 1.4MHz Bandwidth

Configuration 1 - Mode 2

EARFCN / Frequency (MHz)	Test Model	RF A1		RF A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
2525 (Middle) / 881.5	E-TM3.2	47.60	57.54	47.64	58.08	50.63	115.62
	E-TM3.1	47.60	57.54	47.62	57.81	50.62	115.35

E-TM3.2 and E-TM3.1: 20.0MHz Bandwidth

Configuration 1 - Mode 2

EARFCN / Frequency (MHz)	Test Model	RF A1		RF A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
2525 (Middle) / 881.5	E-TM3.2	47.63	57.94	47.63	57.94	50.64	115.88
	E-TM3.1	47.66	58.34	47.66	58.34	50.67	116.68

Product Service

Multi Carrier (x2)

E-TM1.1: 1.4MHz Bandwidth

Configuration 1 - Mode 4 - 1.4, Mode 5 - 1.4 and Mode 6 - 1.4

EARFCN	Frequency (MHz)	RF A1		RF A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
2407 + 2593 (Bottom)	869.7 + 888.3	47.44	55.46	47.39	54.83	50.43	110.29
2432 + 2618 (Middle)	872.2 + 890.8	47.43	55.34	47.47	55.85	50.46	111.19
2643 + 2457 (Top)	893.3 + 874.7	47.43	55.34	47.40	54.95	50.43	110.29

E-TM1.1: 10.0MHz Bandwidth

Configuration 1 - Mode 4 - 10, Mode 5 - 10 and Mode 6 - 10

EARFCN	Frequency (MHz)	RF A1		RF A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
2450 + 2550 (Bottom)	874.0 + 884.0	47.66	58.34	47.65	58.21	50.67	116.55
2475 + 2575 (Middle)	876.5 + 886.5	47.63	57.94	47.64	58.08	50.65	116.02
2600 + 2500 (Top)	889.0 + 879.0	47.67	58.48	47.63	57.94	50.66	116.42

E-TM1.1: 3.0MHz and 5.0MHz Bandwidth

Configuration 1 - Mode 5 - 3 and Mode 5 - 5

EARFCN / Frequency (MHz)	BW Config (MHz)	RF A1		RF A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
2440 + 2610 / 873.0 + 890.0 (Middle)	3.0	47.56	57.02	47.49	56.10	50.54	113.12
2450 + 2600 / 874.0 + 889.0 (Middle)	5.0	47.61	57.68	47.56	57.02	50.60	114.70

E-TM3.2 and E-TM3.1: 1.4MHz Bandwidth

Configuration 1 - Mode 5 - 1.4

EARFCN / Frequency (MHz)	Test Model	RF A1		RF A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
2432 + 2618 / 872.2 + 890.8 (Middle)	E-TM3.2	47.41	55.08	47.39	54.83	50.41	109.91
	E-TM3.1	47.38	54.70	47.35	54.33	50.38	109.03

E-TM3.2 and E-TM3.1: 10.0MHz Bandwidth

Configuration 1 - Mode 5 - 10

EARFCN / Frequency (MHz)	Test Model	RF A1		RF A2		*Total (dBm) RMS	*Total (W) RMS
		Result (dBm) RMS	Result (W) RMS	Result (dBm) RMS	Result (W) RMS		
2475 + 2575 / 876.5 + 886.5 (Middle)	E-TM3.2	47.62	57.81	47.62	57.81	50.63	115.62
	E-TM3.1	47.63	57.94	47.63	57.94	50.64	115.88

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.

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

19 and 20 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 and Industry Canada RSS-132.

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 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 - 1.4, Mode 1 - 20
- Mode 2 (1.4MHz, 3.0MHz, 5.0MHz, 10.0MHz, 15.0MHz, 20MHz OBW)
- Mode 3 - 1.4, Mode 3 - 20
- Mode 4 - 1.4, Mode 4 - 10
- Mode 5 - 1.4, Mode 5 - 3, Mode 5 - 5, Mode 5 - 10
- Mode 6 - 1.4, Mode 6 - 10

2.2.6 Environmental Conditions

	19 June 2013	20 June 2013
Ambient Temperature	22.0°C	22.3°C
Relative Humidity	59.0%	60.0%

Product Service

2.2.7 Test Results

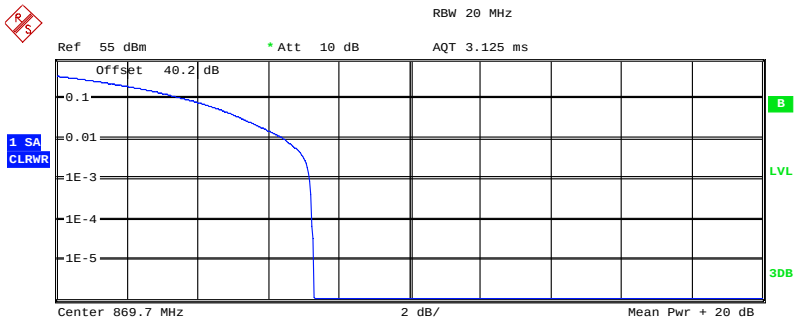
For the period of test the EUT met the requirements of FCC CFR 47 Part 22 and Industry Canada RSS-132 for Peak – Average Ratio.

The test results are shown below.

Single Carrier

Configuration 1 - Mode 1 - 1.4

E-TM1.1: 1.4MHz Bandwidth



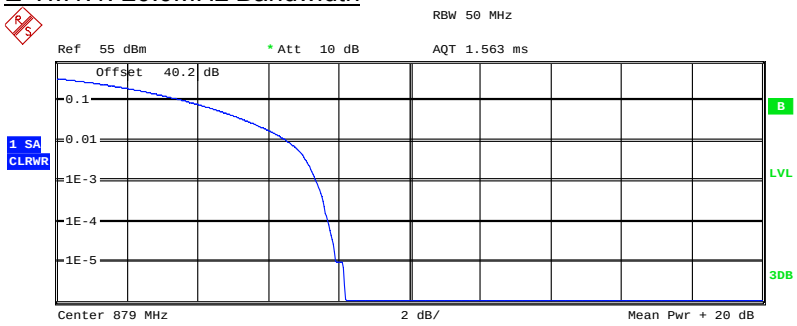
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	47.46 dBm
Peak	54.75 dBm
Crest	7.29 dB
10 %	3.65 dB
1 %	6.44 dB
.1 %	7.18 dB
.01 %	7.24 dB

Date: 19.JUN.2013 16:37:52

Configuration 1 - Mode 1 - 20

E-TM1.1: 20.0MHz Bandwidth



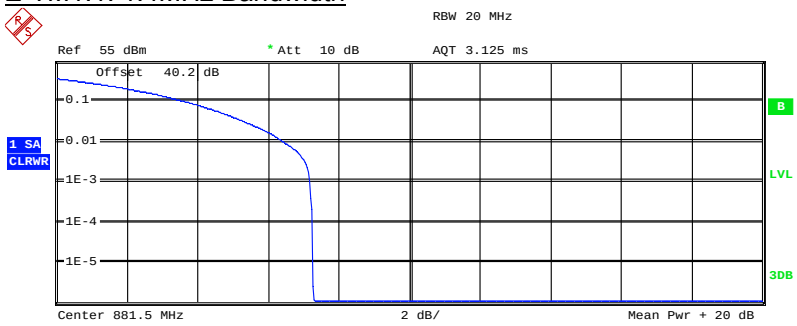
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	47.72 dBm
Peak	55.89 dBm
Crest	8.18 dB
10 %	3.69 dB
1 %	6.54 dB
.1 %	7.37 dB
.01 %	7.69 dB

Date: 20.JUN.2013 09:52:54

Configuration 1 - Mode 2

E-TM1.1: 1.4MHz Bandwidth

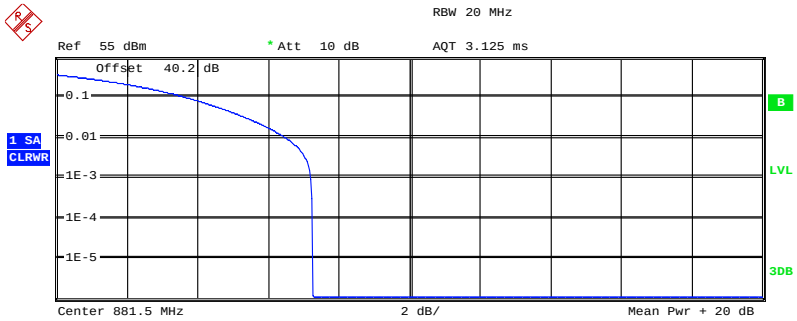


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	47.58 dBm
Peak	54.85 dBm
Crest	7.26 dB
10 %	3.65 dB
1 %	6.41 dB
.1 %	7.18 dB
.01 %	7.24 dB

Date: 19.JUN.2013 15:25:50

E-TM1.1: 3.0MHz Bandwidth

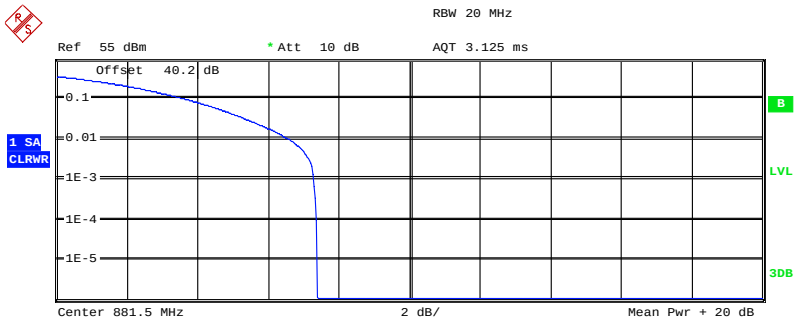


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	47.67 dBm
Peak	54.92 dBm
Crest	7.25 dB
10 %	3.69 dB
1 %	6.47 dB
.1 %	7.21 dB
.01 %	7.28 dB

Date: 19.JUN.2013 15:43:07

E-TM1.1; 5.0MHz Bandwidth



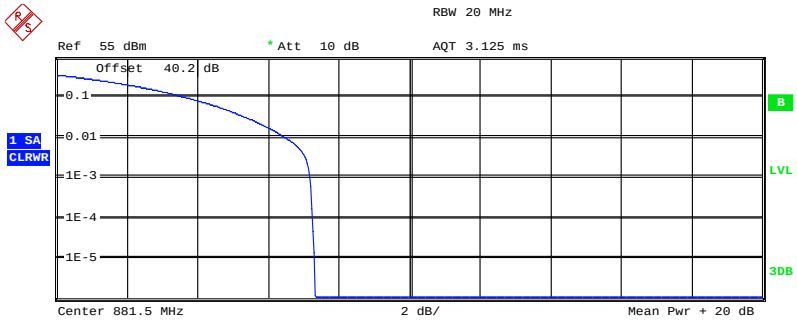
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	47.69 dBm
Peak	55.06 dBm
Crest	7.37 dB
10 %	3.65 dB
1 %	6.57 dB
.1 %	7.28 dB
.01 %	7.37 dB

Date: 19.JUN.2013 16:03:01

Product Service

E-TM1.1; 10.0MHz Bandwidth

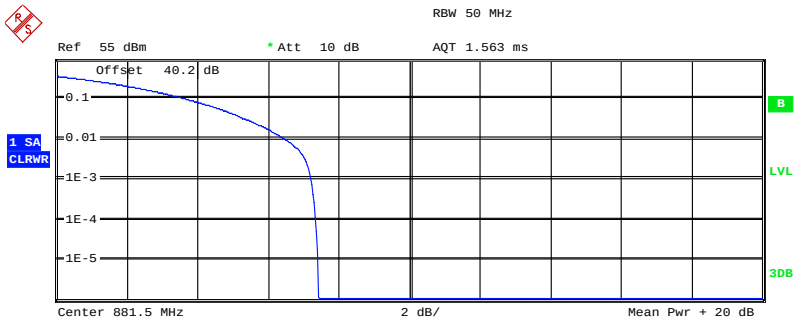


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

	Trace 1
Mean	47.61 dBm
Peak	54.92 dBm
Crest	7.31 dB
10 %	3.69 dB
1 %	6.47 dB
.1 %	7.18 dB
.01 %	7.28 dB

Date: 19.JUN.2013 16:11:52

E-TM1.1; 15.0MHz Bandwidth

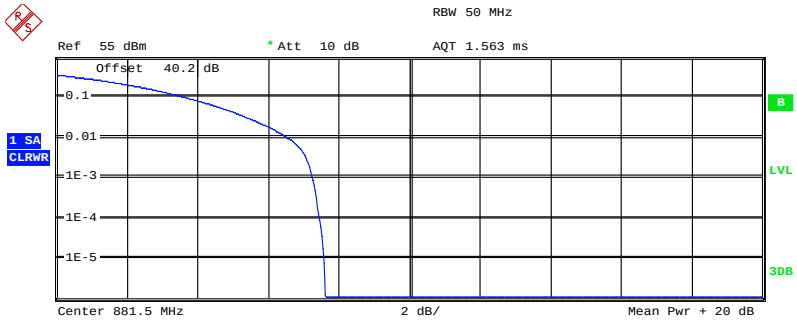


Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	47.72 dBm
Peak	55.12 dBm
Crest	7.41 dB
10 %	3.69 dB
1 %	6.47 dB
.1 %	7.21 dB
.01 %	7.34 dB

Date: 20.JUN.2013 10:13:09

E-TM1.1; 20.0MHz Bandwidth



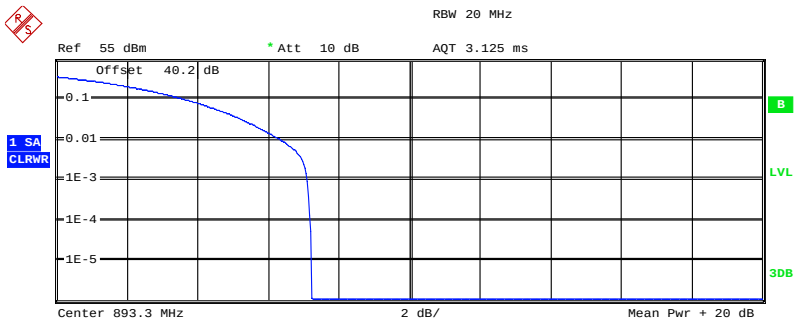
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	47.73 dBm
Peak	55.34 dBm
Crest	7.61 dB
10 %	3.69 dB
1 %	6.54 dB
.1 %	7.24 dB
.01 %	7.47 dB

Date: 20.JUN.2013 10:01:04

Configuration 1 - Mode 3 - 1.4

E-TM1.1: 1.4MHz Bandwidth



Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 23.7MHz

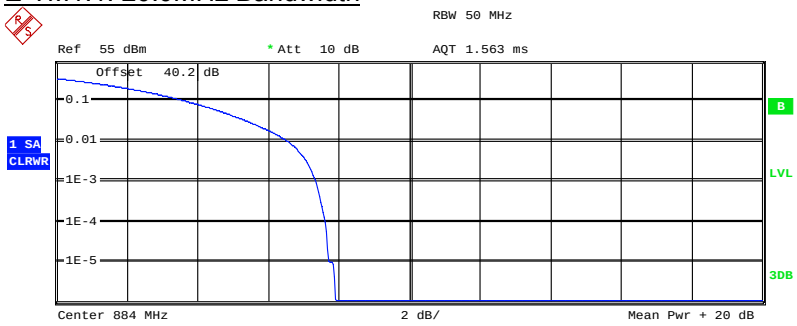
	Trace 1
Mean	47.34 dBm
Peak	54.56 dBm
Crest	7.22 dB
10 %	3.69 dB
1 %	6.35 dB
.1 %	7.12 dB
.01 %	7.18 dB

Date: 20.JUN.2013 09:21:28

Product Service

Configuration 1 - Mode 3 - 20

E-TM1.1: 20.0MHz Bandwidth



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

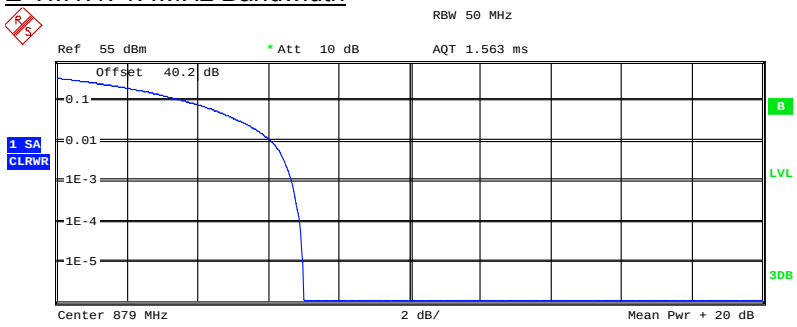
	Trace 1
Mean	47.72 dBm
Peak	55.62 dBm
Crest	7.90 dB
10 %	3.69 dB
1 %	6.54 dB
.1 %	7.34 dB
.01 %	7.63 dB

Date: 20.JUN.2013 09:32:42

Multi Carrier (x2)

Configuration 1 - Mode 4 - 1.4

E-TM1.1: 1.4MHz Bandwidth



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

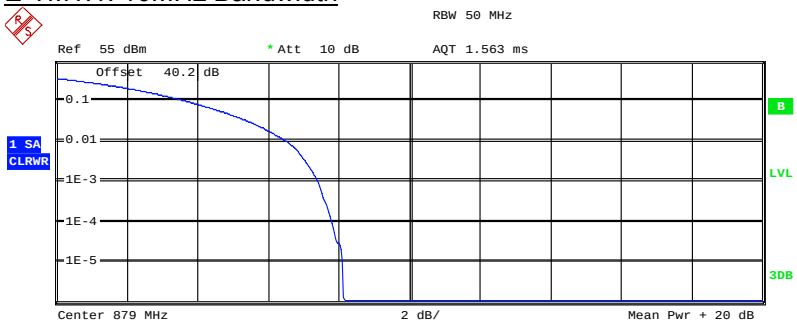
	Trace 1
Mean	47.61 dBm
Peak	54.62 dBm
Crest	7.01 dB
10 %	3.69 dB
1 %	6.09 dB
.1 %	6.67 dB
.01 %	6.89 dB

Date: 20.JUN.2013 13:55:59

Product Service

Configuration 1 - Mode 4 - 10

E-TM1.1: 10MHz Bandwidth



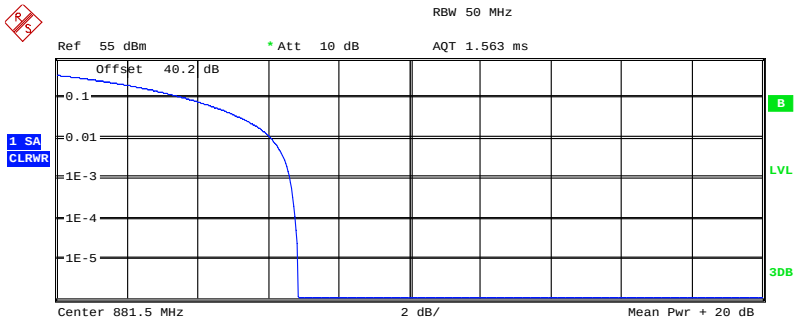
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	47.76 dBm
Peak	55.89 dBm
Crest	8.13 dB
10 %	3.69 dB
1 %	6.51 dB
.1 %	7.40 dB
.01 %	7.79 dB

Date: 20.JUN.2013 16:38:26

Configuration 1 - Mode 5 - 1.4

E-TM1.1: 1.4MHz Bandwidth



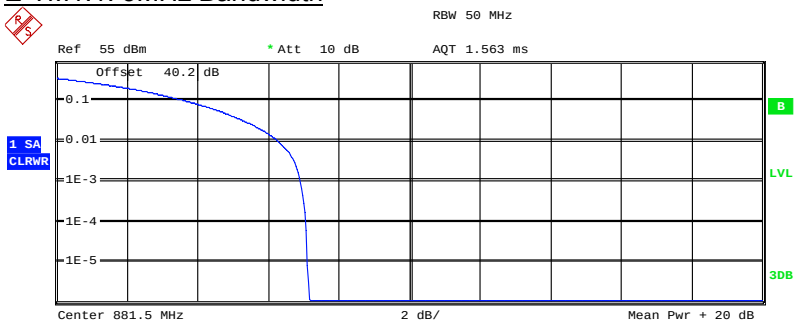
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	47.65 dBm
Peak	54.49 dBm
Crest	6.84 dB
10 %	3.69 dB
1 %	6.06 dB
.1 %	6.60 dB
.01 %	6.76 dB

Date: 20.JUN.2013 13:54:11

Configuration 1 - Mode 5 - 3

E-TM1.1: 3MHz Bandwidth



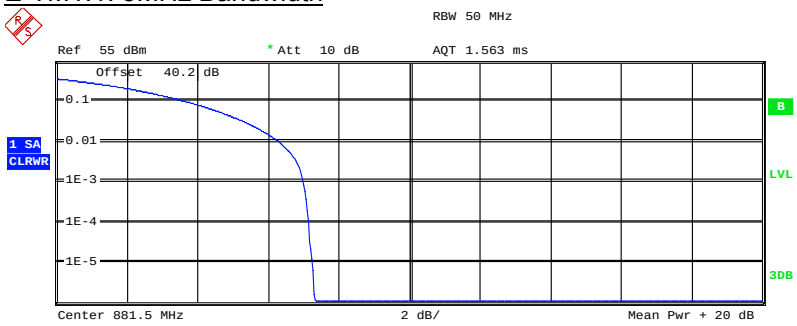
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	47.68 dBm
Peak	54.84 dBm
Crest	7.16 dB
10 %	3.72 dB
1 %	6.28 dB
.1 %	6.92 dB
.01 %	7.08 dB

Date: 20.JUN.2013 17:08:11

Configuration 1 - Mode 5 - 5

E-TM1.1: 5MHz Bandwidth



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

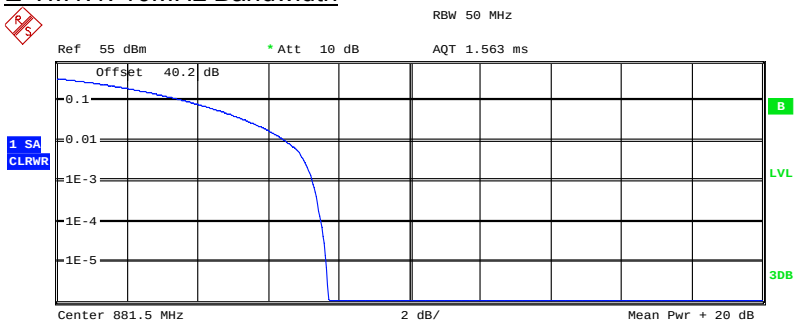
	Trace 1
Mean	47.68 dBm
Peak	54.98 dBm
Crest	7.31 dB
10 %	3.69 dB
1 %	6.31 dB
.1 %	6.99 dB
.01 %	7.15 dB

Date: 20.JUN.2013 17:12:41

Product Service

Configuration 1 - Mode 5 - 10

E-TM1.1: 10MHz Bandwidth



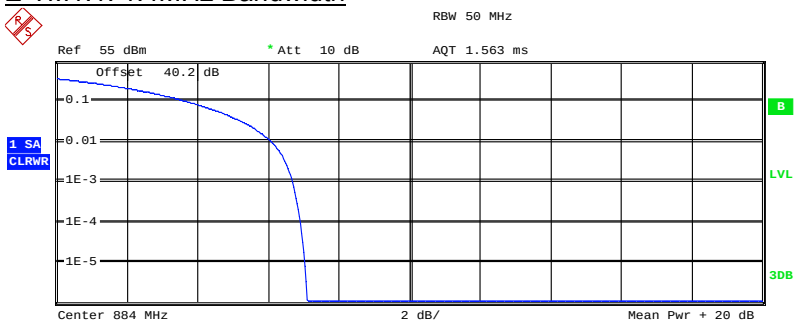
Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 37.9MHz

	Trace 1
Mean	47.78 dBm
Peak	55.48 dBm
Crest	7.70 dB
10 %	3.69 dB
1 %	6.51 dB
.1 %	7.24 dB
.01 %	7.50 dB

Date: 20.JUN.2013 16:12:09

Configuration 1 - Mode 6 - 1.4

E-TM1.1: 1.4MHz Bandwidth



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

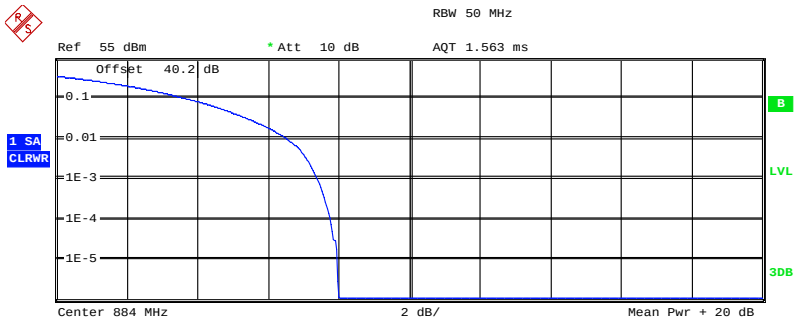
	Trace 1
Mean	47.61 dBm
Peak	54.71 dBm
Crest	7.09 dB
10 %	3.72 dB
1 %	6.09 dB
.1 %	6.70 dB
.01 %	6.92 dB

Date: 20.JUN.2013 15:34:51

Product Service

Configuration 1 - Mode 6 - 10

E-TM1.1: 10MHz Bandwidth



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

	Trace 1
Mean	47.79 dBm
Peak	55.77 dBm
Crest	7.97 dB
10 %	3.72 dB
1 %	6.51 dB
.1 %	7.40 dB
.01 %	7.76 dB

Date: 20.JUN.2013 15:53:45

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

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

2.3.3 Date of Test and Modification State

20 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 resolution bandwidth up to 1MHz away from the block edge. For 1.4MHz OBW in single carrier mode, a resolution bandwidth of 10kHz was used up to 1MHz away from the band edge. 10kHz is <1% of the Emission Bandwidth (1.3MHz), 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 -14.1dBm. For 3MHz OBW, a resolution bandwidth of 10kHz was used up to 1MHz away from the band edge. 10kHz is <1% of the Emission Bandwidth (2.9MHz), 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 -17.6dBm. 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 path loss measured and entered as a reference level offset.

The EUT was tested at it's maximum power level.

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

Configuration 1 - Mode 1 - 1.4, Mode 1 - 3, Mode 1 - 5, Mode 1 - 10, Mode 1 - 15, Mode 1 - 20

- Mode 3 - 1.4, Mode 3 - 3, Mode 3 - 5, Mode 3 - 10, Mode 3 - 15, Mode 3 - 20

- Mode 4' - 1.4, Mode 4' - 3, Mode 4' - 5, Mode 4 - 10
- Mode 6' - 1.4, Mode 6' - 3, Mode 6' - 5, Mode 6 - 10

2.3.6 Environmental Conditions

	20 June 2013
Ambient Temperature	22.3°C
Relative Humidity	60.0%

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.

Single Carrier

ETM1.1

Bandwidth: 1.4MHz

Configuration 1 - Mode 1 -1.4 and Mode 3 - 1.4

Band Edge Frequency	Bottom 869 MHz	Top 894 MHz	RBW / VBW (Hz)	Limit (dBm)
Edge Test with 1.4MHz Bandwidth Channel No./Frequencies	Channel: 2407 Frequency: 869.7 MHz	Channel: 2643 Frequency: 893.3 MHz	10k / 100k	-17.1

Bandwidth: 3.0MHz

Configuration 1 - Mode 1 - 3 and Mode 3 - 3

Band Edge Frequency	Bottom 869 MHz	Top 894 MHz	RBW / VBW (Hz)	Limit (dBm)
Edge Test with 3.0MHz Bandwidth Channel No./Frequencies	Channel: 2415 Frequency: 870.5 MHz	Channel: 2635 Frequency: 892.5MHz	10k / 100k	-20.6

Bandwidth: 5.0MHz

Configuration 1 - Mode 1 - 5 and Mode 3 - 5

Band Edge Frequency	Bottom 869 MHz	Top 894 MHz	RBW / VBW (Hz)	Limit (dBm)
Edge Test with 5.0MHz Bandwidth Channel No./Frequencies	Channel: 2425 Frequency: 871.5 MHz	Channel: 2625 Frequency: 891.5 MHz	50k / 500k	-16.0

Bandwidth: 10.0MHz

Configuration 1 - Mode 1 - 10 and Mode 3 - 10

Band Edge Frequency	Bottom 869 MHz	Top 894 MHz	RBW / VBW (Hz)	Limit (dBm)
Edge Test with 10.0MHz Bandwidth Channel No./Frequencies	Channel: 2450 Frequency: 874.0 MHz	Channel: 2600 Frequency: 889.0 MHz	100k / 1M	-16.0

Bandwidth: 15.0MHz

Configuration 1 - Mode 1 - 15 and Mode 3 - 15

Band Edge Frequency	Bottom 869 MHz	Top 894 MHz	RBW / VBW (Hz)	Limit (dBm)
Edge Test with 15.0MHz Bandwidth Channel No./Frequencies	Channel: 2475 Frequency: 876.5 MHz	Channel: 2575 Frequency: 886.5 MHz	200k / 2M	-16.0

Bandwidth: 20.0MHz

Configuration 1 - Mode 1 - 20 and Mode 3 - 20

Band Edge Frequency	Bottom 869 MHz	Top 894 MHz	RBW / VBW (Hz)	Limit (dBm)
Edge Test with 20.0MHz Bandwidth Channel No./Frequencies	Channel: 2500 Frequency: 879.0 MHz	Channel: 2550 Frequency: 884.0 MHz	200k / 2M	-16.0

Multi Carrier (x2)

ETM1.1

Bandwidth: 1.4MHz

Configuration 1 - Mode 4' - 1.4 and Mode 6' - 1.4

Band Edge Frequency	Bottom 869 MHz	Top 894 MHz	RBW / VBW (Hz)	Limit (dBm)
Edge Test with 1.4MHz Bandwidth Channel No./Frequencies	Channel: 2407 + 2421 Frequency: 869.7 MHz + 871.1 MHz	Channel: 2643 + 2629 Frequency: 893.3 MHz + 891.9 MHz	20k / 200k	-16.0

Bandwidth: 3MHz

Configuration 1 - Mode 4' - 3 and Mode 6' - 3

Band Edge Frequency	Bottom 869 MHz	Top 894 MHz	RBW / VBW (Hz)	Limit (dBm)
Edge Test with 1.4MHz Bandwidth Channel No./Frequencies	Channel: 2415 + 2445 Frequency: 870.5 MHz + 873.5 MHz	Channel: 2635 + 2605 Frequency: 892.5 MHz + 889.5 MHz	30k / 300k	-16.0

Bandwidth: 5MHz

Configuration 1 - Mode 4' - 5 and Mode 6' - 5

Band Edge Frequency	Bottom 869 MHz	Top 894 MHz	RBW / VBW (Hz)	Limit (dBm)
Edge Test with 1.4MHz Bandwidth Channel No./Frequencies	Channel: 2425 + 2475 Frequency: 871.5 MHz + 876.5 MHz	Channel: 2625 + 2575 Frequency: 891.5 MHz + 886.5 MHz	50k / 500k	-16.0

Bandwidth: 10MHz

Configuration 1 - Mode 4 - 10 and Mode 6 - 10

Band Edge Frequency	Bottom 869 MHz	Top 894 MHz	RBW / VBW (Hz)	Limit (dBm)
Edge Test with 10MHz Bandwidth Channel No./Frequencies	Channel: 2450 + 2550 Frequency: 874.0 MHz + 884.0 MHz	Channel: 2600 + 2500 Frequency: 889.0 MHz + 879.0 MHz	100k / 1M	-16.0

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.

The test results are shown below

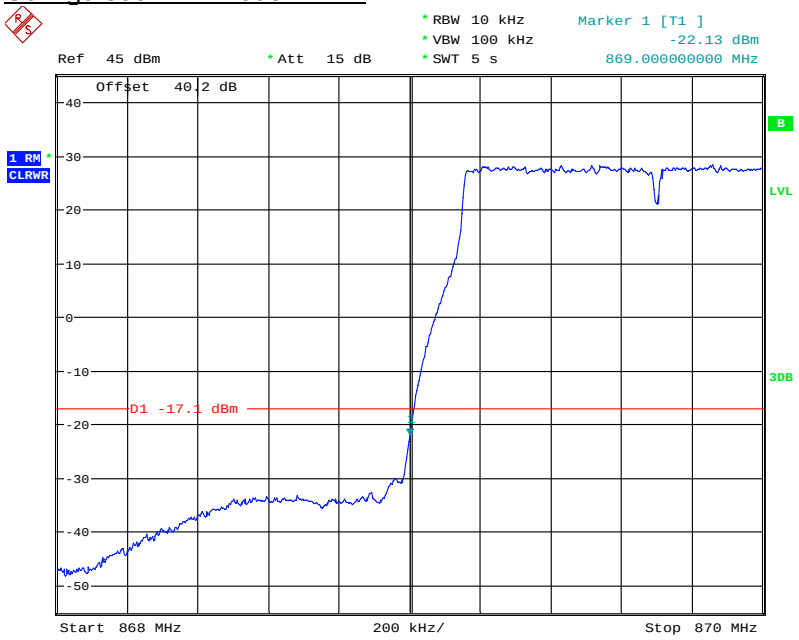
Product Service

Single Carrier

E-TM1.1

1.4MHz Bandwidth

Configuration 1 - Mode 1 - 1.4



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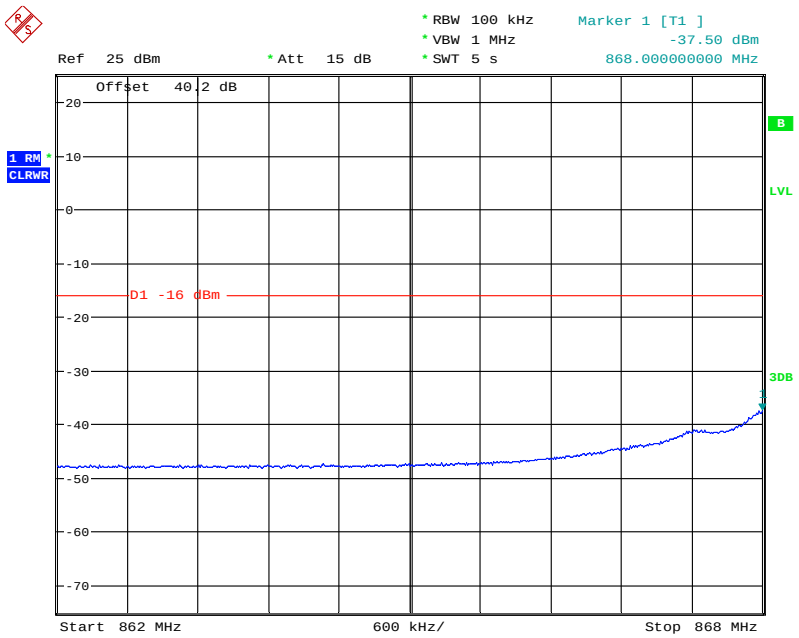
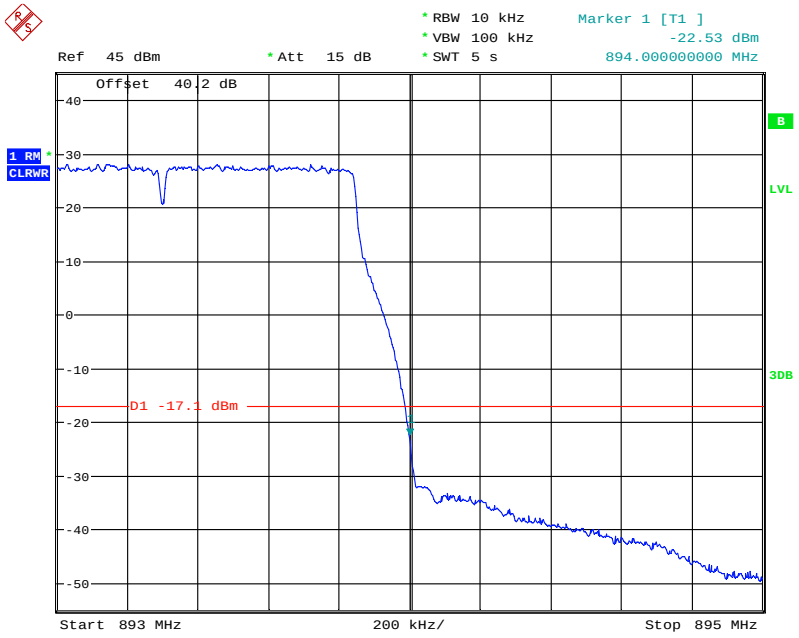


Date: 20.JUN.2013 09:11:24

Product Service

Configuration 1 - Mode 3 - 1.4



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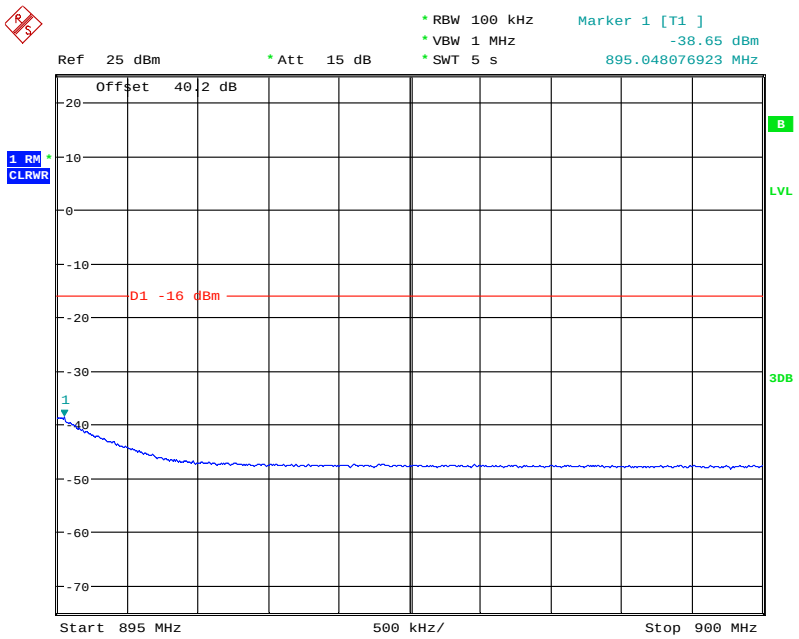
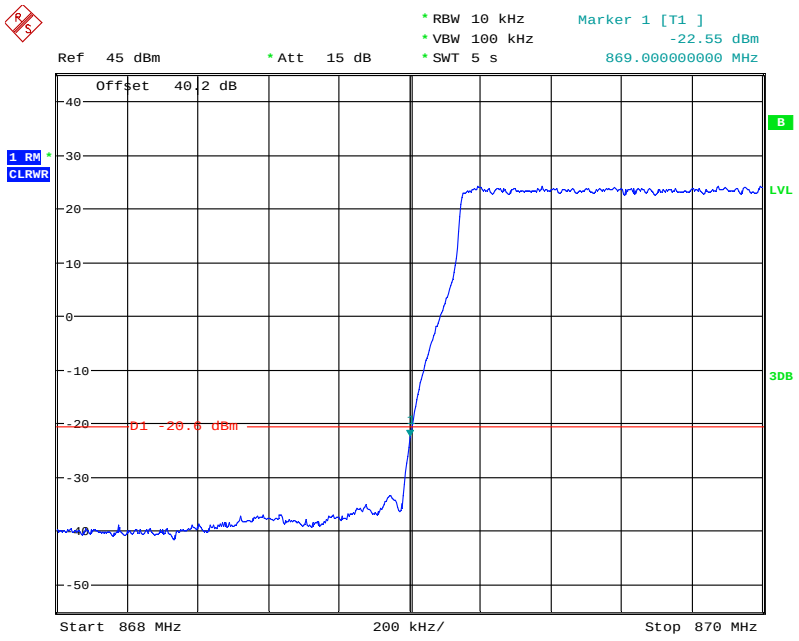


Date: 20.JUN.2013 09:15:21

Product Service

3.0MHz Bandwidth

Configuration 1 - Mode 1 - 3



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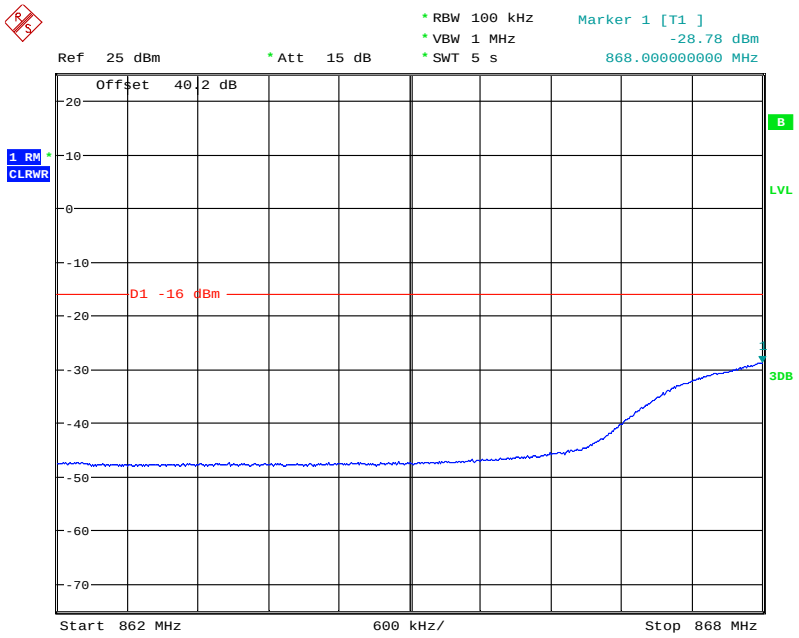
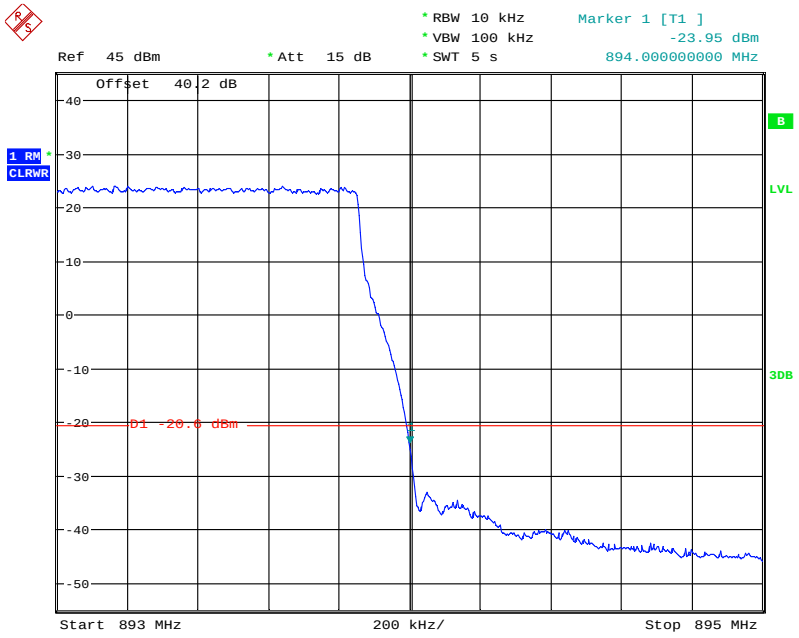


Date: 20.JUN.2013 10:42:11

Product Service

Configuration 1 - Mode 3 - 3



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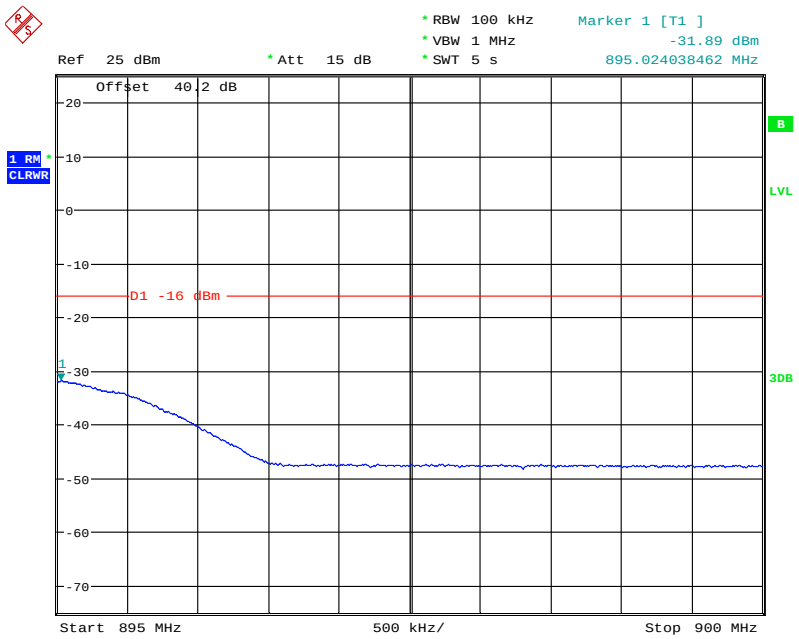
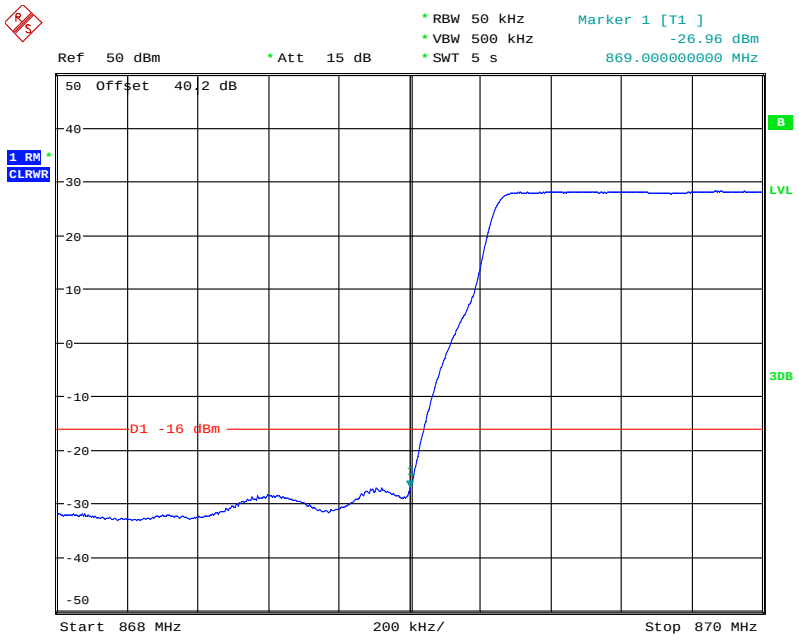


Date: 20.JUN.2013 10:51:18

Product Service

5.0MHz Bandwidth

Configuration 1 - Mode 1 - 5



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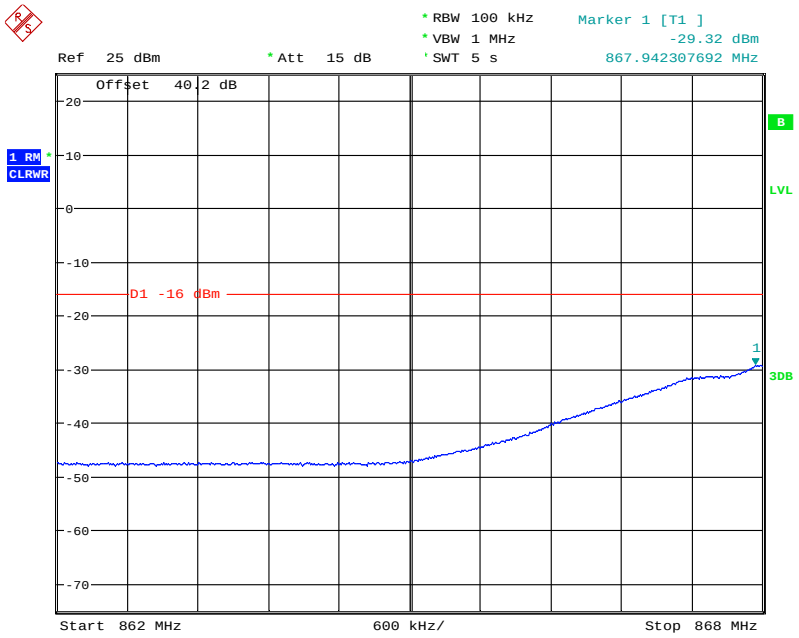
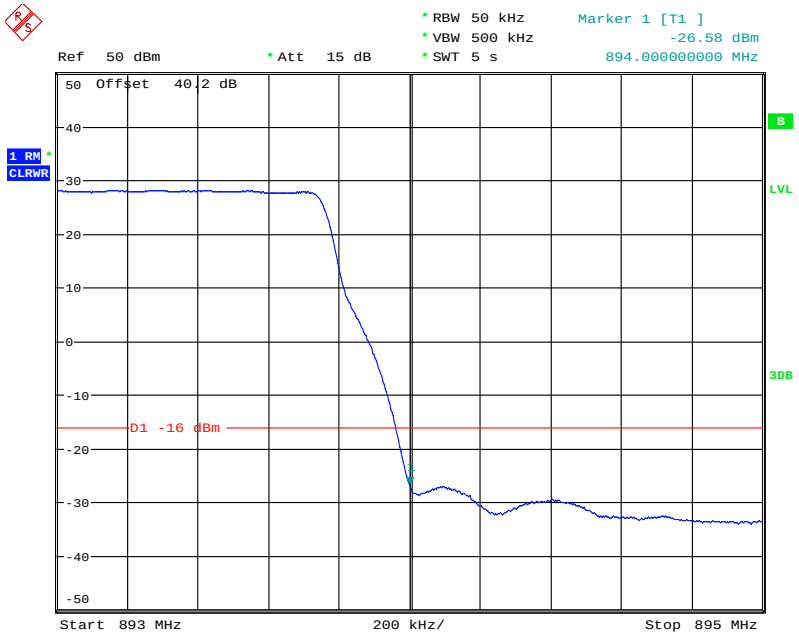


Date: 20.JUN.2013 10:36:56

Product Service

Configuration 1 - Mode 3 - 5



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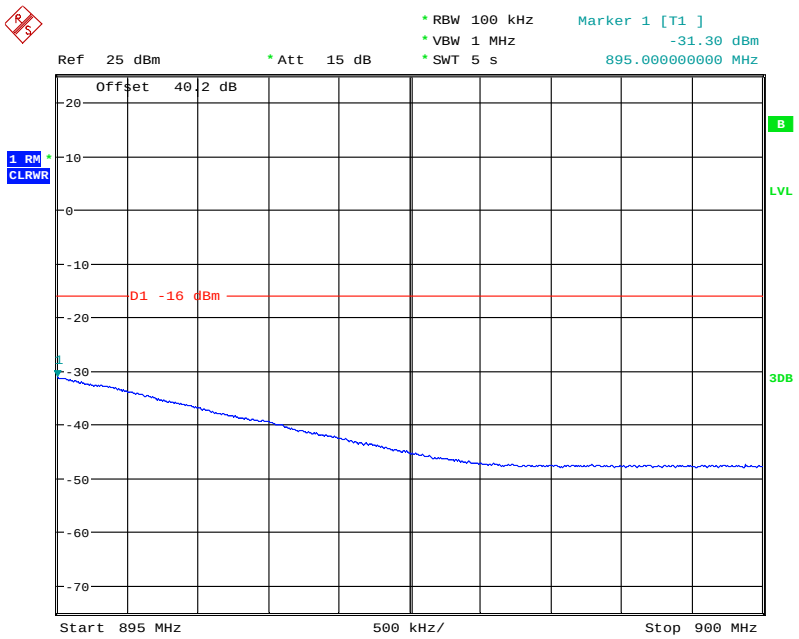
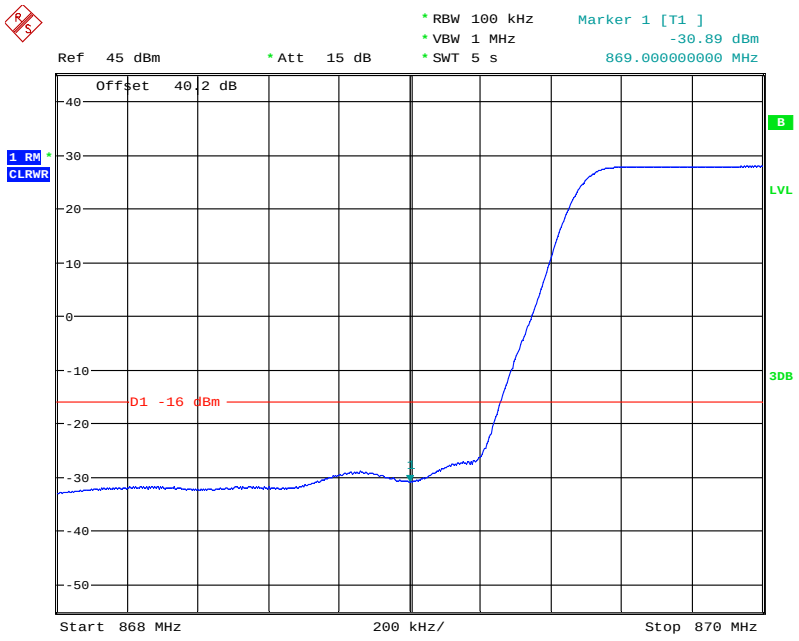


Date: 20.JUN.2013 10:40:39

10.0MHz Bandwidth

Configuration 1 - Mode 1 - 10



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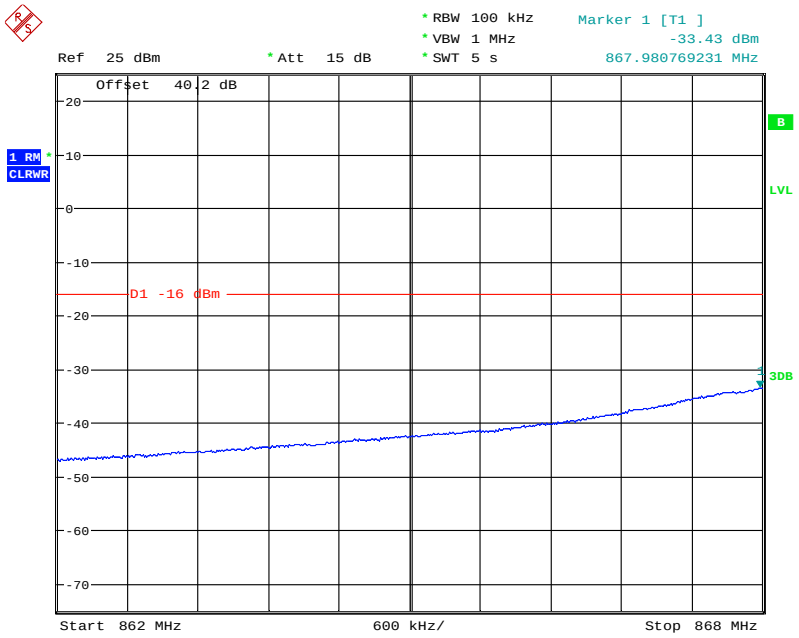

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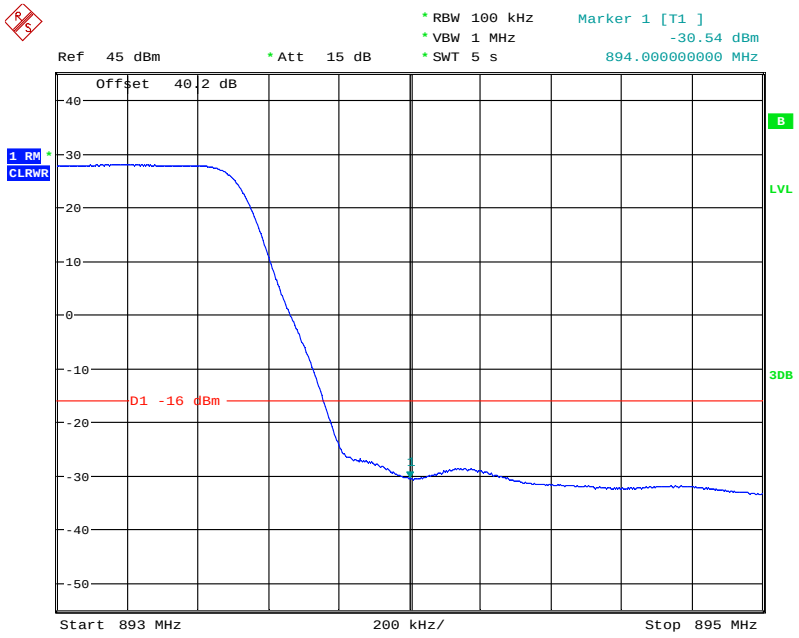
Product Service

Configuration 1 - Mode 3 - 10



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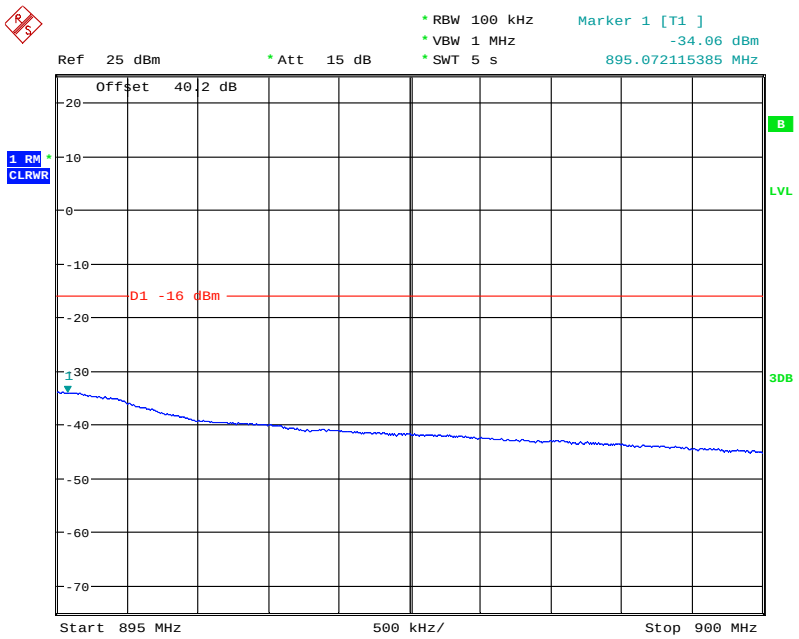
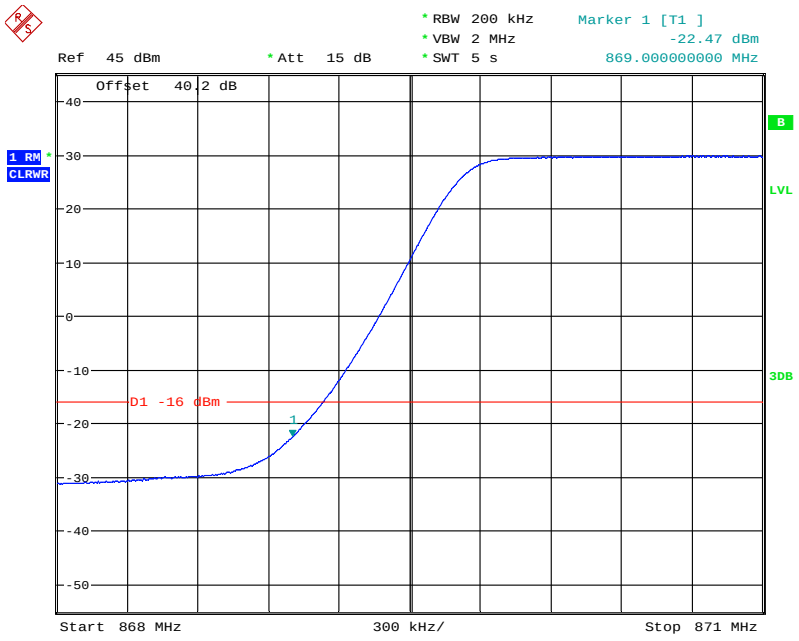


Date: 20.JUN.2013 10:32:21

Product Service

15MHz Bandwidth

Configuration 1 - Mode 1 - 15



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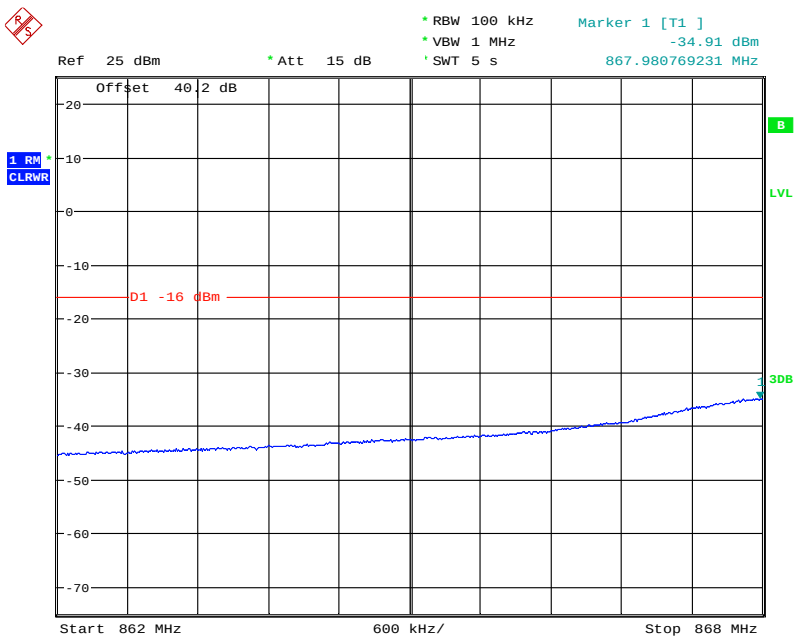

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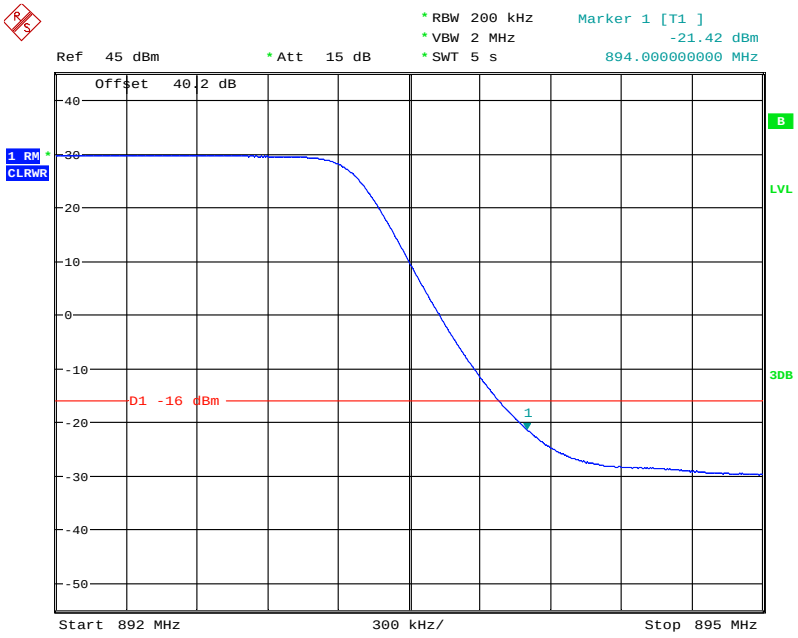
Product Service

Configuration 1 - Mode 3 - 15



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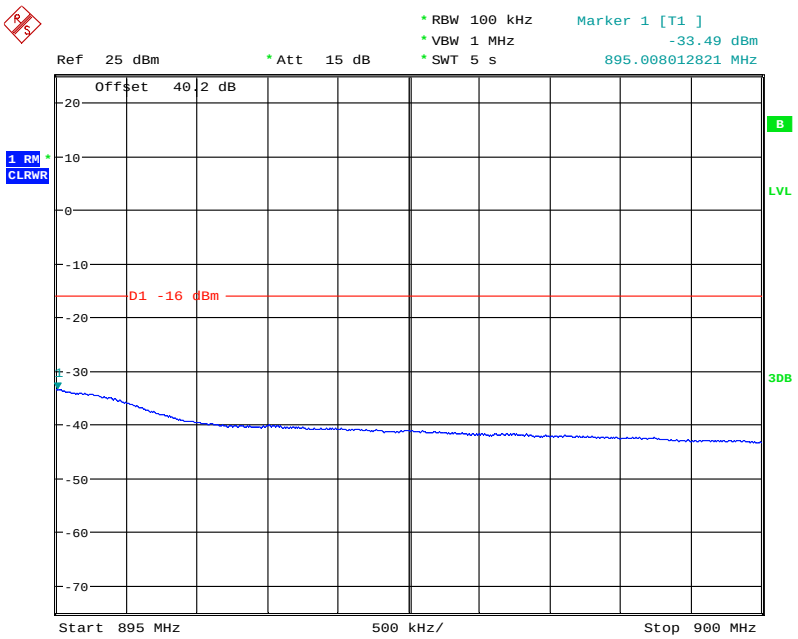
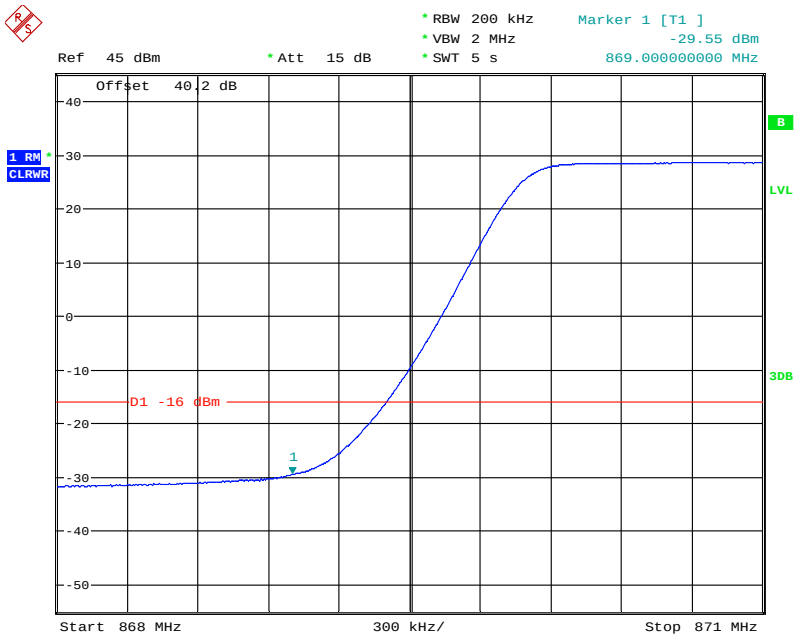


Date: 20.JUN.2013 10:24:49

Product Service

20MHz Bandwidth

Configuration 1 - Mode 1 - 20



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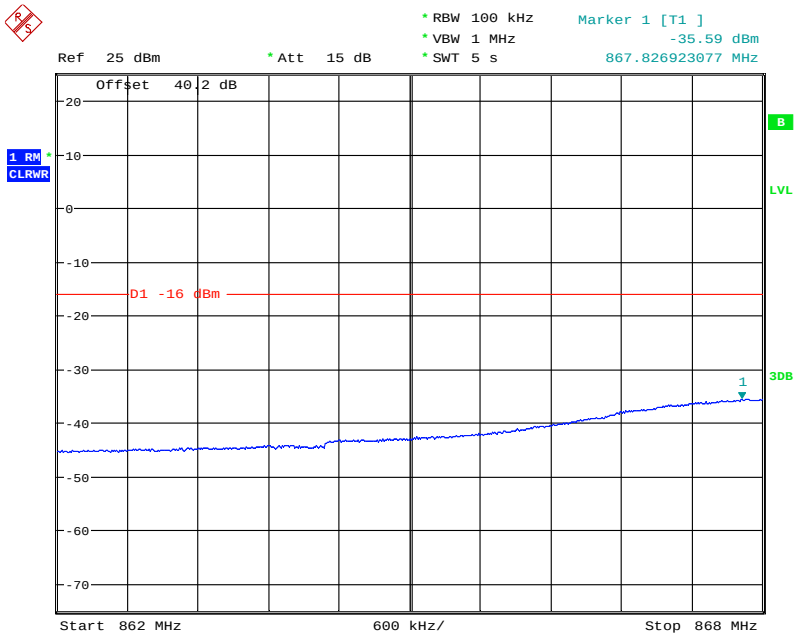

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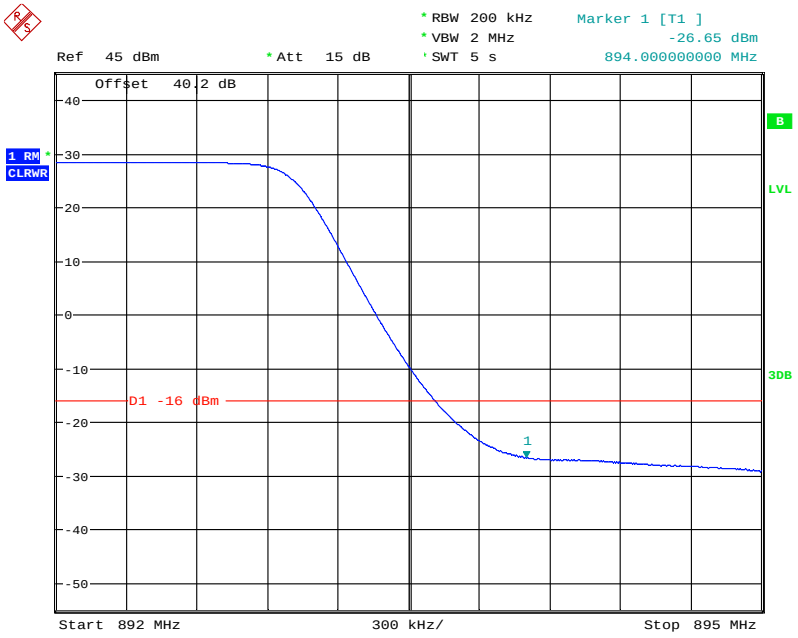
Product Service

Configuration 1 - Mode 3 - 20



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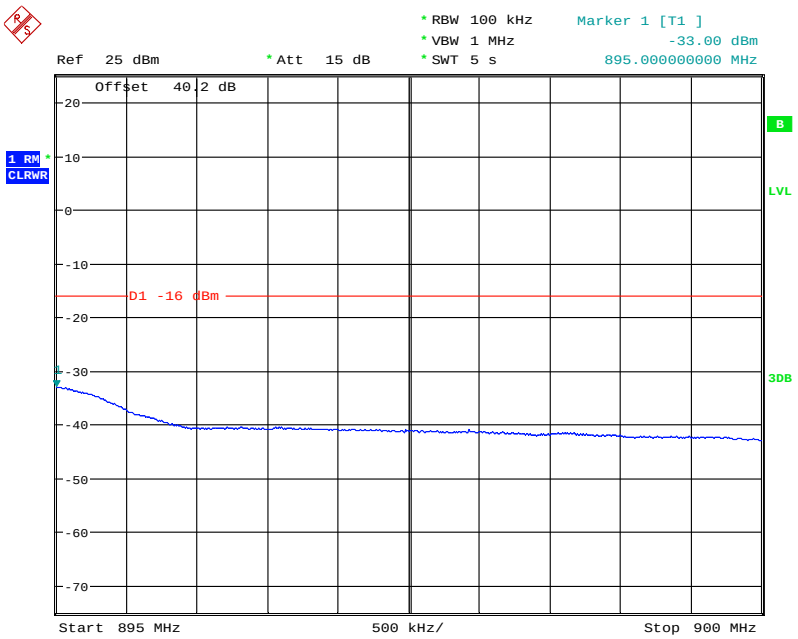


Date: 20.JUN.2013 09:39:58

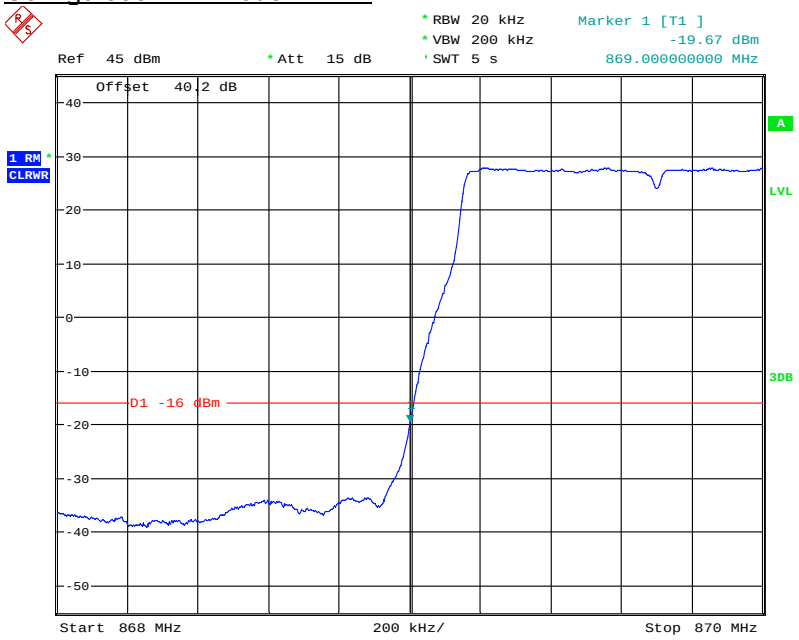
Product Service

Multi Carrier (x2)

E-TM1.1

1.4MHz Bandwidth

Configuration 1 - Mode 4' - 1.4



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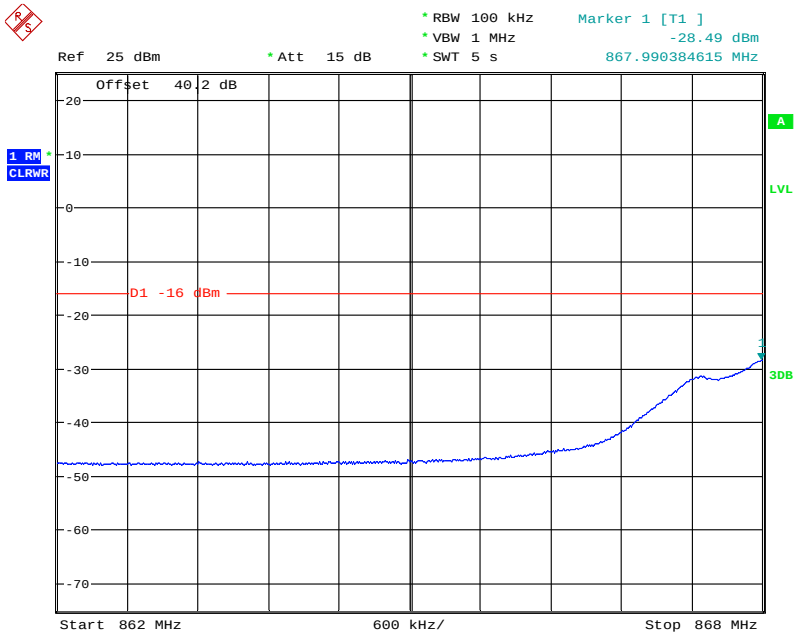

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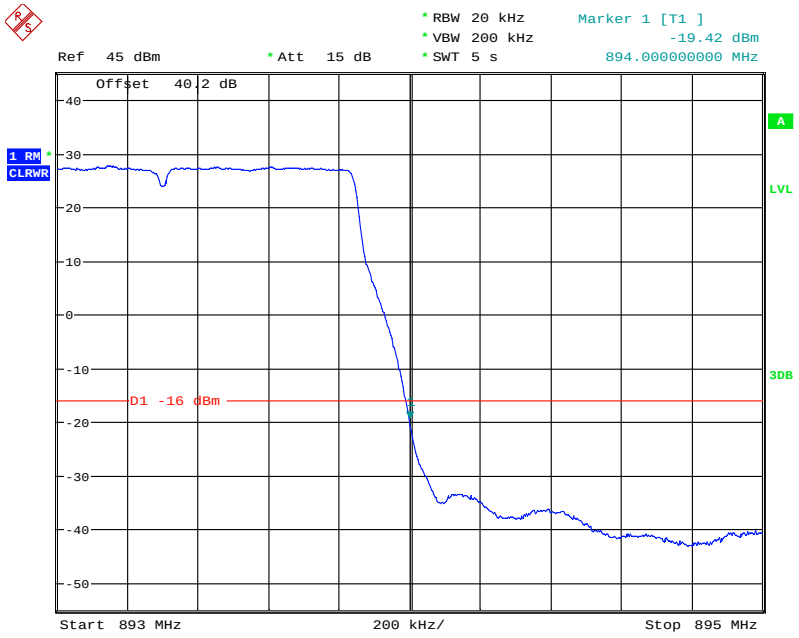
Product Service

Configuration 1 - Mode 6' - 1.4



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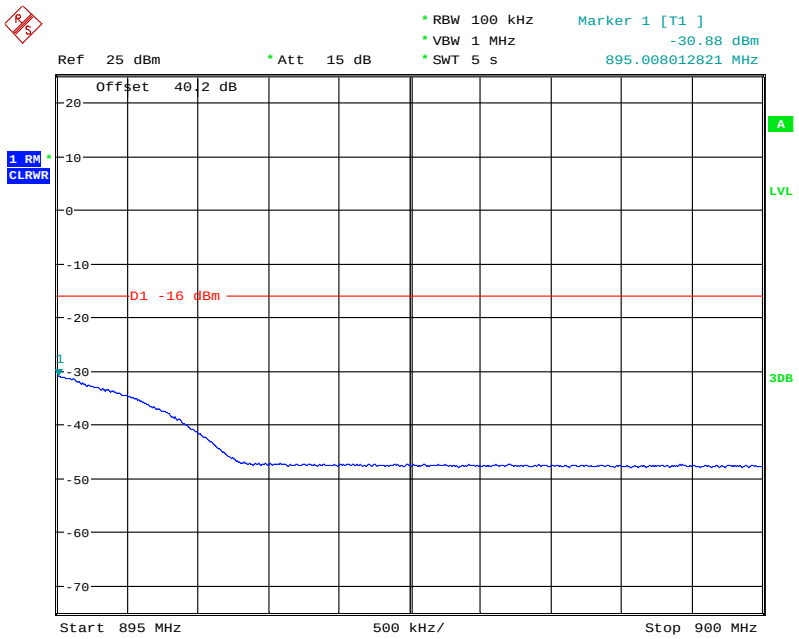
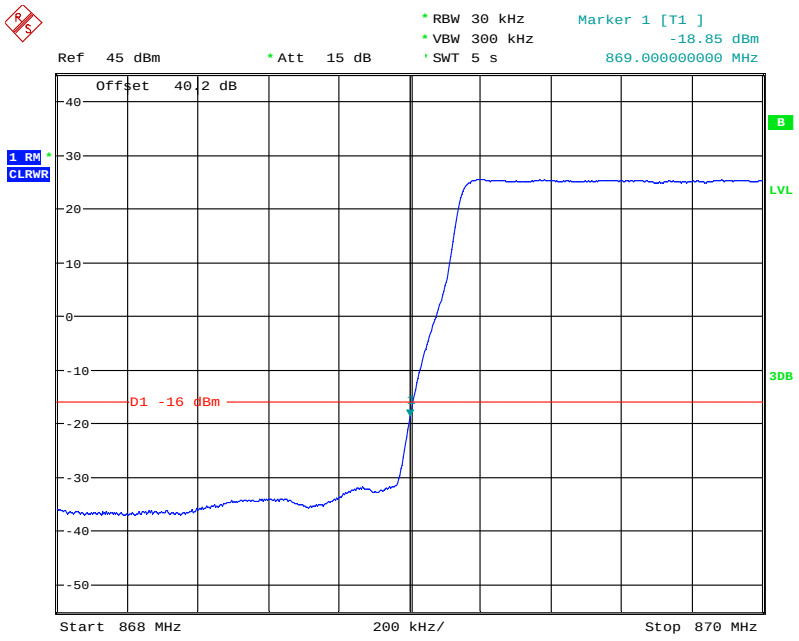


Date: 20.JUN.2013 14:14:18

Product Service

3.0MHz Bandwidth

Configuration 1 - Mode 4' - 3



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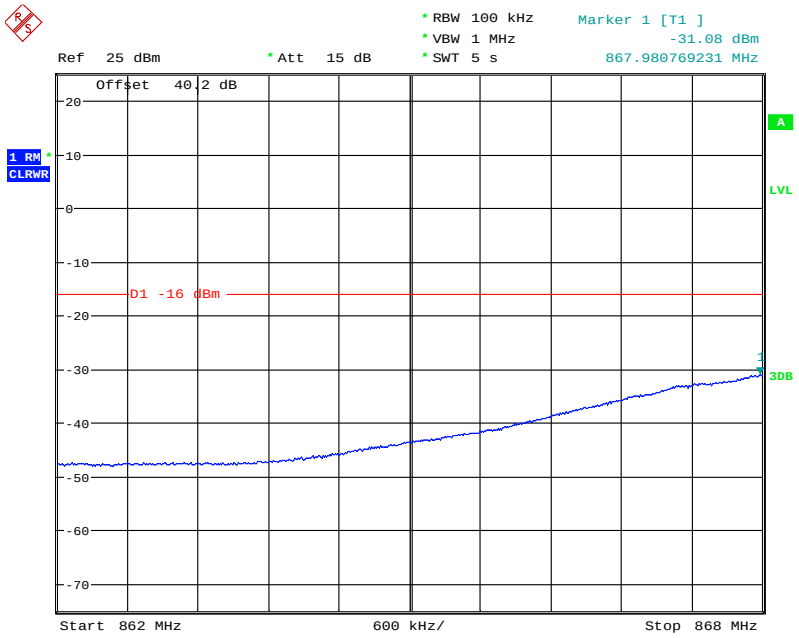

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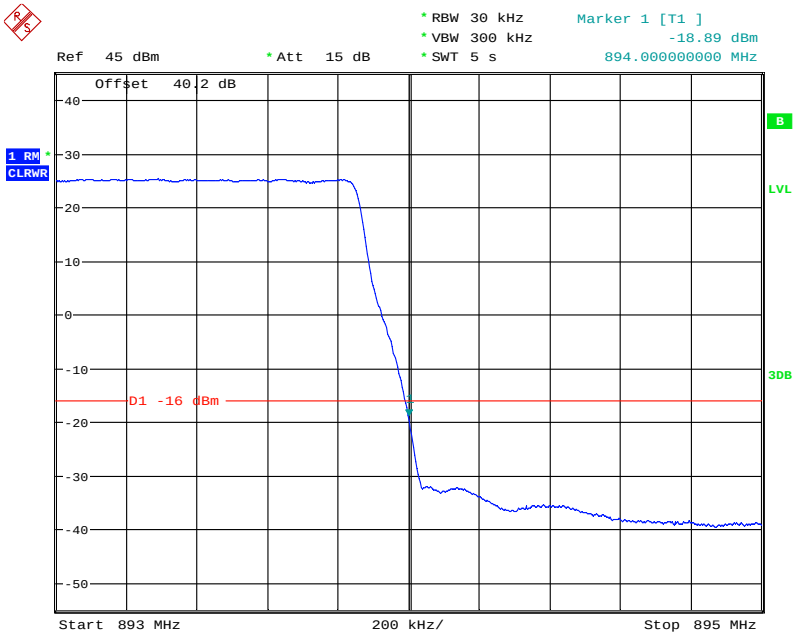
Product Service

Configuration 1 - Mode 6' - 3



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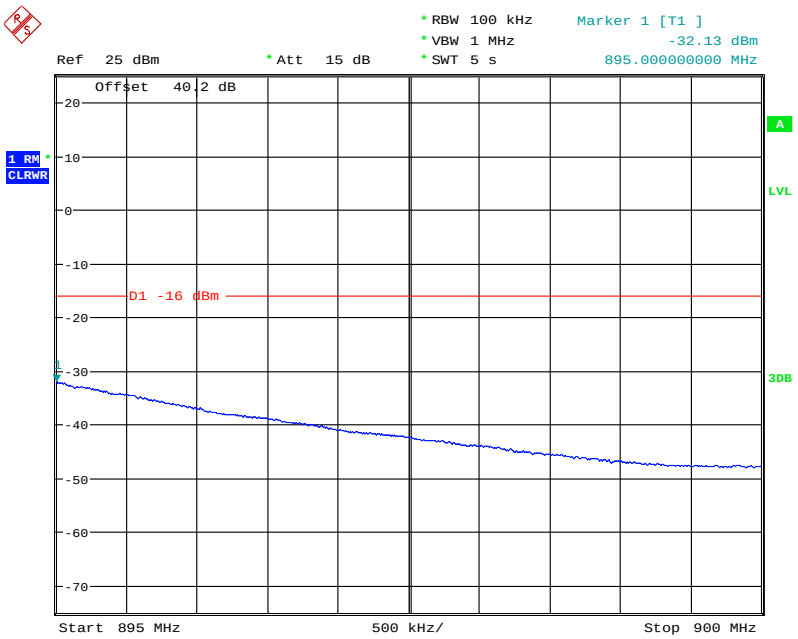
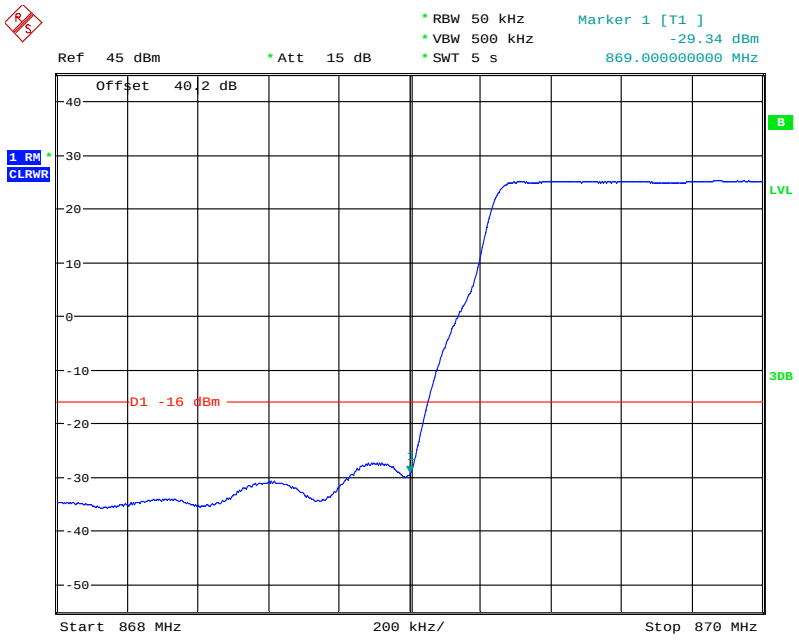


Date: 20.JUN.2013 14:34:13

Product Service

5.0MHz Bandwidth

Configuration 1 - Mode 4' - 5



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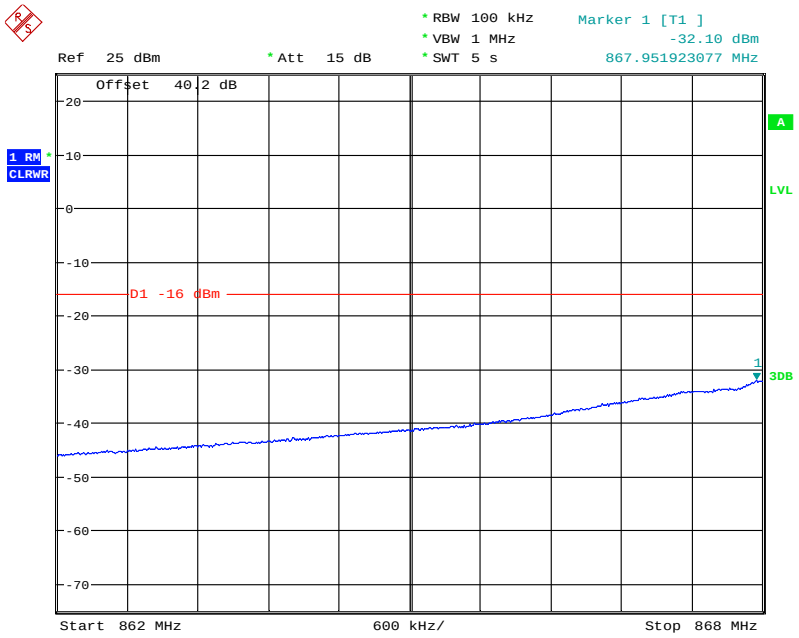
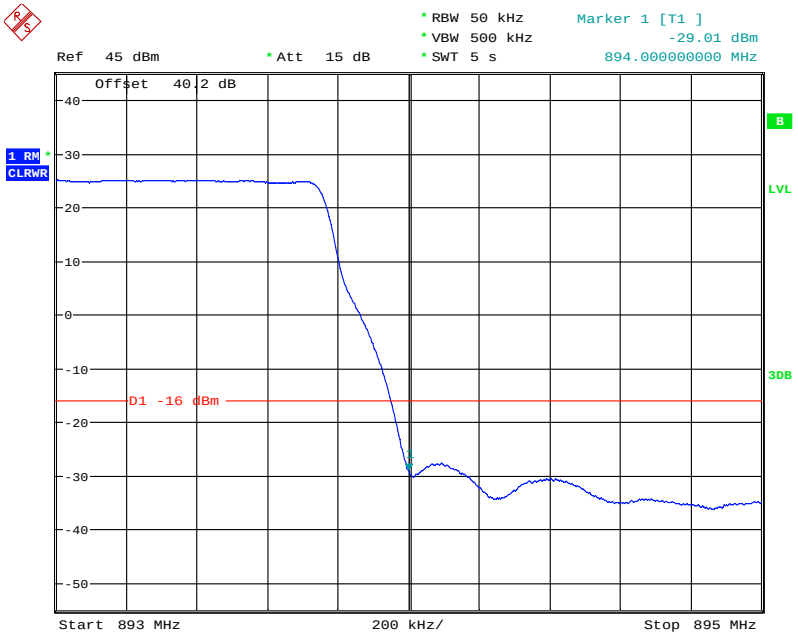


Date: 20.JUN.2013 14:44:56

Product Service

Configuration 1 - Mode 6' - 5



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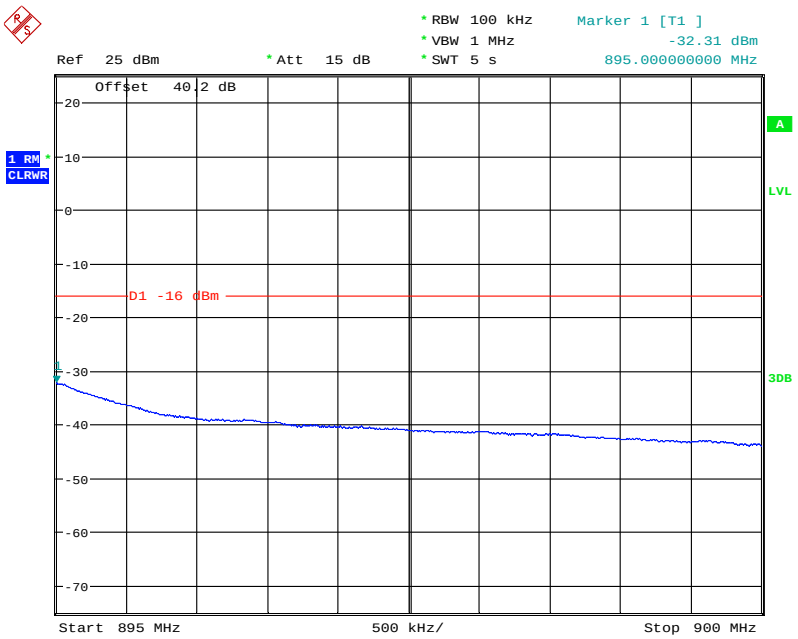
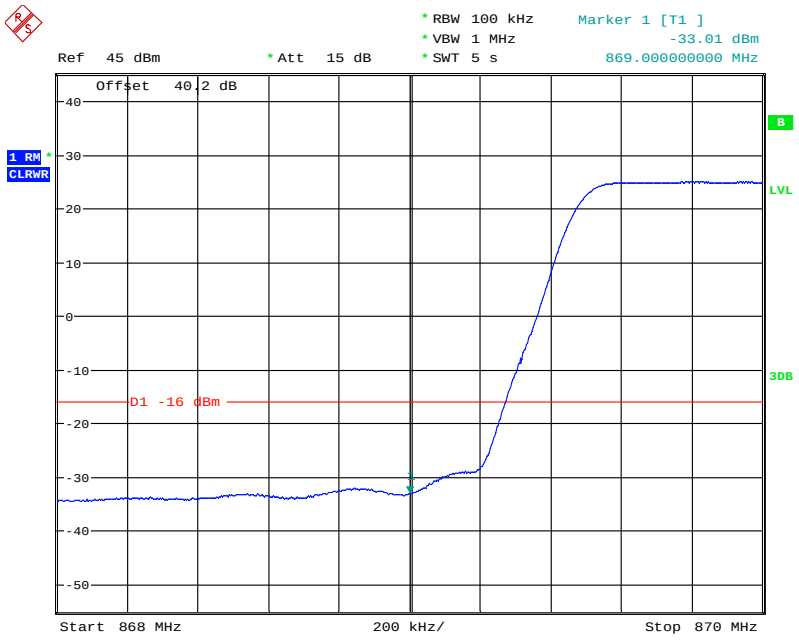


Date: 20.JUN.2013 14:43:23

Product Service

10.0MHz Bandwidth

Configuration 1 - Mode 4 - 10



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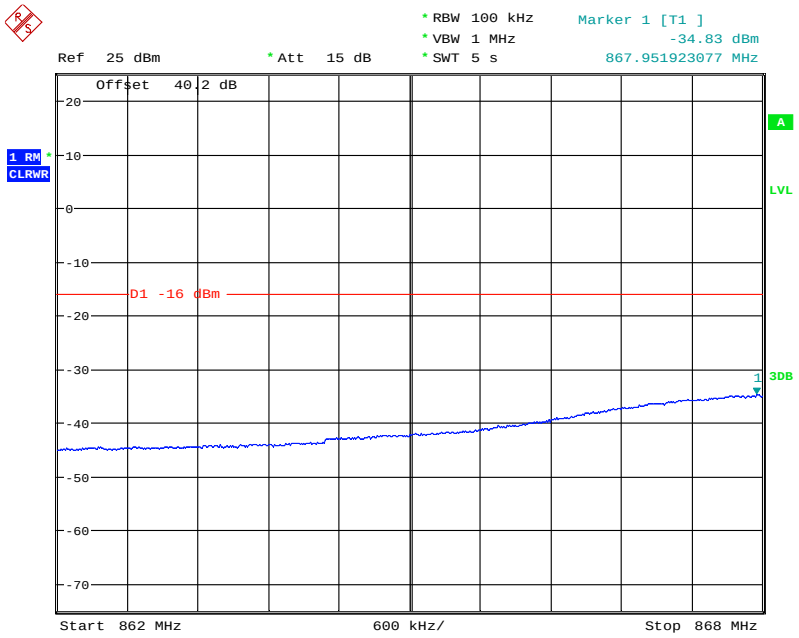
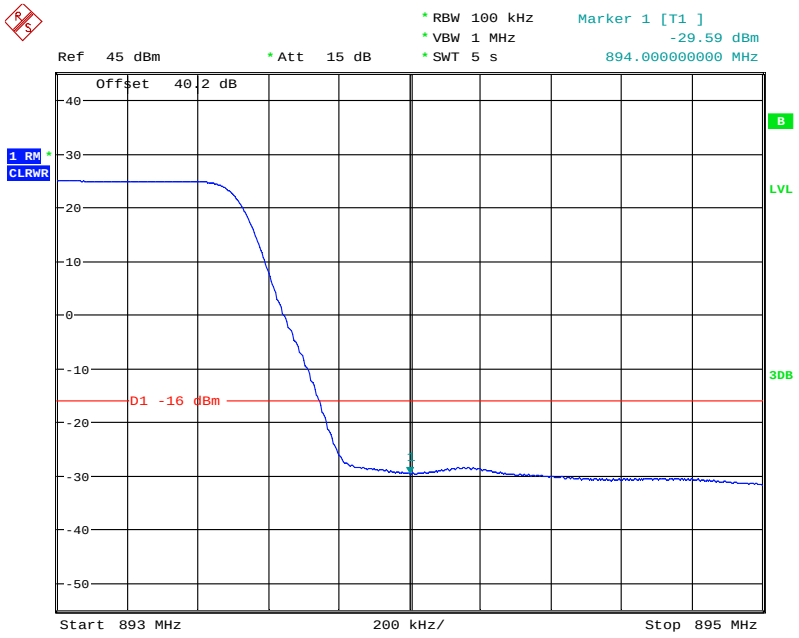


Date: 20.JUN.2013 14:46:57

Product Service

Configuration 1 - Mode 6 - 10



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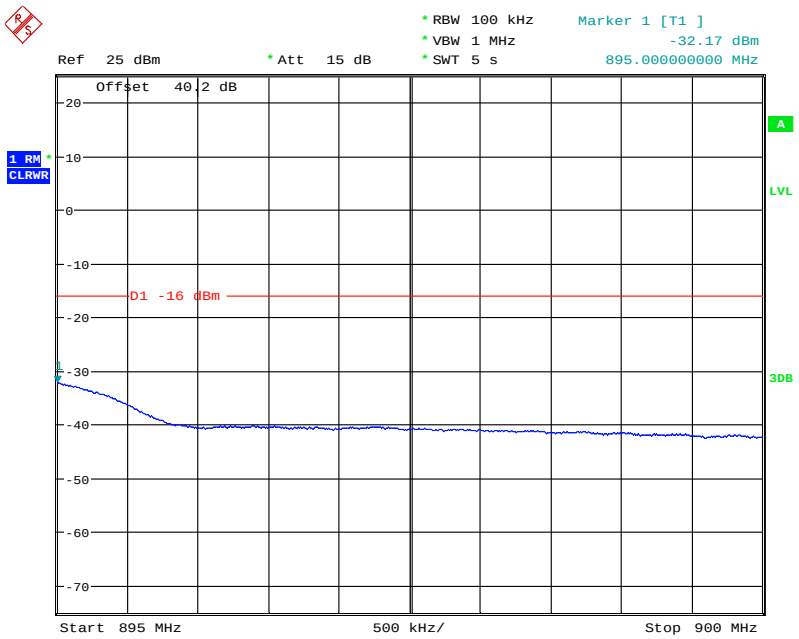


Date: 20.JUN.2013 14:50:06

Limit

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

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

4 and 14 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 + 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:

$E_{(v/m)}=(30 \times 1.64 \times 108.79)^{0.5} / 3 = 24.39V/m = 147.7dB\mu V/m$

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

43 + 10log(108.79) = 63.3dB

Therefore the limit at 3m measurement distance is:

147.7 – 63.3 = 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 operating on all modes in section 1.4.3 and record the result of the following configurations and modes of operation for worst case:

Configuration 1 - Mode 1 - 1.4
- Mode 2 (1.4MHz, 3.0MHz, 5.0MHz, 10.0MHz, 15.0MHz, 20.0MHz OBW)
- Mode 3 - 1.4
- Mode 4 - 1.4
- Mode 5 - 1.4, Mode 5 - 3, Mode 5 - 5, Mode 5 - 10
- Mode 6 - 1.4

2.4.6 Environmental Conditions

	4 June 2013	14 June 2013
Ambient Temperature	27.8°C	26.5°C
Relative Humidity	50.0%	52.0%

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 other emissions are greater than 20dB below the limit. A set of plots have been included to show the measurement system noise floor.

Single Carrier

E-TM1.1

1.4MHz Bandwidth

Configuration 1 - Mode 2

No emissions were detected within 20dB of the limit.

E-TM3.2

1.4MHz Bandwidth

Configuration 1 - Mode 2

No emissions were detected within 20dB of the limit.

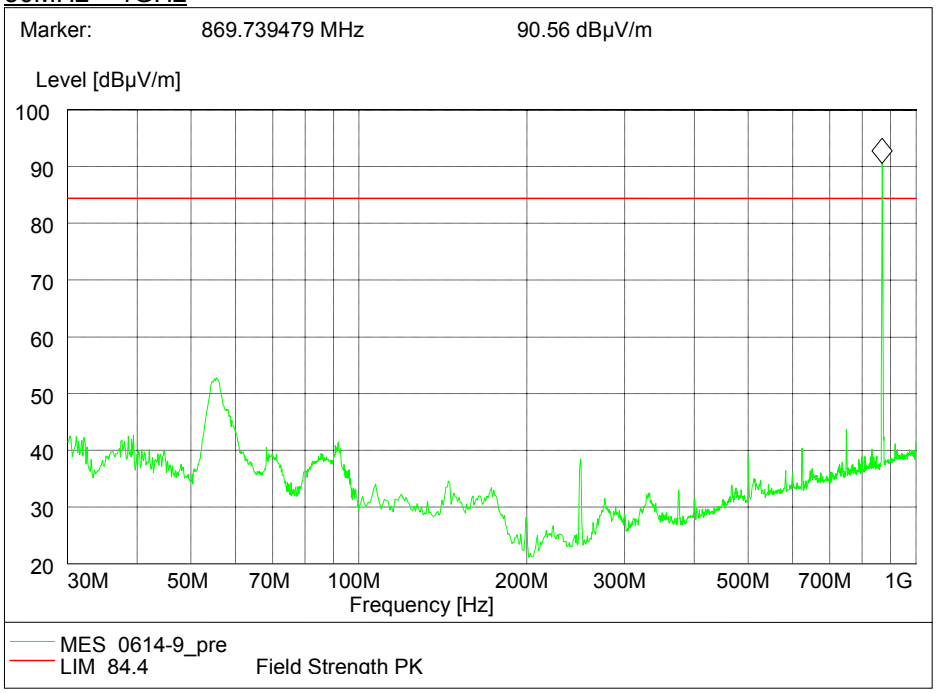
Product Service

E-TM3.1

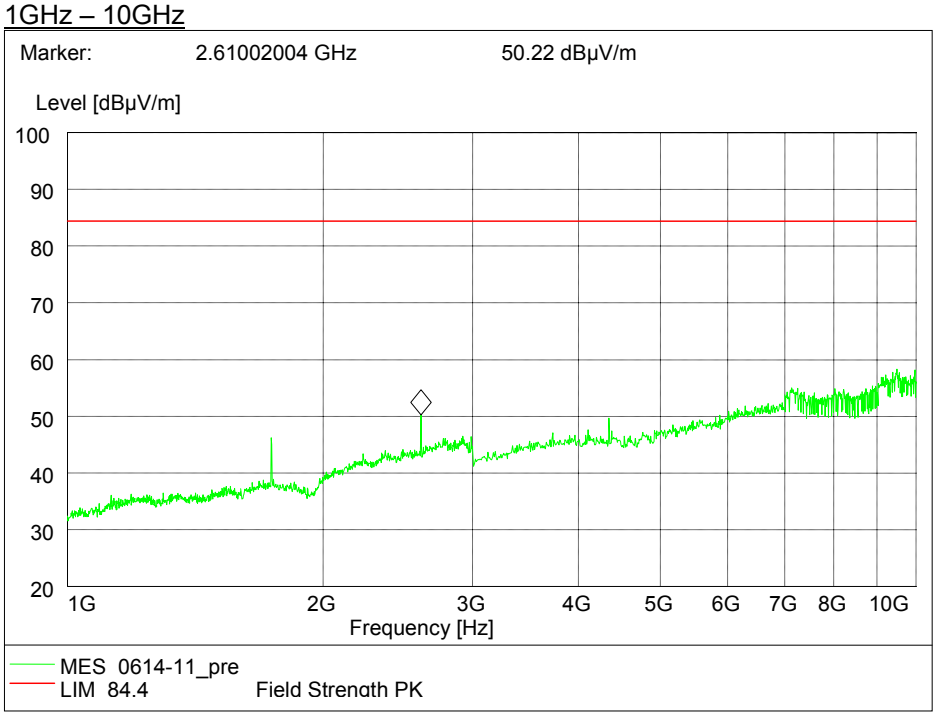
1.4MHz Bandwidth

Configuration 1 - Mode 1

30MHz – 1GHz



1GHz – 10GHz



Configuration 1 - Mode 2

No emissions were detected within 20dB of the limit.

Configuration 1 - Mode 3

No emissions were detected within 20dB of the limit.

3.0MHz Bandwidth

Configuration 1 - Mode 2

No emissions were detected within 20dB of the limit.

5.0MHz Bandwidth

Configuration 1 - Mode 2

No emissions were detected within 20dB of the limit.

10.0MHz Bandwidth

Configuration 1 - Mode 2

No emissions were detected within 20dB of the limit.

15.0MHz Bandwidth

Configuration 1 - Mode 2

No emissions were detected within 20dB of the limit.

20.0MHz Bandwidth

Configuration 1 - Mode 2

No emissions were detected within 20dB of the limit.

Multi Carrier (x2)

E-TM1.1

1.4MHz Bandwidth

Configuration 1 - Mode 5

No emissions were detected within 20dB of the limit.

3MHz Bandwidth

Configuration 1 - Mode 5

No emissions were detected within 20dB of the limit.

5MHz Bandwidth

Configuration 1 - Mode 5

No emissions were detected within 20dB of the limit.

10MHz Bandwidth

Configuration 1 - Mode 5

No emissions were detected within 20dB of the limit.

E-TM3.2

1.4MHz Bandwidth

Configuration 1 - Mode 5

No emissions were detected within 20dB of the limit.

E-TM3.1

1.4MHz Bandwidth

Configuration 1 - Mode 4

No emissions were detected within 20dB of the limit.

Configuration 1 - Mode 5

No emissions were detected within 20dB of the limit

Configuration 1 - Mode 6

No emissions were detected within 20dB of the limit

Limit	-13dBm / 84.4dBµV/m

Remarks
The EUT does not exceed -13dBm / 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

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

2.5.3 Date of Test and Modification State

19 and 20 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 measurements were performed on the output connector RF A1. Limited complementary measurement were done at output connector RF A2 to verify identical performance for both transmitter chains. The EUT was set to transmit on maximum power. The transmitter output was attenuated using an attenuator and the frequency spectrum investigated from 9kHz to 10GHz. The EUT was tested on Bottom, Middle and Top channels for E-TM1.1 test model, just 1.4MHz and 20MHz bandwidth for single carrier and 1.4MHz and 10MHz bandwidth for multi carrier configurations were selected as the representative modes,. The resolution was set to 100kHz from 9kHz to 10GHz thus meeting the requirements of Part 22.917(b). The spectrum analyser detector was set to peak and trace was kept on Max Hold as worst case.

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^{th} 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 - 1.4, Mode 1 - 20
- Mode 2 (1.4MHz, 20.0MHz OBW)
- Mode 3 - 1.4, Mode 3 - 20
- Mode 4 - 1.4, Mode 4 - 10
- Mode 5 - 1.4, Mode 5 - 10
- Mode 6 - 1.4, Mode 6 - 10

Product Service

2.5.6 Environmental Conditions

	19 June 2013	20 June 2013
Ambient Temperature	22.0°C	22.3°C
Relative Humidity	59.0%	60.0%

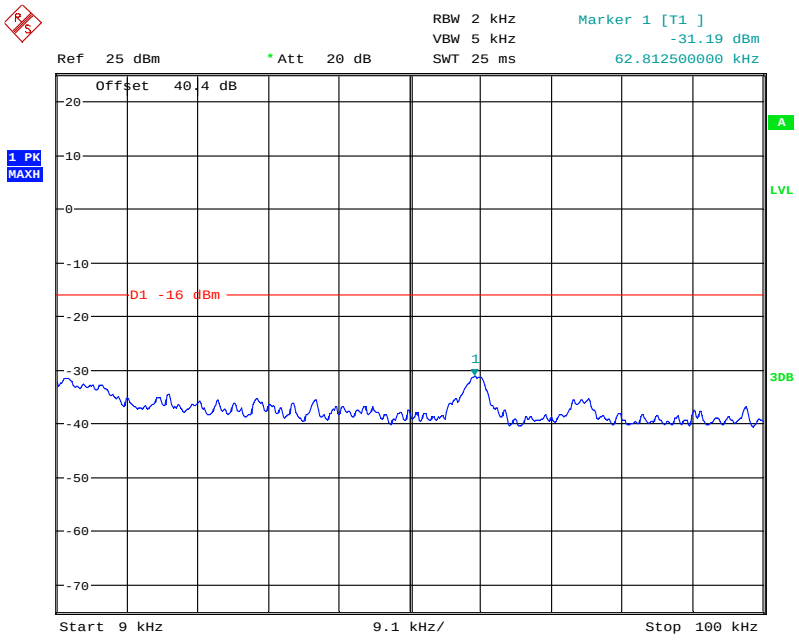
2.5.7 Test Results

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.



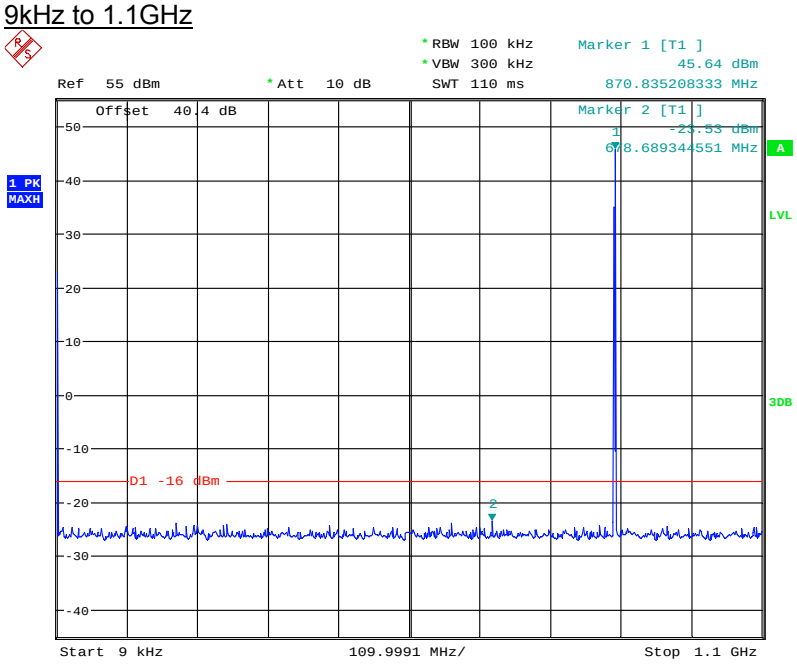
Product Service

Single Carrier

E-TM1.1 - 1.4MHz Bandwidth

Configuration 1 - Mode 1 - 1.4

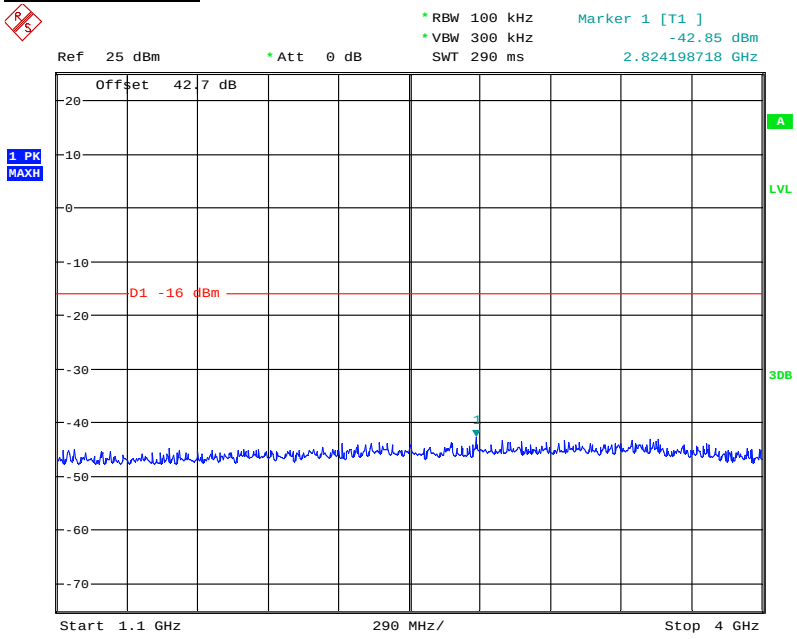
9kHz to 1.1GHz



Date: 19.JUN.2013 16:23:34

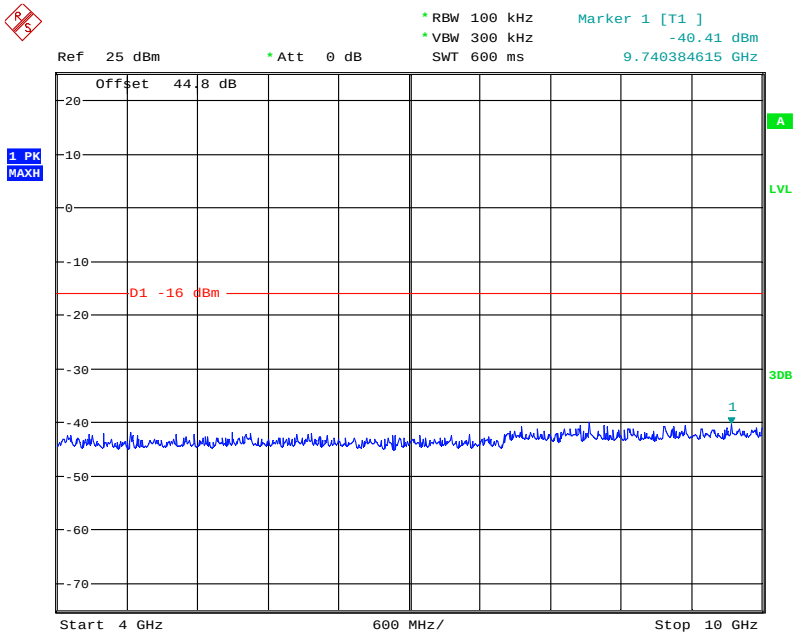
Note: The emission beyond the limit is the operating frequency.

1.1GHz to 4GHz



Date: 19.JUN.2013 16:28:13

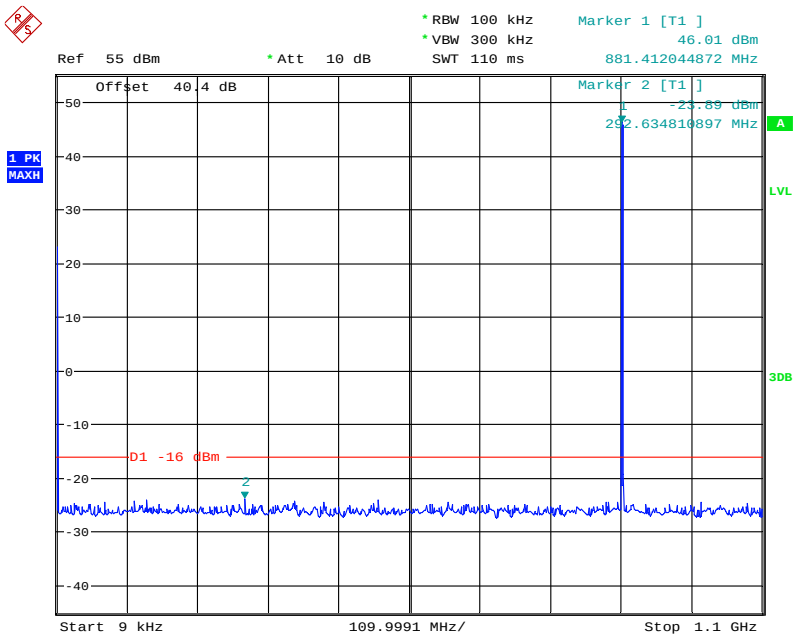
4GHz to 10GHz



Date: 19.JUN.2013 16:27:02

Configuration 1 - Mode 2 - 1.4

9kHz to 1.1GHz

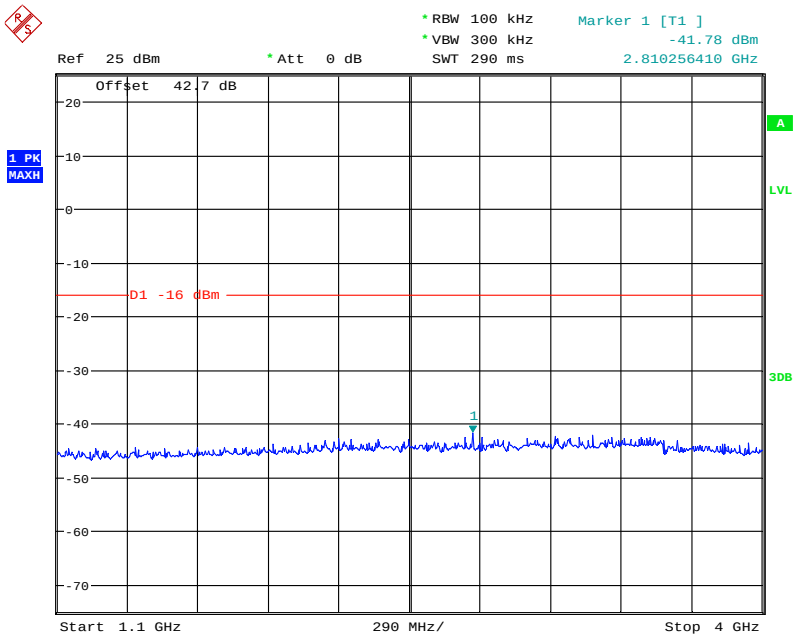


Date: 19.JUN.2013 15:24:49

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

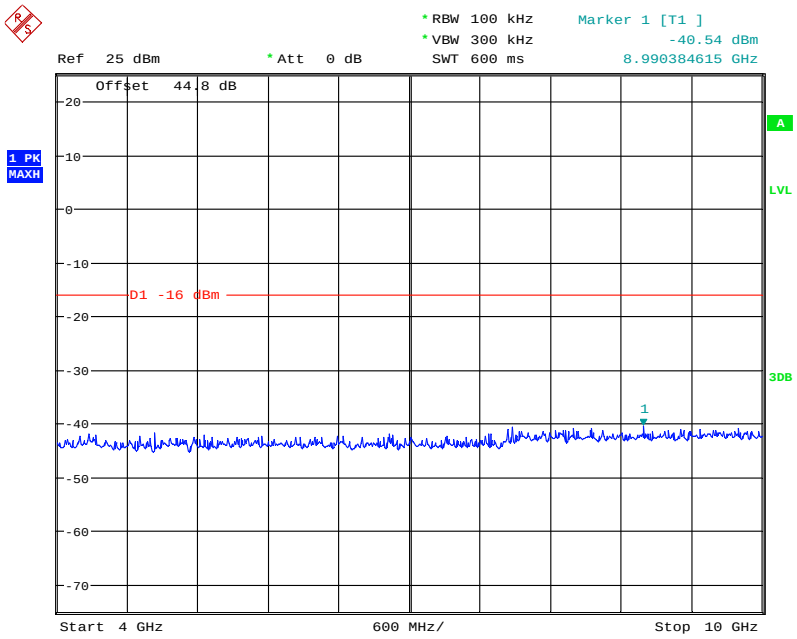
Product Service

1.1GHz to 4GHz



Date: 19.JUN.2013 15:14:53

4GHz to 10GHz

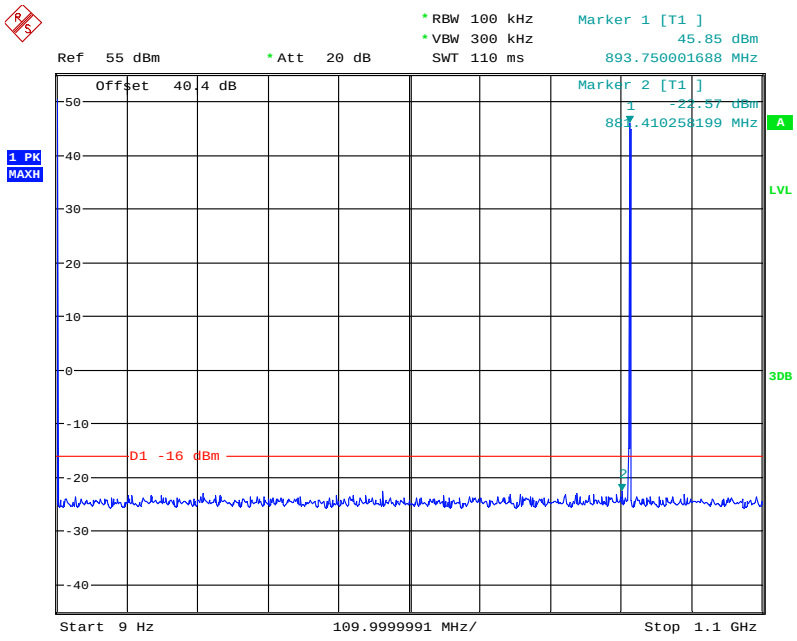


Date: 19.JUN.2013 15:15:44

Product Service

Configuration 1 - Mode 3 - 1.4

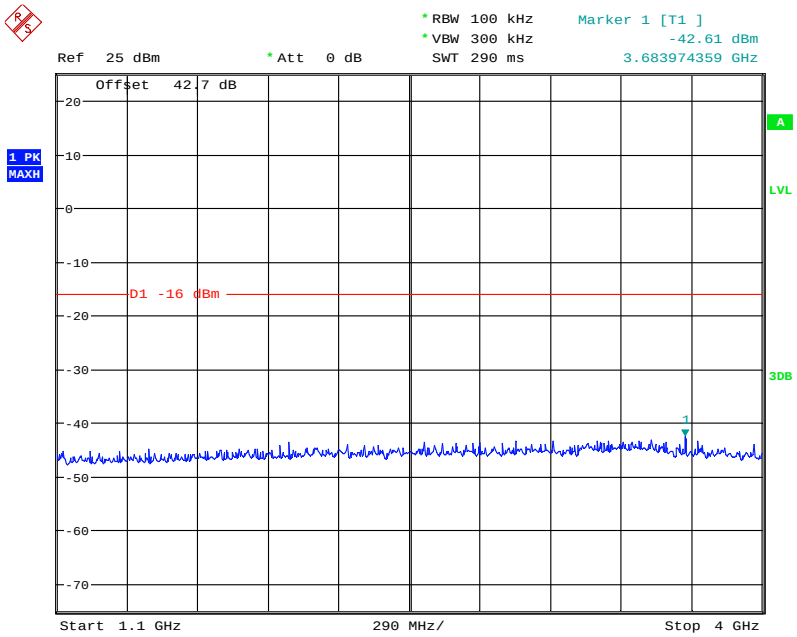
9kHz to 1.1GHz



Date: 20.JUN.2013 09:19:40

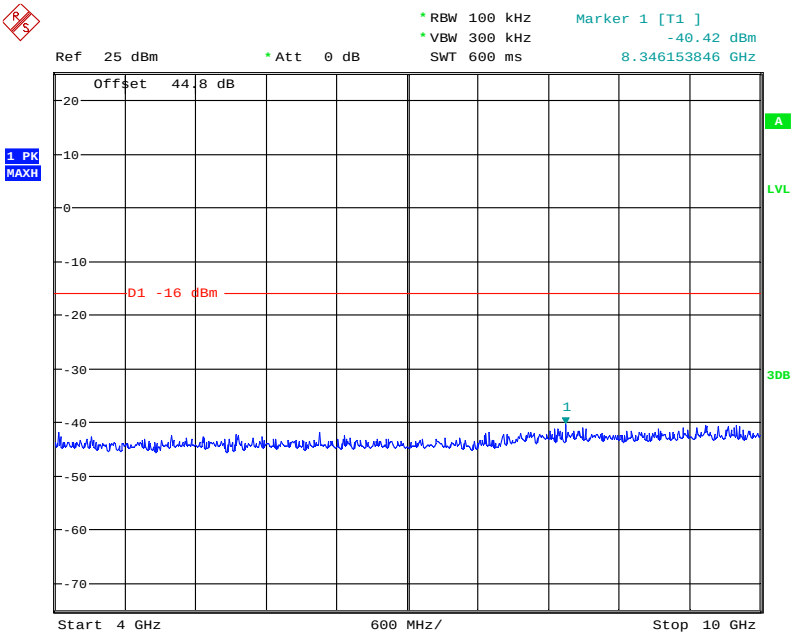
Note: The emission beyond the limit is the operating frequency.

1.1GHz to 4GHz



Date: 20.JUN.2013 09:17:54

4GHz to 10GHz

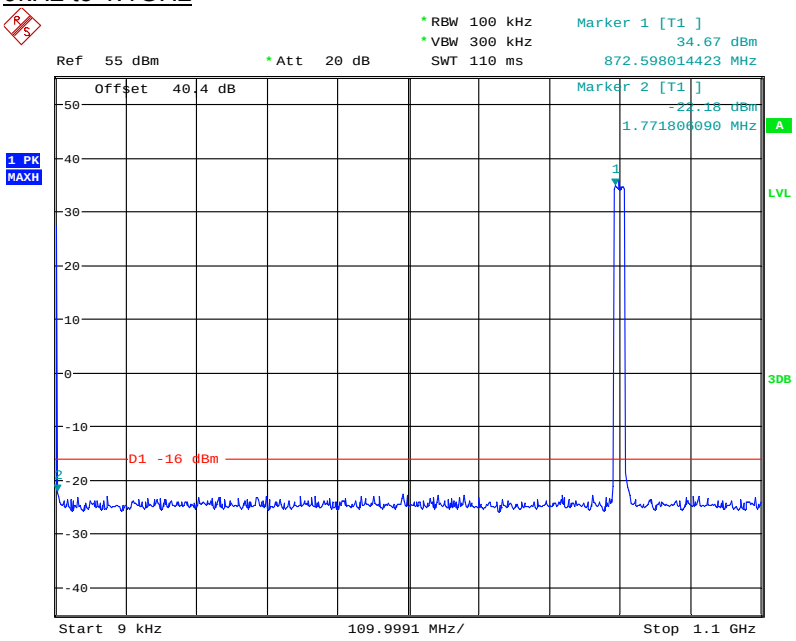


Date: 20.JUN.2013 09:18:31

E-TM1.1 - 20MHz Bandwidth

Configuration 1 - Mode 1 – 20

9kHz to 1.1GHz

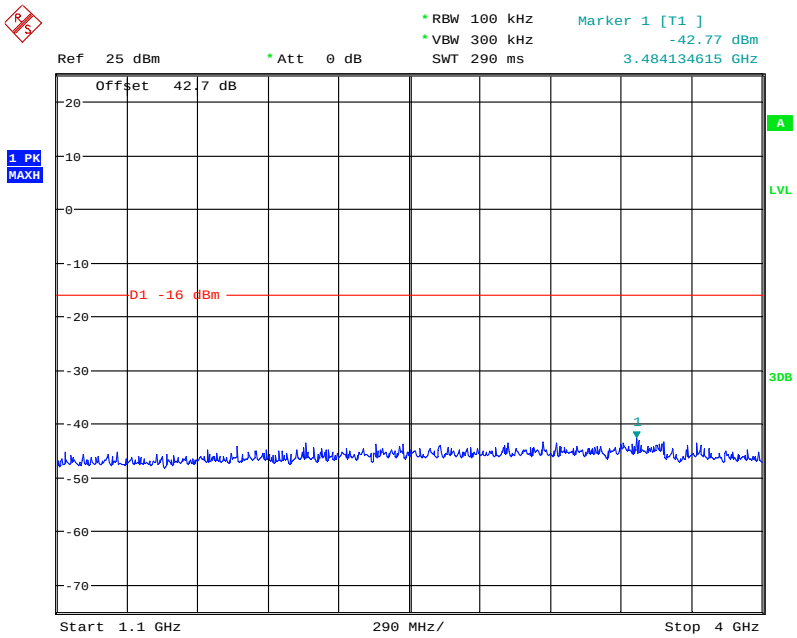


Date: 20.JUN.2013 09:55:24

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

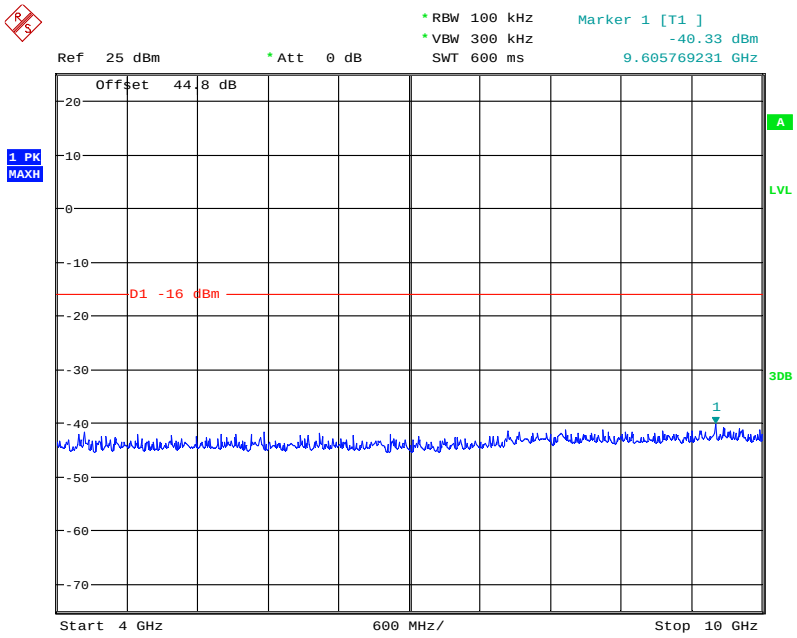
Product Service

1.1GHz to 4GHz



Date: 20.JUN.2013 09:53:38

4GHz to 10GHz

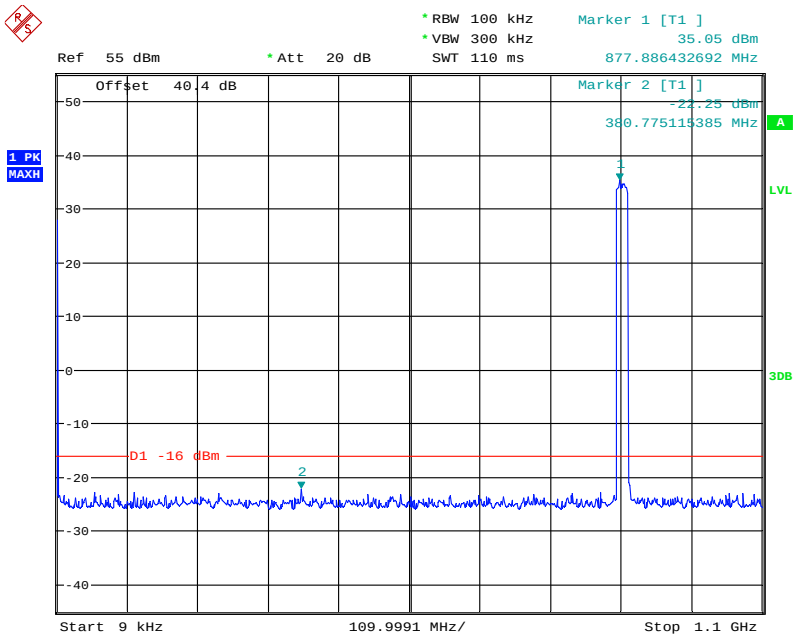


Date: 20.JUN.2013 09:54:10

Product Service

Configuration 1 - Mode 2 - 20

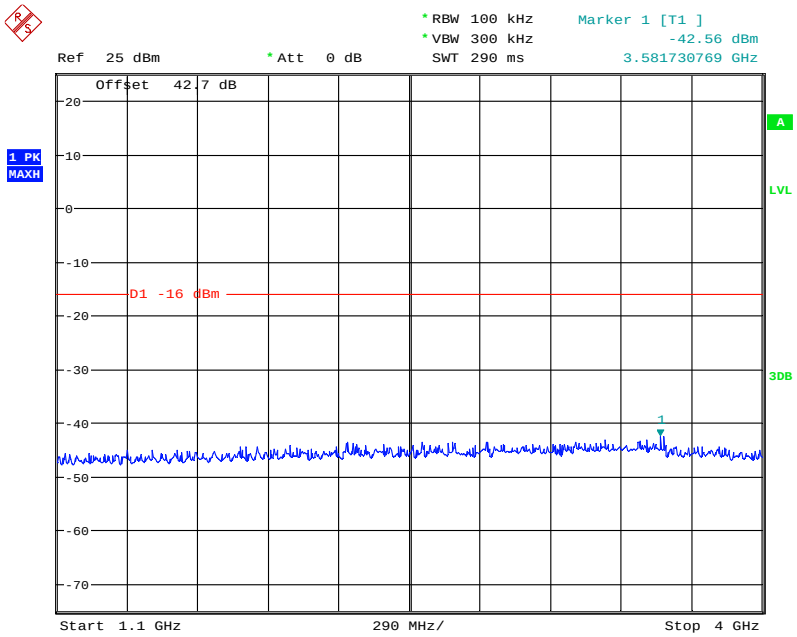
9kHz to 1.1GHz



Date: 20.JUN.2013 10:01:44

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

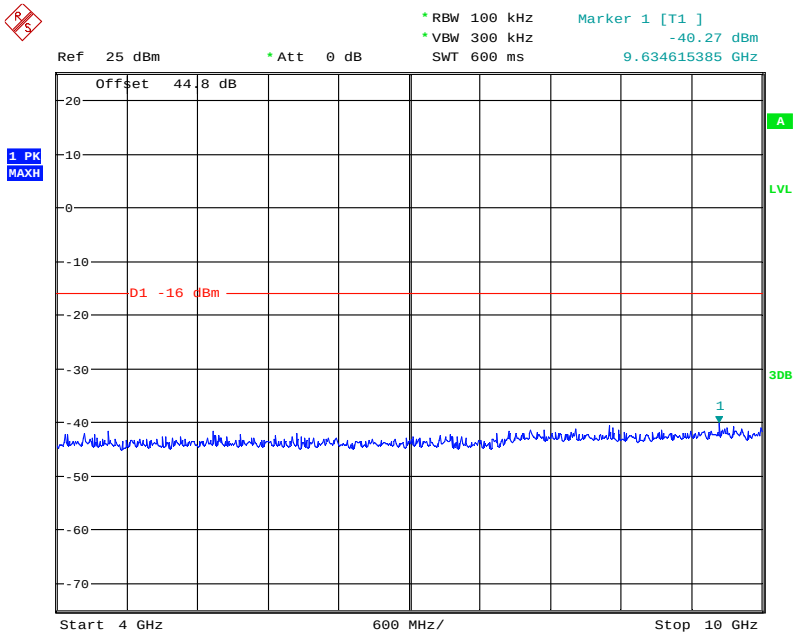
1.1GHz to 4GHz



Date: 20.JUN.2013 10:04:25

Product Service

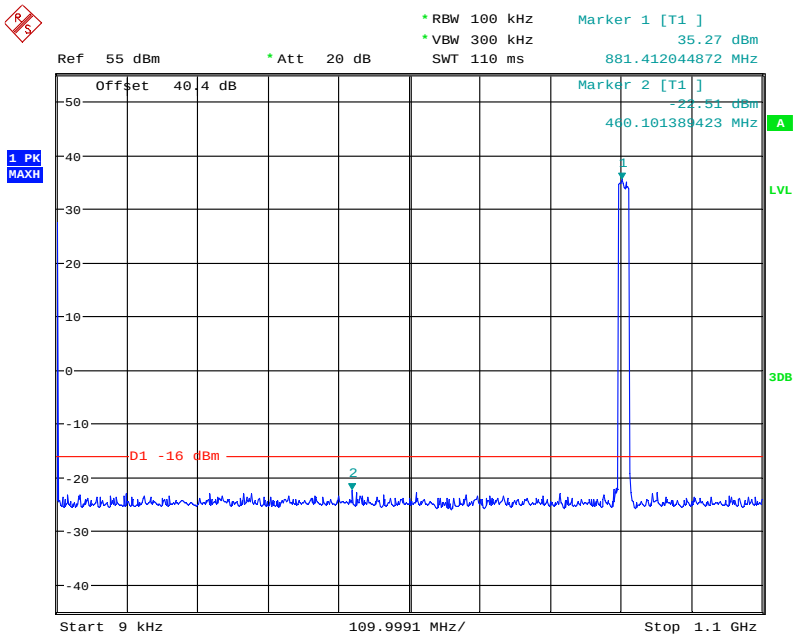
4GHz to 10GHz



Date: 20.JUN.2013 10:03:44

Configuration 1 - Mode 3 - 20

9kHz to 1.1GHz

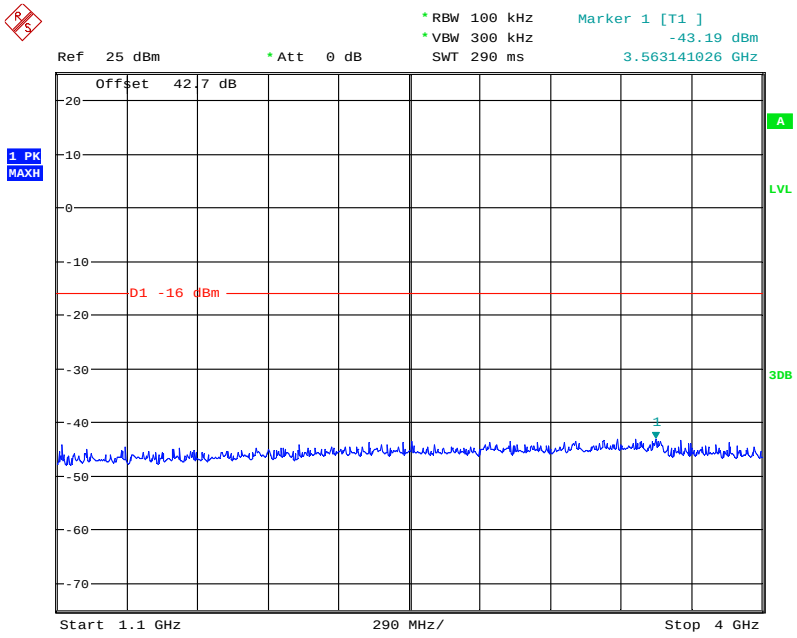


Date: 20.JUN.2013 09:33:31

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

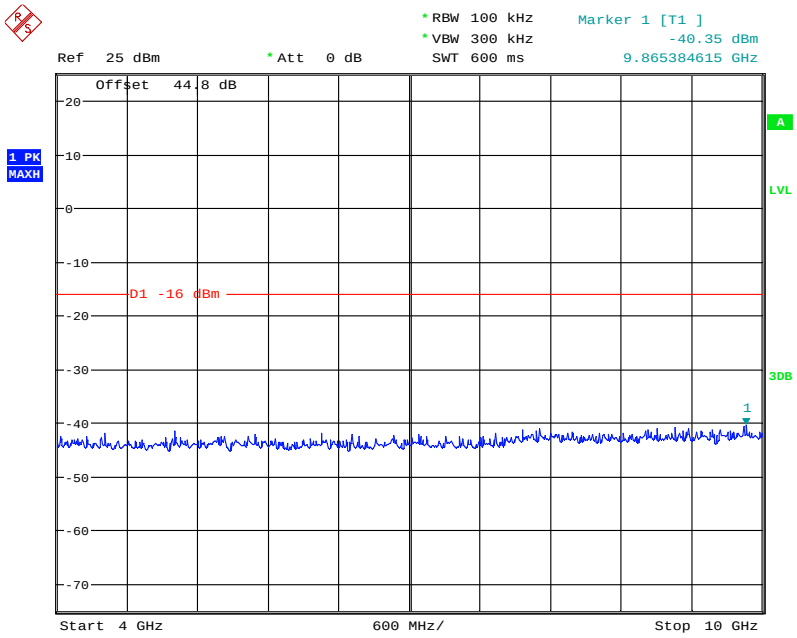
Product Service

1.1GHz to 4GHz



Date: 20.JUN.2013 09:41:31

4GHz to 10GHz



Date: 20.JUN.2013 09:34:42

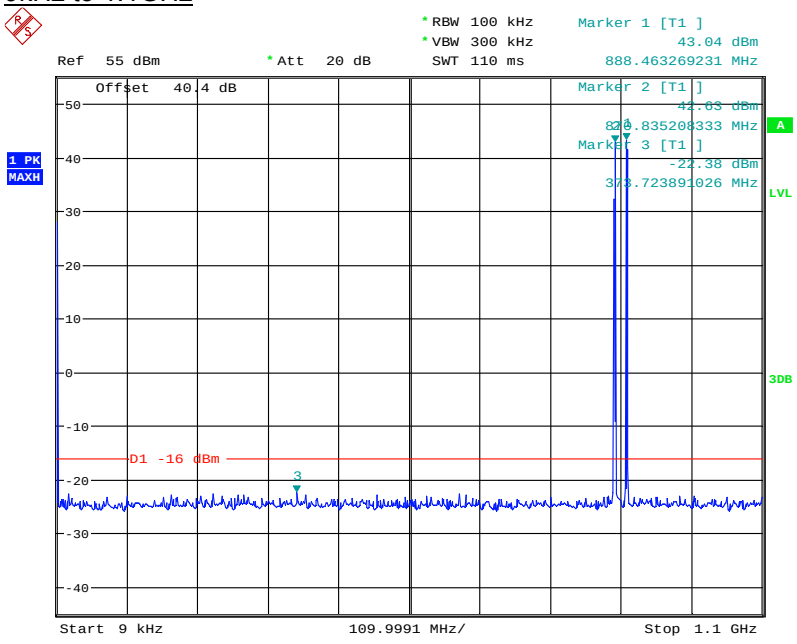
Product Service

Multi Carrier (x2)

E-TM1.1 - 1.4MHz Bandwidth

Configuration 1 - Mode 4 - 1.4

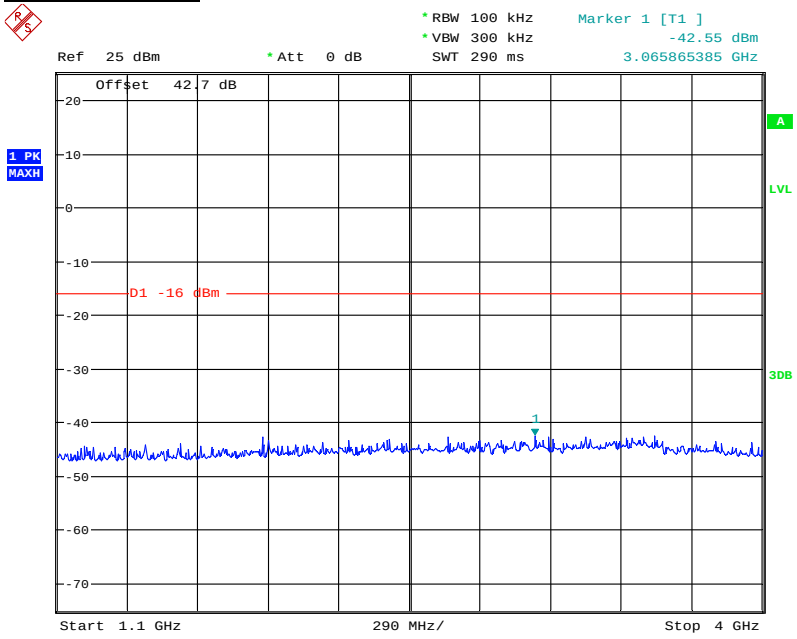
9kHz to 1.1GHz



Date: 20.JUN.2013 14:00:25

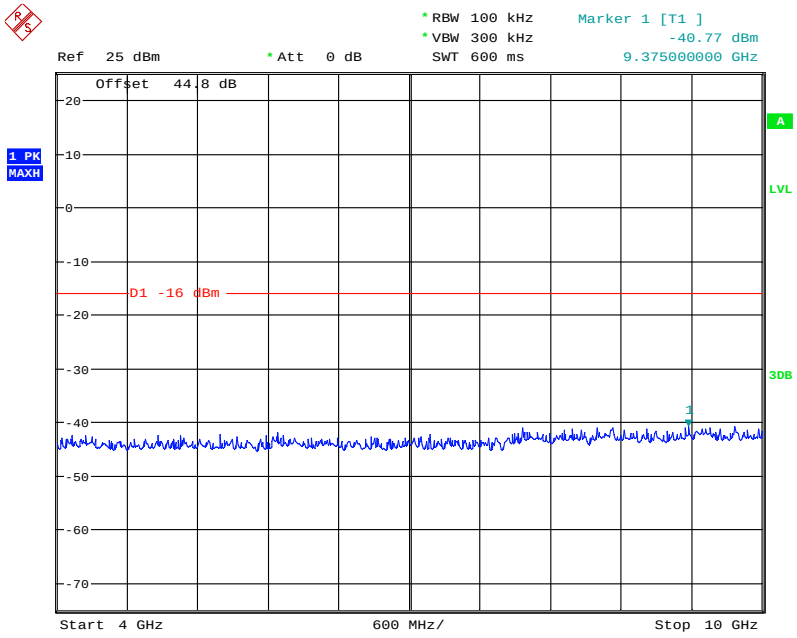
Note: The emission beyond the limit is the operating frequency.

1.1GHz to 4GHz



Date: 20.JUN.2013 15:17:26

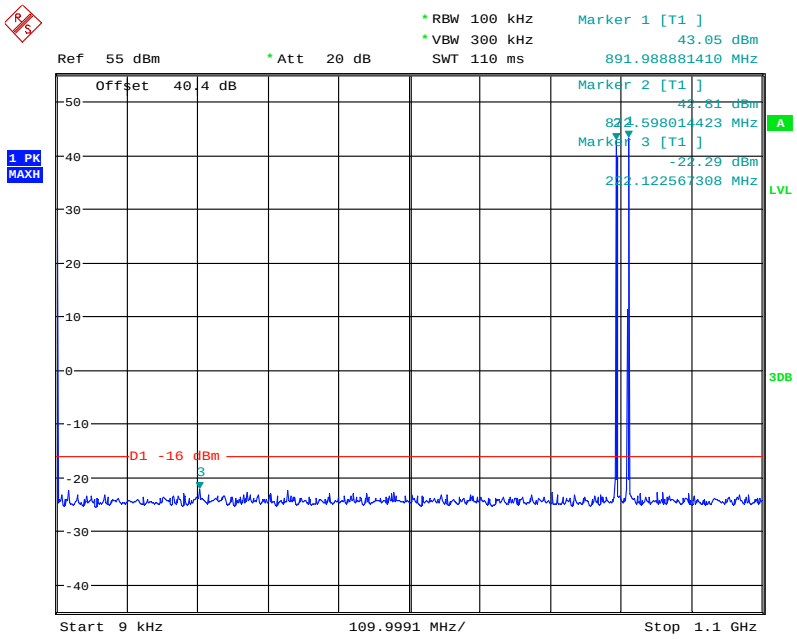
4GHz to 10GHz



Date: 20.JUN.2013 15:16:18

Configuration 1 - Mode 5 - 1.4

9kHz to 1.1GHz

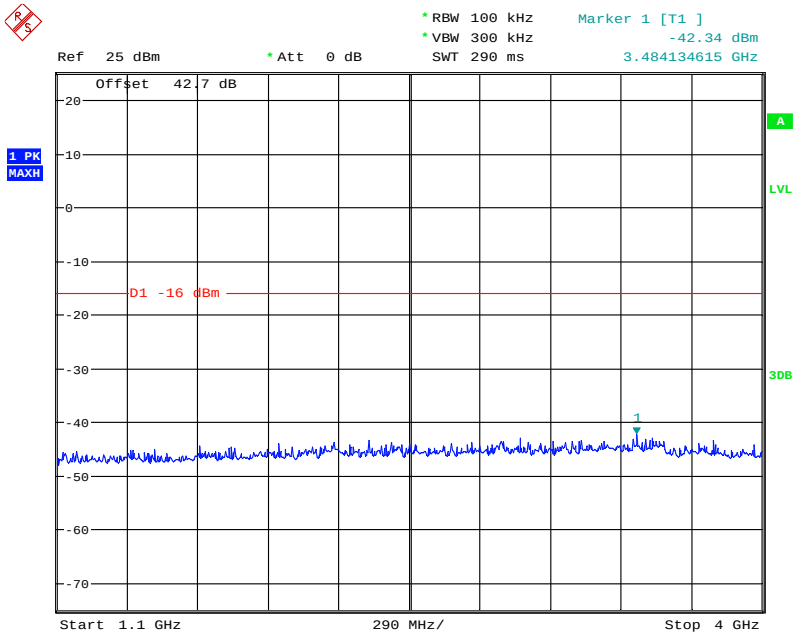


Date: 20.JUN.2013 13:32:25

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

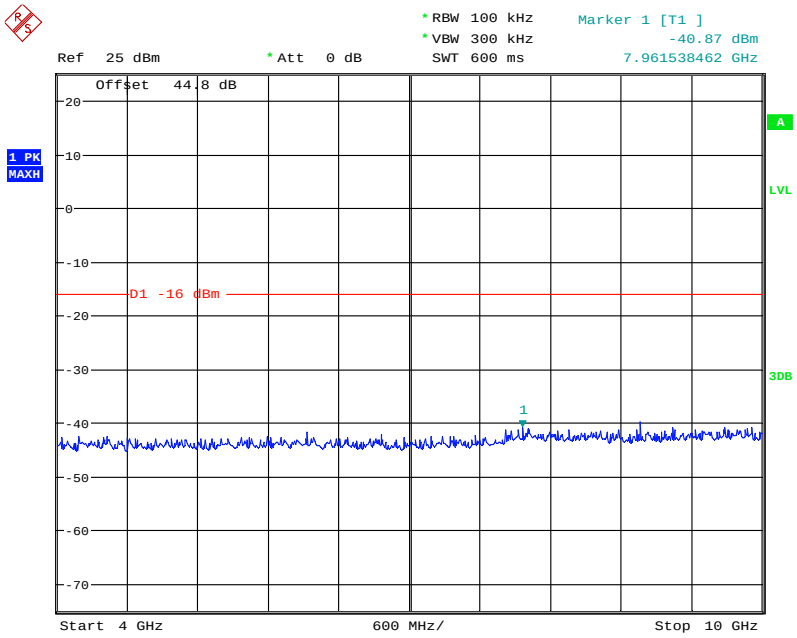
Product Service

1.1GHz to 4GHz



Date: 20.JUN.2013 13:41:58

4GHz to 10GHz

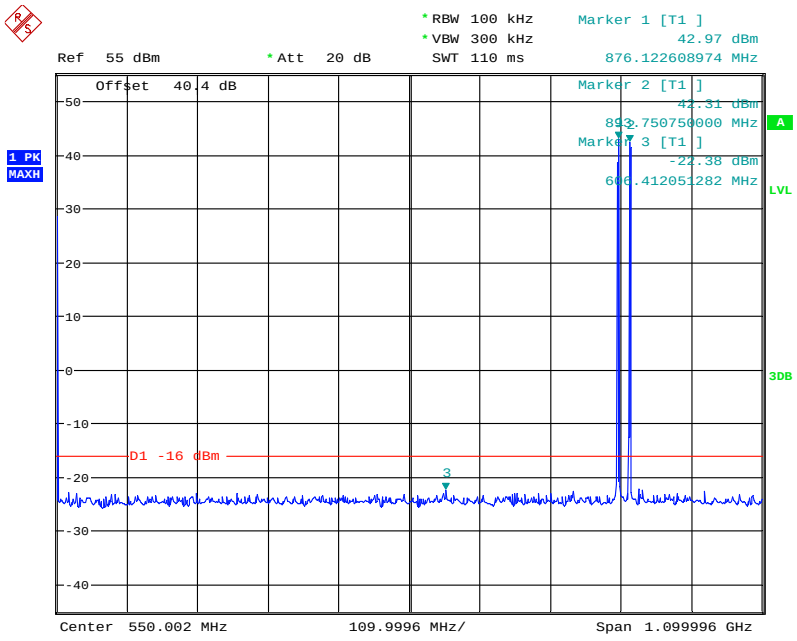


Date: 20.JUN.2013 13:40:36

Product Service

Configuration 1 - Mode 6 - 1.4

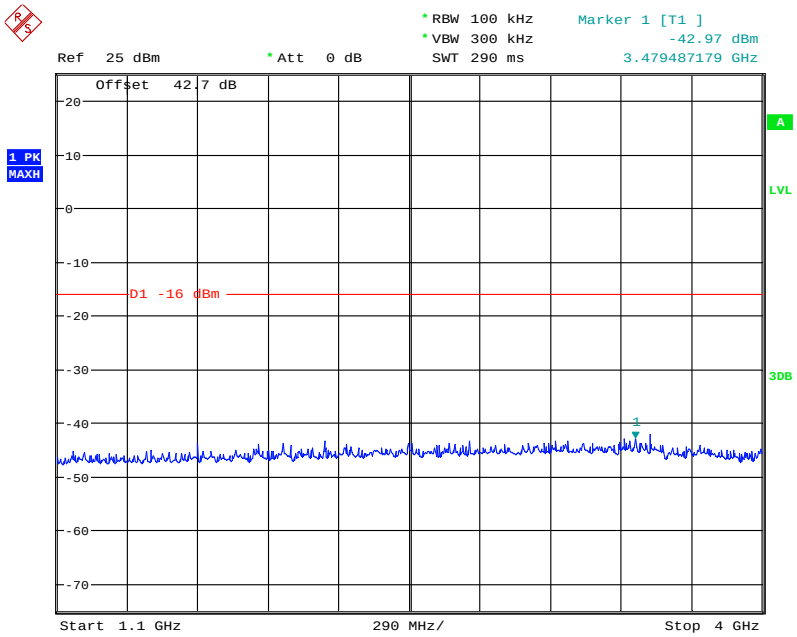
9kHz to 1.1GHz



Date: 20.JUN.2013 15:27:33

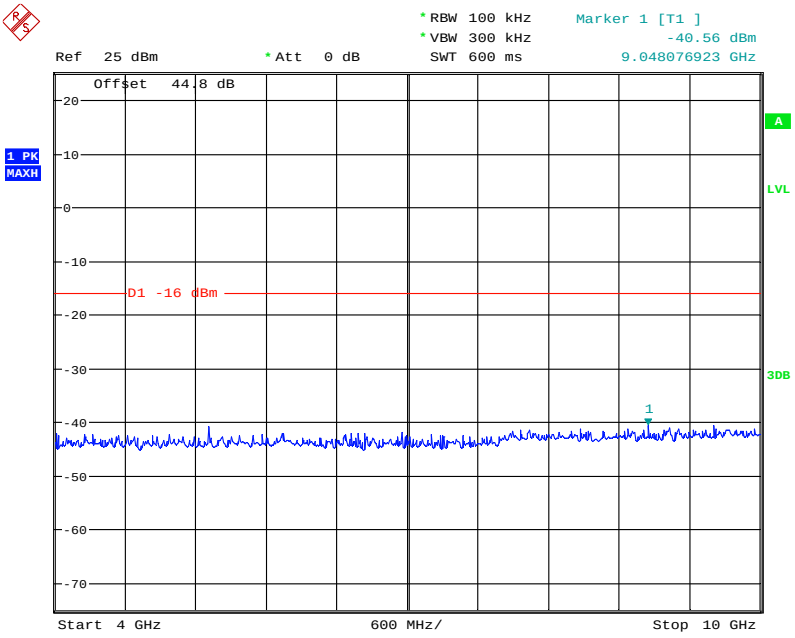
Note: The emission beyond the limit is the operating frequency.

1.1GHz to 4GHz



Date: 20.JUN.2013 15:29:12

4GHz to 10GHz

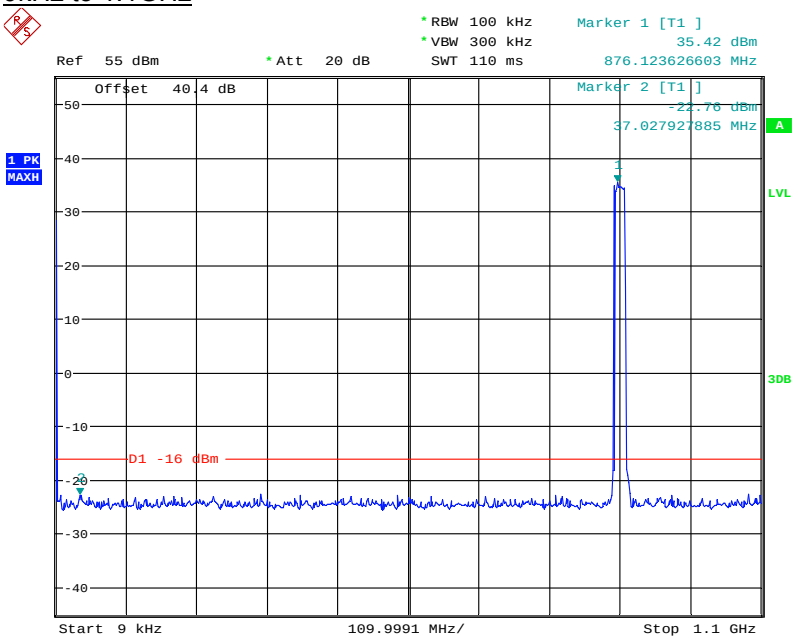


Date: 20.JUN.2013 15:18:18

E-TM1.1 - 10MHz Bandwidth

Configuration 1 - Mode 4 – 10

9kHz to 1.1GHz

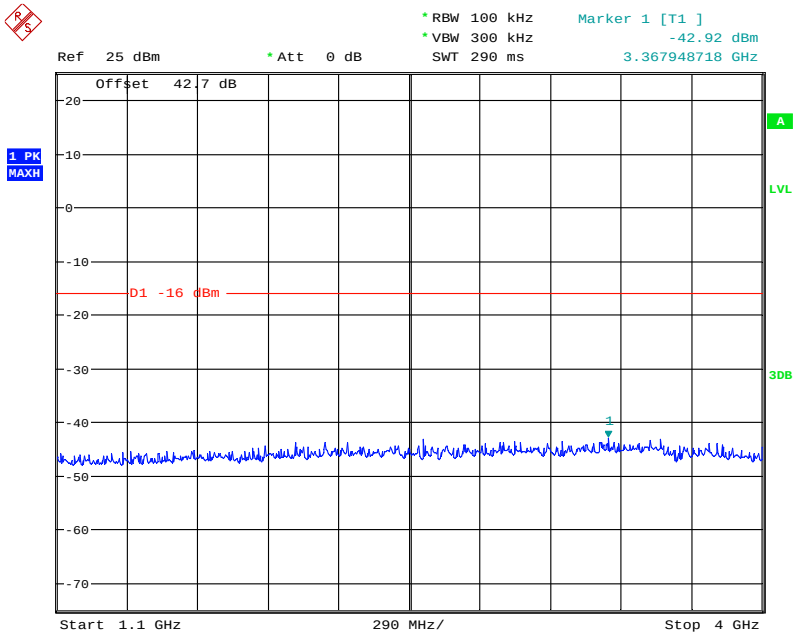


Date: 20.JUN.2013 15:43:24

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

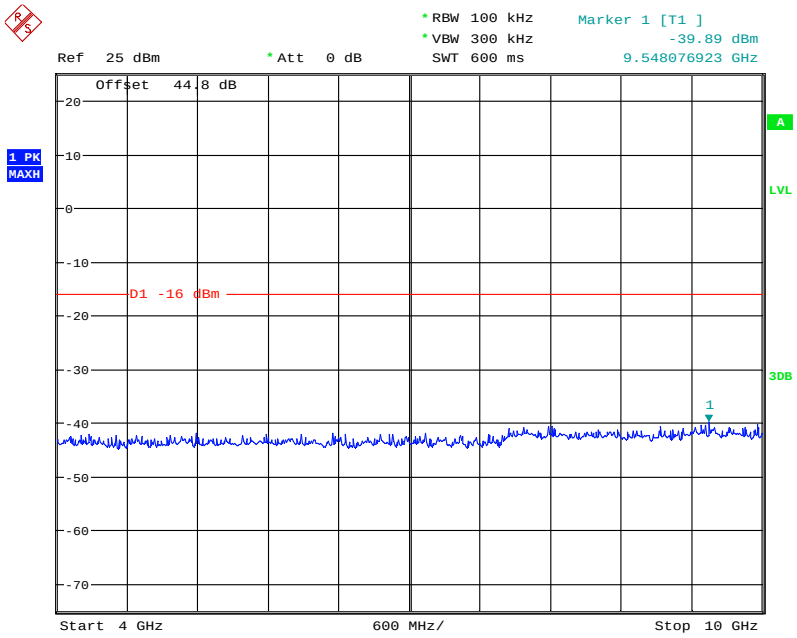
Product Service

1.1GHz to 4GHz



Date: 20.JUN.2013 15:45:36

4GHz to 10GHz

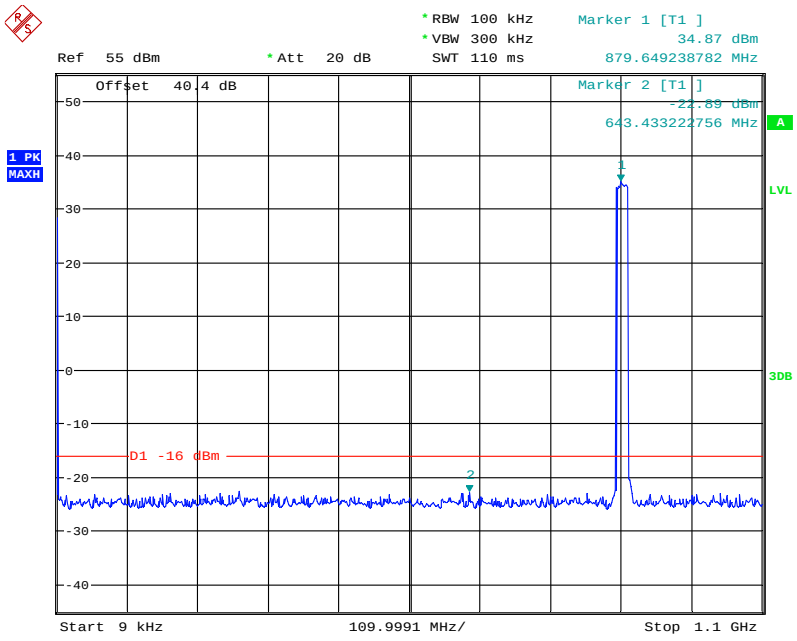


Date: 20.JUN.2013 15:44:46

Product Service

Configuration 1 - Mode 5 - 10

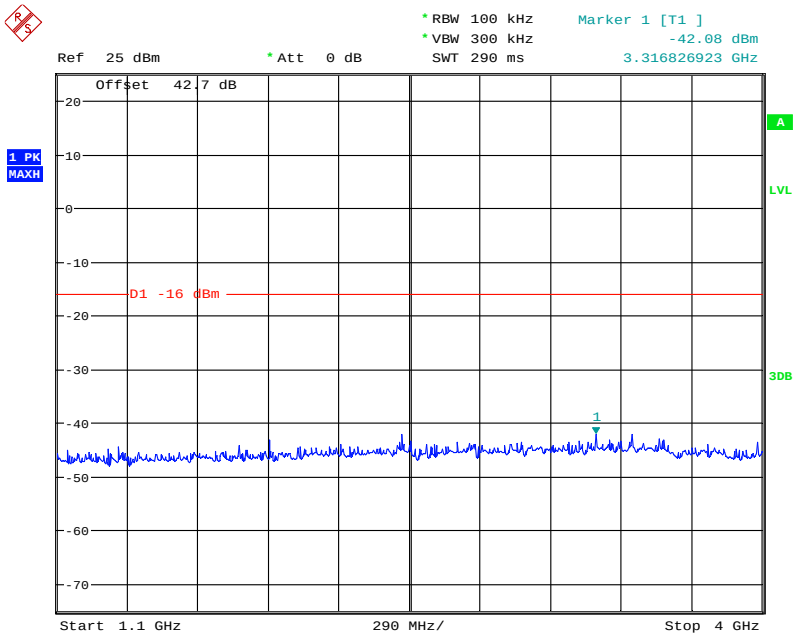
9kHz to 1.1GHz



Date: 20.JUN.2013 16:08:47

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

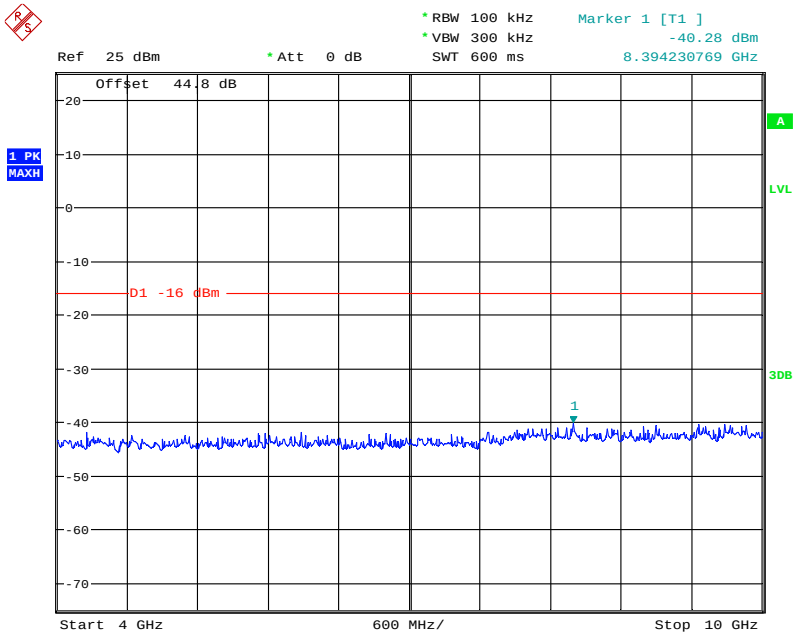
1.1GHz to 4GHz



Date: 20.JUN.2013 16:11:06

Product Service

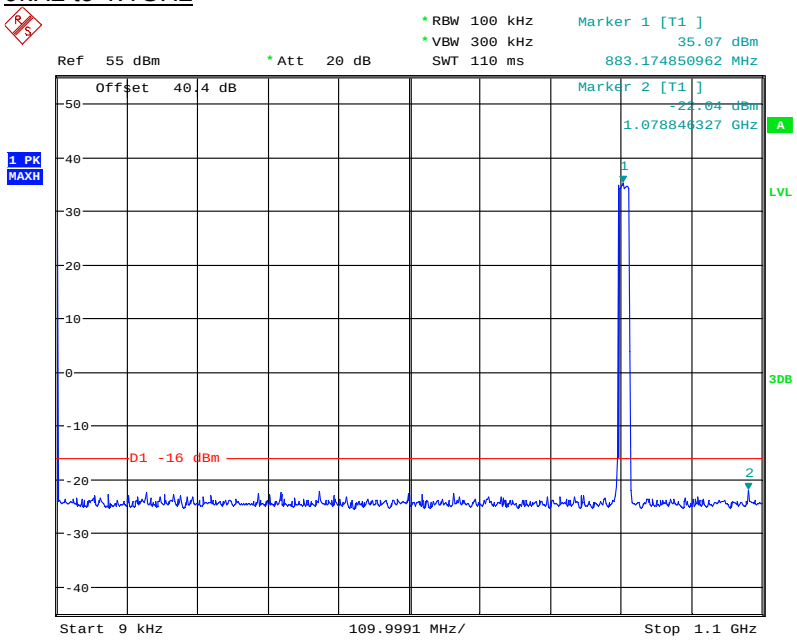
4GHz to 10GHz



Date: 20.JUN.2013 16:10:17

Configuration 1 - Mode 6 - 10

9kHz to 1.1GHz

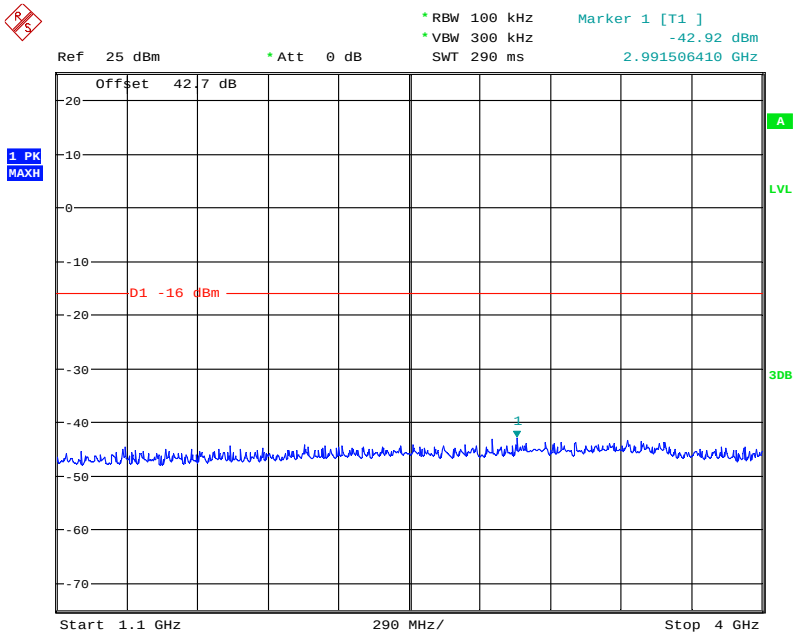


Date: 20.JUN.2013 15:57:50

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

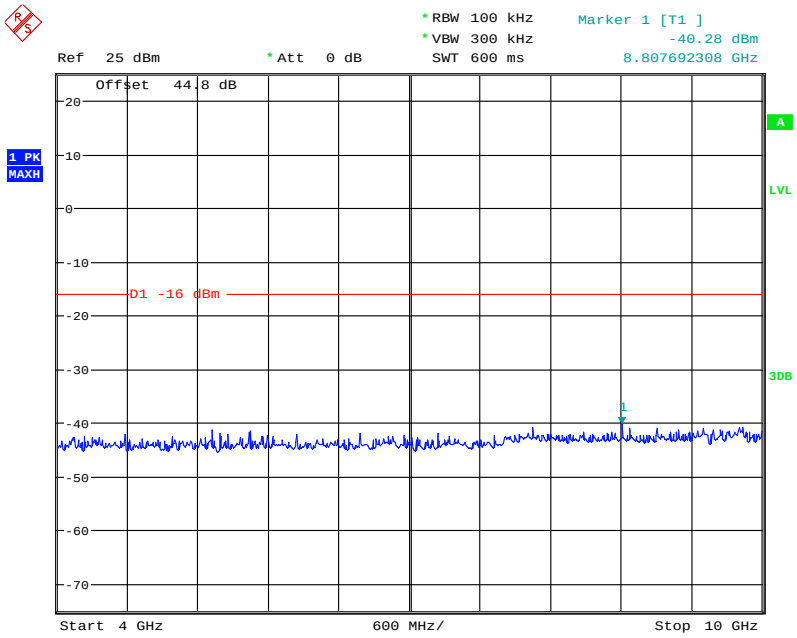
Product Service

1.1GHz to 4GHz



Date: 20.JUN.2013 15:54:45

4GHz to 10GHz



Date: 20.JUN.2013 15:55:42

Remarks

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

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

19 and 20 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 5th harmonic of the highest internal frequency.

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

Configuration 1 - Mode 2 (1.4MHz OBW)
- Mode 5 - 1.4

2.6.6 Environmental Conditions

	19 June 2013	20 June 2013
Ambient Temperature	22.0°C	22.3°C
Relative Humidity	59.0%	60.0%

Product Service

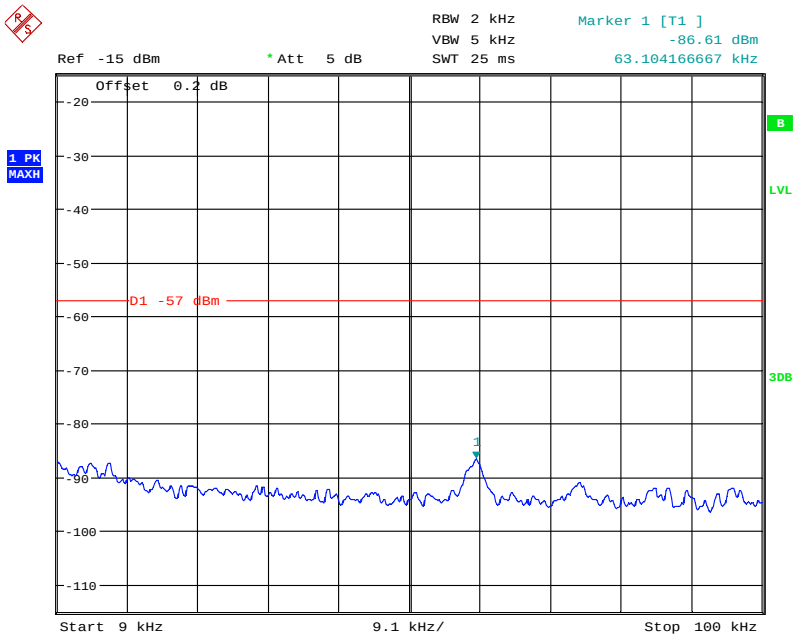
2.6.7 Test Results

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: 19.JUN.2013 15:36:03

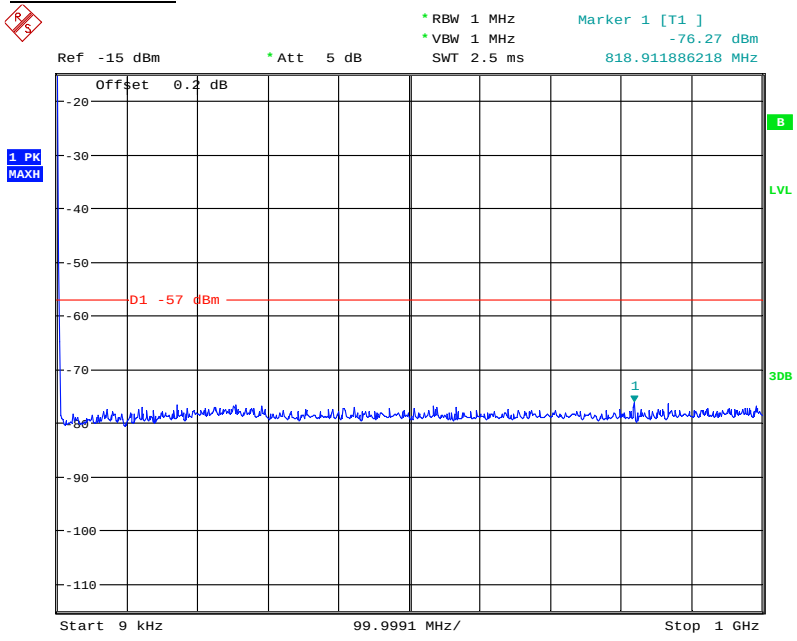
Product Service

Single Carrier

E-TM1.1 – 1.4MHz Bandwidth

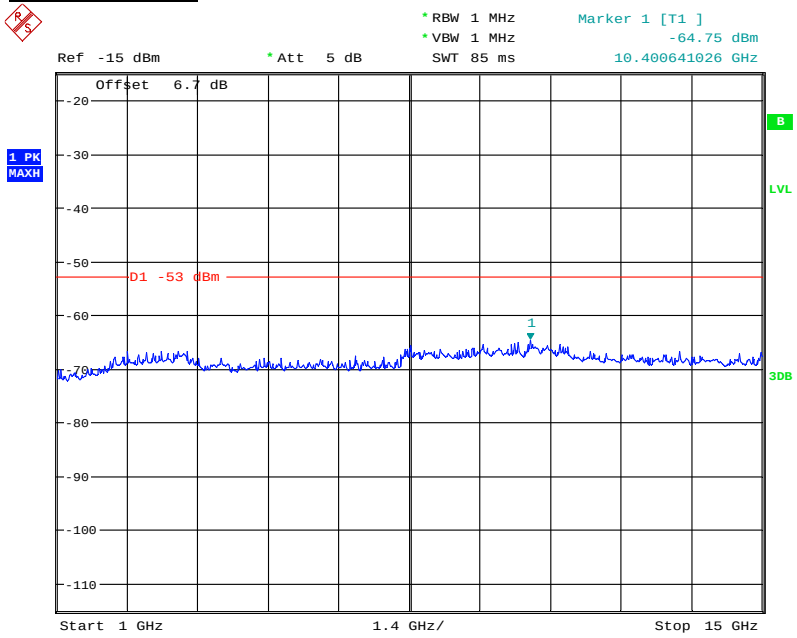
Configuration 1 - Mode 2

9kHz to 1GHz



Date: 19.JUN.2013 15:33:56

1GHz to 15GHz



Date: 19.JUN.2013 15:35:03

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

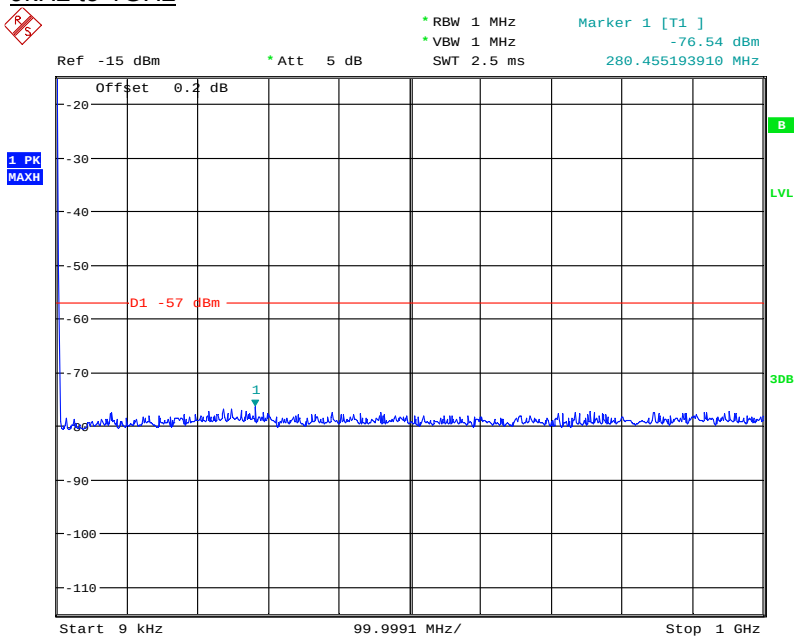
Product Service

Multi Carrier (x2)

E-TM1.1 – 1.4MHz Bandwidth

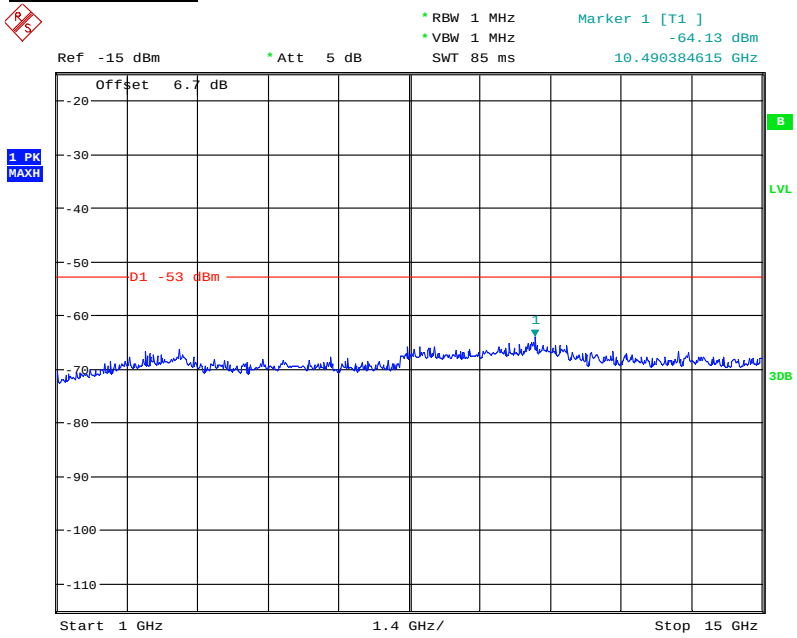
Configuration 1 - Mode 5

9kHz to 1GHz



Date: 20.JUN.2013 13:47:46

1GHz to 15GHz



Date: 20.JUN.2013 13:48:37

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

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

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, 2.6 – Maximum Conducted Output Power, Peak – Average Ratio, Spurious Emissions at Antenna Terminals (±1MHz), Conducted Spurious Emissions and Receiver 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
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
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
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 Wave-guide Horn Antenna	Rohde & Schwarz	HF 906	100029	12	19-Aug-2013
Antenna master	Frankonia	MA 260	-	-	19-Aug-2013
Relay Switch Unit	Rohde & Schwarz	331.1601.31	338965002	-	TU
Semi Anechoic Chamber	Frankonia	23.18m×16.88m×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*
Frequency Stability	30MHz to 2GHz Amplitude	$<1x10^{-7}$
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).