Report On

FCC and Industry Canada Testing of the
Ericsson AB
RU22 0860 / KRC 118 22/5

COMMERCIAL-IN-CONFIDENCE

FCC ID: TA8AKRC11822-5
IC ID: 287AB-AW118225

Document 75910700 Report 01 Issue 1 September 2010

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REPORT ON

FCC and Industry Canada Testing of the
Ericsson AB
RU22 0860 / KRC 118 22/5

Document 75910700 Report 01 Issue 1

September 2010

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DATED 9 September 2010

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47: 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);

X Zhang C Zhang

Product Service

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Product Service

SECTION 1

REPORT SUMMARY

Limited FCC and Industry Canada Testing of the
Ericsson AB
RU22 0860 / KRC 118 22/5

Product Service

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Ericsson AB RU22 0860 / KRC 118 22/5 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 RU22 0860 / KRC 118 22/5 for the hardware update of the PA Transistor.

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	RU22 0860
Part Number	KRC 118 22/5
IC Model Name	AW118225
Serial Number(s)	CC41435746
Software Version	CXP9012183%7_R9YL
Hardware Version	R1D
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 22: 2009 Industry Canada RSS-132: 2005
Incoming Release Date	Declaration of Build Status 17 August 2010
Order Number Date	PTP 13 August 2010
Start of Test	17 August 2010
Finish of Test	03 September 2010
Name of Engineer(s)	X Zhang C Zhang
Related Document(s)	ANSI C63.4: 2009 FCC CFR 47 Part 2: 2009 FCC CFR 47 Part 15: 2009 Industry Canada RSS-GEN Issue 2: 2007

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 – Test Model 1							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 22	RSS-132					
	22.913(a)	4.4	Effective Radiated Power	871.4MHz		N/A	No integral antenna.
				881.4MHz		N/A	
				891.6MHz		N/A	
				871.4MHz+ 881.4MHz		N/A	
				881.4MHz+ 891.6MHz		N/A	
2.1	2.1046, 22.913 (a)	4.4	Maximum Peak Output Power - Conducted	871.4MHz	0	Pass	Both 5MHz and 4.2MHz Bandwidth were tested
				881.4MHz	0	Pass	
				891.6MHz	0	Pass	
				871.4MHz+ 881.4MHz	0	Pass	
				881.4MHz+ 891.6MHz	0	Pass	
2.2	2.1049, 22.917(b)	RSS-Gen 4.6.1	Occupied Bandwidth	871.4MHz	0	Pass	Both 5MHz and 4.2MHz Bandwidth were tested
				881.4MHz	0	Pass	
				891.6MHz	0	Pass	
				871.4MHz+ 881.4MHz		N/A	
				881.4MHz+ 891.6MHz		N/A	
2.3	2.1051, 22.917(b)	4.5	Spurious Emissions at Antenna Terminals (±1MHz)	871.4MHz	0	Pass	
				881.4MHz		N/A	
				891.6MHz	0	Pass	
				871.4MHz+ 881.4MHz	0	Pass	
				881.4MHz+ 891.6MHz	0	Pass	
2.4	2.1053, 22.917(a)	4.5	Radiated Spurious Emissions	871.4MHz	0	Pass	
				881.4MHz	0	Pass	
				891.6MHz	0	Pass	
				871.4MHz+ 881.4MHz	0	Pass	
				881.4MHz+ 891.6MHz	0	Pass	

Product Service

Configuration 1 – Test Model 1							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 22	RSS-132					
2.5	2.1051, 22.917(a)	4.5	Conducted Spurious Emissions	871.4MHz	0	Pass	
				881.4MHz	0	Pass	
				891.6MHz	0	Pass	
				871.4MHz+ 881.4MHz	0	Pass	
				881.4MHz+ 891.6MHz	0	Pass	
	2.1055, 22.355	4.3	Frequency Stability Under Temperature Variations	871.4MHz		N/T	Not tested[1]
				881.4MHz		N/T	
				891.6MHz		N/T	
				871.4MHz+ 881.4MHz		N/T	
				881.4MHz+ 891.6MHz		N/T	
	2.1055, 22.355	4.3	Frequency Stability Under Voltage Variations	871.4MHz		N/T	Not tested[1]
				881.4MHz		N/T	
				891.6MHz		N/T	
				871.4MHz+ 881.4MHz		N/T	
				881.4MHz+ 891.6MHz		N/T	
2.6	15.111	4.6	Receiver Spurious Emissions	871.4MHz	0	Pass	
				881.4MHz	0	Pass	
				891.6MHz	0	Pass	
				871.4MHz+ 881.4MHz		N/A	
				881.4MHz+ 891.6MHz		N/A	

N/A – Not Applicable
Note[1] – Limited testing has been performed as this report is to be used as justification for a Class II Permissive Change. See section 1.6.

Product Service

1.3 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Radio Unit
MANUFACTURER	Ericsson AB
PRODUCT NAME	RU22 0860
PART NUMBER	KRC 118 22/5
IC Model Name	AW118225
SERIAL NUMBER	CC41435746
HARDWARE VERSION	R1D
SOFTWARE VERSION	CXP9012183%7_R9YL
TRANSMITTER OPERATING RANGE	TX: 871.4MHz - 891.6MHz RX: 826.4MHz – 846.6MHz
MODULATIONS	QPSK, 16QAM, 64QAM
INTERMEDIATE FREQUENCIES	--
ITU DESIGNATION OF EMISSION	4M18F9W
HIGHEST INTERNALLY GENERATED FREQUENCY	892MHz
OUTPUT POWER (RMS) (W or dBm)	Single Carrier: 1 x 47.8dBm (1 x 60W) Multi Carrier: 2 x 44.8dBm (2 x 30W)
CHANNEL BANDWIDTH	4.2 to 5MHz (configurable in steps of 100/200kHz)
CHANNEL SPACING	4.4 to 5MHz (configurable in steps of 100/200kHz)
FCC ID	TA8AKRC11822-5
IC ID	287AB-AW118225
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The equipment is a Radio Unit of WCDMA Base Station.

Signature

Date 26 August 2010

D of B S Serial No 75910700/01

No responsibility will be accepted by TÜV 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) RU22 0860 / KRC 118 22/5 is an Ericsson AB Radio Unit working in the public mobile service 800MHz band which provides communication connections to WCDMA850 network. The RU22 0860 / KRC 118 22/5 operates from a -48V DC volt 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 – Test Model 1 (TM1)

The EUT was configured in accordance with FCC CFR 47 Part 22 and Industry Canada RSS-132.

The RU22 0860 / KRC 118 22/5 supports Test Models TM1 at 850MHz which are defined in 3GPP TS 25.141. Test Model 1 (TM1) uses the QPSK modulation

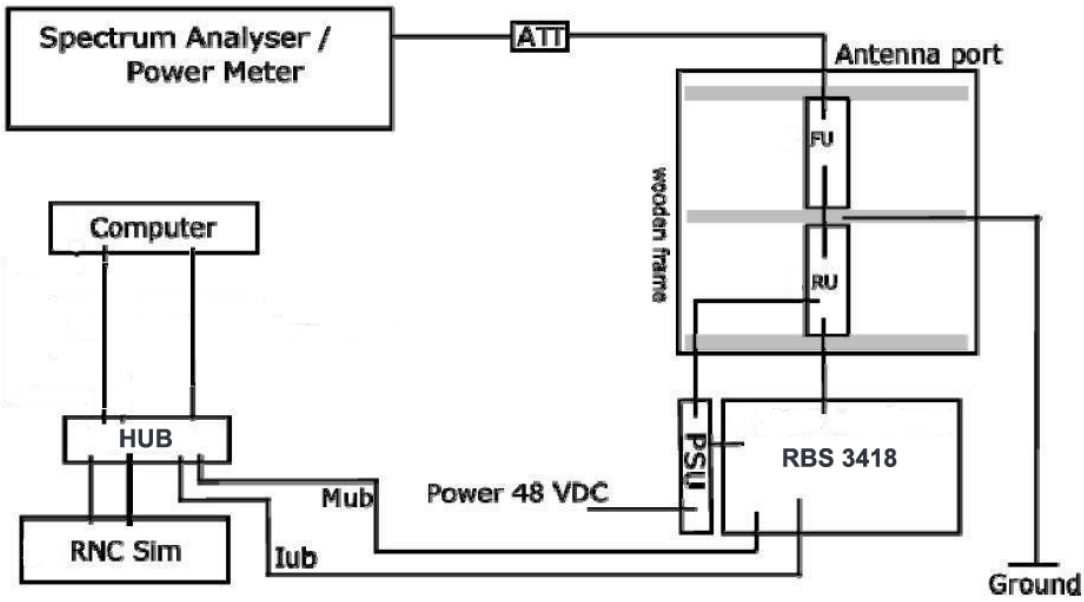
The settings below were tested as the representative setting for all traffic scenarios and the worst case. These settings were used for all measurements unless otherwise stated.

Single carrier TM1: 64 DPCHs at 30ksps (SF=128)
Multi carrier TM1: 32 DPCHs at 30ksps (SF=128) in each carrier
Channel Bandwidth: 5MHz

The EUT can be configured to transmit with 850MHz single or multi carrier at the RF output connector. All Tx Testing was performed on the Ant A connector and the Rx testing was performed on the Ant B connector of the Filter Unit FU12 08 / KRC 118 21/1. 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.

Product Service

Test Setup, Conducted Measurement:

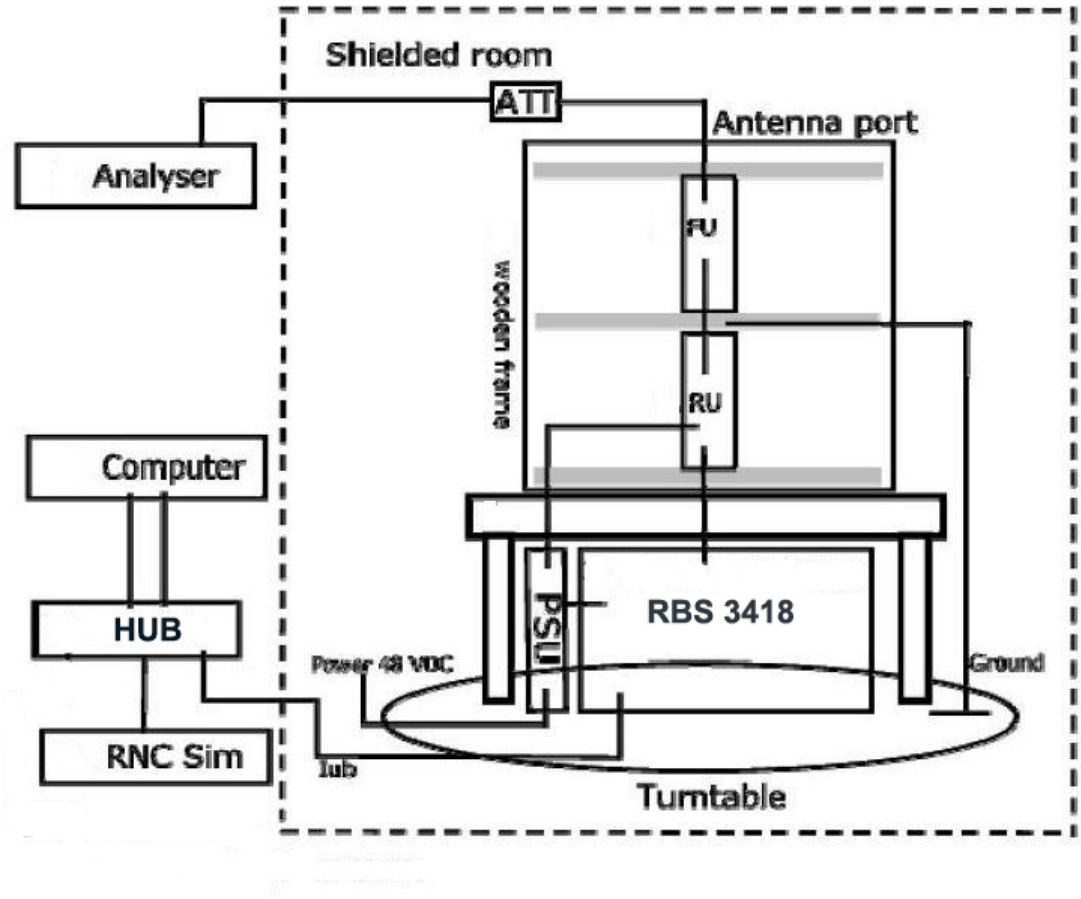


Test Object	Part Number	Version	Serial Number
Radio Unit	RU22 0860 / KRC 118 22/5	R1D	CC41435746
Filter Unit	FU12 08 / KRC 118 21/1	R3A	TU8F947507

Auxiliary Equipment	Part Number / Model Type	Version	Serial Number
Computer	SunBlade 1500	--	MT41130005
RBS 3418	1/BFE 401 1019	R1C	TA64037772
HUB	10 BASE-T Ethernet HUB	--	--
RNC Sim	4780A	REV:AAA	0208
PSU	BML 901 181/1	R1C	BG94007530
Power Metre	Rohde & Schwarz NRP	--	17-294752
Thermal Power Sensor	Rohde & Schwarz NRP-Z51	--	20-295642
Spectrum Analyzer	FSQ26	--	20-296112

Product Service

Test Setup, Radiated Measurement:



Test Object	Part Number	Version	Serial Number
Radio Unit	RU22 0860 / KRC 118 22/5	R1D	CC41435746
Filter Unit	FU12 08 / KRC 118 21/1	R3A	TU8F947507

Auxiliary Equipment	Part Number / Model Type	Version	Serial Number
Computer	SunBlade 1500	--	MT41130005
RBS 3418	1/BFE 401 1019	R1C	TA64037772
HUB	10 BASE-T Ethernet HUB	--	--
RNC Sim	4780A	REV:AAA	0208
PSU	BML 901 181/1	R1C	BG94007530
EMI Receiver	Rohde & Schwarz ESI 40	--	100015

Product Service

1.4.3 Modes of Operation

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

Mode 1 - ARFCN 4357: 871.4MHz (Bottom Channel)

Mode 2 - ARFCN 4407: 881.4MHz (Middle Channel)

Mode 3 - ARFCN 4458: 891.6MHz (Top Channel)

Mode 4 - ARFCN 4357 + 4407: 871.4MHz + 881.4MHz (Bottom Channel + Middle Channel)

Mode 5 - ARFCN 4407 + 4458: 881.4MHz + 891.6MHz (Middle Channel + Top Channel)

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 wooden frame, test laboratories or a chamber as appropriate.

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

1.6 DEVIATIONS FROM THE STANDARD

Full testing has not been carried out in accordance with the specifications because this report is to be used as justification for a Class II Permissive Change to the EUT for the hardware update of the PA Transistor. This report verifies maintained performance of the EUT for the affected characteristics according to the FCC CFR47 by re-testing the updated equipment as described in section 1.4.2.

1.7 MODIFICATION RECORD

No modifications were made to the EUT during testing.

1.8 ALTERNATIVE TEST SITE

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

Product Service

SECTION 2

TEST DETAILS

Limited FCC and Industry Canada Testing of the
Ericsson AB
RU22 0860 / KRC 118 22/5

Product Service

2.1 MAXIMUM PEAK OUTPUT POWER - CONDUCTED

2.1.1 Specification Reference

FCC CFR 47 Part 22, Clause 22.913(a)
Industry Canada RSS-132, Clause 4.4

2.1.2 Equipment Under Test

RU22 0860 / KRC 118 22/5, S/N: CC41435746

2.1.3 Date of Test and Modification State

19 and 26 August 2010 – 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 22 and Industry Canada RSS-132.

Using a power metre and attenuator(s), the output power of the EUT was measured at the antenna terminal. The carrier power was measured with QPSK modulation and all of the timeslots working.

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

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

Configuration 1 - Mode 1
- Mode 2
- Mode 3
- Mode 4
- Mode 5

2.1.6 Environmental Conditions

	19 August 2010	26 August 2010
Ambient Temperature	26.3°C	28.7°C
Relative Humidity	59.4%	57.8%

Product Service

2.1.7 Test Results

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

The test results are shown below

Single Carrier: Configuration 1 - Mode 1, 2 and 3

Bandwidth: 5MHz

Channel	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
Bottom	871.4	41.4	47.60	57.54
Middle	881.4	41.4	47.58	57.28
Top	891.6	41.4	47.59	57.41

Bandwidth: 4.2MHz

Channel	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
Bottom	871.4	41.4	47.61	57.68
Middle	881.4	41.4	47.53	56.62
Top	891.6	41.4	47.47	55.85

Multi Carrier: Configuration 1 - Mode 4 and 5

Bandwidth: 5MHz

Channel	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
Bottom & Middle	871.4 & 881.4	41.4	47.66	58.34
Middle & Top	881.4 & 891.6	41.4	47.62	57.81

Bandwidth: 4.2MHz

Channel	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
Bottom & Middle	871.4 & 881.4	41.4	47.37	54.58
Middle & Top	881.4 & 891.6	41.4	47.51	56.36

Limit	≤500W or <+57dBm

Remarks

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

2.2 OCCUPIED BANDWIDTH

2.2.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1049(h)
FCC CFR 47 Part 22, Clause 22.917(b)
Industry Canada RSS-GEN, Clause 4.6.1

2.2.2 Equipment Under Test

RU22 0860 / KRC 118 22/5, S/N: CC41435746

2.2.3 Date of Test and Modification State

18, 19 and 26 August 2010 – 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 2 and Part 22 and Industry Canada RSS-GEN.

The EUT was transmitting at maximum power, modulated with all timeslots active. Using a resolution bandwidth of 50kHz and a video bandwidth of 500kHz. The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.The –26dBc points were also established and the emission bandwidth determined.

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

Configuration 1 - Mode 1
- Mode 2
- Mode 3

2.2.6 Environmental Conditions

	18 August 2010	19 August 2010	26 August 2010
Ambient Temperature	25.0°C	26.3°C	28.7°C
Relative Humidity	66.2%	59.4%	57.8%

Product Service

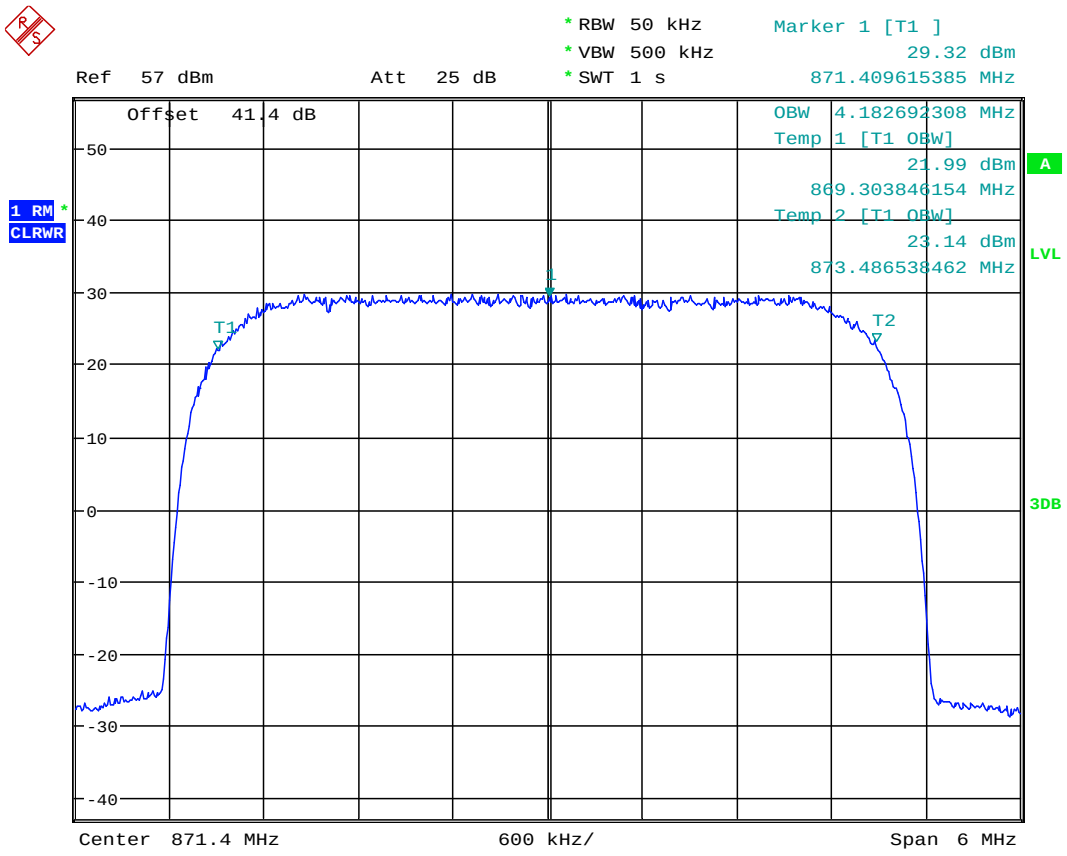
2.2.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 22 and Industry Canada RSS-132 for Occupied Bandwidth.

The test results are shown below

Bandwidth: 5MHz

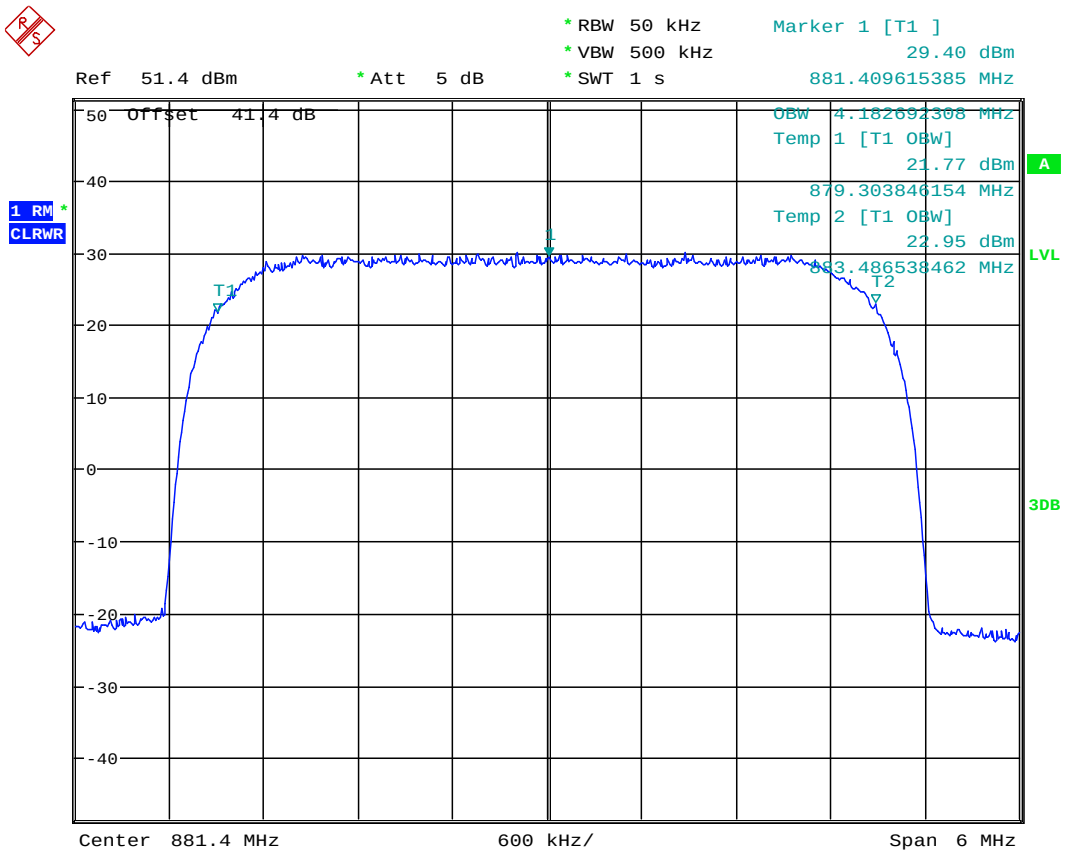
Single Carrier: Configuration 1 - Mode 1



Date: 19.AUG.2010 07:45:00

Product Service

Single Carrier: Configuration 1 - Mode 2



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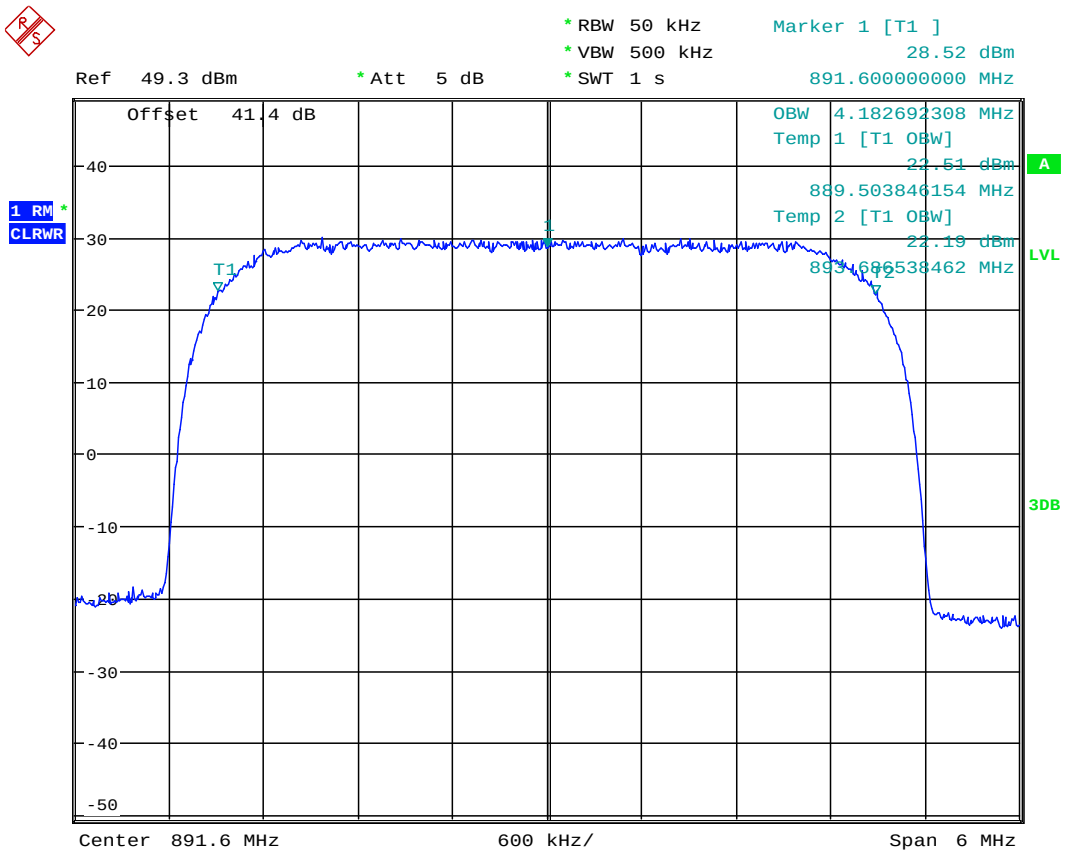
Product Service

Single Carrier: Configuration 1 - Mode 3



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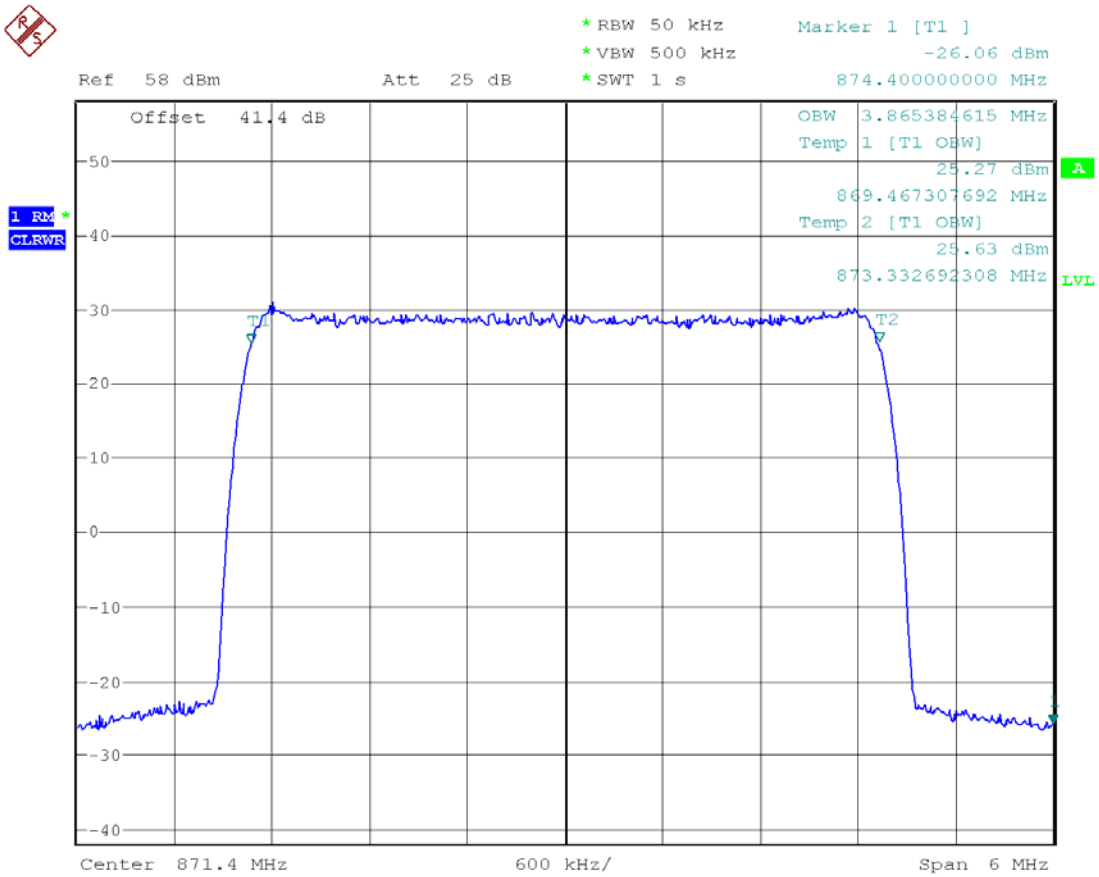
Product Service

Bandwidth: 4.2MHz

Single Carrier: Configuration 1 - Mode 1



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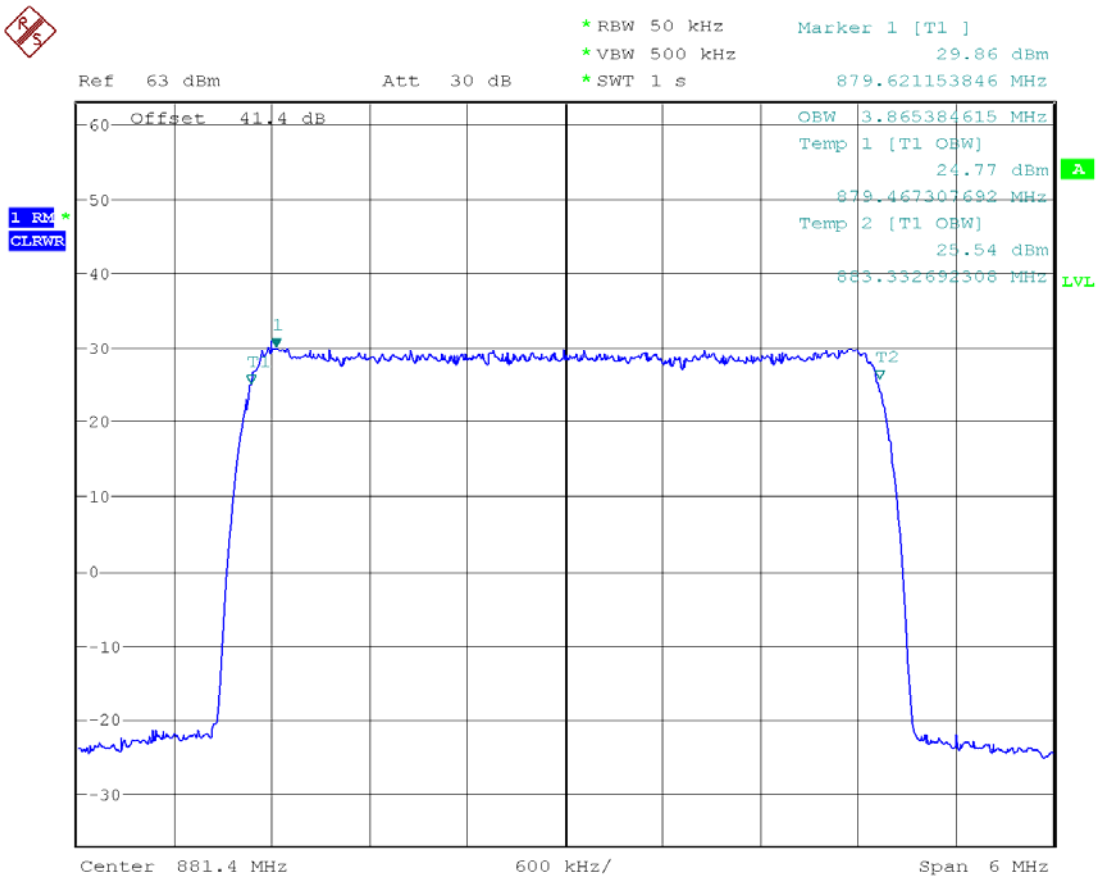
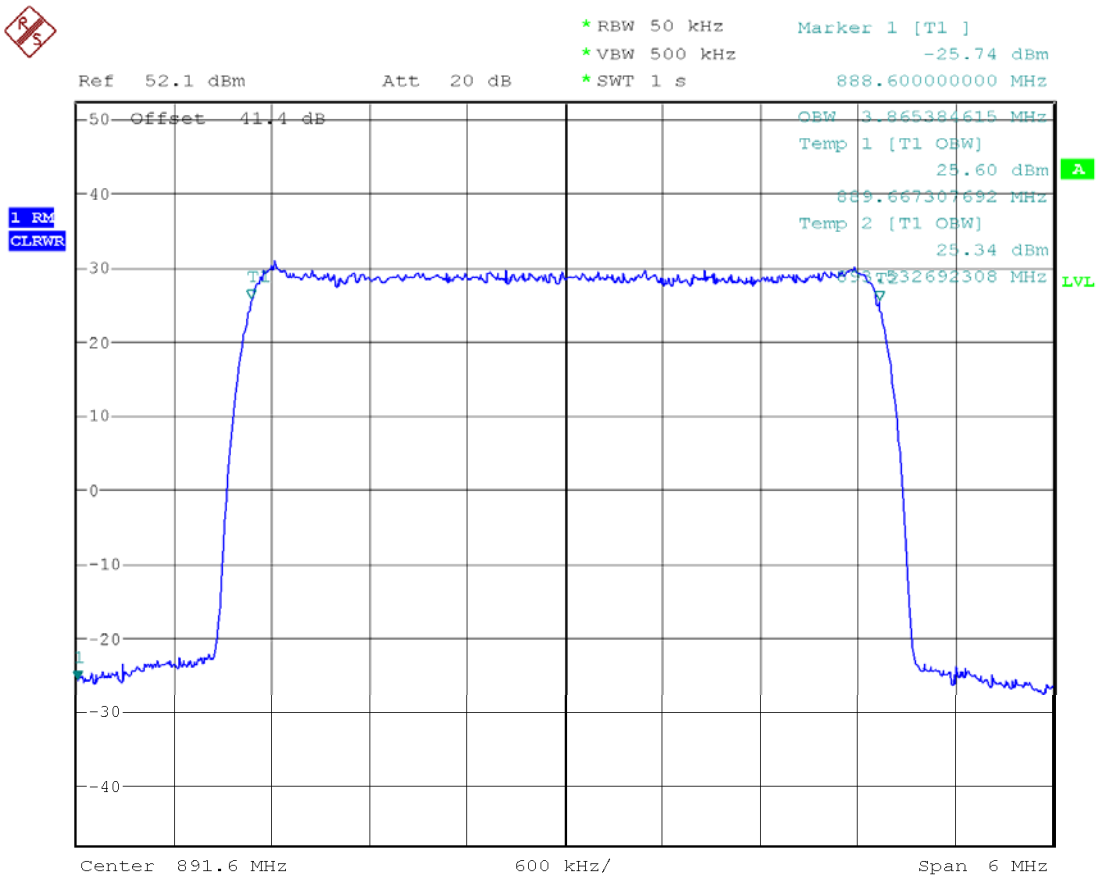
Product Service

Single Carrier: Configuration 1 - Mode 2



Product Service

Single Carrier: Configuration 1 - Mode 3



Date: 26.AUG.2010 15:03:04

2.3 SPURIOUS EMISSIONS AT 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 4.5

2.3.2 Equipment Under Test

RU22 0860 / KRC 118 22/5, S/N: CC41435746

2.3.3 Date of Test and Modification State

18 and 19 August 2010 – 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 26dB bandwith was used for the resolution and video bandwidths up to 1MHz away from the block edge. At greater than 1MHz the resolution and video bandwidths were increased to 1MHz. A resolution bandwidth of 30kHz was used up to 3.25MHz away from the band edge. 30kHz is <1% of the Emission BW (4.7MHz between the 26dB points). To compensate for the reduced measurement bandwidth, the limit was adjuested with 2dB to -15dBm The up to 1MHz away from the band edges. Spectrum analyser detector was set as RMS.

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

The EUT was tested at it's maximum power level with all timeslots active.

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

Configuration 1 - Mode 1
- Mode 3
- Mode 4
- Mode 5

2.3.6 Environmental Conditions

	18 August 2010	19 August 2010
Ambient Temperature	25.0°C	26.3°C
Relative Humidity	66.2%	59.4%

Product Service

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: Configuration 1 - Mode 1 & 3

Channel (MHz)	Edge Test with QPSK modulation Channel No./Frequencies
Bottom 871.4	Channel: 4357 Frequency: 869MHz
Top 891.6	Channel: 4458 Frequency : 894MHz

Single Carrier: Configuration 1 - Mode 4 & 5

Channel (MHz)	Edge Test with QPSK modulation Channel No./Frequencies
Bottom 871.4	Channel: 4357 Frequency: 869MHz
Top 891.6	Channel: 4458 Frequency : 894MHz

Multi Carrier: Configuration 1 - Mode 1 & 3

Channel (MHz)	Edge Test with QPSK modulation Channel No./Frequencies
Bottom 871.4	Channel: 4357 Frequency: 869MHz
Top 891.6	Channel: 4458 Frequency : 894MHz

Multi Carrier: Configuration 1 - Mode 4 & 5

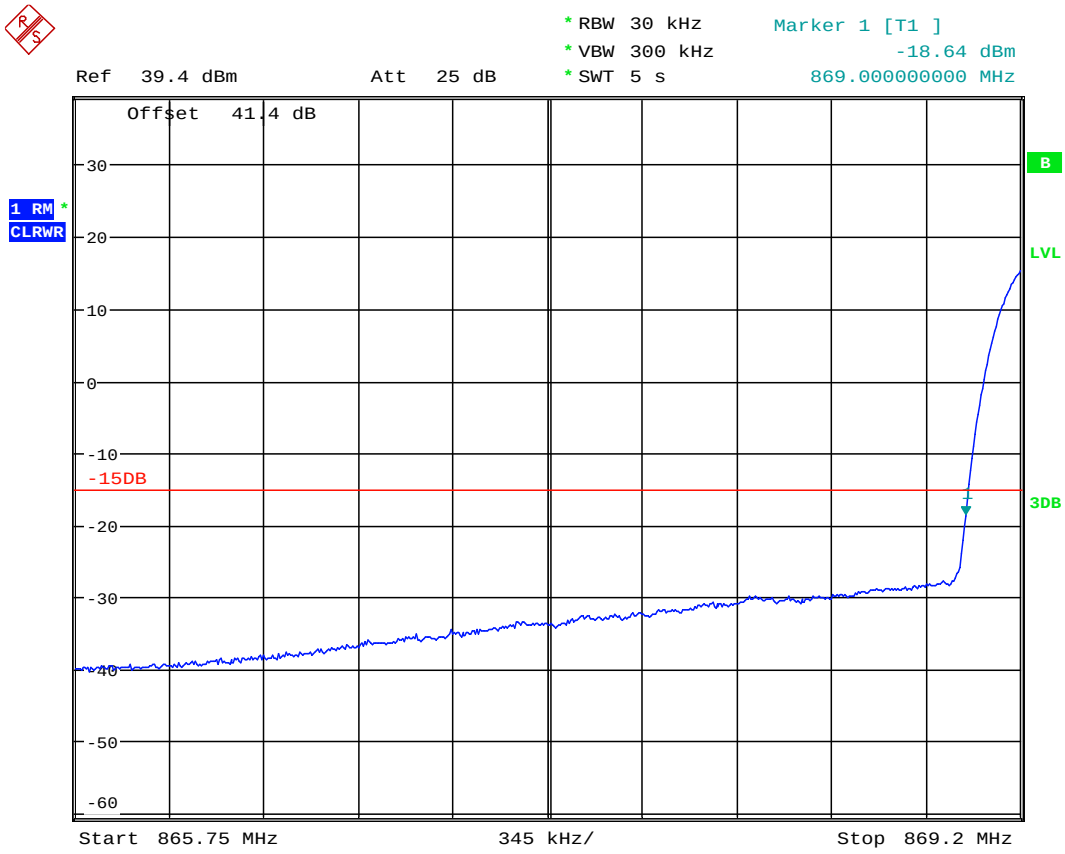
Channel (MHz)	Edge Test with QPSK modulation Channel No./Frequencies
Bottom 871.4	Channel: 4357 Frequency: 869MHz
Top 891.6	Channel: 4458 Frequency : 894MHz

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

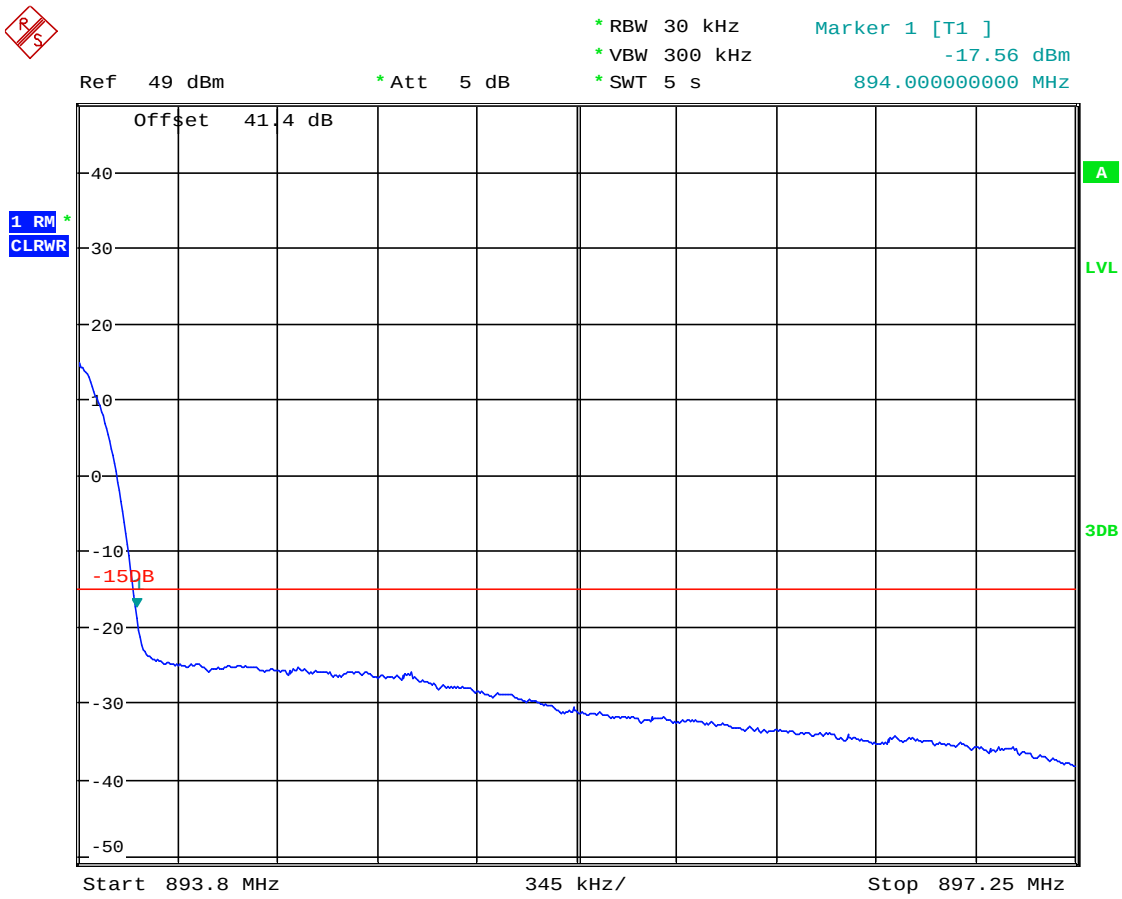
Single Carrier: Configuration 1 - Mode 1



Date: 19.AUG.2010 07:50:20

Product Service

Single Carrier: Configuration 1 - Mode 3



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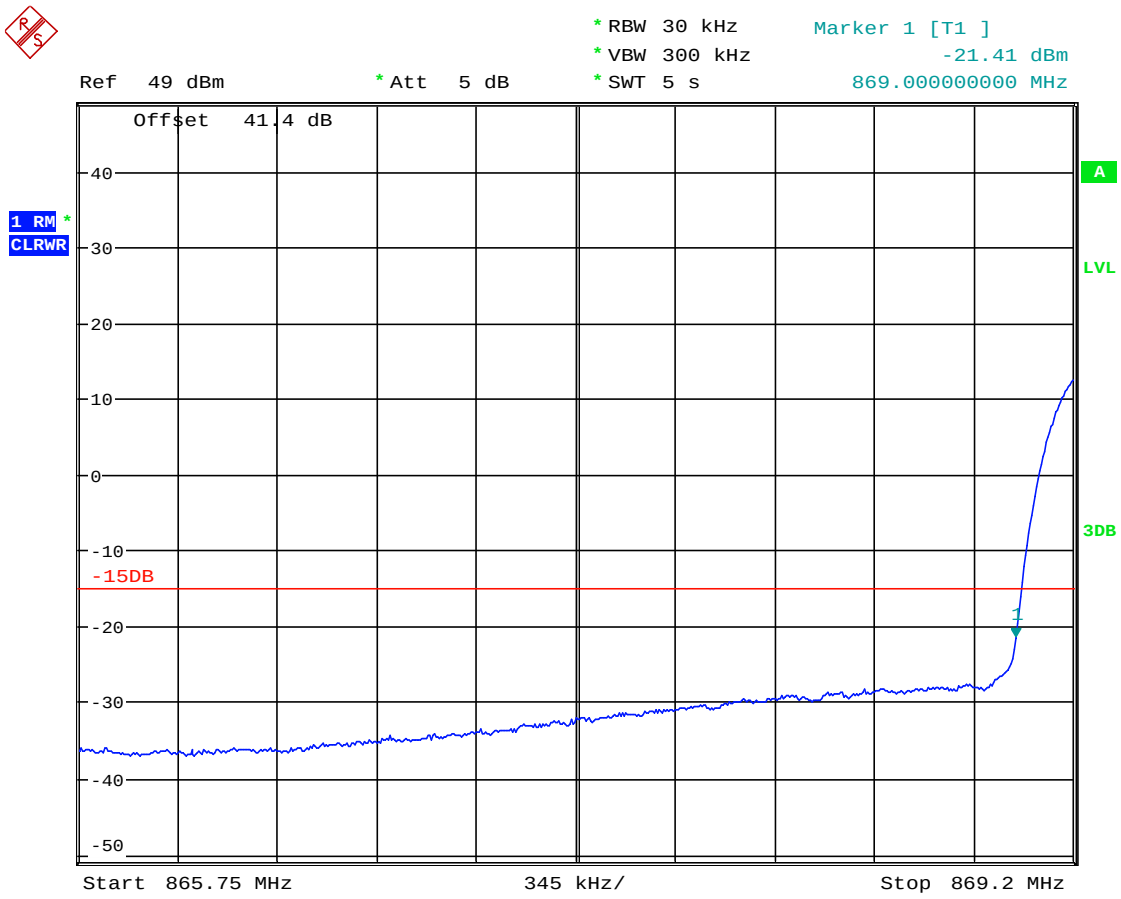
Multi Carrier: Configuration 1 - Mode 4



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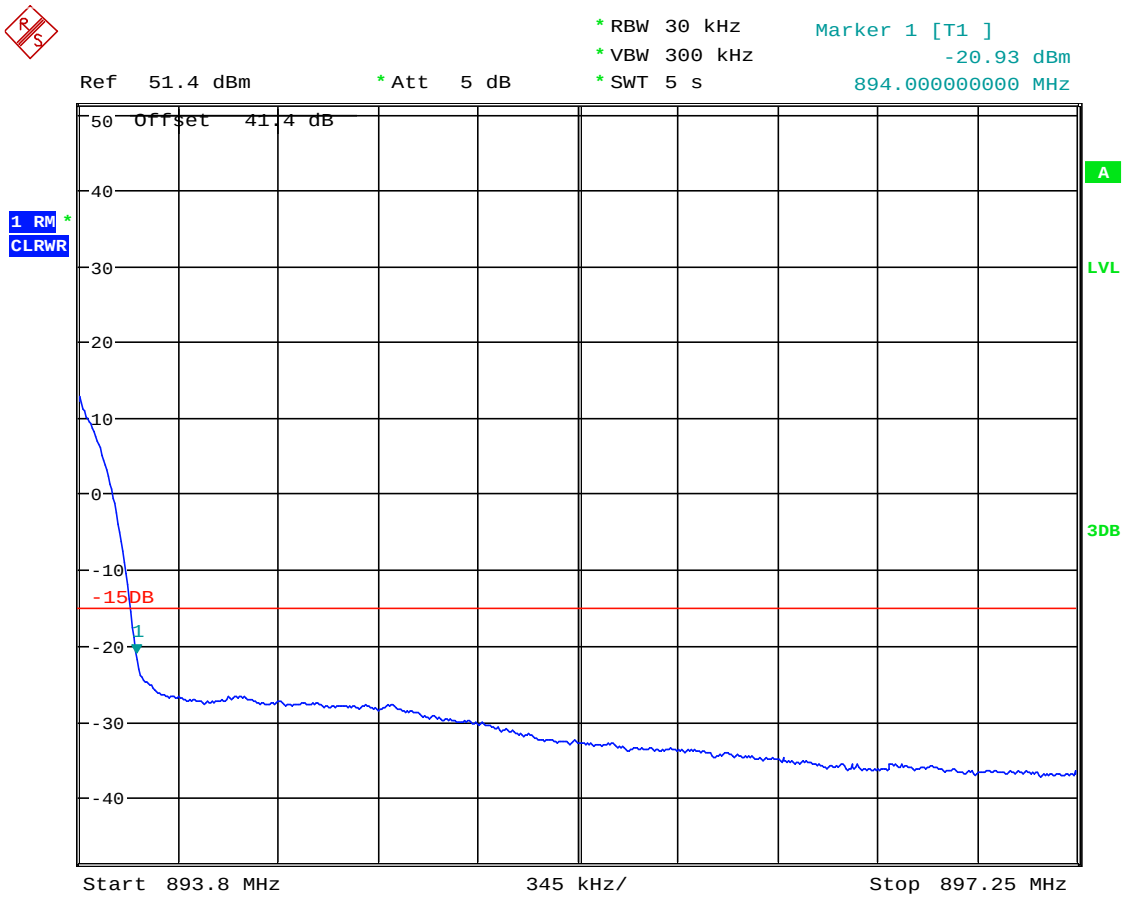
Multi Carrier: Configuration 1 - Mode 5



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, 22.917(a)
Industry Canada RSS-132, Clause 4.5

2.4.2 Equipment Under Test

RU22 0860 / KRC 118 22/5, S/N: CC41435746

2.4.3 Date of Test and Modification State

23 August 2010 – 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.

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 was displayed, showing the -13dBm

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
- Mode 2
- Mode 3
- Mode 4
- Mode 5

Product Service

2.4.6 Environmental Conditions

	23 August 2010
Ambient Temperature	28.4°C
Relative Humidity	49.6%

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.

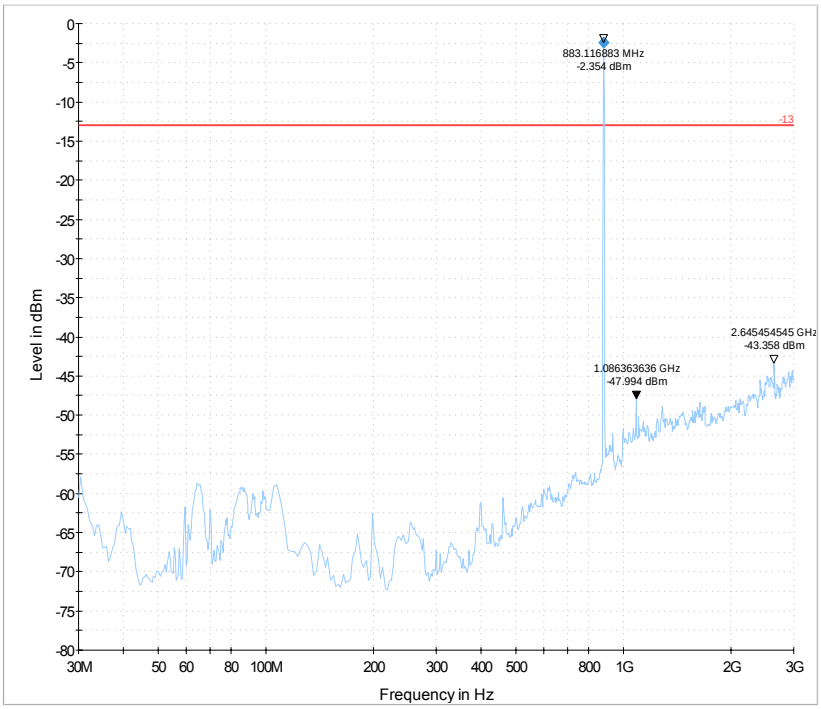
The test results are shown below

Single Carrier: Configuration 1 - Mode 1

No emissions were detected within 30dB of the limit.

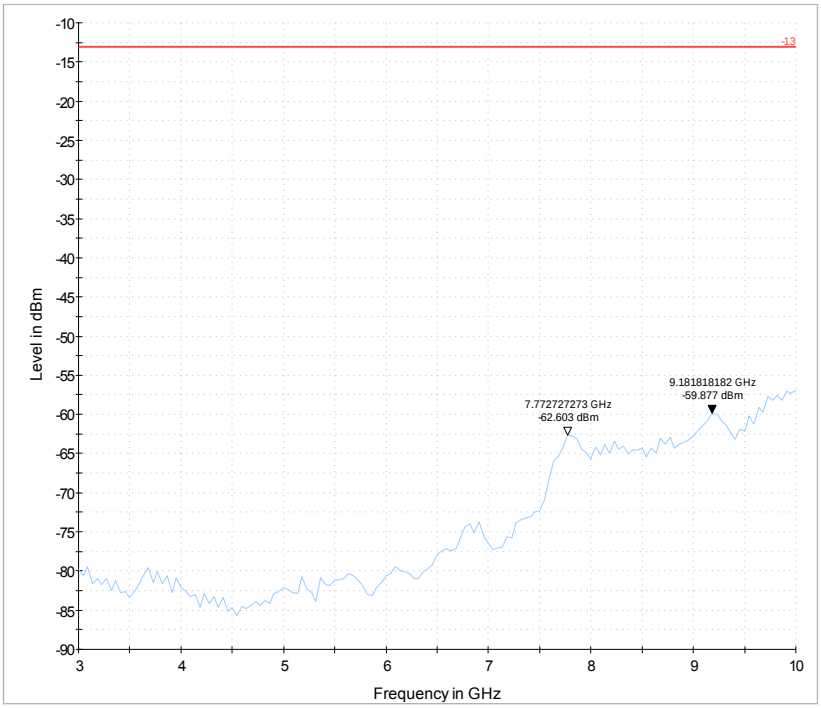
Single Carrier: Configuration 1 - Mode 2

30MHz to 3GHz



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

3GHz to 10GHz



Single Carrier: Configuration 1 - Mode 3

No emissions were detected within 30dB of the limit.

Multi Carrier: Configuration 1 - Mode 4

No emissions were detected within 30dB of the limit.

Multi Carrier: Configuration 1 - Mode 5

No emissions were detected within 30dB of the limit.

Limit	-13dBm

Remarks

The EUT does not exceed -13dBm 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, 22.917(a)
Industry Canada RSS-132, Clause 4.5

2.5.2 Equipment Under Test

RU22 0860 / KRC 118 22/5, S/N: CC41435746

2.5.3 Date of Test and Modification State

18 August and 03 September 2010 – 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 a combination of a filter and attenuators and the frequency spectrum investigated from 9kHz to 10GHz. The EUT was set to transmit on maximum power. The EUT was tested on Bottom, Middle and Top channels for QPSK modulation type. The resolution was set to 1MHz for 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..

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 fundamental.

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

Configuration 1 - Mode 1
- Mode 2
- Mode 3
- Mode 4
- Mode 5

Product Service

2.5.6 Environmental Conditions

	18 August 2010	03 September 2010
Ambient Temperature	25.0°C	25.0°C
Relative Humidity	66.2%	56.8%

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 Radiated Spurious Emissions.

The test results are shown below

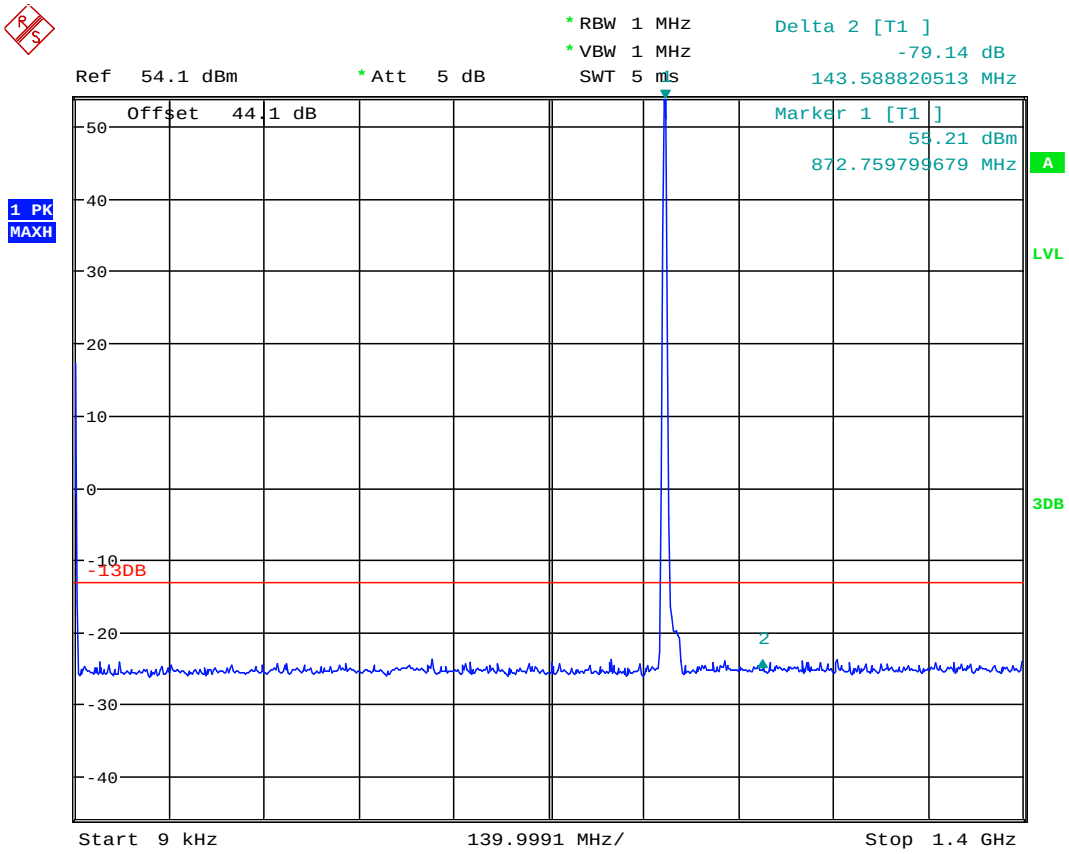
Remark:

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: Configuration 1 - Mode 1

9kHz to 1.4GHz

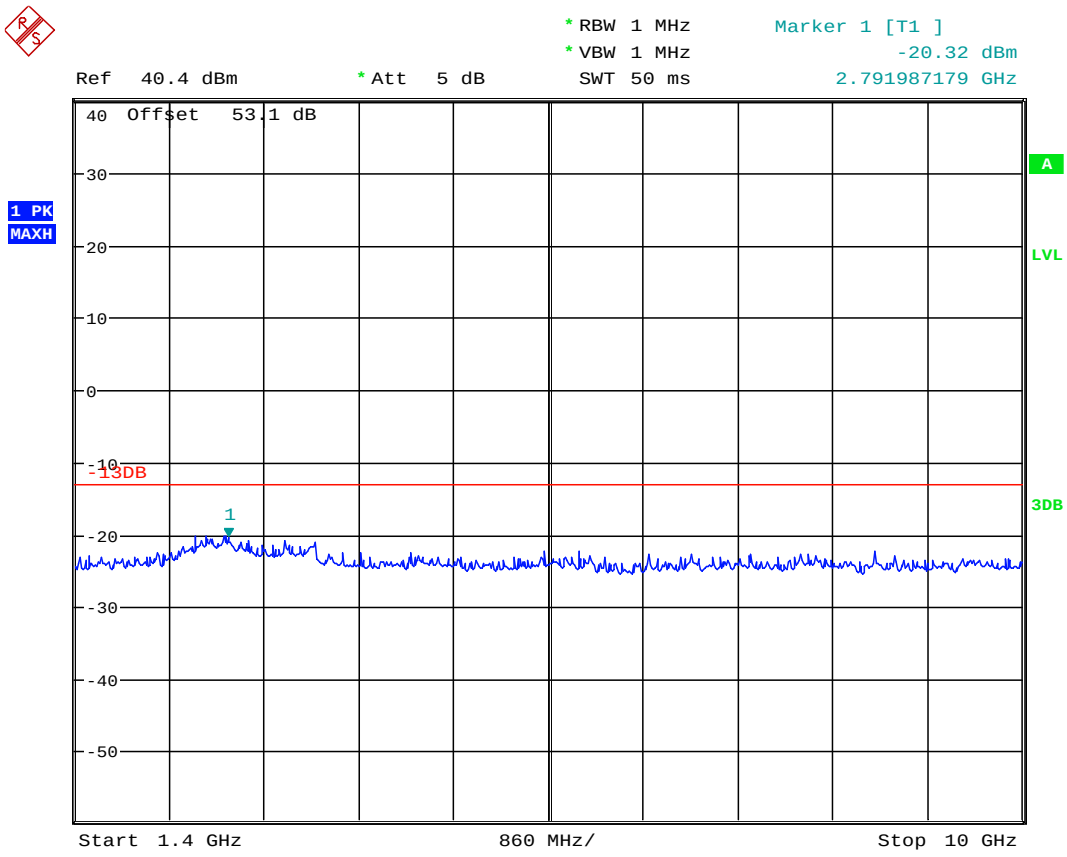


Date: 18.AUG.2010 05:21:40

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

Product Service

1.4GHz to 10GHz

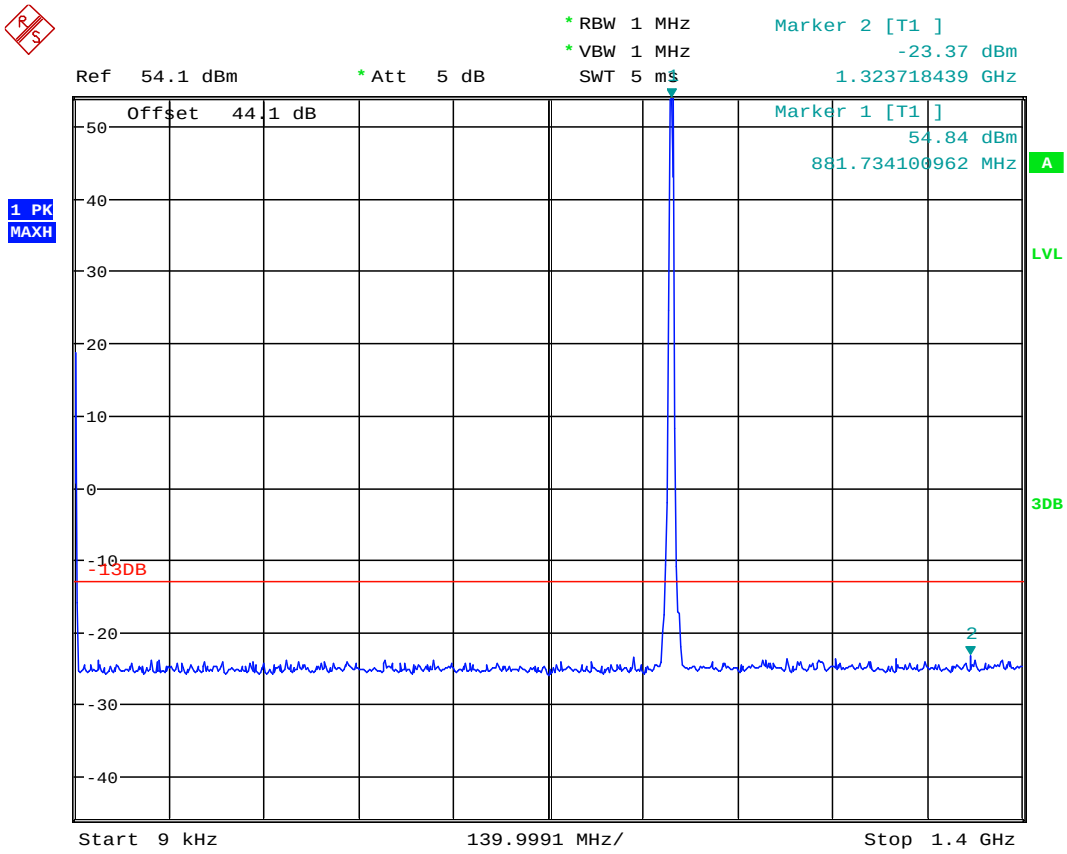


Date: 18.AUG.2010 05:12:24

Product Service

Single Carrier: Configuration 1 - Mode 2

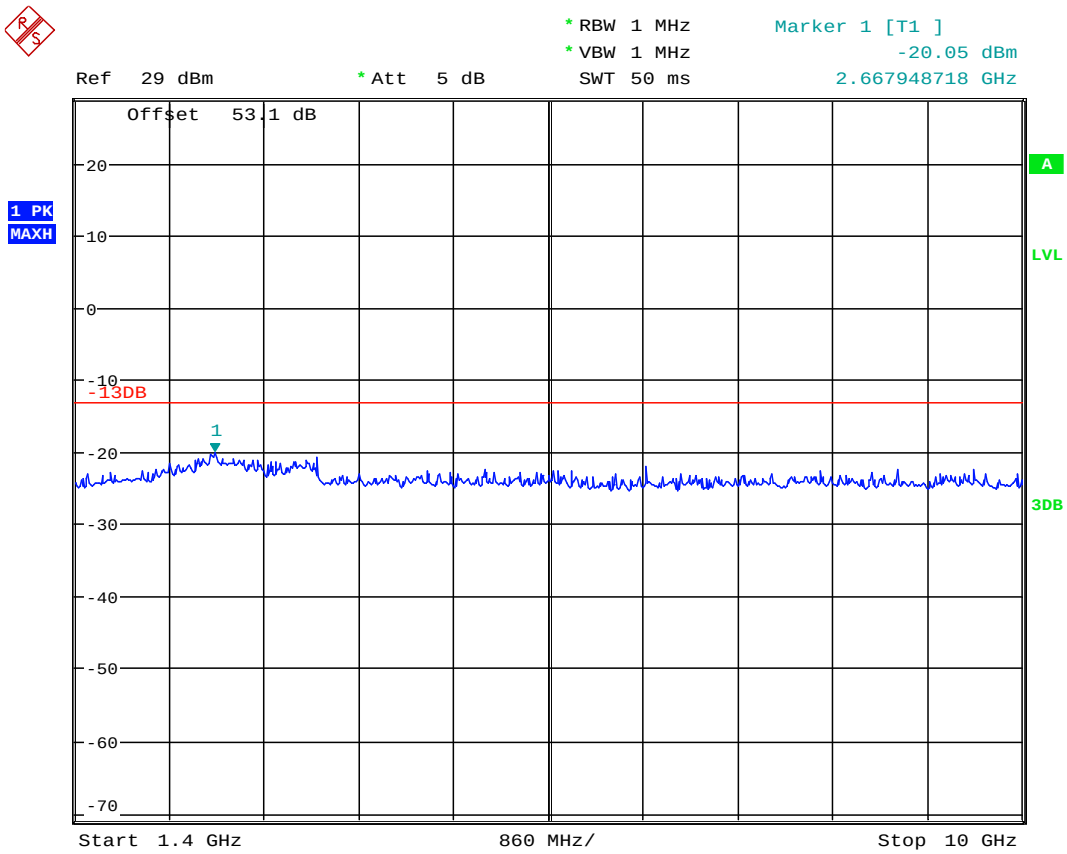
9kHz to 1.4GHz



Date: 18.AUG.2010 05:31:36

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

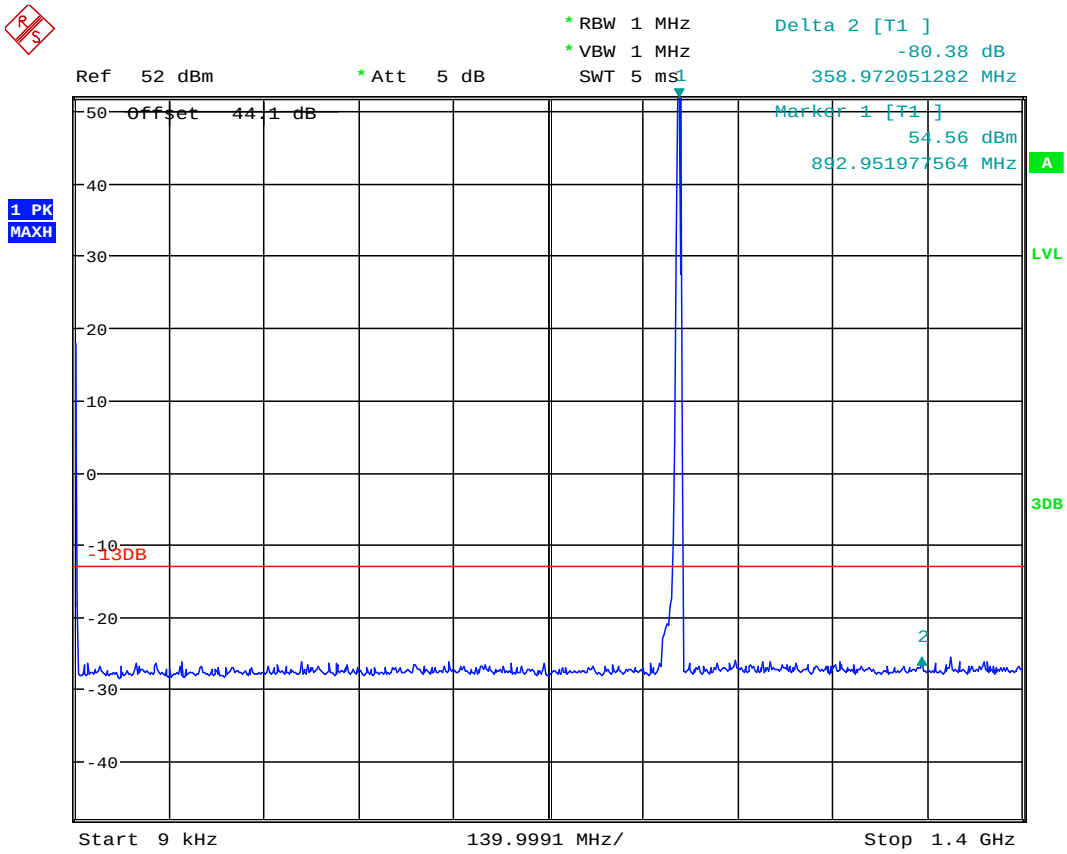
1.4GHz to 10GHz



Date: 18.AUG.2010 07:28:49

Single Carrier: Configuration 1 - Mode 3

9kHz to 1.4GHz

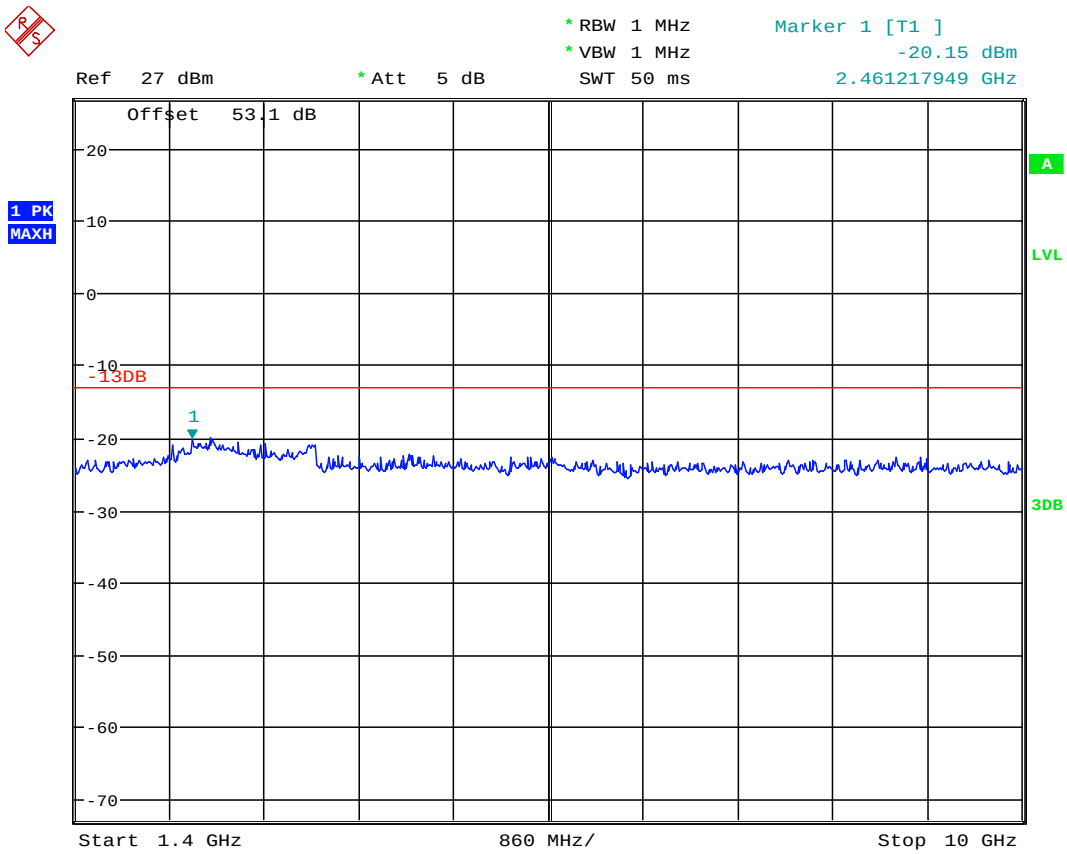


Date: 18.AUG.2010 07:45:08

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

Product Service

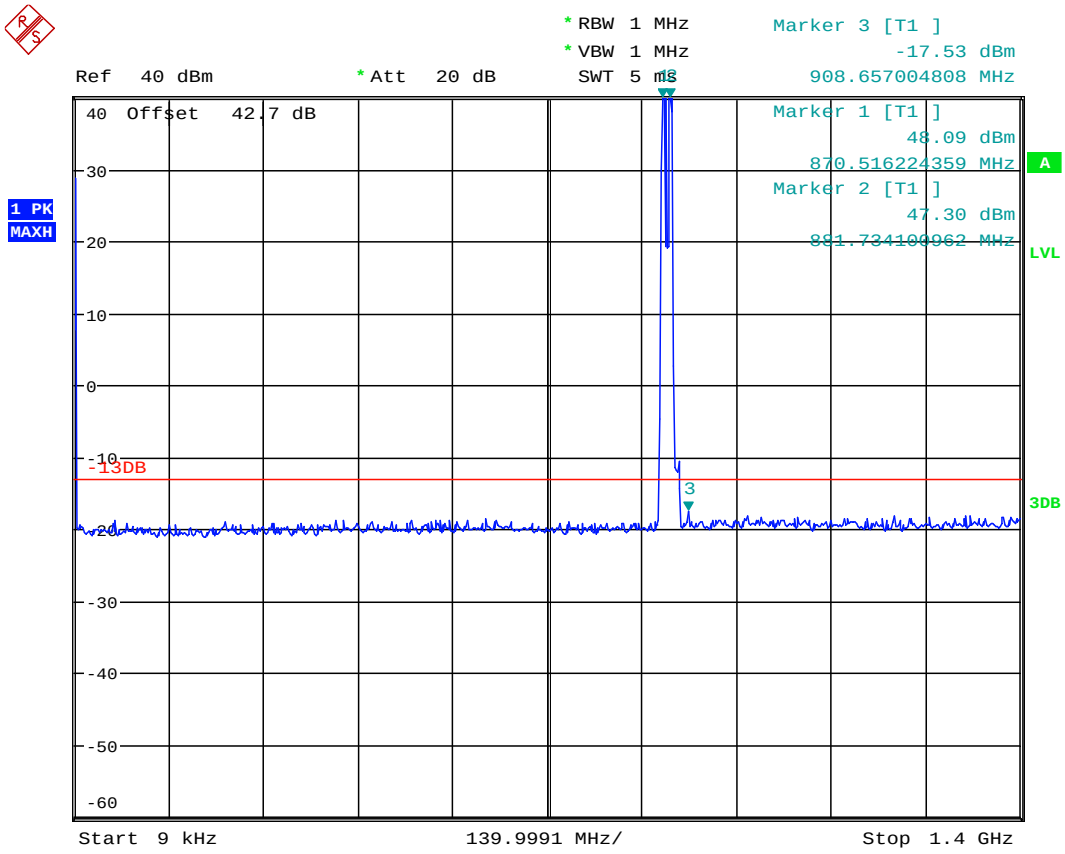
1.4GHz to 10GHz



Date: 18.AUG.2010 07:39:21

Multi Carrier: Configuration 1 - Mode 4

9kHz to 1.4GHz

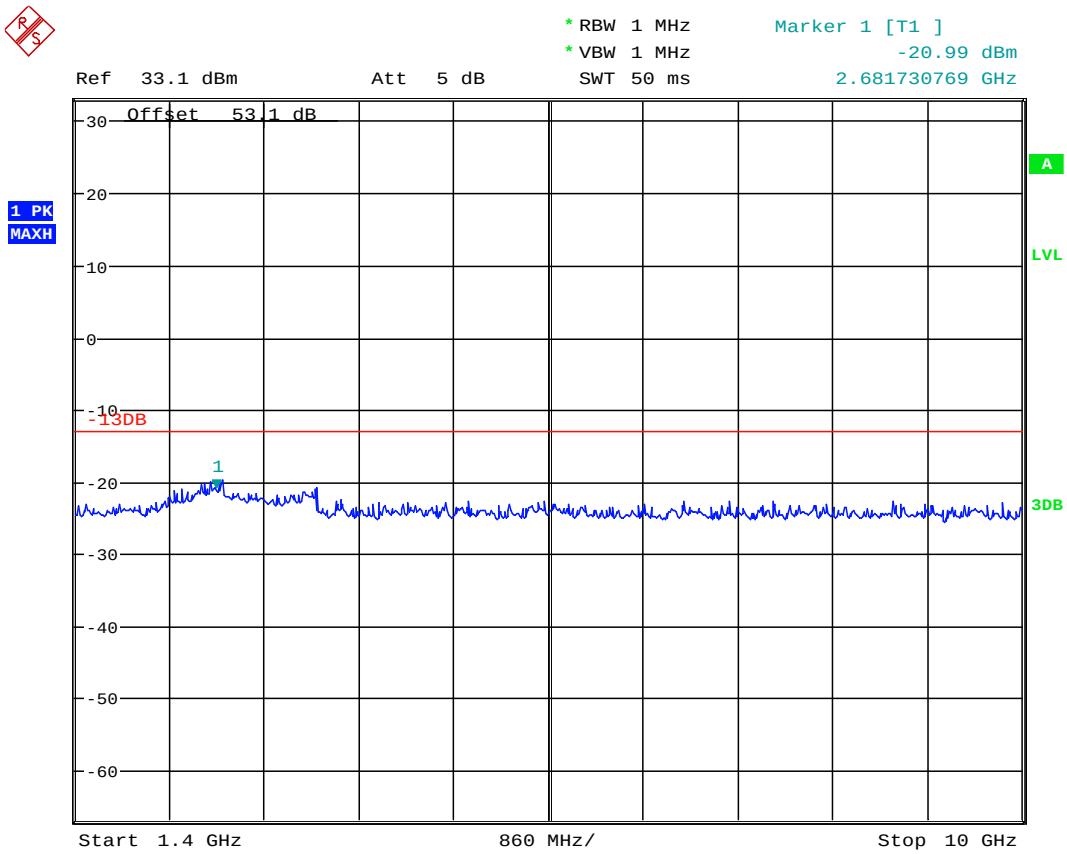


Date: 3.SEP.2010 08:52:40

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

Product Service

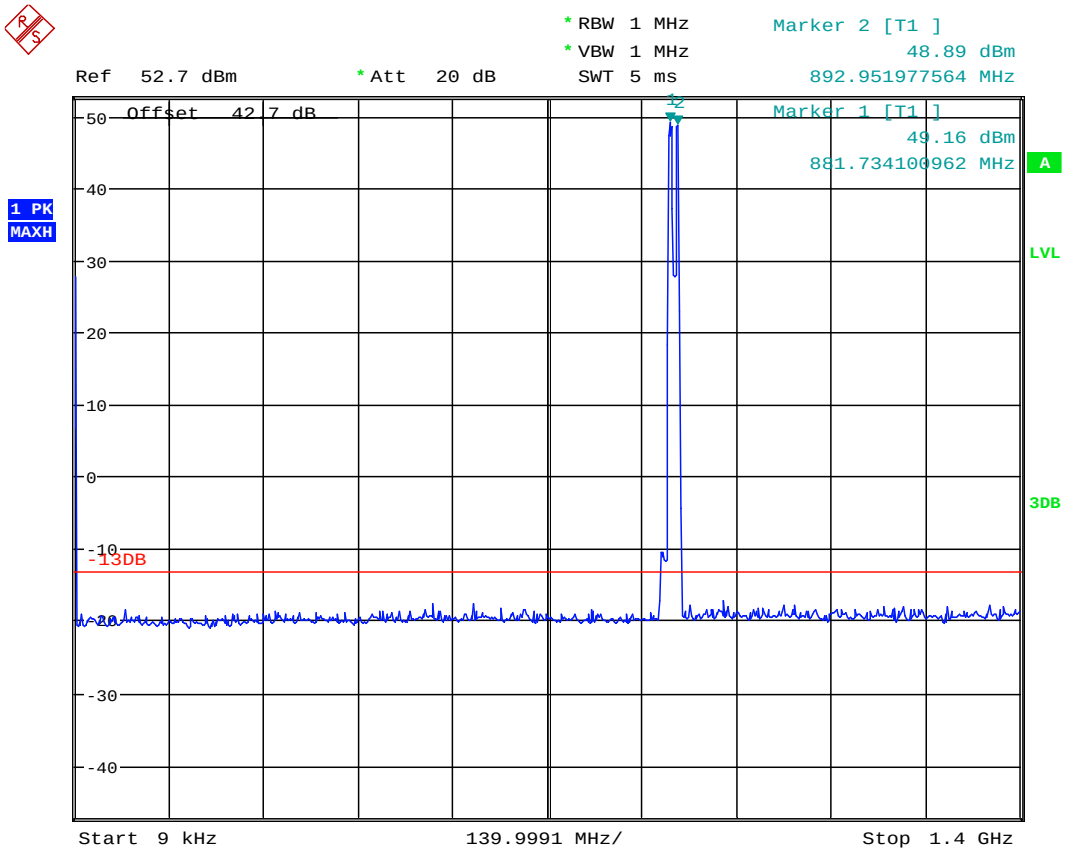
1.4GHz to 10GHz



Date: 18.AUG.2010 09:33:18

Multi Carrier: Configuration 1 - Mode 5

9kHz to 1.4GHz

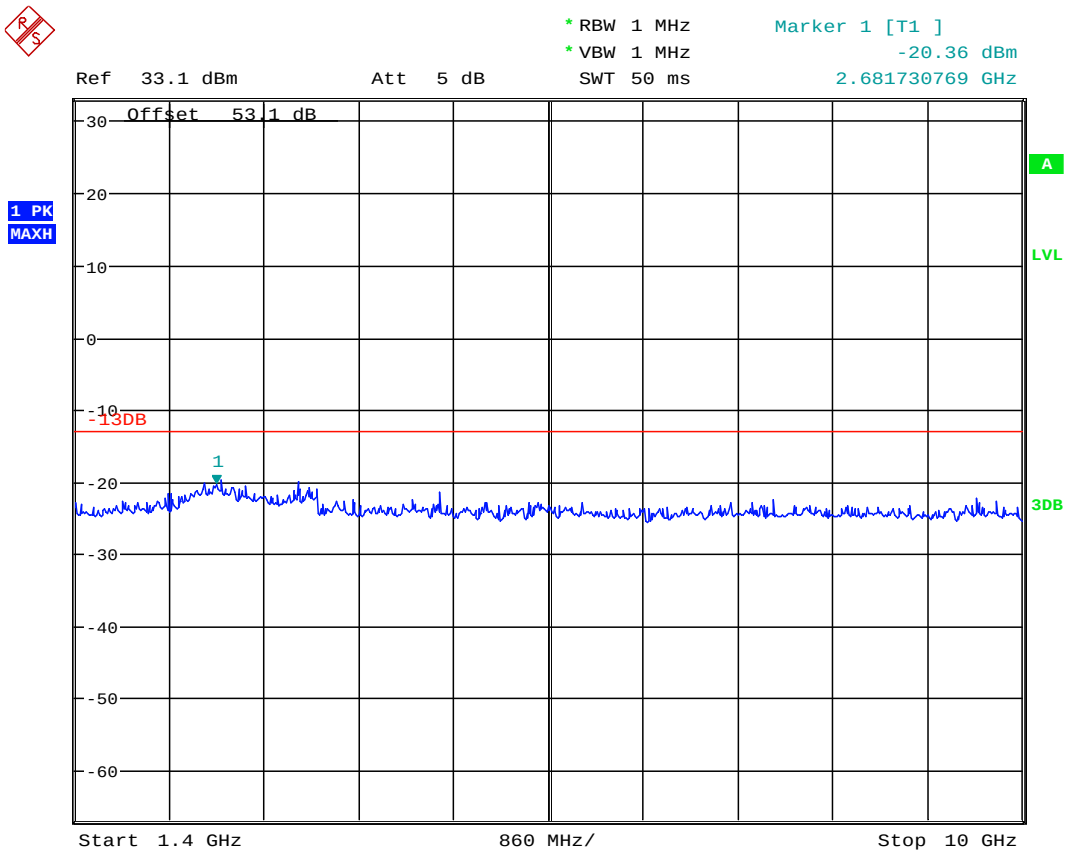


Date: 3.SEP.2010 08:38:25

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

Product Service

1.4GHz to 10GHz



Date: 18.AUG.2010 09:26:34

Limit	-13dBm

Remarks

The EUT does not exceed -13dBm at the frequency range of 9kHz to 10GHz.

Product Service

2.6 RECEIVER SPURIOUS EMISSIONS

2.6.1 Specification Reference

FCC CFR 47 Part 15, Clause 15.111
Industry Canada RSS 132, Clause 4.6

2.6.2 Equipment Under Test

RU22 0860 / KRC 118 22/5, S/N: CC41435746

2.6.3 Date of Test and Modification State

18 August 2010 – 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: and Industry Canada RSS 132.

In accordance with RSS-Gen Clause 6(b), the receiver spurious emissions from the antenna terminal were measured. Measurments were performed on the receiver antenna connector Ant B. The EUT was set to transmitter mode on the TX connector Ant A and during the measurement the Ant A was terminated with match load.

The resolution was set to 100kHz in the frequency range 9kHz to 1GHz and 1MHz in the frequency range 1GHz to 5GHz thus meeting the requirements of RSS-Gen Clause 6(b). The spectrum analyser detector was set to peak and trace was kept on Max Hold. The limit line was displayed, showing the –57dBm, 2 nanowatts in band 30MHz to 1GHz and -53dBm, 5 nanowatts above 1GHz.

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

In addition, measurements were made from 9kHz up to the 5th harmonic of the fundamental.

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

Configuration 1 - Mode 1
- Mode 2
- Mode 3

2.6.6 Environmental Conditions

	18 August 2010
Ambient Temperature	25.0°C
Relative Humidity	66.2%

Product Service

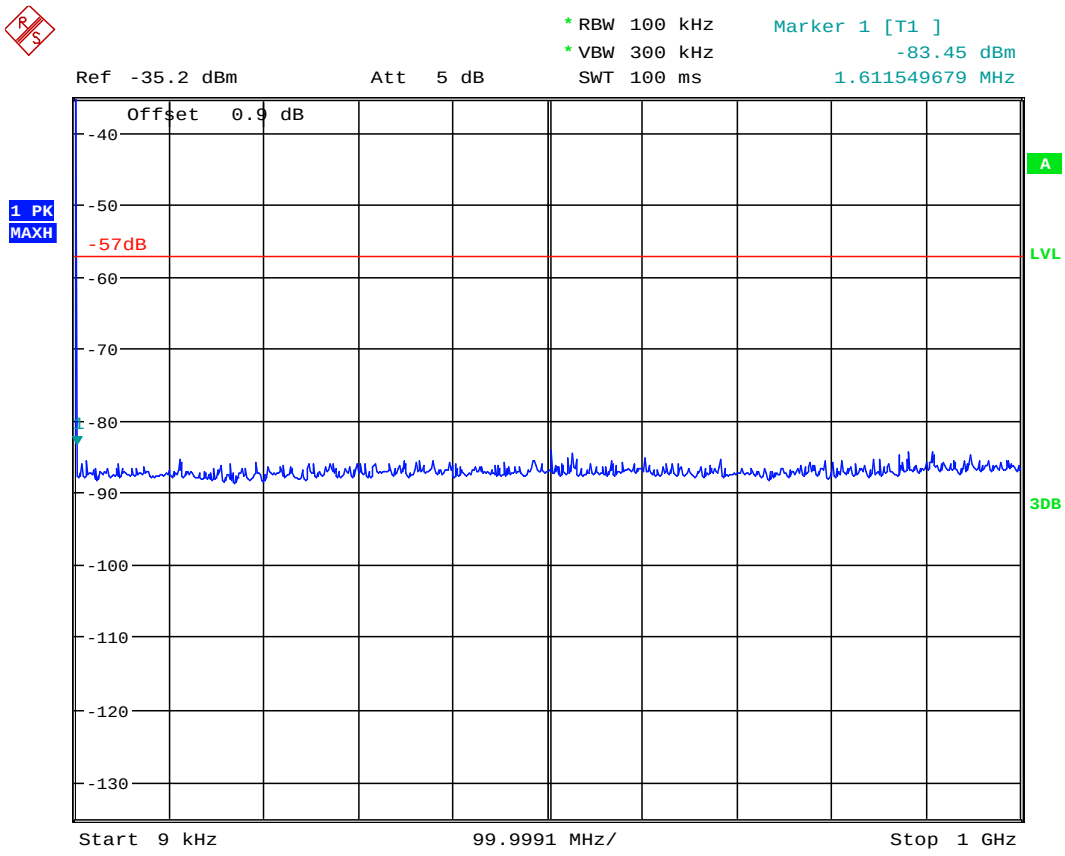
2.6.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 15 and Industry Canada RSS 132 for Receiver Spurious Emissions.

The test results are shown below

Single Carrier: Configuration 1 - Mode 1

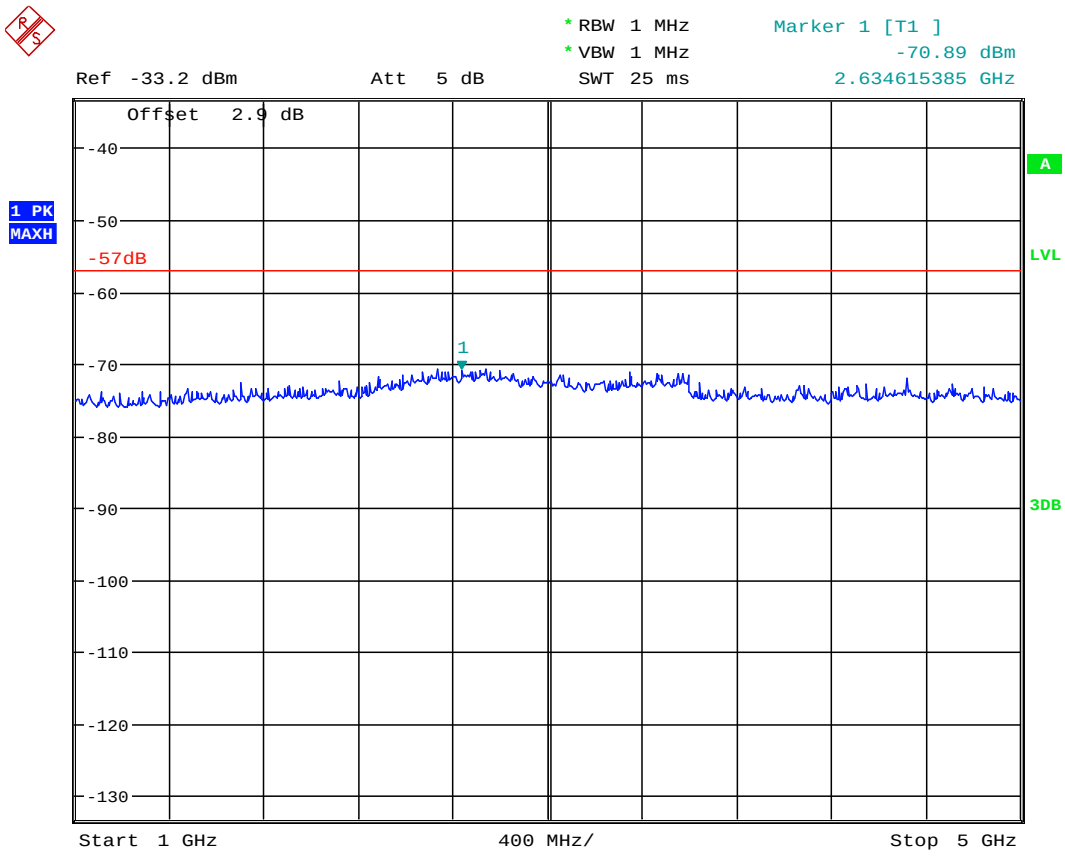
9kHz to 1GHz



Date: 18.AUG.2010 10:27:37

Product Service

1GHz to 5GHz

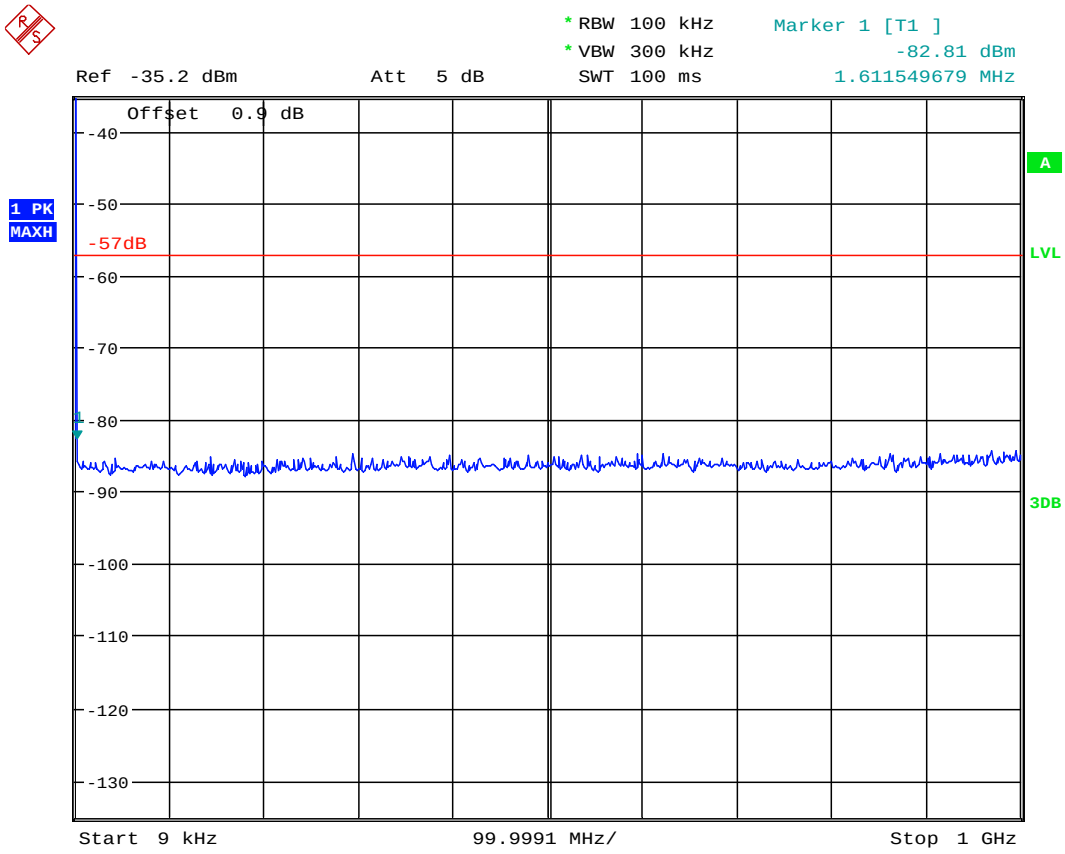


Date: 18.AUG.2010 10:26:58

Product Service

Single Carrier: Configuration 1 - Mode 2

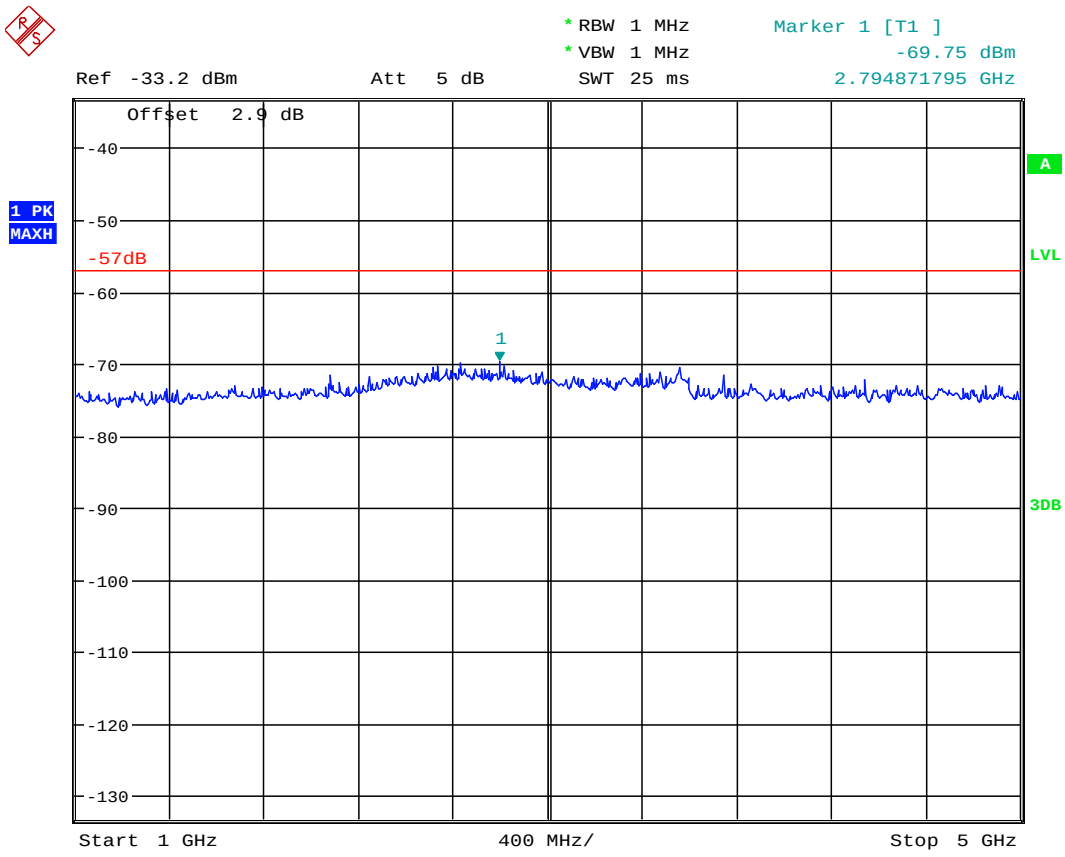
9kHz to 1GHz



Date: 18.AUG.2010 10:21:37

Product Service

1GHz to 5GHz

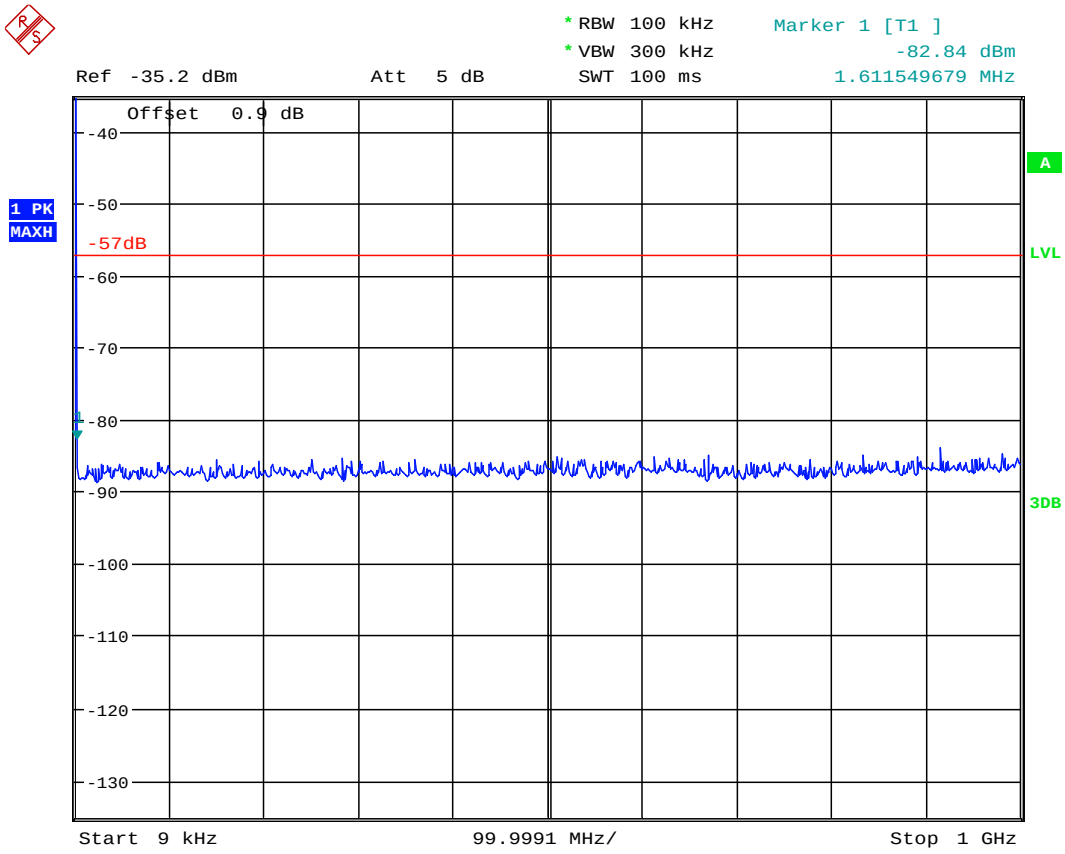


Date: 18.AUG.2010 10:22:29

Product Service

Single Carrier: Configuration 1 - Mode 3

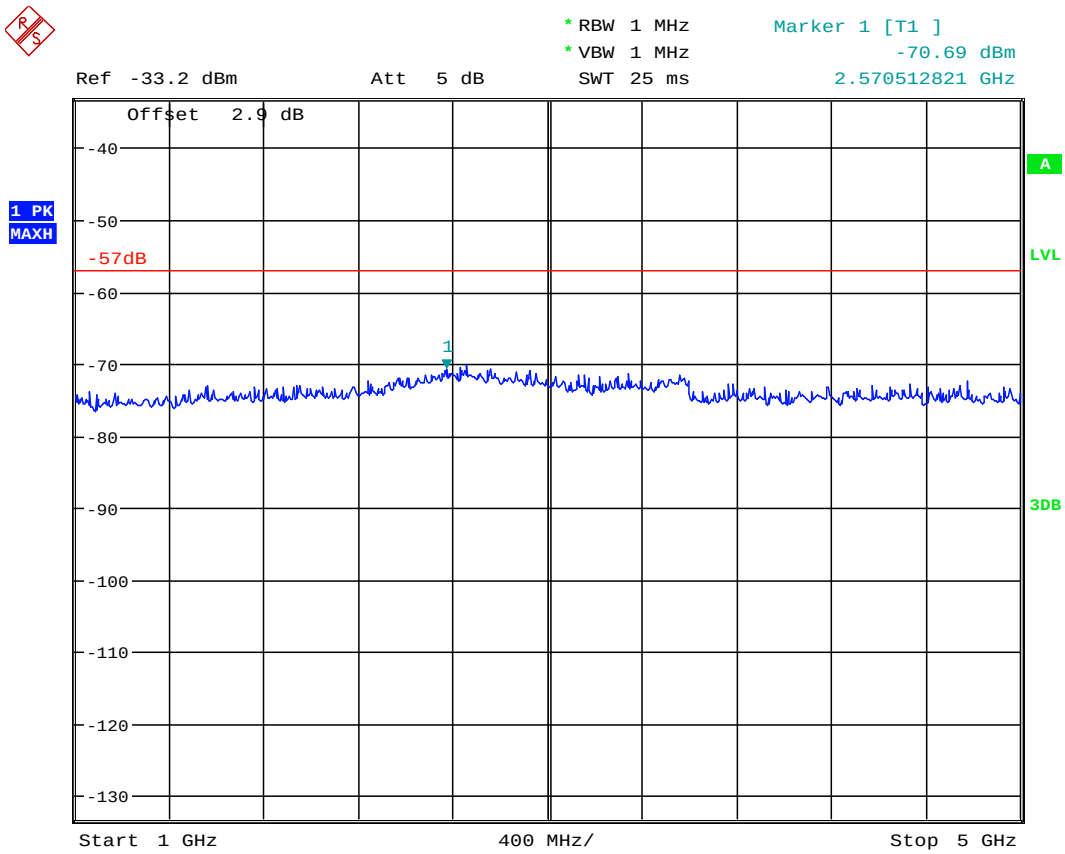
9kHz to 1GHz



Date: 18.AUG.2010 10:31:46

Product Service

1GHz to 5GHz



Date: 18.AUG.2010 10:32:29

Limit	-57dBm (30MHz-1GHz) and -53dBm (above 1GHz)

Remarks

The EUT does not exceed -57dBm at the frequency range of 9kHz to 5GHz.

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 Due
Section 2.1, 2.2, 2.3, 2.5, and 2.6 – Maximum Conducted Output Power, Occupied Bandwidth, Spurious Emissions at Antenna Terminals (±1MHz), Conducted Spurious Emissions and Receiver Spurious Emissions.				
Spectrum Analyser	Rohde & Schwarz	FSQ26	20-296112	2011/06/09
Spectrum Analyser	Rohde & Schwarz	FSQ26	200235	2011/04/26
Power Metre	Rohde & Schwarz	NRP	17-294752	2011/05/26
Thermal Power Sensor	Rohde & Schwarz	NRP-Z51	20-295642	2011/06/07
Network Analyzer	Agilent	8720D	US38431317	2010/10/26
40dB Attenuator	SHX	DTS100	04051204	O/P MON
Load	SHX	TF100GH	08050604	O/P MON
Load	Shanghai Huaxiang	TF100	09121619	O/P MON
High Pass Filter	K&L	5PH1-1400 / U12750	7	O/P MON
Digital Multi-meter	FLUKE	179	91820401	2011/01/03
Thermo-hygrometer	AZ Instruments	8705	9151655	2010/12/16
Section 2.4 – Radiated Spurious Emissions				
EMI Receiver	Rohde & Schwarz	ESI 40	100015	2011/08/19
Ultra log test antenna	Rohde & Schwarz	HL562	100167	2011/08/19
Double-Ridged Waveguide Horn Antenna	Rohde & Schwarz	HF 906	100029	2011/08/19
Antenna master	Frankonia	MA 260	-	2011/08/19
Relay Switch Unit	Rohde & Schwarz	331.1601.31	338965002	TU
Anechoic Chamber	Frankonia	9.08m×5.255m×e.525m	-	2011/08/19
Digital Multimeter	FLUKE	179	91820401	2011/01/03
Thermo-hygrometer	AZ Instruments	8705	9151655	2010/12/16

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

Product Service

3.2 MEASUREMENT UNCERTAINTY

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

Test Discipline	Frequency / Parameter	MU
Conducted Maximum Peak Output Power	30MHz to 10GHz Amplitude	0.5dB*
Conducted Emissions	30MHz to 40GHz Amplitude	3.0dB*
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

Product Service

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

UKAS TESTING 0141

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).