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Report On

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

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

Document 75921989 Report 01 Issue 1

March 2013



Product Service

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Ericsson RUS 01 B2 / KRC 118 66/2

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March 2013

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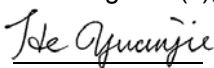
DATED

20 March 2013

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate compliance with FCC CFR 47: Part 24 and Industry Canada RSS-133. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);


Y He


X Zhang





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SECTION 1

REPORT SUMMARY

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



1.1 INTRODUCTION

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

Testing was carried out in support of a C2PC application for Grant of RUS 01 B2 / KRC 118 66/2 to include LTE/CDMA multi-standard wireless network.

Objective	To perform FCC and Industry Canada Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Ericsson AB
Product Name	RUS 01 B2
Part Number	KRC 118 66/2
IC Model Number	AS118662
Serial Number(s)	CB4L099533
Software Version	CXP102051/16_R17LXMU1
PIS Software Version	CXP 901 7316/1, R39UG
Hardware Version	R1D
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 24: 2012 Industry Canada RSS-133 Issue 6: 2013
Incoming Release Date	Declaration of Build Status 23 February 2013
Order Number	PTP
Date	24 February 2013
Start of Test	25 February 2013
Finish of Test	06 March 2013
Name of Engineer(s)	Y He X Zhang
Related Document(s)	ANSI C63.4: 2009 FCC CFR 47 Part 2: 2012 Industry Canada RSS-GEN Issue 3: 2010



1.2 BRIEF SUMMARY OF RESULTS

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

Configuration 1 – Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2 and Part 24	RSS-133 and RSS-GEN					
	24.232 (a)	6.4	Effective Radiated Power	1931.5MHz(L3)+1933.65MHz(C)		N/A	No integral antenna.
				1960.0MHz(L3)+1962.15MHz(C)		N/A	
				1986.35MHz(C)+1988.5MHz(L3)		N/A	
				1932.5MHz(L5)+1935.65MHz(C)		N/A	
				1960.0MHz(L5)+1963.15MHz(C)		N/A	
				1984.35MHz(C)+1987.5MHz(L5)		N/A	
				1935.0MHz(L 10)+1940.65MHz(C)		N/A	
				1960.0MHz(L 10)+1965.65MHz(C)		N/A	
				1979.35MHz(C)+1985.0MHz(L 10)		N/A	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)		N/A	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)		N/A	
				1960.0MHz(L 10)+1965.65MHz(C)+1966.90MHz(C)		N/A	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)+1964.65MHz(C)		N/A	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)+1965.65MHz(C)		N/A	
2.1	2.1046, 24.232 (a)	6.4	Maximum Peak Output Power - Conducted	1931.5MHz(L3)+1933.65MHz(C)	0	Pass	-
				1960.0MHz(L3)+1962.15MHz(C)	0	Pass	
				1986.35MHz(C)+1988.5MHz(L3)	0	Pass	
				1932.5MHz(L5)+1935.65MHz(C)	0	Pass	
				1960.0MHz(L5)+1963.15MHz(C)	0	Pass	
				1984.35MHz(C)+1987.5MHz(L5)	0	Pass	
				1935.0MHz(L 10)+1940.65MHz(C)	0	Pass	
				1960.0MHz(L 10)+1965.65MHz(C)	0	Pass	
				1979.35MHz(C)+1985.0MHz(L 10)	0	Pass	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)	0	Pass	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)	0	Pass	
				1960.0MHz(L 10)+1965.65MHz(C)+1966.90MHz(C)	0	Pass	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)+1964.65MHz(C)	0	Pass	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)+1965.65MHz(C)	0	Pass	



Configuration 1 – Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2 and Part 24	RSS-133 and RSS-GEN					
2.2	24.232 (d)	6.4	Peak – Average Ratio	1931.5MHz(L3)+1933.65MHz(C)	0	Pass	-
				1960.0MHz(L3)+1962.15MHz(C)	0	Pass	
				1986.35MHz(C)+1988.5MHz(L3)	0	Pass	
				1932.5MHz(L5)+1935.65MHz(C)	0	Pass	
				1960.0MHz(L5)+1963.15MHz(C)	0	Pass	
				1984.35MHz(C)+1987.5MHz(L5)	0	Pass	
				1935.0MHz(L10)+1940.65MHz(C)	0	Pass	
				1960.0MHz(L10)+1965.65MHz(C)	0	Pass	
				1979.35MHz(C)+1985.0MHz(L10)	0	Pass	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)	0	Pass	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)	0	Pass	
				1960.0MHz(L10)+1965.65MHz(C)+1966.90MHz(C)	0	Pass	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)+1964.65MHz(C)	0	Pass	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)+1965.65MHz(C)	0	Pass	
	2.1047 (d)	6.2	Modulation Characteristics	1960.0MHz(L3)+1962.15MHz(C)		N/A	-
				1960.0MHz(L5)+1963.15MHz(C)		N/A	
				1960.0MHz(L10)+1965.65MHz(C)		N/A	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)		N/A	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)		N/A	
				1960.0MHz(L10)+1965.65MHz(C)+1966.90MHz(C)		N/A	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)+1964.65MHz(C)		N/A	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)+1965.65MHz(C)		N/A	
	2.1049, 24.238 (b)	RSS-Gen 4.6.1	Occupied Bandwidth	1960.0MHz(L3)+1962.15MHz(C)		N/A	-
				1960.0MHz(L5)+1963.15MHz(C)		N/A	
				1960.0MHz(L10)+1965.65MHz(C)		N/A	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)		N/A	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)		N/A	
				1960.0MHz(L10)+1965.65MHz(C)+1966.90MHz(C)		N/A	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)+1964.65MHz(C)		N/A	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)+1965.65MHz(C)		N/A	



Configuration 1 – Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2 and Part 24	RSS-133 and RSS-GEN					
2.3	2.1051, 24.238 (b)	6.5	Spurious Emissions at Antenna Terminals (± 1 MHz)	1931.5MHz(L3)+1933.65MHz(C)	0	Pass	-
				1986.35MHz(C)+1988.5MHz(L3)	0	Pass	
				1931.25MHz(C)+1933.4MHz(L3)	0	Pass	
				1986.6MHz(L3)+1988.75MHz(C)	0	Pass	
				1932.5MHz(L5)+1935.65MHz(C)	0	Pass	
				1984.35MHz(C)+1987.5MHz(L5)	0	Pass	
				1935.0MHz(L10)+1940.65MHz(C)	0	Pass	
				1979.35MHz(C)+1985.0MHz(L10)	0	Pass	
2.4	2.1053, 24.238 (a)	6.5	Radiated Spurious Emissions	1931.5MHz(L3)+1933.65MHz(C)	0	Pass	-
				1960.0MHz(L3)+1962.15MHz(C)	0	Pass	
				1986.35MHz(C)+1988.5MHz(L3)	0	Pass	
				1960.0MHz(L5)+1963.15MHz(C)	0	Pass	
				1960.0MHz(L10)+1965.65MHz(C)	0	Pass	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)	0	Pass	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)		N/A	
				1960.0MHz(L10)+1965.65MHz(C)+1966.90MHz(C)		N/A	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)+1964.65MHz(C)	0	Pass	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)+1965.65MHz(C)		N/A	
2.5	2.1051, 24.238 (a)	6.5	Conducted Spurious Emissions	1931.5MHz(L3)+1933.65MHz(C)	0	Pass	-
				1960.0MHz(L3)+1962.15MHz(C)	0	Pass	
				1986.35MHz(C)+1988.5MHz(L3)	0	Pass	
				1960.0MHz(L5)+1963.15MHz(C)	0	Pass	
				1960.0MHz(L10)+1965.65MHz(C)	0	Pass	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)	0	Pass	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)		N/A	
				1960.0MHz(L10)+1965.65MHz(C)+1966.90MHz(C)		N/A	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)+1964.65MHz(C)	0	Pass	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)+1965.65MHz(C)		N/A	



Configuration 1 – Radio Equipment							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Comments
	FCC Part 2 and Part 24	RSS-133 and RSS-GEN					
	2.1055, 24.235	6.3	Frequency Stability Under Temperature Variations	1960.0MHz(L3)+1962.15MHz(C)		N/A	-
				1960.0MHz(L5)+1963.15MHz(C)		N/A	
				1960.0MHz(L10)+1965.65MHz(C)		N/A	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)		N/A	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)		N/A	
				1960.0MHz(L10)+1965.65MHz(C)+1966.90MHz(C)		N/A	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)+1964.65MHz(C)		N/A	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)+1965.65MHz(C)		N/A	
	2.1055, 24.235	6.3	Frequency Stability Under Voltage Variations	1960.0MHz(L3)+1962.15MHz(C)		N/A	-
				1960.0MHz(L5)+1963.15MHz(C)		N/A	
				1960.0MHz(L10)+1965.65MHz(C)		N/A	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)		N/A	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)		N/A	
				1960.0MHz(L10)+1965.65MHz(C)+1966.90MHz(C)		N/A	
				1960.0MHz(L3)+1962.15MHz(C)+1963.40MHz(C)+1964.65MHz(C)		N/A	
				1960.0MHz(L5)+1963.15MHz(C)+1964.40MHz(C)+1965.65MHz(C)		N/A	

N/A – Not Applicable

Note: "(L3)" denotes LTE network with 3MHz channel bandwidth.

"(L5)" denotes LTE network with 5MHz channel bandwidth.

"(L10)" denotes LTE network with 10MHz channel bandwidth.

"(C)" denotes CDMA network



Product Service

1.3 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Radio Equipment
MANUFACTURER	Ericsson AB
PRODUCT NAME	RUS 01 B2
PART NUMBER	KRC 118 66/2
IC Model Number	AS118662
SERIAL NUMBER(s)	CB4L099533
HARDWARE VERSION	R1D
SOFTWARE VERSION	CXP102051/16_R17LXMU1
PIS Software Version	CXP 901 7316/1, R39UG
TRANSMITTER OPERATING RANGE	TX: 1931.25MHz - 1988.75MHz RX: 1851.25MHz - 1908.75MHz
MODULATIONS	LTE: QPSK, 16QAM, 64QAM CDMA: QPSK, 8PSK, 16QAM
INTERMEDIATE FREQUENCIES	--
ITU DESIGNATION OF EMISSION	1M25F9W 2M70F9W 4M48F9W 8M94F9W
SUPPORTED CHANNEL BANDWIDTH CONFIGURATION	LTE: 3MHz, 5MHz, 10MHz according to 3GPP TS 36.141 CDMA: 1.25MHz
OUTPUT POWER (RMS) (W or dBm)	80W (or 49dBm)
OUTPUT POWER TOLERANCE	± 2.0dB
NUMBER OF ANTENNA PORTS	1 TX/RX port, 1 RX port
SUPPORTED CONFIGURATION	Multi-standard (LTE/CDMA) configured for Mix Carrier.
FCC ID	TA8AKRC11866-2
IC ID	287AB-AS118662
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The equipment is the Radio Part of LTE / CDMA Base Station.

Signature

Date

07 March 2013

D of B S Serial No

75921989/01

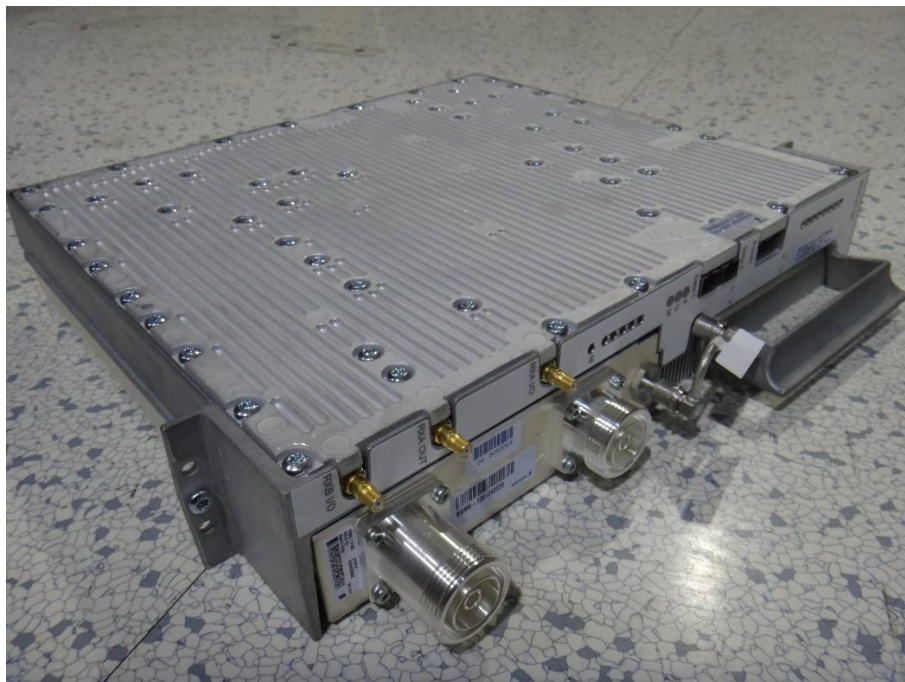
No responsibility will be accepted by TÜV Product Service as to the accuracy of the information declared in this document by the manufacturer.

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

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

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



Equipment Under Test



1.4.2 Test Configuration

Configuration 1: Radio Equipment

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

The RUS 01 B2 / KRC 118 66/2 supports Multi-standard (LTE/CDMA) configured for mix-carrier. LTE supports Test Models E-TM1.1 (QPSK), E-TM3.2 (16QAM) and E-TM3.1 (64QAM) defined in 3GPP TS 36.141 and CDMA supports QPSK, 8PSK and 16QAM modulations at 1900MHz. The setting below was found to be representative for all traffic scenarios when several settings with the different modulations, the number of carriers and the output power combinations were tested to find the worst case setting. These settings were used for all measurements if not otherwise noted:

- LTE/CDMA Mix Carrier:

The Output Power settings as below:

Mix Carrier (x2): LTE(60W) & CDMA(20W)

Mix Carrier (x3): LTE(40W) & CDMA(20W) & CDMA(20W)

Mix Carrier (x4): LTE(20W) & CDMA(20W) & CDMA(20W) & CDMA(20W)

LTE in test models E-TM1.1, E-TM3.2 and E-TM3.1;

CDMA with QPSK Modulation

Forward Traffic Channel using Spreading Rate 1 (1X), Voice

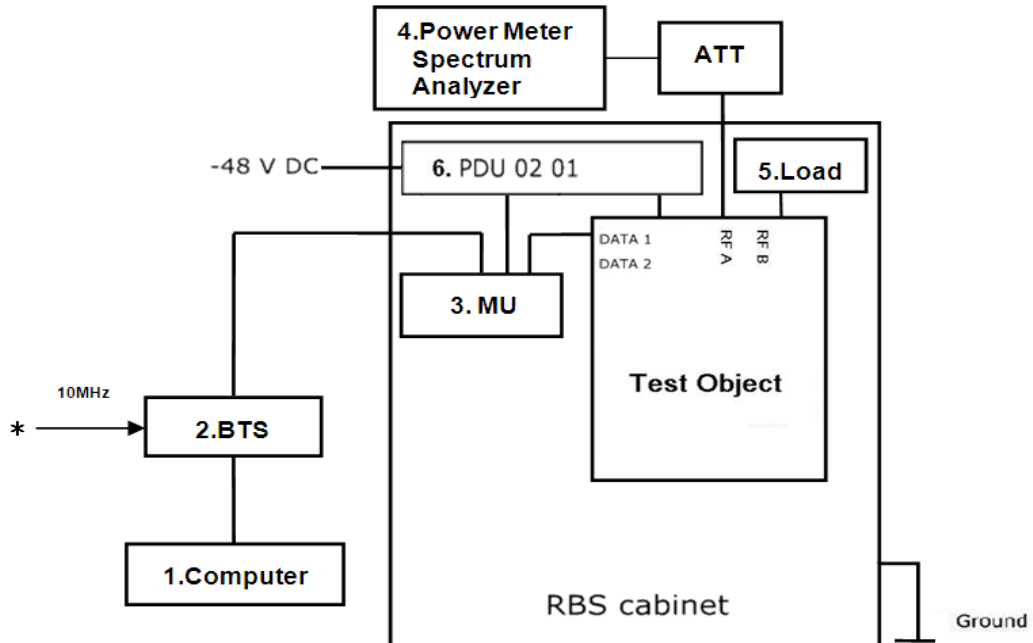
User Channels: 6

Channel rate: 9.6kbps

Channel bandwidth: 1.25MHz

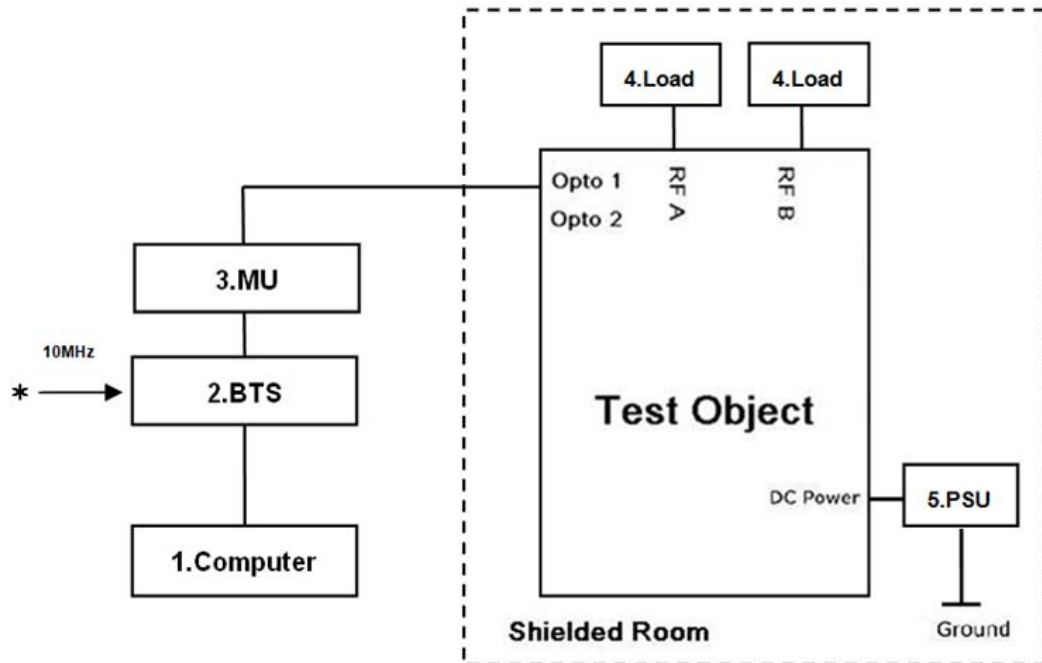
The EUT has only one TX/RX port and one RX port and it can be configured to transmit with 1900MHz mix carrier at RF A output connector. All TX measurements were performed on the TX output connector RF A. The complete testing was performed with the EUT transmitting at maximum RF power unless otherwise stated.

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

**Test Setup, Conducted Measurement:**

Test Object	Part Number	Version	Serial Number
Radio Part	RUS 01 B2 / KRC 118 66/2	R1D	CB4L099533

No.	Auxiliary Equipment	Part Number / Model Type	Version	Serial Number
1	Computer	HP DC5100SFF	--	CNG6510B8B
2	BTS 602A	--	--	--
	DBU	NTLK70AA	06	NNTMPX00M14V
	XCEM-A	NTLK86AAE5	02	NNTMPX00LLDN
	AEM1302	NTLK85GAE5	07	NNTMPX00VRY3
3	DUL 20 01	KDU 137 533/4	R1F	D161986490
	XMU 02 01	KDU 137 745/1	R2A	C825513812
4	Power Meter	NRP2	--	101283
	Thermal Power Sensor	NRPZ51	--	102434
	Spectrum Analyzer	FSQ	--	0705/2012
5	Load	TF100	--	09121631
6	PDU 02 01	BMG 980 336/4	R2H	X051285555

**Test Setup, Radiated Measurement:**

Test Object	Part Number	Version	Serial Number
Radio Part	RUS 01 B2 / KRC 118 66/2	R1D	CB4L099533

No.	Auxiliary Equipment	Part Number / Model Type	Version	Serial Number
1	Computer	ADVANTECH 610H	--	ATB5103888
2	BTS 602A	--	--	--
	DBU	NTLK70AA	06	NNTMPX00M14V
	XCEM-A	NTLK86AAE5	02	NNTMPX00LLDN
	AEM1302	NTLK85GAE5	07	NNTMPX00VRY3
3	DUL 20 01	KDU 137 533/4	R1F	D161986490
	XMU 02 01	KDU 137 745/1	R2A	C825513812
4	Load	TF100	--	09121631
	Load	TF100	--	09121602
5	Power Supply	DH1716A-14	--	20080405

1.4.3 Modes of Operation

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

L3 denotes LTE network with 3MHz channel bandwidth.

L5 denotes LTE network with 5MHz channel bandwidth.

L10 denotes LTE network with 10MHz channel bandwidth.

C denotes CDMA network

Mix Carrier (x2)

Mode 1 - L3&C, L5&C, L10&C

MSR	Channel No.	Frequency (MHz)
L3(B)&C	615 & 73	1931.5+1933.65
L5(B)&C	625 & 113	1932.5+1935.65
L10(B)&C	650 & 213	1935.0+1940.65

Mode 2 - L3&C, L5&C, L10&C

MSR	Channel No.	Frequency (MHz)
L3(M)&C	900 & 643	1960.0+1962.15
L5(M)&C	900 & 663	1960.0+1963.15
L10(M)&C	900 & 713	1960.0+1965.65

Mode 3 - C&L3, C&L5, C&L10

MSR	Channel No.	Frequency (MHz)
C&L3(T)	1127 & 1185	1986.35+1988.5
C&L5(T)	1087 & 1175	1984.35+1987.5
C&L10(T)	987 & 1150	1979.35+1985.0

Mode 4 - C&L3

MSR	Channel No.	Frequency (MHz)
C(B)&L3	25 & 634	1931.25+1933.4

Mode 5 - L3&C

MSR	Channel No.	Frequency (MHz)
L3&C(T)	1166 & 1175	1986.6+1988.75

**Mix Carrier (x3)**

Mode 6 - L3&C&C, L5&C&C, L10&C&C

MSR	Channel No.	Frequency (MHz)
L3(M)&C&C	900 & 643 & 668	1960.0+1962.15+1963.40
L5(M)&C&C	900 & 663 & 688	1960.0+1963.15+1964.40
L10(M)&C&C	900 & 713 & 738	1960.0+1965.65+1966.90

Mix Carrier (x4)

Mode 7 - L3&C&C&C, L5&C&C&C

MSR	Channel No.	Frequency (MHz)
L3(M)&C&C&C	900 & 643 & 668 & 693	1960.0+1962.15+1963.40+1964.65
L5(M)&C&C&C	900 & 663 & 688 & 713	1960.0+1963.15+1964.40+1965.65

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



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 has been performed under the following site registrations:

FCC Accreditation 910917:

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

Industry Canada Accreditation 7308A-1:

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



Product Service

SECTION 2

TEST DETAILS

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



2.1 MAXIMUM PEAK OUTPUT POWER - CONDUCTED

2.1.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1046
 FCC CFR 47 Part 24, Clause 24.232 (a)
 Industry Canada RSS-133, Clause 6.4

2.1.2 Equipment Under Test

RUS 01 B2 / KRC 118 66/2, S/N: CB4L099533

2.1.3 Date of Test and Modification State

25 and 26 February 2013 – Modification State 0

2.1.4 Test Equipment Used

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

2.1.5 Test Method and Operating Modes

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

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

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

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

Configuration 1 - Mode 1 - L3&C, L5&C, L10&C
 - Mode 2 - L3&C, L5&C, L10&C
 - Mode 3 - C&L3, C&L5, C&L10
 - Mode 6 - L3&C&C, L5&C&C, L10&C&C
 - Mode 7 - L3&C&C&C, L5&C&C&C

2.1.6 Environmental Conditions

	25 February 2013	26 February 2013
Ambient Temperature	22.3°C	22.0°C
Relative Humidity	38.5%	40.5%



2.1.7 Test Results

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

The test results are shown below

Mix Carrier (x2)

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

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

MSR	Channel No.	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
L3&C	615 & 73	1931.5+1933.65	42.7	49.27	84.53
L5&C	625 & 113	1932.5+1935.65	42.7	48.60	72.44
L10&C	650 & 213	1935.0+1940.65	42.7	48.53	71.29

LTE (E-TM3.2) & CDMA (QPSK)

MSR	Channel No.	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
L3&C	615 & 73	1931.5+1933.65	42.7	49.22	83.56
L5&C	625 & 113	1932.5+1935.65	42.7	48.50	70.79
L10&C	650 & 213	1935.0+1940.65	42.7	48.46	70.15

LTE (E-TM3.1) & CDMA (QPSK)

MSR	Channel No.	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
L3&C	615 & 73	1931.5+1933.65	42.7	49.25	84.14
L5&C	625 & 113	1932.5+1935.65	42.7	48.50	70.79
L10&C	650 & 213	1935.0+1940.65	42.7	48.48	70.47

Configuration 1 - Mode 2 - L3&C, L5&C, L10&C**LTE (E-TM1.1) & CDMA (QPSK)**

MSR	Channel No.	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
L3&C	900 & 643	1960.0+1962.15	42.7	49.20	83.18
L5&C	900 & 663	1960.0+1963.15	42.7	48.69	73.96
L10&C	900 & 713	1960.0+1965.65	42.7	48.46	70.15

LTE (E-TM3.2) & CDMA (QPSK)

MSR	Channel No.	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
L3&C	900 & 643	1960.0+1962.15	42.7	49.17	82.60
L5&C	900 & 663	1960.0+1963.15	42.7	48.67	73.62
L10&C	900 & 713	1960.0+1965.65	42.7	48.57	71.94

LTE (E-TM3.1) & CDMA (QPSK)

MSR	Channel No.	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
L3&C	900 & 643	1960.0+1962.15	42.7	49.19	82.99
L5&C	900 & 663	1960.0+1963.15	42.7	48.67	73.62
L10&C	900 & 713	1960.0+1965.65	42.7	48.46	70.15

Configuration 1 - Mode 3 - C&L3, C&L5, C&L10**LTE (E-TM1.1) & CDMA (QPSK)**

MSR	Channel No.	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
C&L3	1127 & 1185	1986.35+1988.5	42.7	48.86	76.91
C&L5	1087 & 1175	1984.35+1987.5	42.7	48.20	66.07
C&L10	987 & 1150	1979.35+1985.0	42.7	48.29	67.45

LTE (E-TM3.2) & CDMA (QPSK)

MSR	Channel No.	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
C&L3	1127 & 1185	1986.35+1988.5	42.7	48.90	77.62
C&L5	1087 & 1175	1984.35+1987.5	42.7	48.12	64.86
C&L10	987 & 1150	1979.35+1985.0	42.7	48.22	66.47

LTE (E-TM3.1) & CDMA (QPSK)

MSR	Channel No.	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
C&L3	1127 & 1185	1986.35+1988.5	42.7	48.85	76.74
C&L5	1087 & 1175	1984.35+1987.5	42.7	48.17	65.61
C&L10	987 & 1150	1979.35+1985.0	42.7	48.24	66.68



Product Service

Mix Carrier (x3)**Configuration 1 - Mode 6 - L3&C&C, L5&C&C, L10&C&C****LTE (E-TM1.1) & CDMA (QPSK)**

MSR	Channel No.	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
L3&C&C	900 & 643 & 668	1960.0+1962.15+1963.40	42.7	48.60	72.44
L5&C&C	900 & 663 & 688	1960.0+1963.15+1964.40	42.7	48.64	73.11
L10&C&C	900 & 713 & 738	1960.0+1965.65+1966.90	42.7	48.42	69.50

LTE (E-TM3.2) & CDMA (QPSK)

MSR	Channel No.	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
L3&C&C	900 & 643 & 668	1960.0+1962.15+1963.40	42.7	48.55	71.61
L5&C&C	900 & 663 & 688	1960.0+1963.15+1964.40	42.7	48.48	70.47
L10&C&C	900 & 713 & 738	1960.0+1965.65+1966.90	42.7	48.37	68.71

LTE (E-TM3.1) & CDMA (QPSK)

MSR	Channel No.	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
L3&C&C	900 & 643 & 668	1960.0+1962.15+1963.40	42.7	48.55	71.61
L5&C&C	900 & 663 & 688	1960.0+1963.15+1964.40	42.7	48.54	71.45
L10&C&C	900 & 713 & 738	1960.0+1965.65+1966.90	42.7	48.42	69.50



Product Service

Mix Carrier (x4)**Configuration 1 - Mode 7 - L3&C&C&C, L5&C&C&C****LTE (E-TM1.1) & CDMA (QPSK)**

MSR	Channel No.	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
L3&C&C&C	900 & 643 & 668 & 693	1960.0+1962.15+1963.40+1964.65	42.7	48.68	73.79
L5&C&C&C	900 & 663 & 688 & 713	1960.0+1963.15+1964.40+1965.65	42.7	48.67	73.62

LTE (E-TM3.2) & CDMA (QPSK)

MSR	Channel No.	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
L3&C&C&C	900 & 643 & 668 & 693	1960.0+1962.15+1963.40+1964.65	42.7	48.62	72.78
L5&C&C&C	900 & 663 & 688 & 713	1960.0+1963.15+1964.40+1965.65	42.7	48.53	71.29

LTE (E-TM3.1) & CDMA (QPSK)

MSR	Channel No.	Frequency (MHz)	Path Loss (dB)	Result (dBm) RMS	Result (W) RMS
L3&C&C&C	900 & 643 & 668 & 693	1960.0+1962.15+1963.40+1964.65	42.7	48.62	72.78
L5&C&C&C	900 & 663 & 688 & 713	1960.0+1963.15+1964.40+1965.65	42.7	48.58	72.11

Limit	≤+50dBm or ≤100W
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Remarks

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



2.2 PEAK – AVERAGE RATIO

2.2.1 Specification Reference

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

2.2.2 Equipment Under Test

RUS 01 B2 / KRC 118 66/2, S/N: CB4L099533

2.2.3 Date of Test and Modification State

26 to 28 February and 1 March 2013 – Modification State 0

2.2.4 Test Equipment Used

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

2.2.5 Test Method and Operating Modes

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

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

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

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

Configuration 1 - Mode 1 - L3&C, L5&C, L10&C
 - Mode 2 - L3&C, L5&C, L10&C
 - Mode 3 - C&L3, C&L5, C&L10
 - Mode 6 - L3&C&C, L5&C&C, L10&C&C
 - Mode 7 - L3&C&C&C, L5&C&C&C

2.2.6 Environmental Conditions

	26 February 2013	27 February 2013	28 February 2013	01 March 2013
Ambient Temperature	22.0°C	21.5°C	21.0°C	21.0°C
Relative Humidity	40.5%	39.4%	44.7%	35.5%



Product Service

2.2.7 Test Results

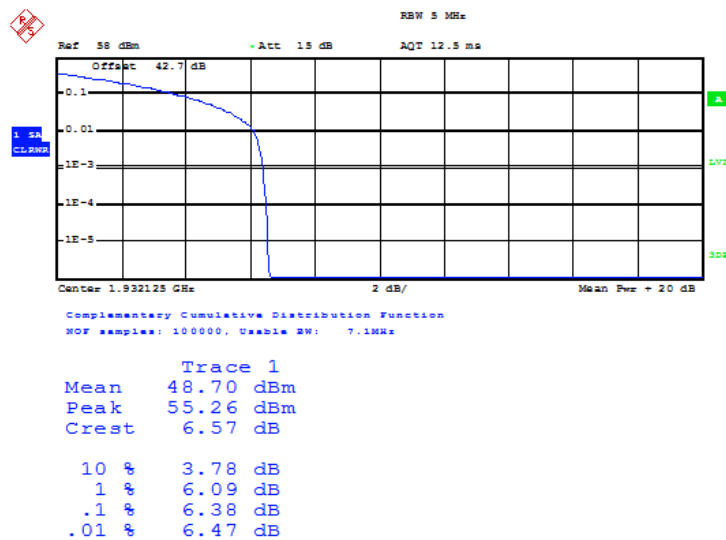
For the period of test the EUT met the requirements of FCC CFR 47 Part 24 and Industry Canada RSS-133 for Peak – Average Ratio.

The test results are shown below.

Mix Carrier (x2)

Configuration 1 - Mode 1 - L3&C

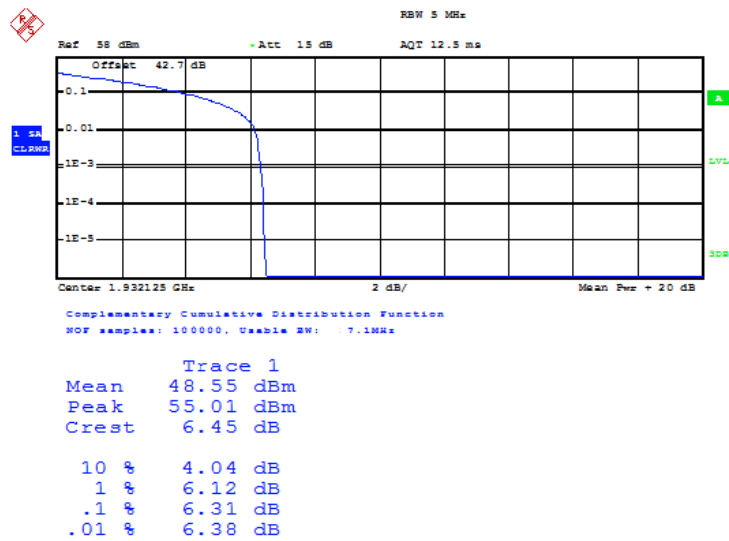
LTE (E-TM1.1) & CDMA (QPSK)



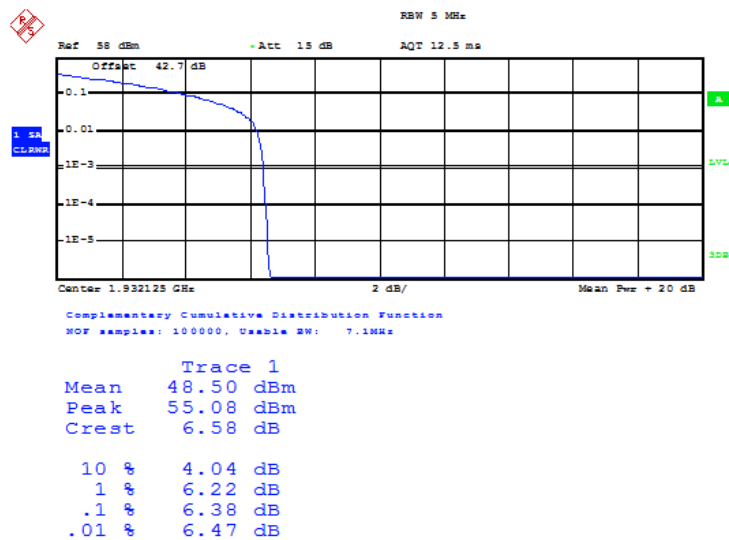
Date: 1.MAR.2013 17:32:49



Product Service

LTE (E-TM3.2) & CDMA (QPSK)

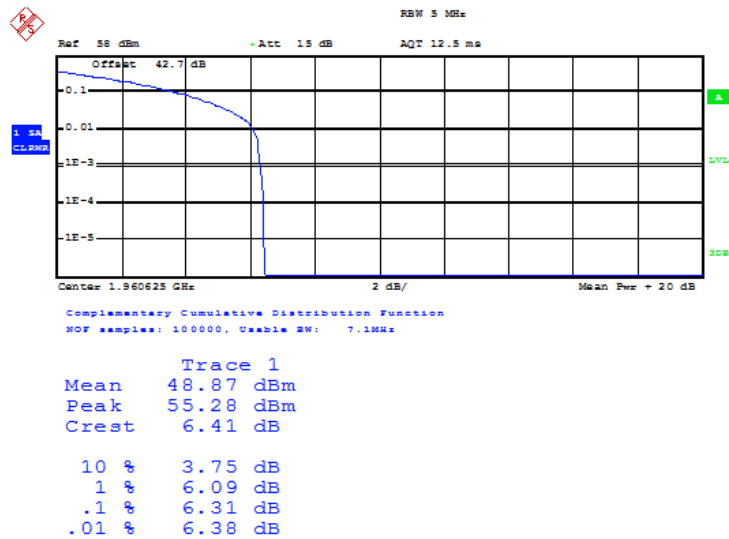
Date: 27.FEB.2013 04:07:24

LTE (E-TM3.1) & CDMA (QPSK)

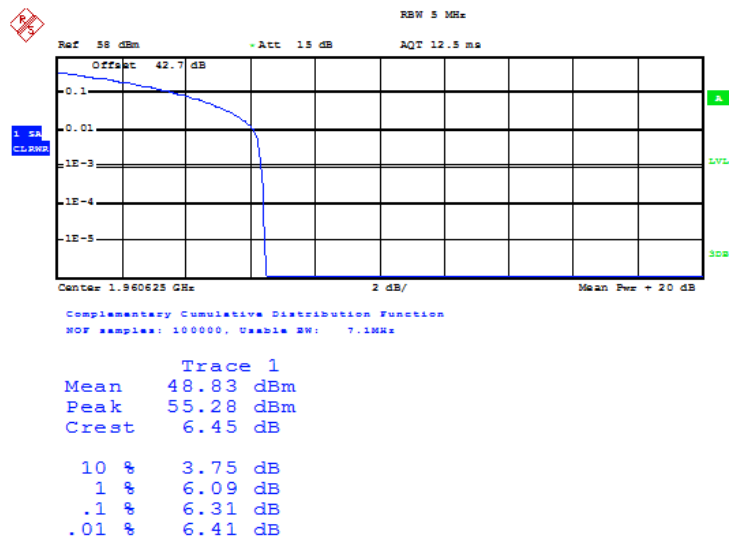
Date: 27.FEB.2013 04:07:28



Product Service

Configuration 1 - Mode 2 - L3&C**LTE (E-TM1.1) & CDMA (QPSK)**

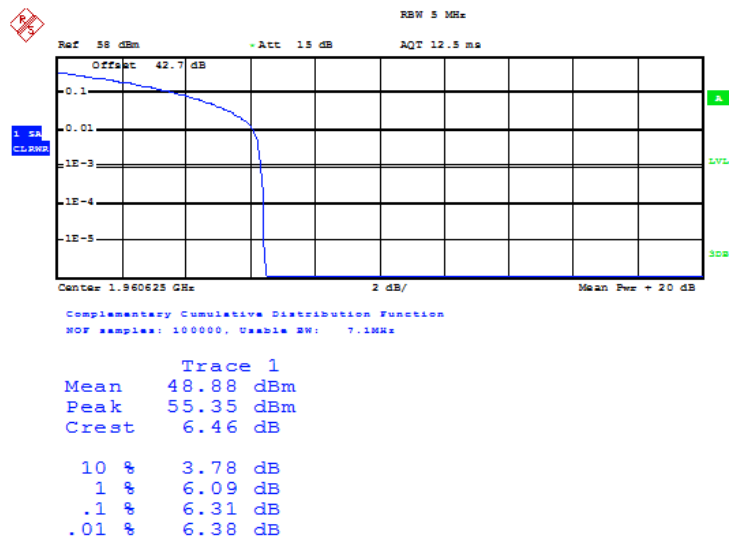
Date: 27.FEB.2013 05:27:27

LTE (E-TM3.2) & CDMA (QPSK)

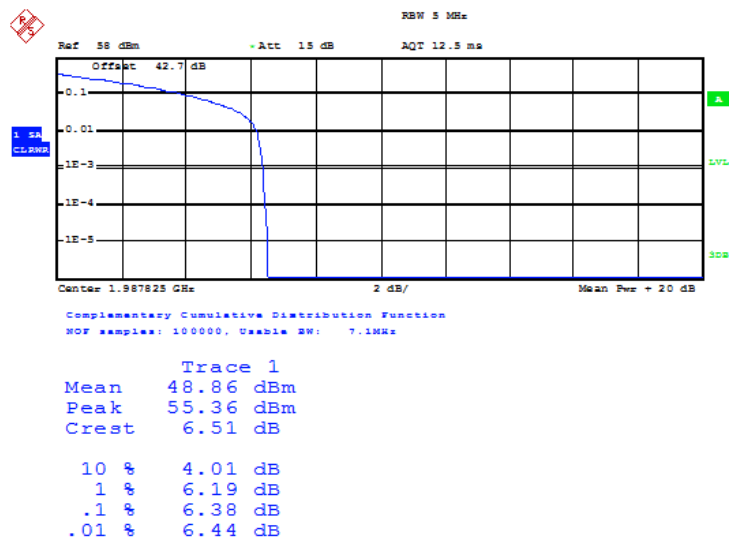
Date: 27.FEB.2013 05:24:45



Product Service

LTE (E-TM3.1) & CDMA (QPSK)

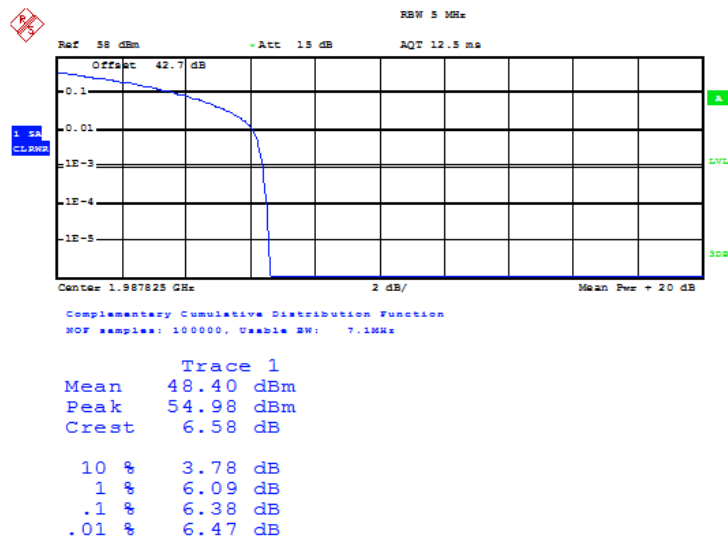
Date: 27.FEB.2013 05:26:06

Configuration 1 - Mode 3 - C&L3**LTE (E-TM1.1) & CDMA (QPSK)**

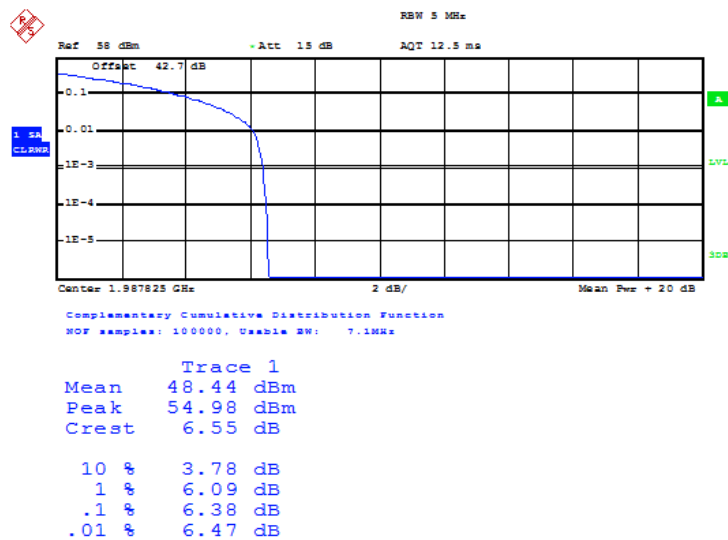
Date: 27.FEB.2013 03:32:16



Product Service

LTE (E-TM3.2) & CDMA (QPSK)

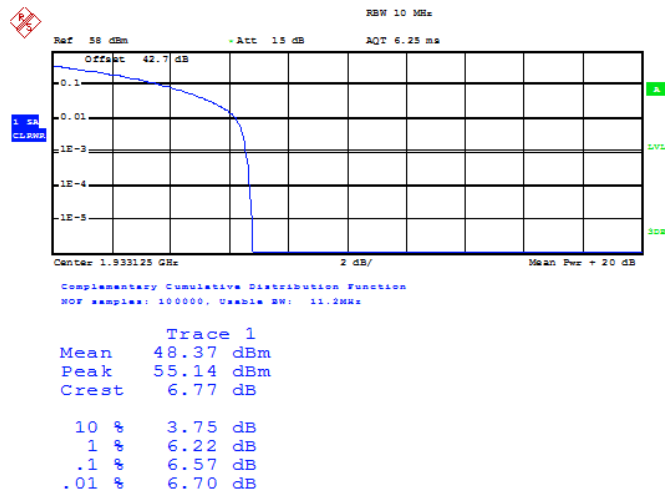
Date: 27.FEB.2013 07:21:17

LTE (E-TM3.1) & CDMA (QPSK)

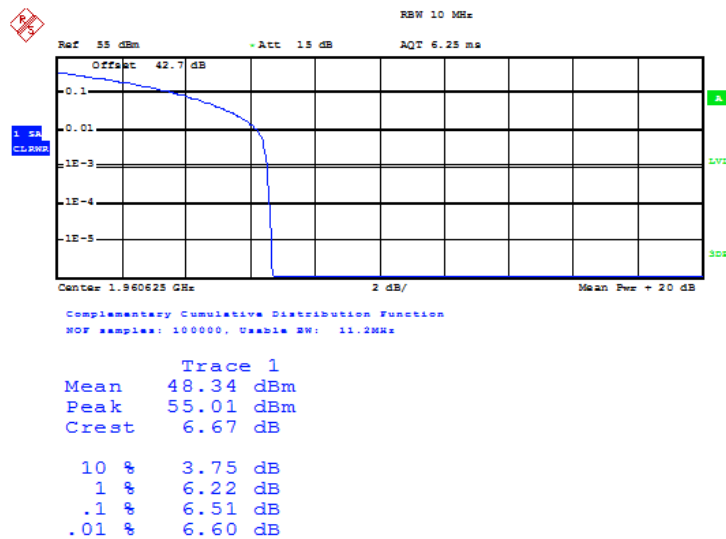
Date: 27.FEB.2013 07:20:00



Product Service

Configuration 1 - Mode 1 - L5&C**LTE (E-TM1.1) & CDMA (QPSK)**

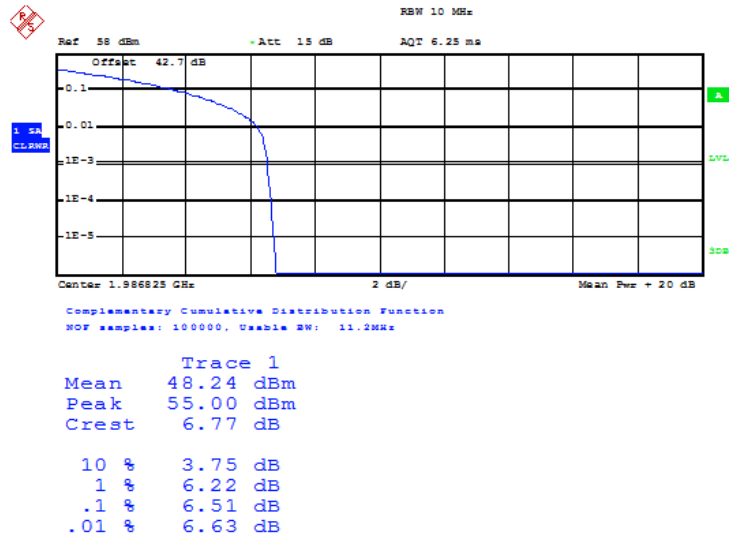
Date: 27.FEB.2013 08:29:05

Configuration 1 - Mode 2 - L5&C**LTE (E-TM1.1) & CDMA (QPSK)**

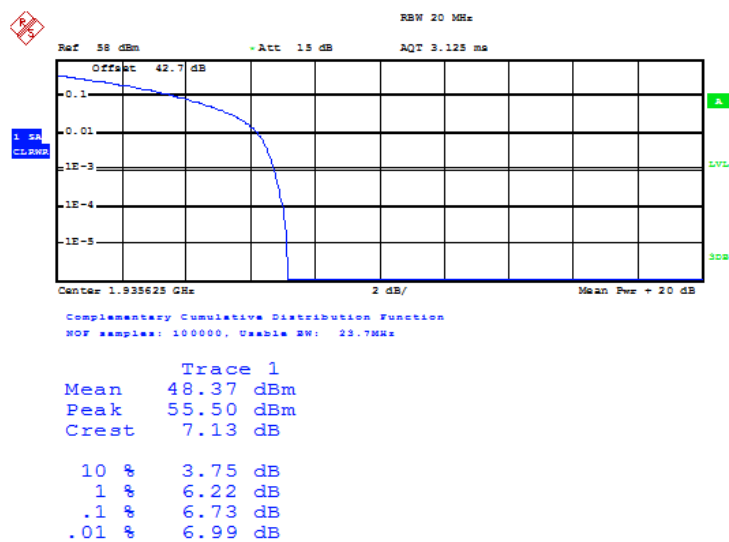
Date: 27.FEB.2013 08:00:02



Product Service

Configuration 1 - Mode 3 - C&L5**LTE (E-TM1.1) & CDMA (QPSK)**

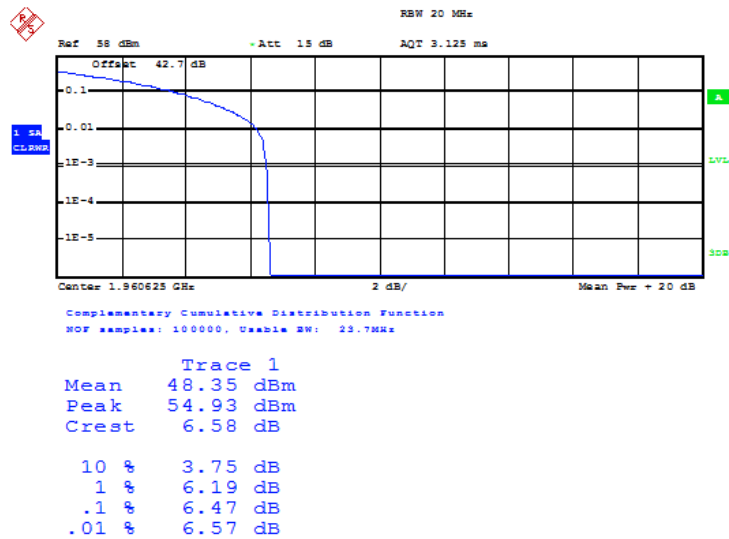
Date: 27.FEB.2013 09:27:52

Configuration 1 - Mode 1 - L10&C**LTE (E-TM1.1) & CDMA (QPSK)**

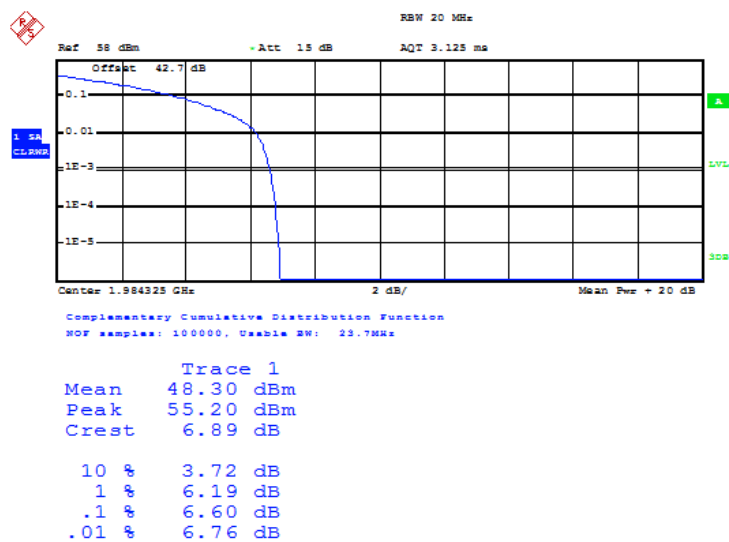
Date: 28.FEB.2013 04:45:57



Product Service

Configuration 1 - Mode 2 - L10&C**LTE (E-TM1.1) & CDMA (QPSK)**

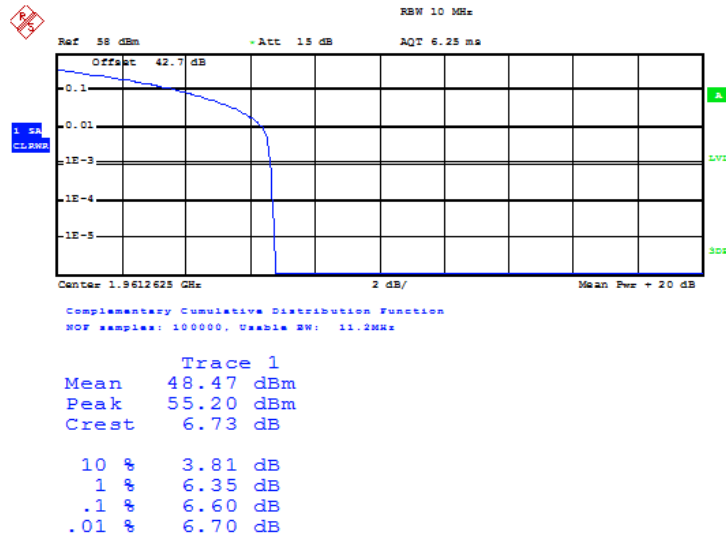
Date: 28.FEB.2013 04:00:48

Configuration 1 - Mode 3 - C&L10**LTE (E-TM1.1) & CDMA (QPSK)**

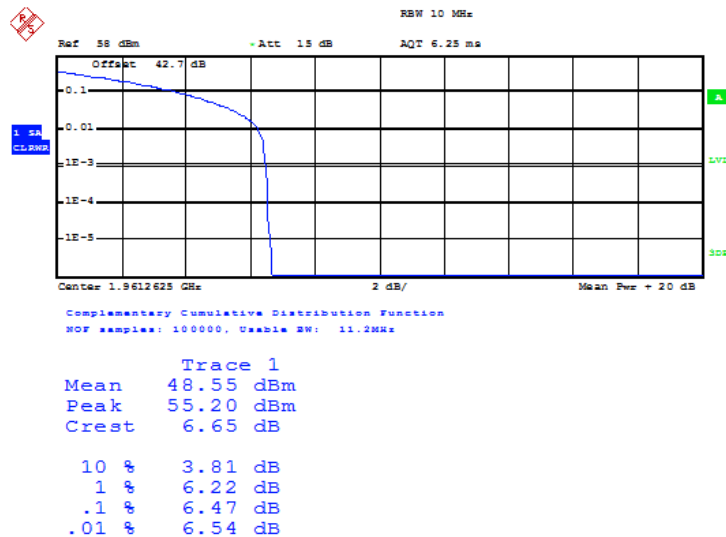
Date: 28.FEB.2013 05:11:35



Product Service

Mix Carrier (x3)**Configuration 1 - Mode 6 - L3&C&C****LTE (E-TM1.1) & CDMA (QPSK)**

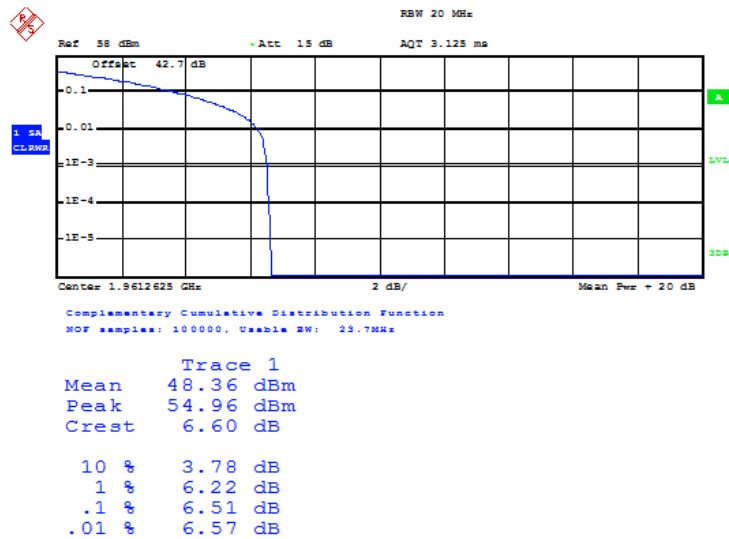
Date: 28.FEB.2013 08:25:43

Configuration 1 - Mode 6 - L5&C&C**LTE (E-TM1.1) & CDMA (QPSK)**

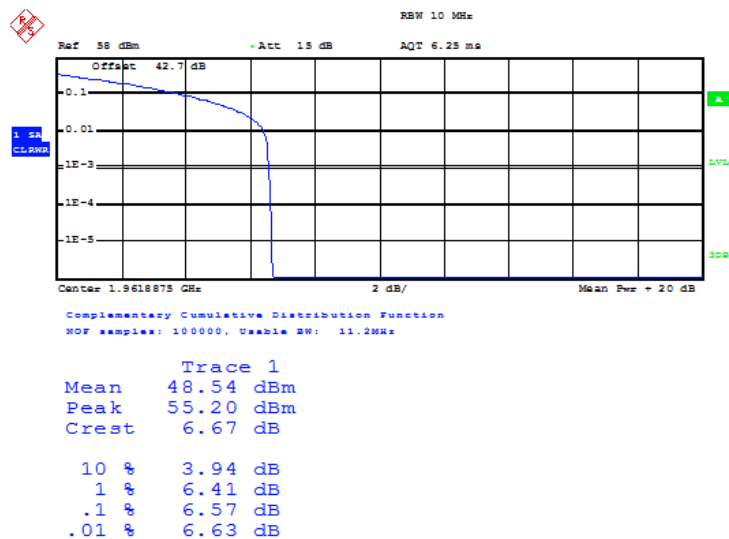
Date: 1.MAR.2013 08:47:36



Product Service

Configuration 1 - Mode 6 - L10&C&C**LTE (E-TM1.1) & CDMA (QPSK)**

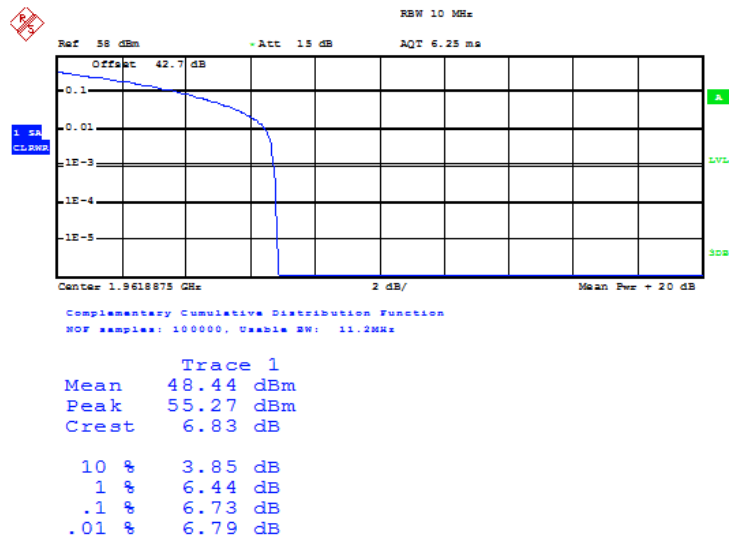
Date: 1.MAR.2013 08:48:27

Mix Carrier (x4)**Configuration 1 - Mode 7 - L3&C&C&C****LTE (E-TM1.1) & CDMA (QPSK)**

Date: 28.FEB.2013 08:13:45



Product Service

Configuration 1 - Mode 7 - L5&C&C&C**LTE (E-TM1.1) & CDMA (QPSK)**

Date: 1.MAR.2013 04:04:43

Limit	13dB
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Remarks

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



2.3 SPURIOUS EMISSIONS AT ANTENNA TERMINALS (± 1 MHz)

2.3.1 Specification Reference

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

2.3.2 Equipment Under Test

RUS 01 B2 / KRC 118 66/2, S/N: CB4L099533

2.3.3 Date of Test and Modification State

26 to 28 February and 01 March 2013 – Modification State 0

2.3.4 Test Equipment Used

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

2.3.5 Test Method and Operating Modes

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

In accordance with 24.238(b), at least 1% of the emission bandwidth shall be used for the resolution bandwidth up to 1MHz away from the block edge. As the LTE emission bandwidth of the EUT support are 3MHz, 5MHz and 10MHz, the CDMA emission bandwidth is 1.25MHz. So, 30kHz RBW was used up to 1MHz away from the band edges when the mix carrier of LTE bandwidth is 3MHz, 50kHz RBW when the mix carrier of LTE bandwidth is 5MHz, and 100kHz RBW when the mix carrier of LTE bandwidth is 10MHz. A resolution bandwidth of 50kHz was used between 1MHz to 5MHz away from the band edge. As the FCC rules specify a RBW of 1MHz for measurements of emissions > 1MHz away from the band edges, the limit was adjusted with -13dB to -26dBm to compensate for the reduce measurement bandwidth. Spectrum analyser detector was set as RMS.

The EUT was tested at it's maximum power level. The path loss measured and entered as a reference level offset.

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

Configuration 1 - Mode 1 - L3&C, L5&C, L10&C
 - Mode 3 - C&L3, C&L5, C&L10
 - Mode 4 - C&L3
 - Mode 5 - L3&C

2.3.6 Environmental Conditions

	26 February 2013	27 February 2013	28 February 2013	01 March 2013
Ambient Temperature	22.0°C	21.5°C	21.0°C	21.0°C
Relative Humidity	40.5%	39.4%	44.7%	35.5%

2.3.7 Test Results

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

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

Mix Carrier (x2)

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

Configuration 1 - Mode 1 - L3&C, Mode 3 - C&L3

Band Edge Frequency	Edge Test with LTE at the Bottom and Top Channel	RBW / VBW (Hz)
Bottom 1930 MHz	Channel No. 615 & 73 Frequencies 1931.5MHz(L3)+1933.65MHz(C)	30k / 300k
Top 1990MHz	Channel No. 1127 & 1185 Frequencies 1986.35MHz(C)+1988.5MHz(L3)	

Configuration 1 - Mode 4 - C&L3, Mode 5 - L3&C

Band Edge Frequency	Edge Test with CDMA at the Bottom and Top Channel	RBW / VBW (Hz)
Bottom 1930 MHz	Channel No. 25 & 634 Frequencies 1931.25MHz(C)+1933.4MHz(L3)	30k / 300k
Top 1990MHz	Channel No. 1166 & 1175 Frequencies 1986.6MHz(L3)+1988.75MHz(C)	

Configuration 1 - Mode 1 - L5&C, Mode 3 - C&L5

Band Edge Frequency	Edge Test with LTE at the Bottom and Top Channel	RBW / VBW (Hz)
Bottom 1930 MHz	Channel No. 625 & 113 Frequencies 1932.5MHz(L5)+1935.65MHz(C)	50k / 500k
Top 1990MHz	Channel No. 1087 & 1175 Frequencies 1986.35MHz(C)+1987.5MHz(L5)	

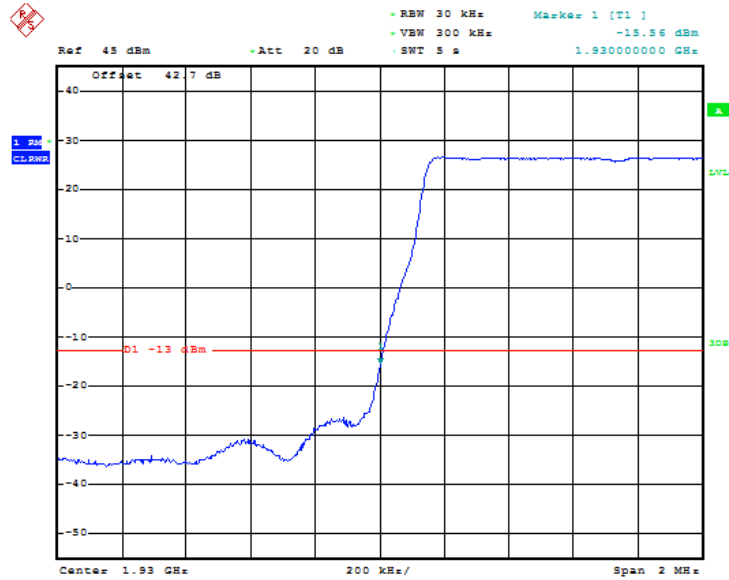
Configuration 1 - Mode 1 - L10&C, Mode 3 - C&L10C

Band Edge Frequency	Edge Test with LTE at the Bottom and Top Channel	RBW / VBW (Hz)
Bottom 1930 MHz	Channel No. 650 & 213 Frequencies 1935.0MHz(L10)+1940.65MHz(C)	100k / 1M
Top 1990MHz	Channel No. 987 & 1150 Frequencies 1979.35MHz(C)+1985.0MHz(L10)	

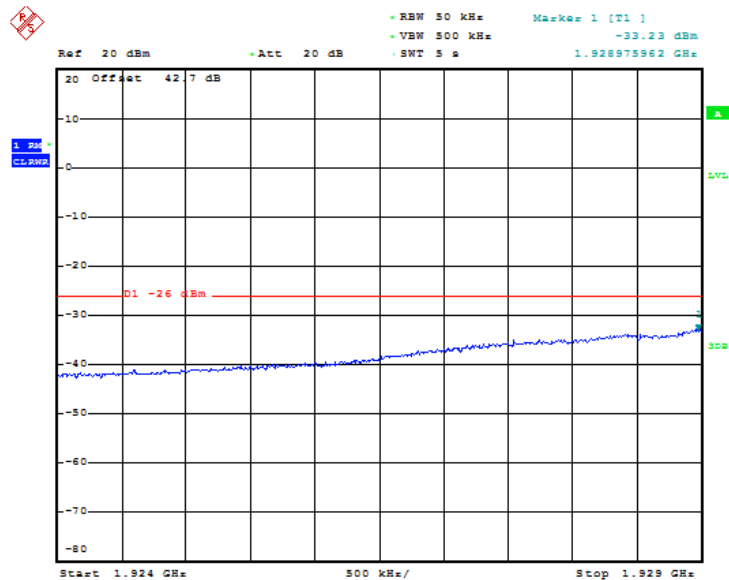
The channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels outside of ranges shown in the above tables shall not be made available to the end user.



Product Service

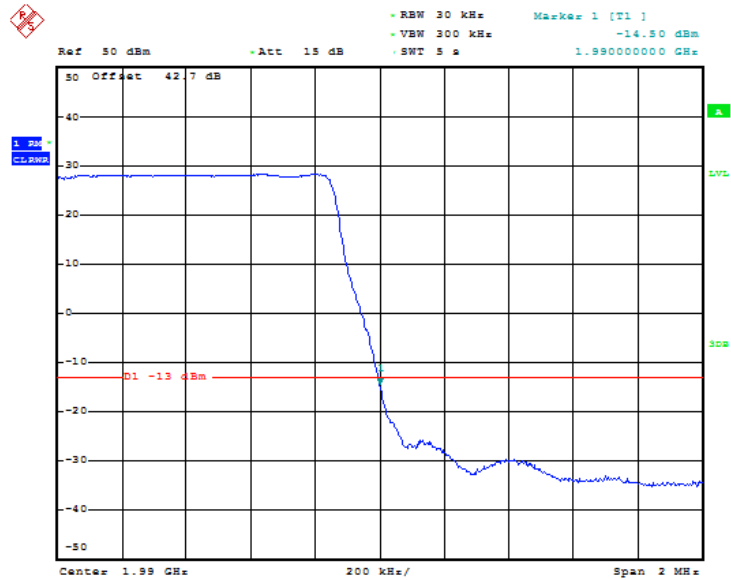
Mix Carrier (x2)**LTE (E-TM1.1) & CDMA (QPSK)****Configuration 1 - Mode 1 - L3&C**

Date: 28.FEB.2013 06:52:43

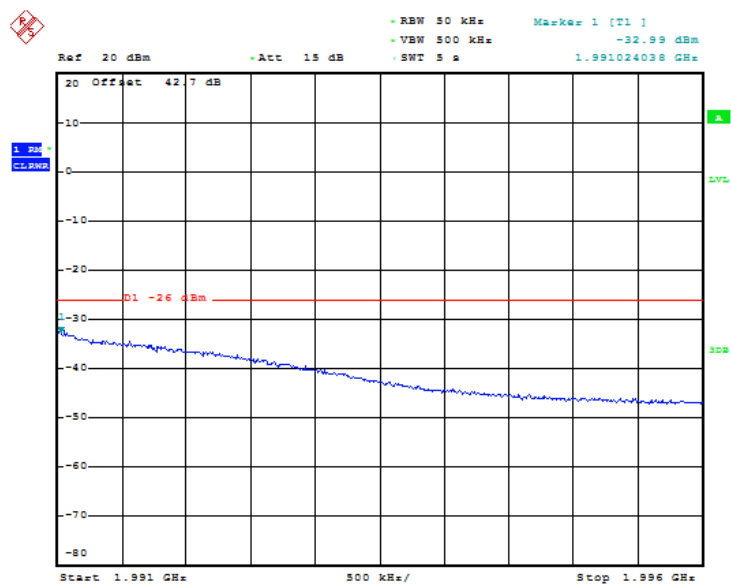


Date: 28.FEB.2013 06:50:52

Configuration 1 - Mode 3 - C&L3



Date: 27.FEB.2013 07:30:17

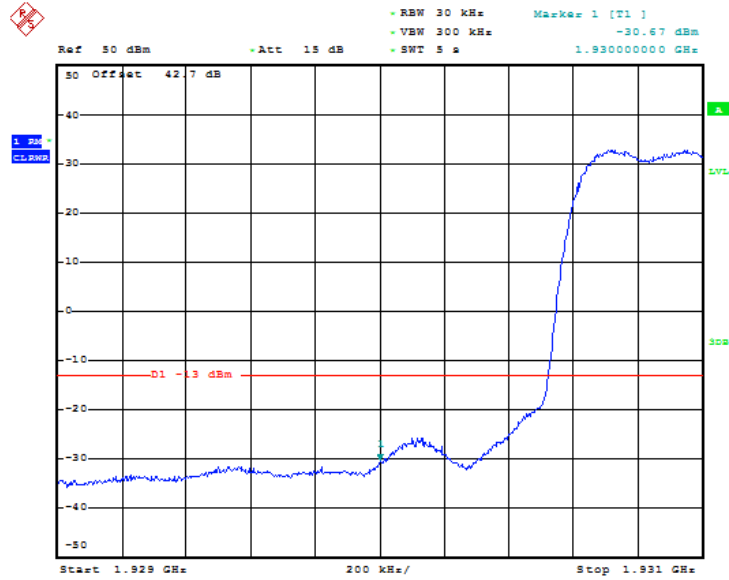


Date: 27.FEB.2013 07:31:15

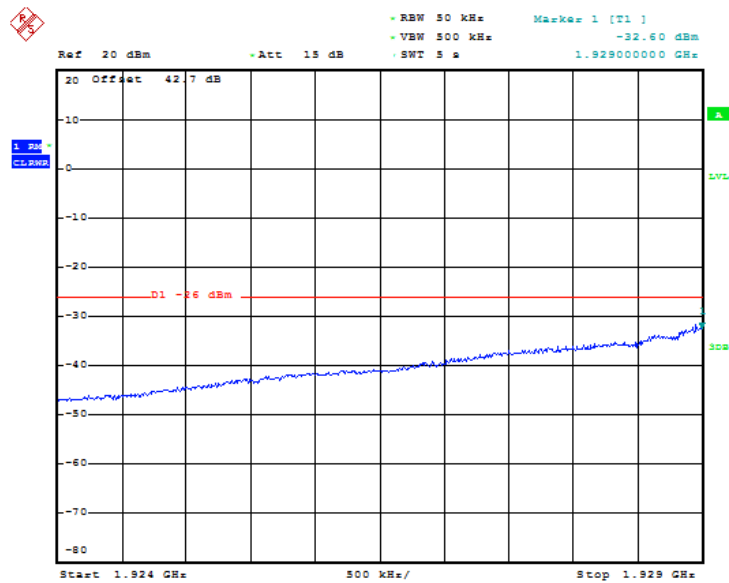


Product Service

Configuration 1 - Mode 4 - C&L3



Date: 27.FEB.2013 04:35:10

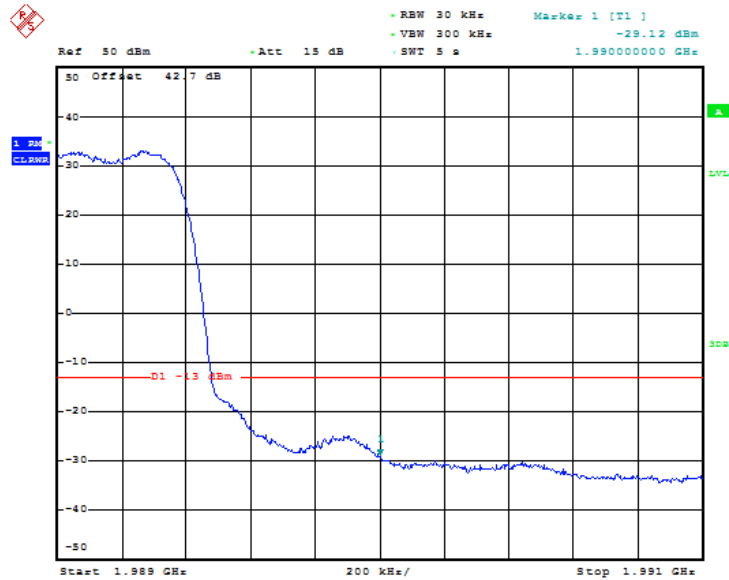


Date: 27.FEB.2013 04:33:16

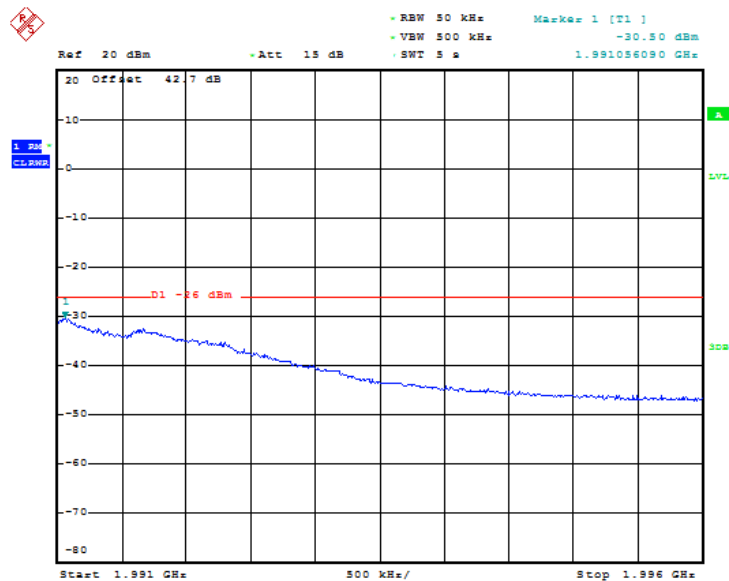


Product Service

Configuration 1 - Mode 5 - L3&C

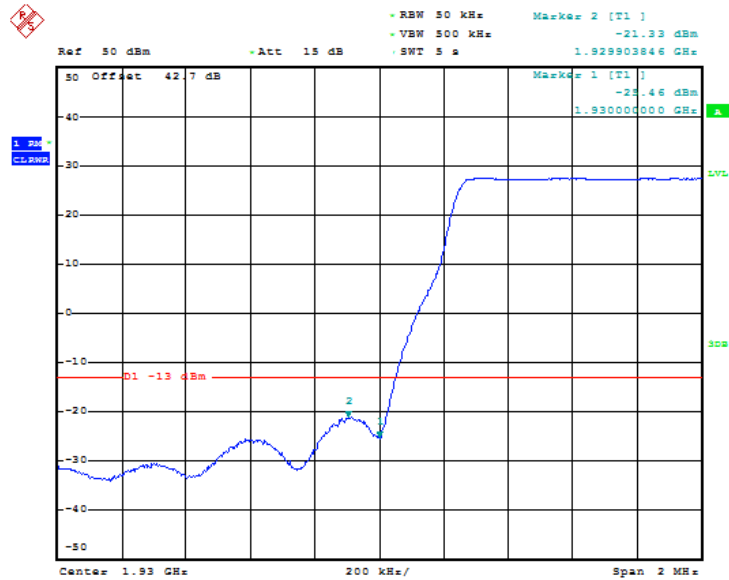


Date: 27.FEB.2013 04:58:57

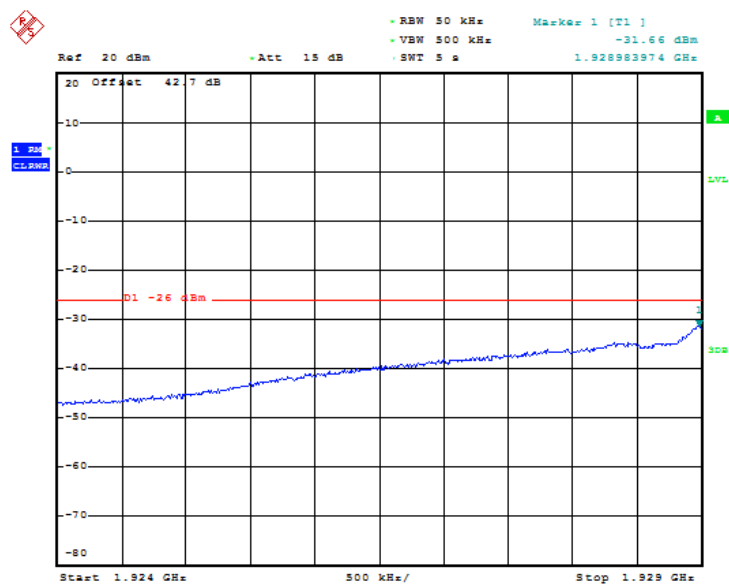


Date: 27.FEB.2013 05:00:57

Configuration 1 - Mode 1 - L5&C



Date: 27.FEB.2013 08:31:15



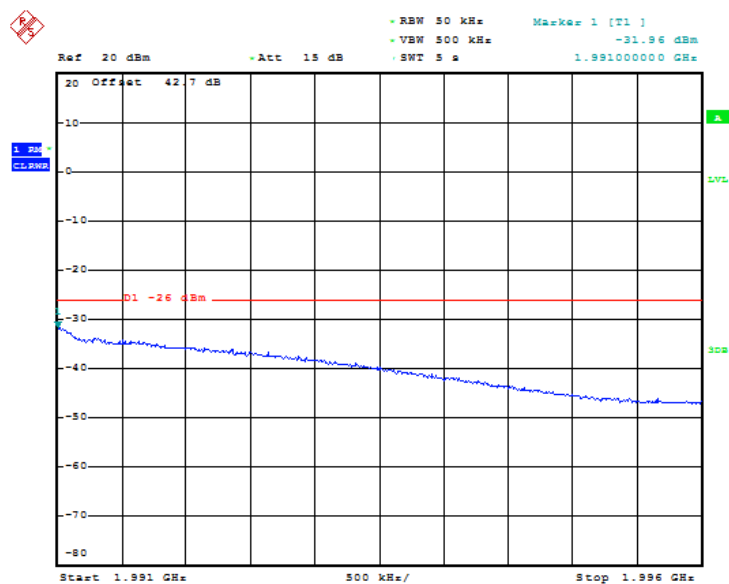
Date: 27.FEB.2013 08:32:39



Product Service

Configuration 1 - Mode 3 - C&L5

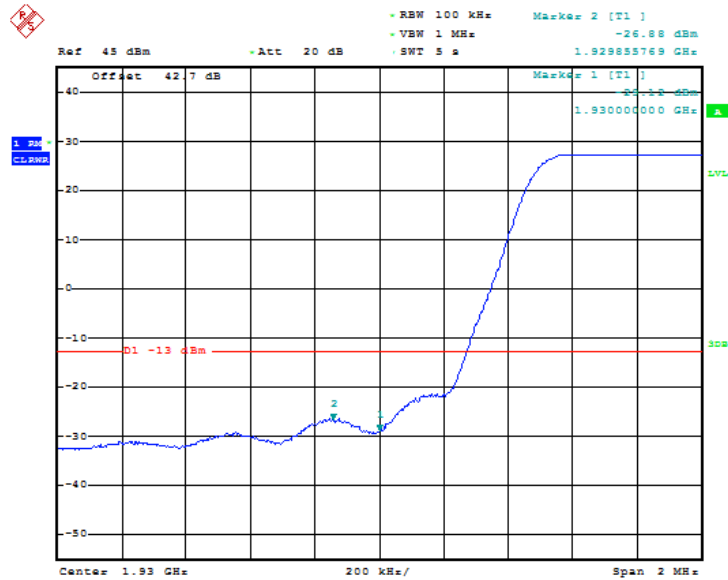
Date: 27.FEB.2013 09:29:02



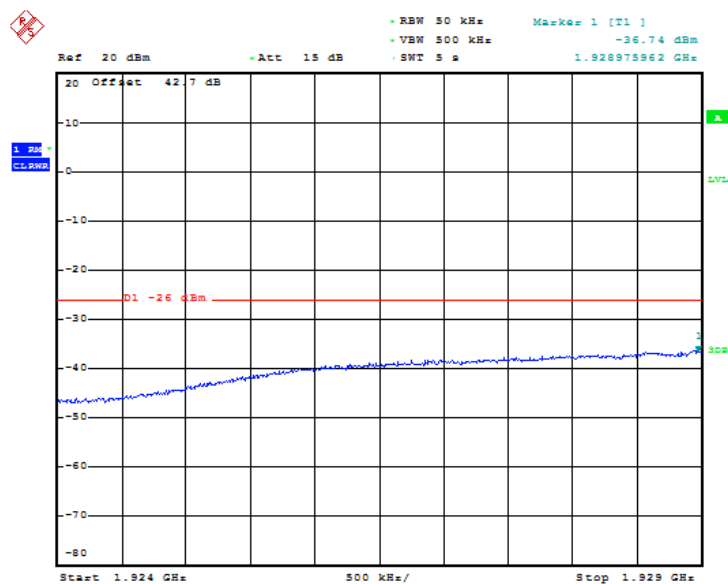
Date: 27.FEB.2013 09:30:04

Product Service

Configuration 1 - Mode 1 - L10&C



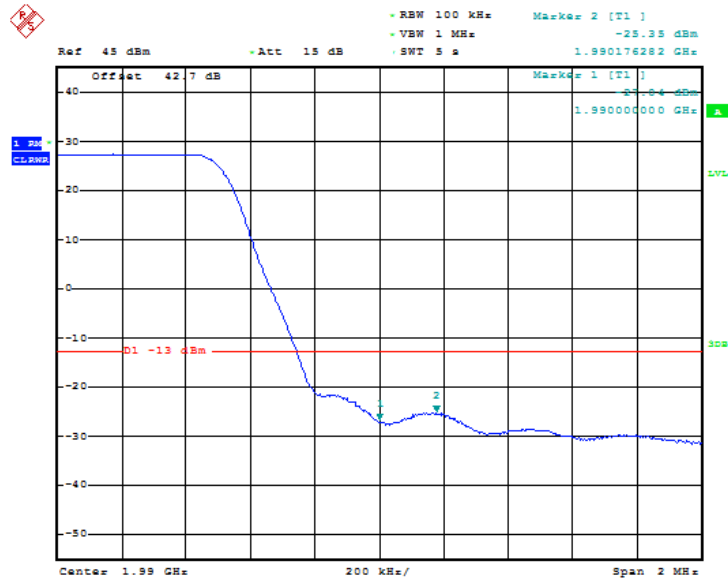
Date: 28.FEB.2013 04:39:19



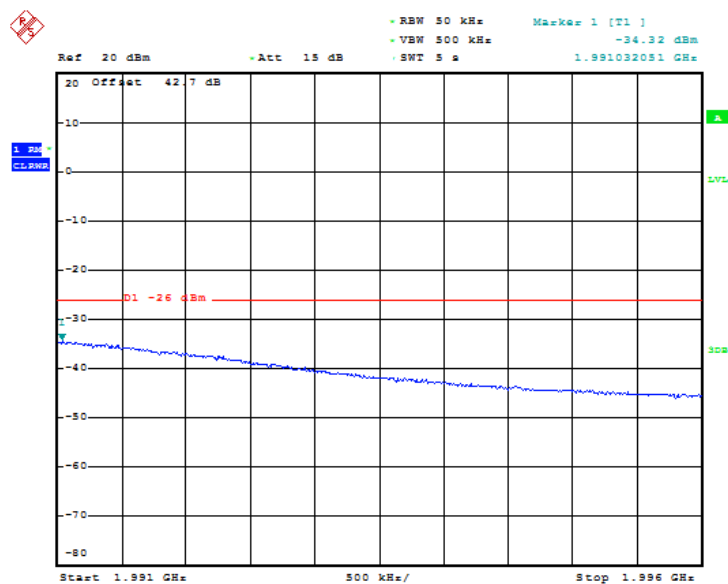
Date: 28.FEB.2013 04:40:29



Product Service

Configuration 1 - Mode 3 - C&L10

Date: 28.FEB.2013 05:16:00



Date: 28.FEB.2013 05:16:41

Limit

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



2.4 RADIATED SPURIOUS EMISSIONS

2.4.1 Specification Reference

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

2.4.2 Equipment Under Test

RUS 01 B2 / KRC 118 66/2, S/N: CB4L099533

2.4.3 Date of Test and Modification State

05 and 06 March 2013 – Modification State 0

2.4.4 Test Equipment Used

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

2.4.5 Test Method and Operating Modes

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

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

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

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

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

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

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

Where:

Field Strength is measured in dB μ V/m

P is measured Transmitter Power in Watts



Determination of Spurious Emission Limit

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

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

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

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

$$E_{(v/m)} = (30 \times 1.64 \times 64.86)^{0.5} / 3 = 18.830V/m = 145.5dB\mu V/m$$

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

$$43 + 10\log(64.86) = 61.1dB$$

Therefore the limit at 3m measurement distance is:

$$145.5 - 61.1 = 84.4 \text{ dB}\mu V/m$$

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

The test was performed with the EUT 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 - L3&C
 - Mode 2 - L3&C, L5&C, L10&C
 - Mode 3 - C&L3
 - Mode 6 - L3&C&C
 - Mode 7 - L3&C&C&C

2.4.6 Environmental Conditions

	05 March 2013	06 March 2013
Ambient Temperature	21.5°C	22.5°C
Relative Humidity	40.0%	35.8%

2.4.7 Test Results

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

The test results are shown below

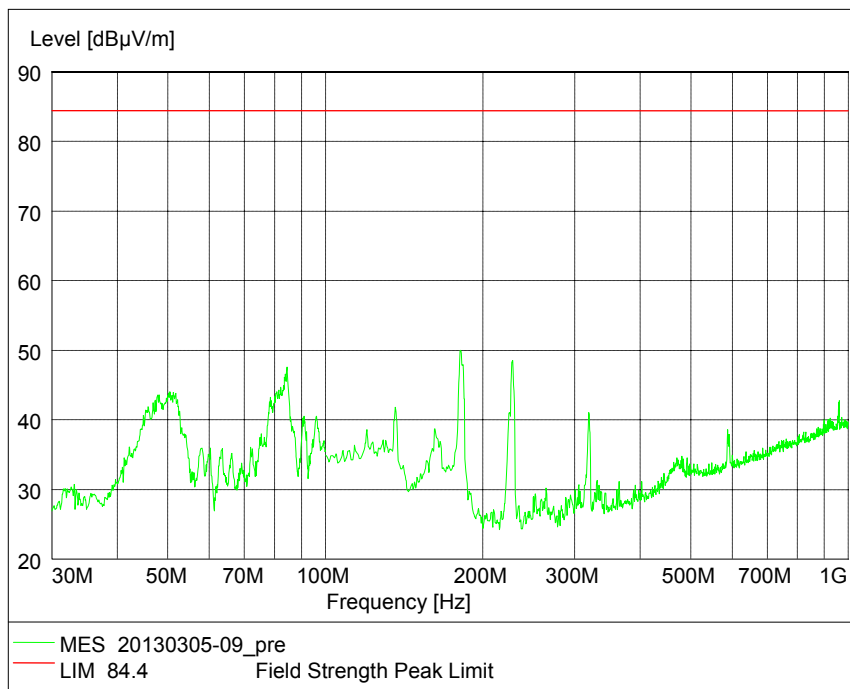
Note: Only the worst case results plots have been included as all of the emissions are greater than 20dB below the limit. A set of plots have been included to show the measurement system noise floor

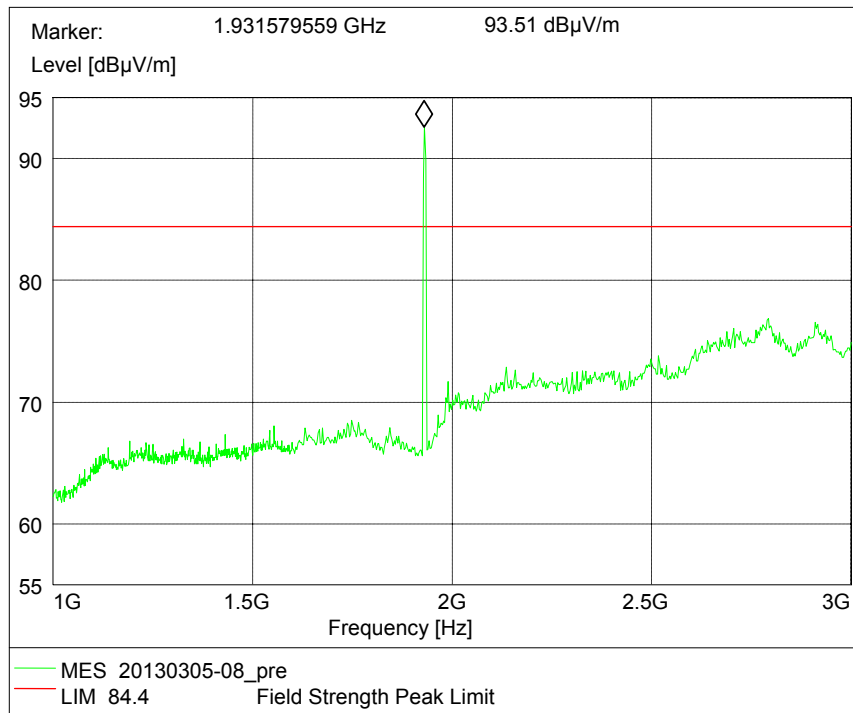
Mix Carrier (x2)

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

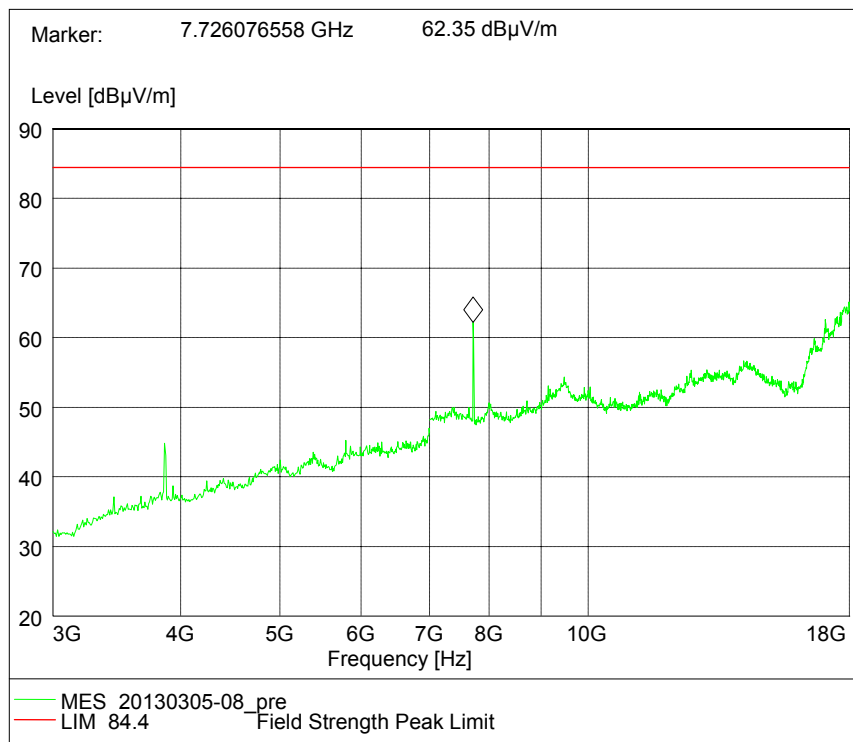
Configuration 1 - Mode 1 - L3&C

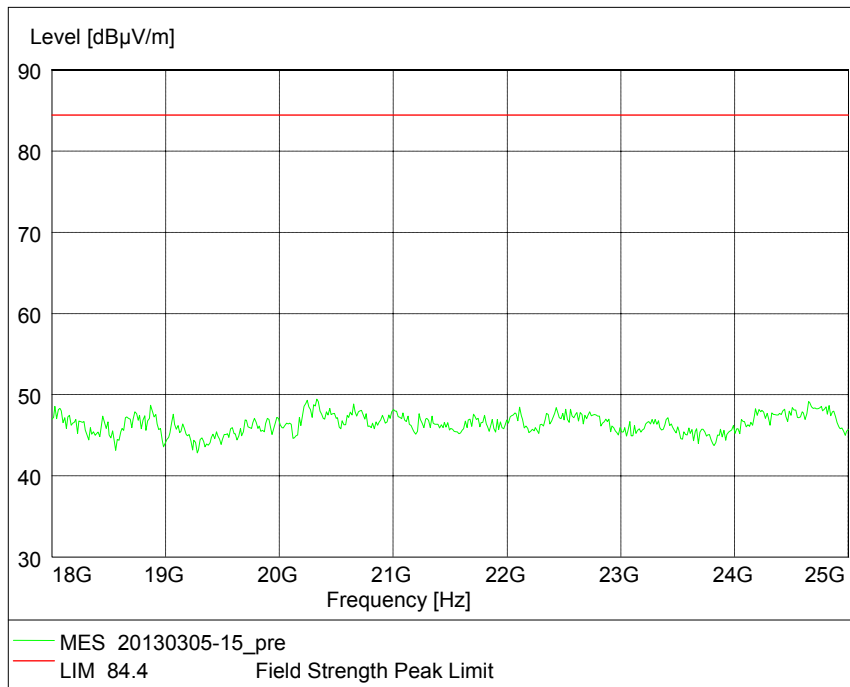
30MHz to 1GHz



1GHz - 3GHz

Note: The emission marked is the operating frequency.

3GHz - 18GHz

18GHz - 25GHz**Configuration 1 - Mode 3 - C&L3**

No emissions were detected within 20dB of the limit.

Configuration 1 - Mode 2 - L5&C

No emissions were detected within 20dB of the limit.

Configuration 1 - Mode 2 - L10&C

No emissions were detected within 20dB of the limit.

LTE (E-TM3.2) & CDMA (QPSK)**Configuration 1 - Mode 2 - L3&C**

No emissions were detected within 20dB of the limit.

LTE (E-TM3.1) & CDMA (QPSK)**Configuration 1 - Mode 2 - L3&C**

No emissions were detected within 20dB of the limit.



Product Service

Mix Carrier (x3)**LTE (E-TM1.1) & CDMA (QPSK)****Configuration 1 - Mode 6 - L3&C&C**

No emissions were detected within 20dB of the limit.

MixCarrier (x4)**LTE (E-TM1.1) & CDMA (QPSK)****Configuration 1 - Mode 7 - L3&C&C&C**

No emissions were detected within 20dB of the limit.

Limit	-13dBm / 84.4dB μ V/m
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Remarks

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



2.5 CONDUCTED SPURIOUS EMISSIONS

2.5.1 Specification Reference

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

2.5.2 Equipment Under Test

RUS 01 B2 / KRC 118 66/2, S/N: CB4L099533

2.5.3 Date of Test and Modification State

26 to 28 February and 01 March 2013 – Modification State 0

2.5.4 Test Equipment Used

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

2.5.5 Test Method and Operating Modes

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

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

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

In addition, measurements were made up to the 10th 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 - L3&C
 - Mode 2 - L3&C, L5&C, L10&C
 - Mode 3 - C&L3
 - Mode 6 - L3&C&C
 - Mode 7 - L3&C&C&C

2.5.6 Environmental Conditions

	26 February 2013	27 February 2013	28 February 2013	01 March 2013
Ambient Temperature	22.0°C	21.5°C	21.0°C	21.0°C
Relative Humidity	40.5%	39.4%	44.7%	35.5%



Product Service

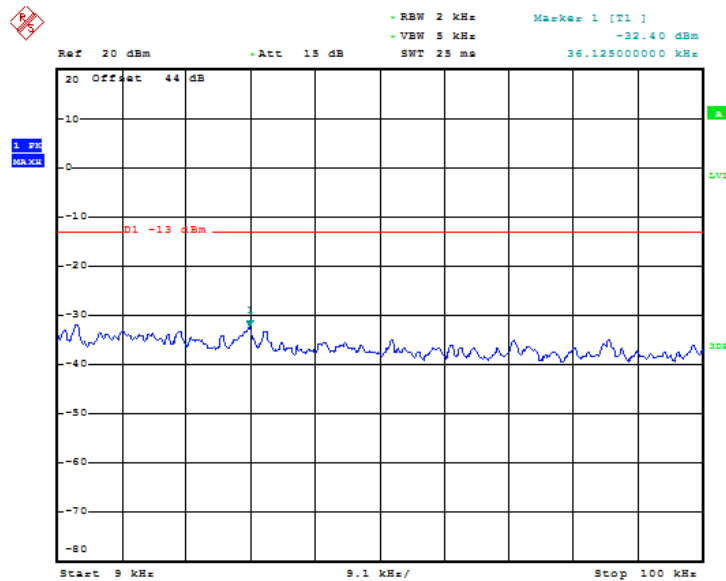
2.5.7 Test Results

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

The test results are shown below

Remark:

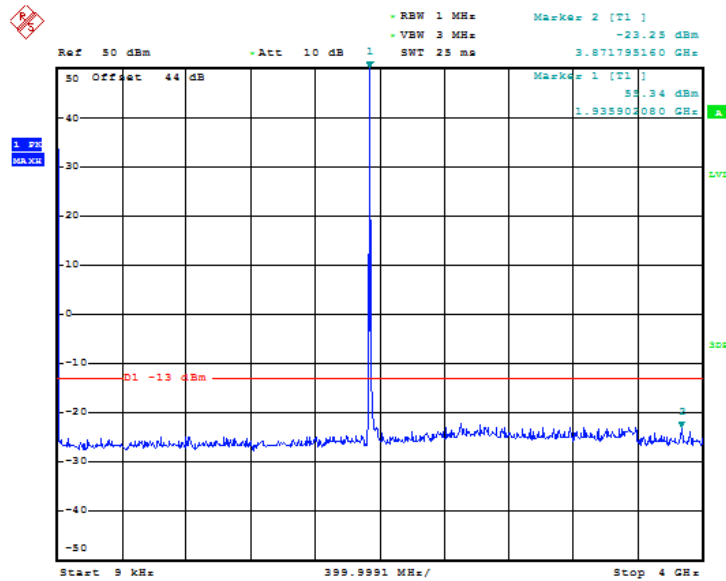
The emissions at 9kHz on the plots was not generated by the test object. A complementary measurement with a smaller Span showed that it was related to the LO feedthrough.



Date: 27.FEB.2013 08:02:59

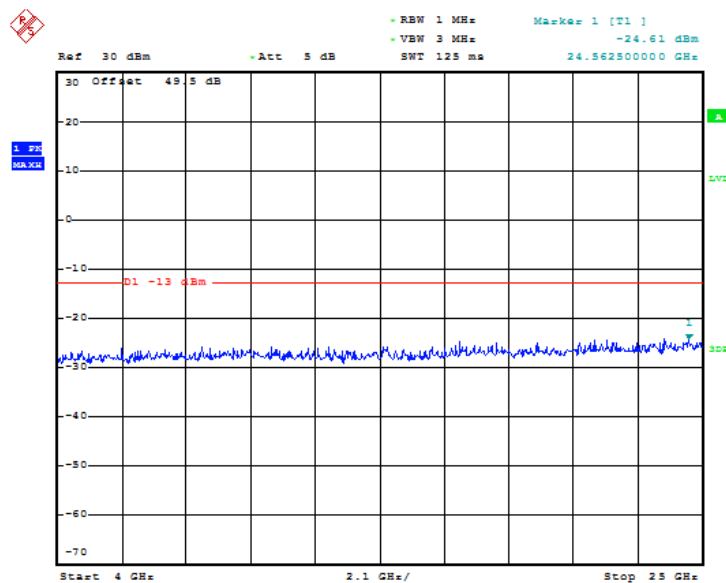


Product Service

Mix Carrier (x2)**LTE (E-TM1.1) & CDMA (QPSK)****Configuration 1 - Mode 1 - L3&C****9kHz to 4GHz**

Date: 27.FEB.2013 04:05:17

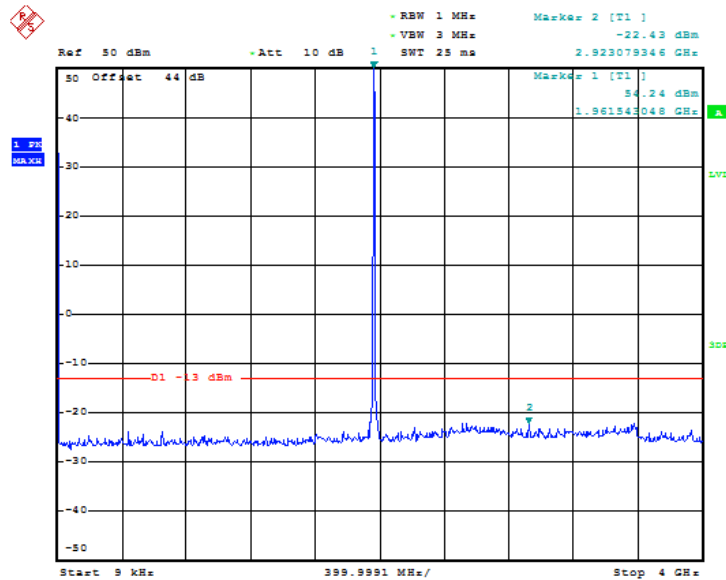
Note: The emission beyond the limit is the operating frequency.

4GHz to 25GHz

Date: 27.FEB.2013 04:03:19

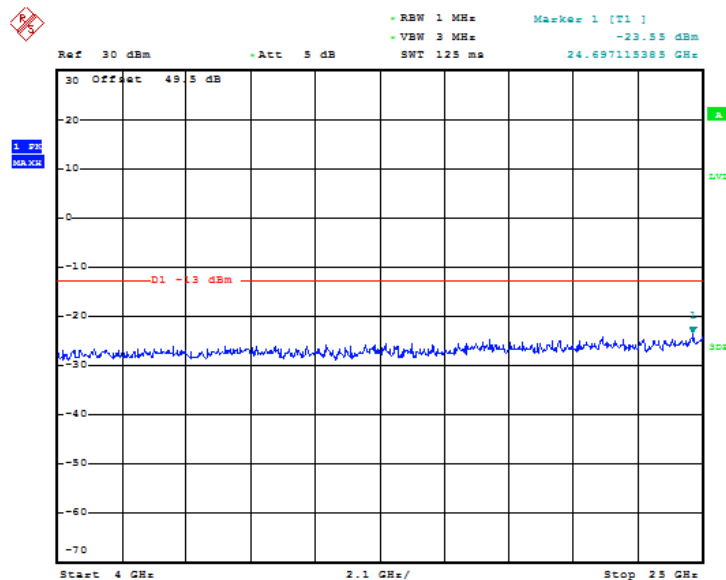


Product Service

Configuration 1 - Mode 2 - L3&C**9kHz to 4GHz**

Date: 27.FEB.2013 05:21:51

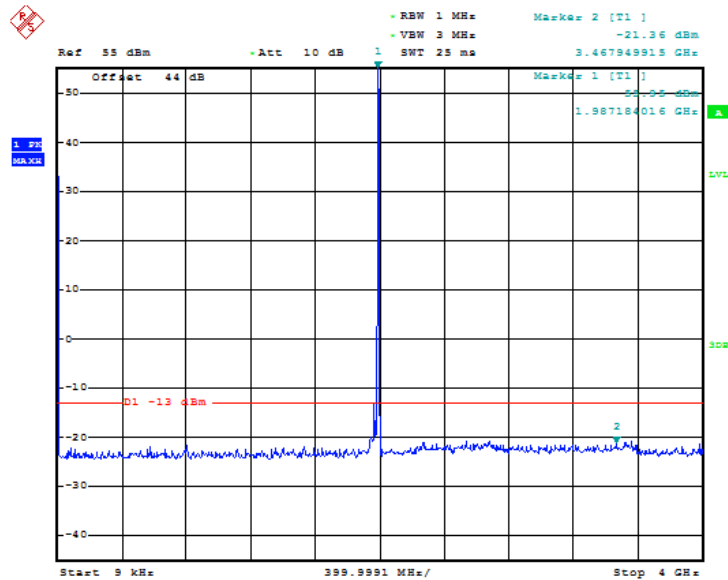
Note: The emission beyond the limit is the operating frequency.

4GHz to 25GHz

Date: 27.FEB.2013 05:22:30

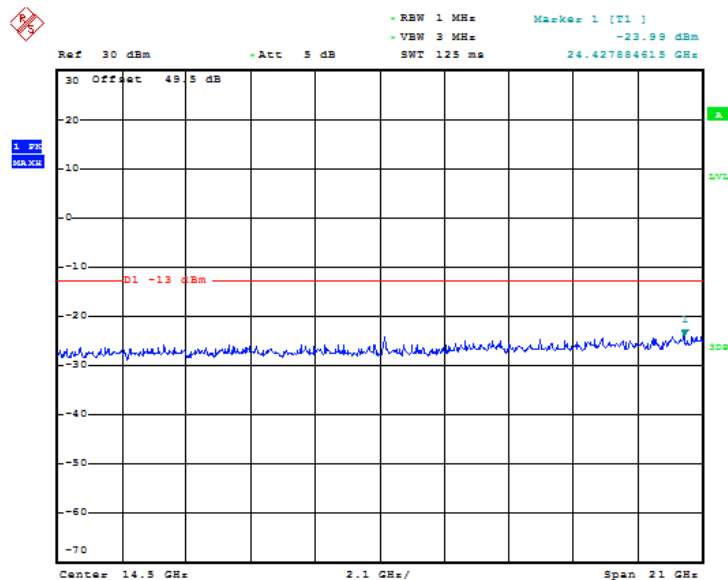


Product Service

Configuration 1 - Mode 3 - C&L39kHz to 4GHz

Date: 27.FEB.2013 09:41:00

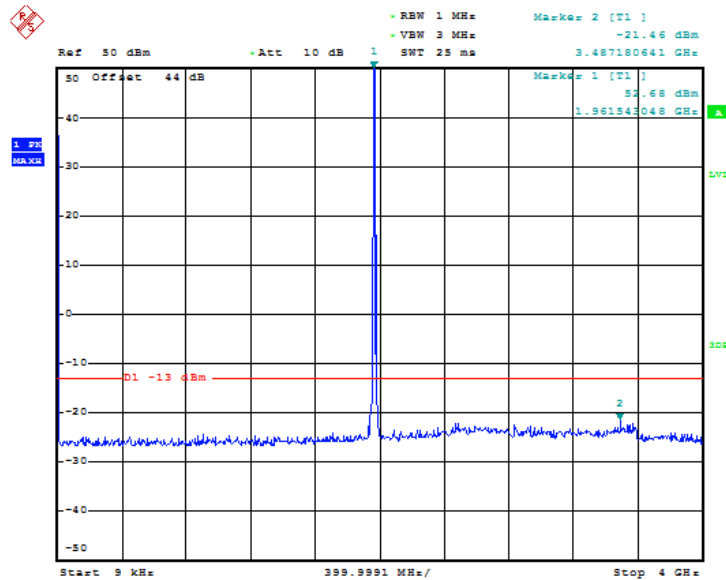
Note: The emission beyond the limit is the operating frequency.

4GHz to 25GHz

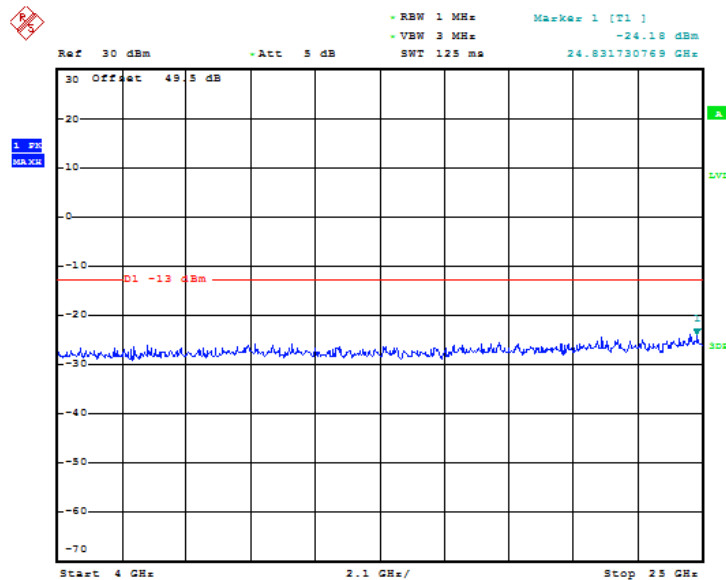
Date: 27.FEB.2013 09:42:25



Product Service

Configuration 1 - Mode 2 - L5&C**9kHz to 4GHz**

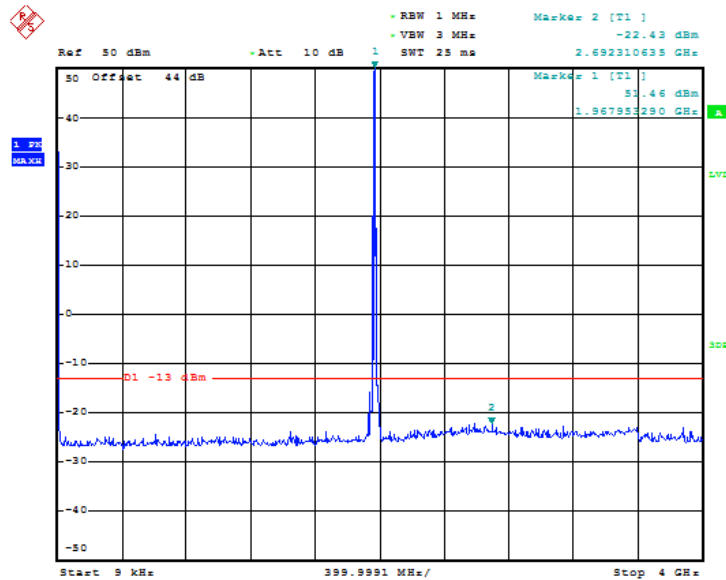
Date: 27.FEB.2013 08:01:48

4GHz to 25GHz

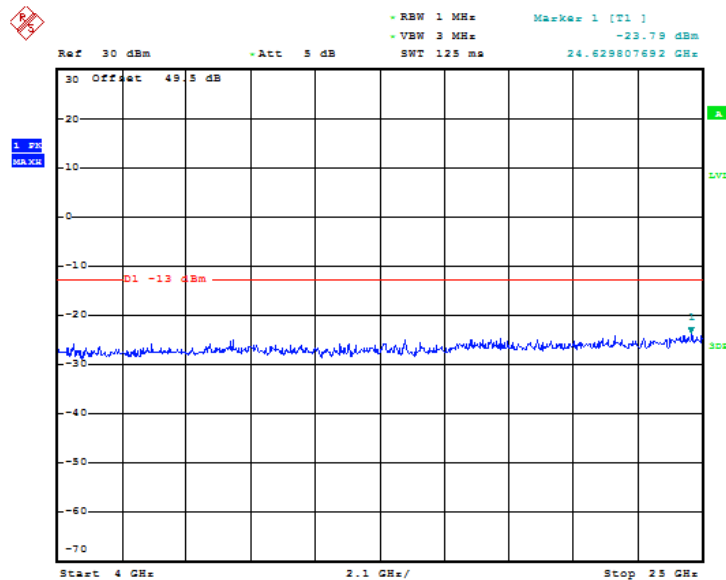
Date: 27.FEB.2013 08:03:45



Product Service

Configuration 1 - Mode 2 - L10&C**9kHz to 4GHz**

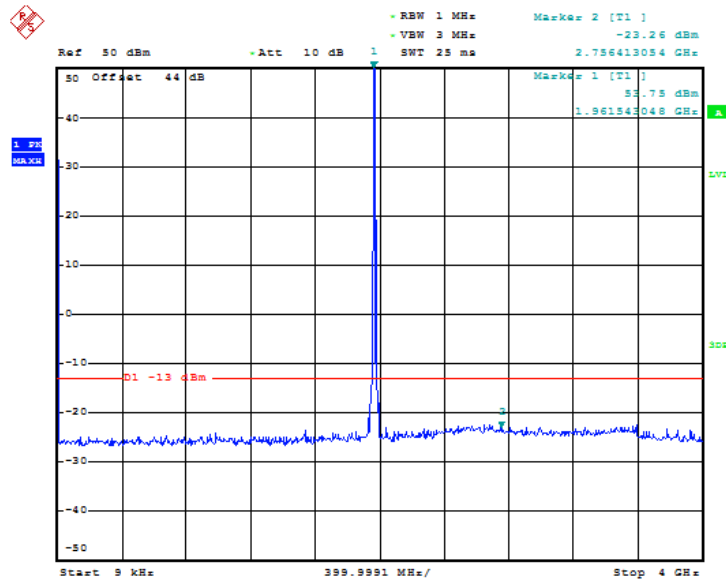
Date: 28.FEB.2013 04:02:55

4GHz to 25GHz

Date: 28.FEB.2013 04:03:36

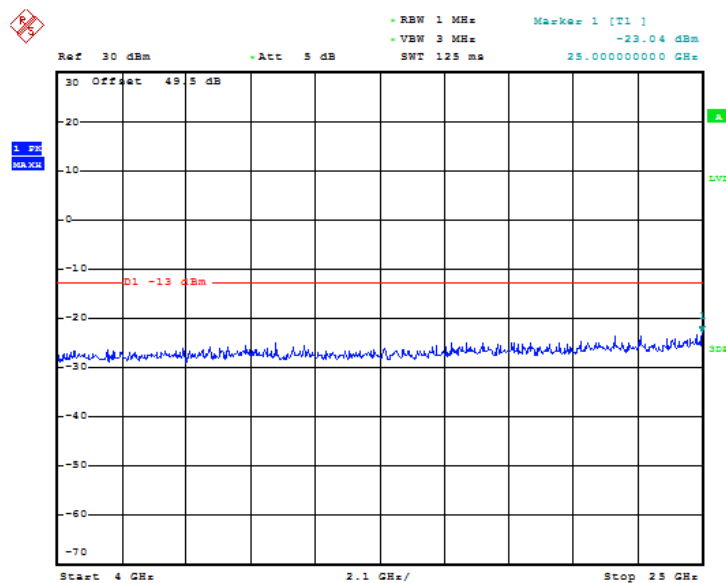


Product Service

Mix Carrier (x3)**LTE (E-TM1.1) & CDMA (QPSK)****Configuration 1 - Mode 6 - L3&C&C****9kHz to 4GHz**

Date: 28.FEB.2013 08:27:23

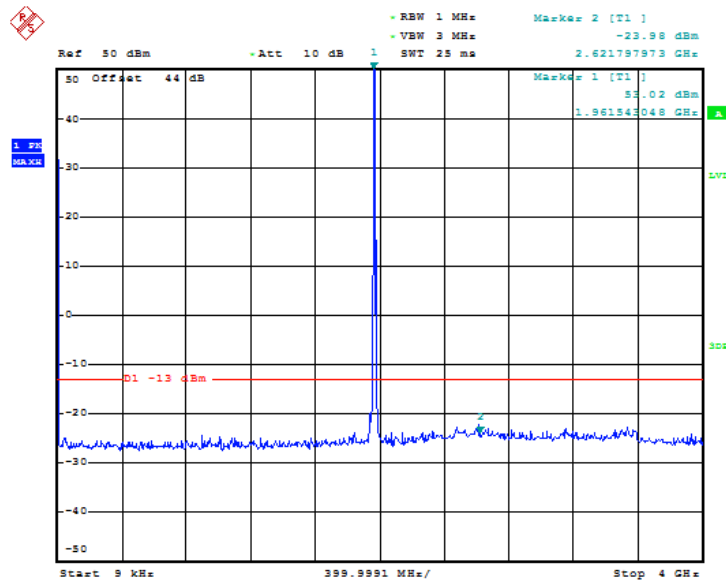
Note: The emissions beyond the limit are the operating frequencies.

4GHz to 25GHz

Date: 28.FEB.2013 08:28:34

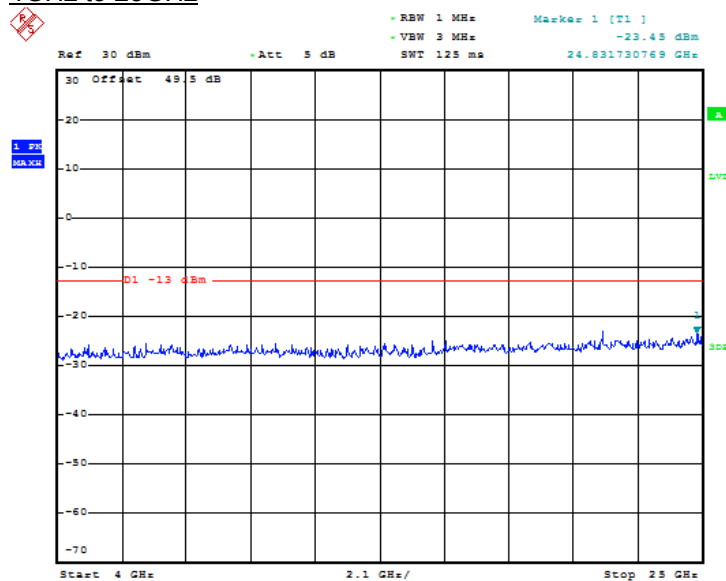


Product Service

Mix Carrier (x4)**LTE (E-TM1.1) & CDMA (QPSK)****Configuration 1 - Mode 7 - L3&C&C&C****9kHz to 4GHz**

Date: 28.FEB.2013 08:06:24

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

4GHz to 25GHz

Date: 28.FEB.2013 08:07:29



Product Service

Limit	-13dBm
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Remarks

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



Product Service

SECTION 3

TEST EQUIPMENT USED

3.1 TEST EQUIPMENT USED

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

Instrument	Manufacturer	Type No.	Serial No.	Calibration Period (months)	Calibration Due
Section 2.1, 2.2, 2.3 and 2.5– Maximum Conducted Output Power, Peak – Average Ratio, Spurious Emissions at Antenna Terminals (± 1MHz) and Conducted Spurious Emissions					
Spectrum Analyser	Rohde & Schwarz	FSQ	0705/2012	12	12-April-2013
Power Meter	Rohde & Schwarz	NRP2	101283	12	12-Aug-2013
Thermal Power Sensor	Rohde & Schwarz	NRPZ51	102434	12	12-Aug-2013
Network Analyzer	Hewlett Packard	8720D	US36140166	12	09-Sep-2013
40 dB Attenuator	ShanghaiHuaxiang	DTS100G	11081901	-	O/P MON
Load	ShanghaiHuaxiang	TF100	09121602	-	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	09121631	-	O/P MON
Load	Shanghai Huaxiang	TF100	09121602	-	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
Pyramidal Horn Antenna	EMCO	3160-09	-	-	-
Antenna master	Frankonia	MA 260	-	12	19-Aug-2013
Relay Switch Unit	Rohde & Schwarz	331.1601.31	338965002	-	TU
Semi Anechoic Chamber	Frankonia	23.18m×16.88m×9.60m	-	12	19-Aug-2013
Power Supply	Dahua	DH1716A-14	20080401	-	O/P MON
Digital Multi-meter	FLUKE	179	91820401	12	13-Dec-2013
Thermo-hygrometer	AZ Instruments	8705	9151655	12	16-Dec-2013

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



Product Service

3.2 MEASUREMENT UNCERTAINTY

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

Test Discipline	Frequency / Parameter	MU
Conducted Maximum Peak Output Power	30MHz to 10GHz Amplitude	0.5dB*
Conducted Emissions	30MHz to 40GHz Amplitude	3.0dB*
Frequency Stability	30MHz to 2GHz Amplitude	$<1 \times 10^{-7}$
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.

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