

IC: 7027A-DRX1
Report No.:

3086329.001 DRX-1 Radio FDA.doc

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Electromagnetic Compatibility Test Report

Prepared in accordance with

FCC Part 15

On

DRX-1 Radio

DRX-1

Prepared for:

Carestream Health Inc.

150 Verona St

Rochester NY, 14608

Prepared by:

TUV Rheinland of North America, Inc.

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Au	ftraggeber:	Carestream Health In						
	Client:	150 Verona St		-8321 / 585-477-2718				
		Rochester NY, 14608	ronald.ca	ain@carestreamhealth.com				
Bezeichnung: Identification:	DRX-1 Ra	adio	Serien-Nr.: Serial No.	0039				
Gegenstand der Prüfung: Test item:	DRX-1		Prüfdatum: Date tested:	09/11/2008				
Prüfort: Testing location:	336 Initia	einland of North Amerative Drive r, NY 14624	rica					
Prüfgrundlage: Test specification:	Emission	Emissions: FCC Part 15.407 Subpart E FCC Part 15.209(a) FCC part 15.407(a)(1), FCC Part 15.407(a)(5) RSS-210 Issue 7, FCC Part 15.407(a)(6), FCC Part 15.407(b)(8), FCC Part 15.205, FCC Part 15.407(c), FCC Part 15.407(g), FCC Part 15.203, RSS-210						
Prüfergebnis: Test Result	oben gen			vurde geprüft und entspricht ect was found to be Compliant				
geprüft / tested by:	Randall Mas	line						
8 May 2009 Datum Date	Name Name	Unterschrift Signature						
Sonstiges:			None					
	ppliant, Does not Cor	entspricht Prüfgrundlage mply = entspricht nicht	Abbreviations: OK, Pass, Compliant, Complies = passed Fail, Not Compliant, Does Not Comply = failed N/A = not applicable					
F©		фајуи	Industry Can	ada BSMI				
		200313-0	3466C-1	SL2-IN-E-050R				



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1 General Information

1.1 Scope

This report is intended to document the status of conformance with the requirements of the FCC Part 15, based on the results of testing performed on 09/11/2008 on the DRX-1 Radio, Model No. DRX-1, manufactured by Carestream Health Inc.. This report only applies to the specific samples tested under the stated test conditions. It is the responsibility of the manufacturer to assure that additional production units of this model are manufactured with identical or EMI equivalent electrical and mechanical components. This report is further intended to document changes and modifications to the EUT throughout its life cycle. All documentation will be included as a supplement.

1.2 Purpose

Testing was performed to evaluate the EMC performance of the EUT (Equipment Under Test) in accordance with the applicable requirements, procedures, and criteria defined in the application of regulations and application of standards listed in this report.



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1.3	Sum	ma	ry of Test Results							
Applicant Carestream Health 150 Verona St Rochester NY, 146			Tel	Tel 585-627-8321 Cont		tact Ronald Cain				
				Fax	585-477-27	18	e-ma	il	ronald.cain@ h.com	carestreamhealt
Description		DR	X-1 Radio	Model	Number	DRX	K-1			
Serial Number		003	39	Test V	oltage/Freq.	Batt	ery 12	VDC		
Test Date Com	pleted:	09/	11/2008	Test E	ngineer	Ran	dall N	I aslin	e	
Standa	rds		Description	Se	verity Level	or Limi	t	Me	easurement	Test Result
RSS-210 Issue	7		Industry Canada - Low-power License-exempt Radiocommunication Devices	See ca below	alled out bas	ic stan	dards	See :	Below	Complies
FCC Part 15.407 5.15-5.25 GHz i band only		Έ	Unlicensed National Information Infrastructure Devices	See ca below	ılled out bas	ic stan	dards	See ?	Below	Complies
FCC Part 15.209(a)			Radiated Emissions	Class B, 30 - 1000 MHz					Complies	
FCC Part 15.207(c)			Conducted Emissions	Class B, 0.15 - 30 MHz					ot Required ery Powered	Complies
FCC Part 15.407	7(a) (1)		Conducted Output Power	50 mw	Maximum					Complies
FCC part 15.407	7(a)(1)		-26 dB Bandwidth					2	14.9 MHz	Complies
FCC Part 15.407	7(a)(5)		Peak Power Spectral Density							Complies
FCC Part 15.407	7(a)(6)		Peak Power Excursion							Complies
FCC Part 15.407	7(b)(8)		Band Edge							Complies
FCC Part 15.205	5		Restricted Bands						Complies	
FCC Part 15.407(c)			Discontinuance Of Transmission							Complies
FCC Part 15.407(g)		Frequency Stability							Complies	
FCC Part 15.203			Antenna Requirements							Complies
RSS-210			99% Bandwidth							Complies

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2 Laboratory Information

2.1 Accreditations & Endorsements

2.1.1 US Federal Communications Commission

TUV Rheinland of North America located at 336 Initiative Dr, Rochester NY is accredited by the commission for performing testing services for the general public on a fee basis. This laboratory test facilities have been fully described in reports submitted to and accepted by the FCC (Registration No US90575). The laboratory scope of accreditation includes: Title 47 CFR Part 15, and 18. The accreditation is updated every 3 years.

2.1.2 NIST / NVLAP

Program, which is administered under the auspices of the National Institute of Standards and Technology. The laboratory has been assessed and accredited in accordance with ISO Standard 17025:2005 (Lab code: 200313-0). The scope of laboratory accreditation includes emission and immunity testing. The accreditation is updated annually.

2.1.3 VCCI

VCCI Accredited test lab. Registration numbers R-1065, C-1120, C-1121

2.1.4 Industry Canada

Registration No.: 3466C-1. The OATS has been accepted by Industry Canada to perform testing to 3 and to 10m, based on the test procedures described in ANSI C63.4-2003.

2.1.5 BSMI

Registration No.: SL2-IN-E-050R. The BSMI accreditation was obtained by NIST MRA with the BSMI.



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2.2 Measurement Uncertainty

General

	The estimated combined standard uncertainty for ESD immunity measurements is $\pm 0.43\%$.
	The estimated combined standard uncertainty for radiated immunity measurements is $\pm 2.0 dB$.
	The estimated combined standard uncertainty for EFT fast transient immunity measurements is \pm 6.0%.
	The estimated combined standard uncertainty for surge immunity measurements is \pm 5.0%.
	The estimated combined standard uncertainty for conducted immunity measurements is \pm 2.0 dB.
	The estimated combined standard uncertainty for power frequency magnetic field immunity measurements is \pm 2.57%.
	The estimated combined standard uncertainty for voltage variation and interruption measurements is \pm 4.89%.
\boxtimes	The estimated combined standard uncertainty for radiated emissions measurements is \pm 4.6 dB.
	The estimated combined standard uncertainty for conducted emissions measurements is \pm 2.6 dB.
	The estimated combined standard uncertainty for harmonic current \pm 7.27% and flicker measurements is \pm 3.87%.

2.3 Calibration Traceability

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Measurement method complies with ANSI/NCSL Z540-1-1994 and ISO Standard 17025:2005. Equipment calibration records are kept on file at the test facility.

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2.4 Measurement Equipment Used

Equipment	Manufacturer	Model #	Ref./Serial #		Last Cal dd/mm/yy	Next Cal dd/mm/yy	Test
BiLog	Chase	CBL6112A		2125	N/A	N/A	RI
BiLog	Chase	CBL6111		1169	29-June-07	29-June-09	RE
BiLog	Chase	CBL6111		1170	29-June-07	29-June-09	RE
Horn	EMCO	3115	C025	9512-4630	14-Jun-07	14-Jun-09	RE
Horn	EMCO	3115	C031	9812-5635	7-Feb-08	7-Feb-10	RE
LISN	Schwarzbeck	8121-200	C102	200	15-Jan-08	15-Jan-10	CE
LISN	Schwarzbeck	8121-131	C111	131	20-Dec-07	20-Dec-09	CE
LISN	Schwarzbeck	8121-128	C114	128	24-Jul-08	24-Jul-10	CE
ESD Gun	Schaffner	NSG 435	C200	1495	22-Jul-08	22-Jul-09	ESD
Precision Power Source	California Instruments	MDL 225500L/5	C210		N/A	N/A	HAR, FLI, VDSI
Power Analyzer	Voltech	PM3000A	C211	8992	6-May-08	6-May-09	FLI
Wideband (.01-230)	IFI	M75	C212	A295-0497	N/A	N/A	CI
Signal Generator	Marconi	2024	C213	112223122	19-Dec-07	19-Dec-08	RI
Signal Generator	HP	8657A	C214	312A04354	19-Dec-07	19-Dec-08	CI
Power Meter	НР	437B	C215	3125010240	19-Dec-07	19-Dec-08	CI
Power Supply & Control Module	IFI	PS 5000/28/40	C219	049-4146	N/A	N/A	RI
Wideband Amp (.01- 1000)	IFI	M5580	C220	0492-4146	N/A	N/A	RI
Coupling Decoupling 1 PH	FCC	FCC-801-M3-32	C221	106	07-Jan-08	07-Jan-09	CI
Attenuator 6dB (0-1000MHz) 100W	JFW		C223		N/A	N/A	CI
Directional Coupler		62630	C224	5326	N/A	N/A	CI
CDN Adapter Kit	FCC	801-150-50 CDN	C225	752/753	04-Jan-08	04-Jan-09	CI
Calibration Fixture	FCC	801-2031-CF	C226	135	03-Jan-08	03-Jan-09	CI
EM Injection Clamp	FCC	F-2031	C227	259	03-Jan-08	03-Jan-09	CI
PS/Control Module	IFI	5000/28/40	C228	2245-1296	N/A	N/A	RI
Wideband Amp	IFI	CMX5001	C229	2244-1296	N/A	N/A	RI
Leveling PreAmplifier	IFI	LPA-5B	C230	2265-1296	N/A	N/A	RI

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		T	1	1	Т	T	T
Field Monitor	Amplifier Research	FM5004		308114	N/A	N/A	RI
RF 900MHz Pulse Modulator	Schaffner	CPM9830	C240	1026	N/A	N/A	RI
Induction Coil (2.0m x 2.6m)	Haefely		C241		N/A	N/A	MF
Magnetic Field Test System	Haefely	MAG 100.1	C243	080-136-03	N/A	N/A	MF
Triaxial Field Meter	F.W.BELL	4080	C244		25-Apr-07	25-Apr-09	MF
Directional Coupler 0.8-4.2GHz	Amplifier Research	DC7144A	C251	307343	N/A	N/A	RI
Digitizing Oscilloscope 1GHz	Tektronix	TDS 784C	C254	B010847	17 Dec-07	17 Dec-08	SI, EFT VDSI
Field sensor	Amplifier Research	FP6001	C255	305319	6 Jun 08	6 Jun 09	RI
Power Sensor (100KHz- 4.2GHz)	Agilent	8482A	C256	MY41093835	18 Dec-07	18 Dec-08	CI
Power Meter	Gigatronics	8541B	C257	1828546	28-May-08	28-May-09	RI
Peak Power Sensor	Gigatronics	80350A	C258	1829770	16-May-08	16-May-09	RI
Coupling Decoupling 2 PH	FCC	FCC-801-M4 -32A	C260	07005	10-Jun-08	10-Jun-09	CI
Coupling Decoupling 1 PH	FCC	FCC-801-M3 -16A	C261	07021	10-Jun-08	10-Jun-09	CI
EMI Receiver	Rohde & Schwarz	ESVS 30	C310	826006/015	19-Dec-07	19-Dec-08	RE
Analyzer w RF Filter Section 85460A	НР	8546A	C311	3325A00127	23-Jul-08	23-Jul-09	RE, CE
Receiver (20Hz-40GHz)	Rohde & Schwarz	ESI 40	C320	839283/005	22-Jul-08	22-Jul-09	RE,CE
Receiver (20Hz-40GHz)	Rohde & Schwarz	ESIB 40	C321	100180	20-Jan-08	20-Jan-09	RE,CE
EMI Receiver	Rohde & Schwarz	ESHS 30	C323	831954/012	19-Dec-07	19-Dec-08	CE
Multimeter	Fluke	87	C405	49050672	5-May-08	5-May-09	All Tests
Clamp On Meter	Amprobe	RS-3	C410		17-Dec-07	17-Dec-08	MF
Absorbing Clamp	Rohde & Schwarz	MDS-21	C413	76549	10-Sep-07	10-Sep-08	RE
Temp./Humidity Chart Recorder	Honeywell		C418	637592	9-Jan-08	9-Jan-09	RE
Temp./Humidity Chart Recorder	Honeywell		C419	639971	8-Jan-08	8-Jan-09	Re
Passive HV Probe 100X	Fluke	80K-40	C434		24-Jul-08	24-Jul-09	ESD
Oscilloscope	Tektronics	2430	C435	8010532	23-Jul-08	23-Jul-09	EFT
Multimeter	Fluke	83	C437	48162892	24-Jul-08	24-Jul-09	RE
Amplifier (1-26.5 GHz.)	Agilent	8449B	C438	3008A01842	18-Dec-07	18-Dec-08	RE
Amplifier 1 - 18GHz	Rohde & Schwarz	TS-PR18	C439	122002/001	18-Jan-08	18-Jan-10	RE

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Signal Generator (10M- 40GHz)	Rohde & Schwarz	SMR40	C440	100195	19-Dec-07	19-Dec-08	RI
Amplifier (18-26.5GHz)	Rohde & Schwarz	TS-PR18	C443	100005	22-Jul-08	22-Jul-08	RE
Digital Pressure/Temp/RH	Davis	Perception II	C444	40917	08-Jan-08	08-Jan-09	All tests
Multimeter	Fluke	87	C445	59890224	18-Dec-07	18-Dec-08	All tests
Power Analyzer	Voltech	PM6000	C446	100006700195	13-Dec-07	13-Dec-08	HAR, FLI, VDSI
Analyzer w RF Filter Section 85460A	НР	8546A	D004	3625A00356	23-Jul-08	23-Jul-08	RE, CE
ESD Gun	Schaffner	NSG 435	D005	1891	12 Dec-07	12 Dec-08	ESD
Fast Transient / Burst Generator	Schaffner	NSG2025	D007	109	18-Sep-07	18-Sep-08	EFT
Surge Immunity Test System	Schaffner	NSG2050	D008	199930- 007SC	18-Sep-07	18-Sep-08	SI
Pulse Coupling Network	Schaffner	CDN 133	D009	102	24-Sep-07	24-Sep-08	SI

Note: CE = Conducted Emissions, CI= Conducted Immunity, DP=Disturbance Power, EFT=Electrical Fast Transients, ESD = Electrostatic Discharge, FLI=Flicker, HAR=Harmonics, MF=Magnetic Field Immunity, RE=Radiated Emissions, RI=Radiated Immunity, SI=Surge Immunity, VDSI=Voltage Dips and Short Interruptions

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3 Product Information

3.1 Product Description

See Section 6.4.

Channel	Operating Frequency (MHz)	Rated Power (dBm)
36	5180	+16.9
40	5200	+16.9
44	5220	+16.9
48	5240	+16.9

3.2 **Equipment Modifications**

No modifications were needed to bring product into compliance.

3.3 Test Plan

The EUT product information, test configuration, mode of operation, test types, test procedures, test levels, pass/failure criteria, in this report were carried out per the product test plan located in appendix A of this report.

There were no deviations, adaptations or exclusions made to the standards shown on page 2 during the testing of the DRX-1 radio. There were no options selected in any of the standards during the DRX-1 radio tests.

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Figure 1 – External Photo of EUT

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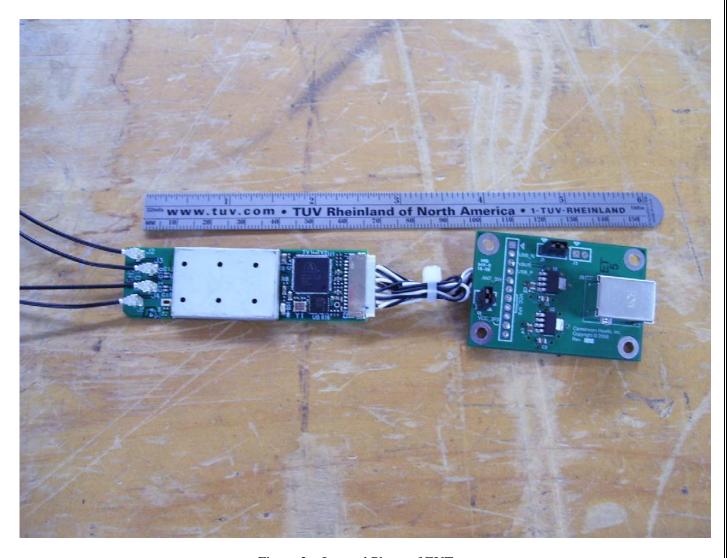


Figure 2 – Internal Photo of EUT

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4 Emissions

4.1 Radiated Emissions

This test measures the electromagnetic levels of spurious signals generated by the EUT that radiated from the EUT and may affect the performance of other nearby electronic equipment.

4.1.1 Over View of Test

Results	Complies (as tested	l per this		Date	9/11/20	08			
Standard	FCC Part 15.209(a)								
Product Model	DRX-1			Serial#	0039				
Configuration	See test plan for deta	ails							
Test Set-up	Tested on 10m O.A.	Tested on 10m O.A.T.S. placed on turn-table, see test plans for details							
EUT Powered By	Battery 12VDC	Temp	24°C	Humidity	54%	Pressure	1013mbar		
Frequency Range	30 - 1000 MHz @ 1	0m							
Criteria	Class B. (Below Lin	Limit) Perf. Verification			Readings Under Limit				
Mod. to EUT	None		Test Perfe	ormed By	Randa	ıll Masline			

4.1.2 Test Procedure(s)

Radiated and FCC emissions tests were performed using the procedures of ANSI C63.4 including methods for signal maximizations and EUT configuration. The photos included with the report show the EUT in its maximized configuration.

The frequency range from 30 - 1000 MHz was investigated for radiated emissions.

Radiated emission testing was first performed at a distance of 3 meters in the semi-anechoic chamber in order to identify the specific frequencies for which these measurements will be made on the 10 m OATS.

In accordance with FCC Public Notice DA 02-2138 Measurement Procedure updated for Peak Transmit Power in the Unlicensed National Information Infrastructure (U-NII) Bands.

The transmitter was transmitting continuously at maximum power for all tests. Therefore; method 2 was used to measure peak power..

4.1.3 Deviations

There were no deviations from the test methodology listed in the test plan for the radiated emission test.

4.1.4 Final Test

All final radiated emissions measurements were below (in compliance) the limits.

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4.1.5 Final Tabulated Data

Radiated Er	nissions l	Measure	ments		1			
Standard:	47 CFR 15.	209(a), Cla	iss B		Final		Date:	9/11/2008
Device Tested:	DRX-1 Radi	io			3.0m	455	File:	10102409
3	Me	easured Le	l vel			250 -2		
Meas#	Freq (MHz)	Quasi- Peak	Quasi- Peak Limit	Quasi- Peak Δ	Result	Polarization	Angle (degrees)	Antenna Height (meters)
s4)	467.9730	44.20	46.00	-1.80	Complied	Vertical	130	1.00
2	455.9740	44.00	46.00	-2.00	Complied	Horizontal	130	1.00
3	467.9730	43.30	46.00	-2.70	Complied	Horizontal	130	1.00
4	479.9740	42.90	46.00	-3.10	Complied	Vertical	130	1.00
5	455.9740	41.90	46.00	-4.10	Complied	Vertical	130	1.00
6	443.9650	41.50	46.00	-4.50	Complied	Horizontal	130	1.00
7	479.9740	41.80	46.00	-4.20	Complied	Horizontal	130	1.00
8	191.9900	38.00	43.50	-5.50	Complied	Horizontal	130	1.00

Spurious Emissions

Spurious emissions were investigated to the 10th harmonic or in this case to 40 GHz, measurements were taken on the highest channel, channel 36 at 24 Mbits/s.

Spurious En	nissions Mea	suremer	nts		8						
	47 CFR 15.209(a)							Final		Date:	9/11/2008
Device Tested:	DRX-1 Radio		×.				v.	3.0m		File:	10102409
50	М	L easured Le	vel								
				20							Antenna
		1500000 500		Peak	11-102 FM DA			111100	N S S S S S S S	Angle	Height
Meas #	Freq (MHz)	Peak	Average	Limit	Peak ∆	Avg Limit	Avg ∆	Result	Polarization	(degrees)	(meters)
1	3992.0000	36.00	34.00	74.00	-38.00	54.00	-20.00	Complied	Horizontal	0	1.00
2	4364.0000	34.00	32.30	74.00	-40.00	54.00	-21.70	Complied	Horizontal	0	1.00
3	8756.0000	39.00	36.90	74.00	-35.00	54.00	-17.10	Complied	Horizontal	0	1.00
4	10360.0000	44.30	41.70	74.00	-29.70	54.00	-12.30	Complied	Horizontal	0	1.00
5	15540.0000	44.00	41.80	74.00	-30.00	54.00	-12.20	Complied	Horizontal	0	1.00
6	20720.0000	39.60	36.10	74.00	-34.40	54.00	-17.90	Complied	Horizontal	0	1.00
7	25900.0000	40.00	37.30	74.00	-34.00	54.00	-16.70	Complied	Horizontal	0	1.00
8	31080.0000	41.60	38.10	74.00	-32.40	54.00	-15.90	Complied	Horizontal	0	1.00
9	36260.0000	41.80	38.70	74.00	-32.20	54.00	-15.30	Complied	Horizontal	0	1.00

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4.2 Conducted Emissions

This test measures the electromagnet levels of spurious signals generated by the EUT on the AC power line that may affect the performance of other near by electronic equipment.

The EUT operated on 12VDC battery only, therefore testing was not performed.

4.3 Conducted Output Power Limits

Testing has been carried out on the EUT in accordance with 47 CFR Part 15.407(a)(1) in order to determine the -26 dB emission bandwidth of the transmitted signal. It has been determined that the -26 emission bandwidth is 44.94 MHz.

The peak transmit power limit based on the -26dB emission bandwidth in the frequency band of 5150 – 5250 MHz can be calculated as follows:

+4 dBm + 10 log B where B is the -26 dB emission Bandwidth in MHz

+4 dBm + 10 log 40 = +4 dBm + 16.52 = 20.52 dBm (112mW)

In accordance with 47 CFR Part 15.404(a)(1) the peak transmit power in the frequency band of 5150 – 5250 MHz shall not exceed the lesser of 50 mW or +4 dBm + 10log B, where B is the -26 dB emission bandwidth in MHz.

In accordance with 47 CFR Part 15.407(a)(1), the peak transmit power limit, in the frequency band of 5150 - 5250 MHz, has been determined at +16.9 dBm (50mW)

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4.3.1 Maximum Peak Transmit Power Test Results

Transmission Bitrate	M	Limit (dBm) Antena gain							
(Mbits/s)	Ch 36 5180 MHz								
6	13.8	13.6	14.0	13.7	16.9				
12	14.0	13.7	14.0	13.8	16.9				
24	15.1	14.2	14.9	14.9	16.9				
54	14.4	14.4	14.5	14.5	16.9				

Table 1 – Maximum Peak transmit power at 20MHz Bandwidth

Transmission Bitrate	Maximum Peak Transmit Power (dBm)				Limit (dBm) Antena gain
(Mbits/s)	Ch 36 5180 MHz	Ch 40 5200 MHz	Ch 44 5220 MHz	Ch 48 5240 MHz	< 6 dBi
6	13.6	13.4	13.8	13.5	16.9
12	13.9	13.5	13.9	13.6	16.9
24	14.8	14.0	14.7	14.7	16.9
54	14.3	14.3	14.2	14.3	16.9

Table 1a – Maximum Peak transmit power at 40MHz Bandwidth

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4.4 Peak Power Spectral Density

The results of the testing on the EUT, carried out in accordance with 47 CFR Part 15.407(a)(5), are depicted in the table 2 below. The limits have been derived from 47 CFR Part 15.407(a)(1)

In accordance with FCC Public Notice DA 02-2138 Measurement Procedure updated for Peak Transmit Power in the Unlicensed National Information Infrastructure (U-NII) Bands. Method #1 was used

4.4.1 Test Results

Transmission	Peak power Spectral Density (dBm)				
Bitrate	Conducted in any 1 MHz band				Limit (dBm)
(Mbits/s)	Ch 36 5180 MHz	Ch 40 5200 MHz	Ch 44 5220 MHz	Ch 48 5240 MHz	
6	+3.2	+3.7	+3.5	+3.8	+4
12	+1.7	+2.1	+3.8	+2.6	+4
24	-3.5	-2.2	-3.5	-2.6	+4
54	-7	-5.5	-8.6	-5.7	+4

Table 2 – Peak Power Spectral Density at 20MHz Bandwidth

Transmission	Peak power Spectral Density (dBm)				
Bitrate	Conducted in any 1 MHz band				Limit (dBm)
(Mbits/s)	Ch 36 5180 MHz	Ch 40 5200 MHz	Ch 44 5220 MHz	Ch 48 5240 MHz	
6	+3.0	+3.2	+3.1	+3.4	+4
12	+1.5	+1.9	+3.3	+2.1	+4
24	-3.3	-1.6	-3.0	-2.2	+4
54	-5	-4.7	-8.2	-5.1	+4

Table 2a – Peak Power Spectral Density at 40MHz Bandwidth

4.4.2 Final Test

The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.

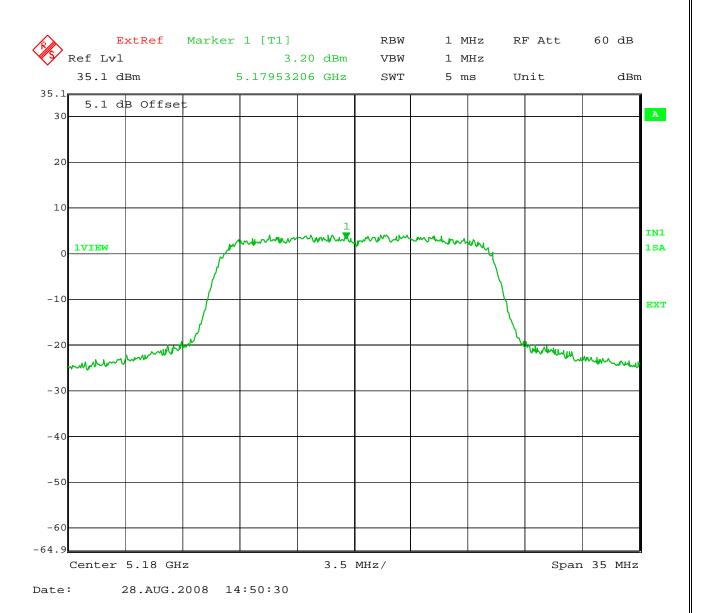
The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TUV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TUV Rheinland, NVLAP or any agency of the United States Government.



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Plot 1 – Peak Power Spectral Density (conducted) in any 1 MHz band

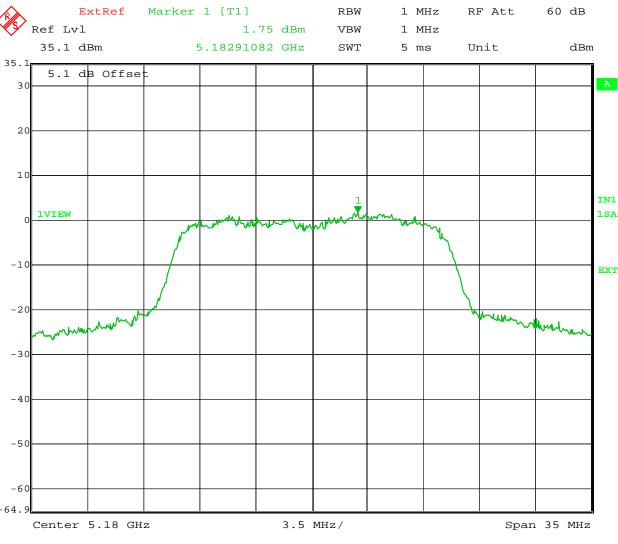
EUT operating on Ch 36 (5180 MHz) at a Transmission rate of 6 Mbits/s with an offset of 5.1 dB for cable loss



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Date: 28.AUG.2008 14:52:01

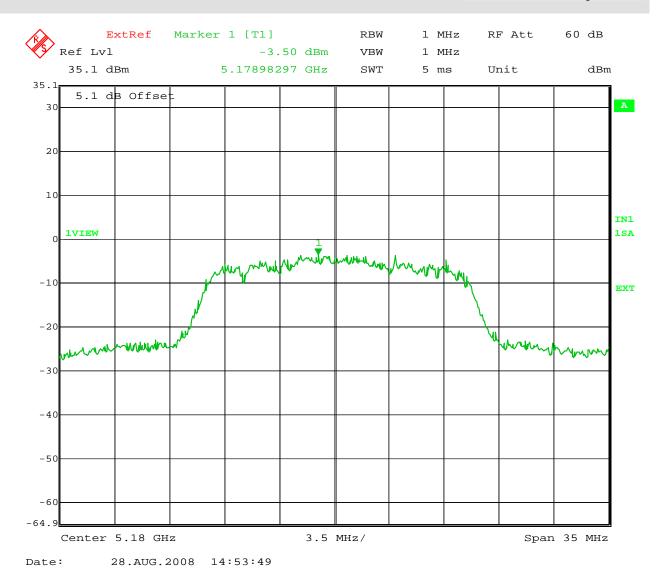
Plot 2 – Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 36 (5180 MHz) at a Transmission rate of 12 Mbits/s with an offset of 5.1 dB for cable loss



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Plot 3 – Peak Power Spectral Density (conducted) in any 1 MHz band

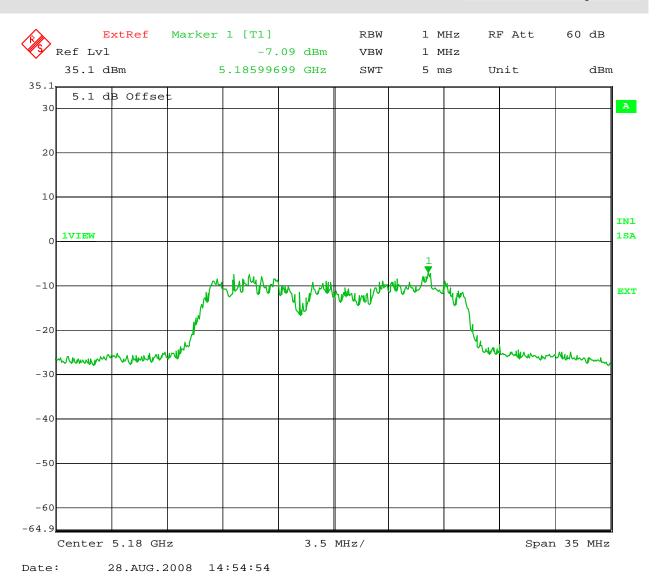
EUT operating on Ch 36 (5180 MHz) at a Transmission rate of 24 Mbits/s with an offset of 5.1 dB for cable loss

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Plot 4 – Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 36 (5180 MHz) at a Transmission rate of 54 Mbits/s with an offset of 5.1 dB for cable loss

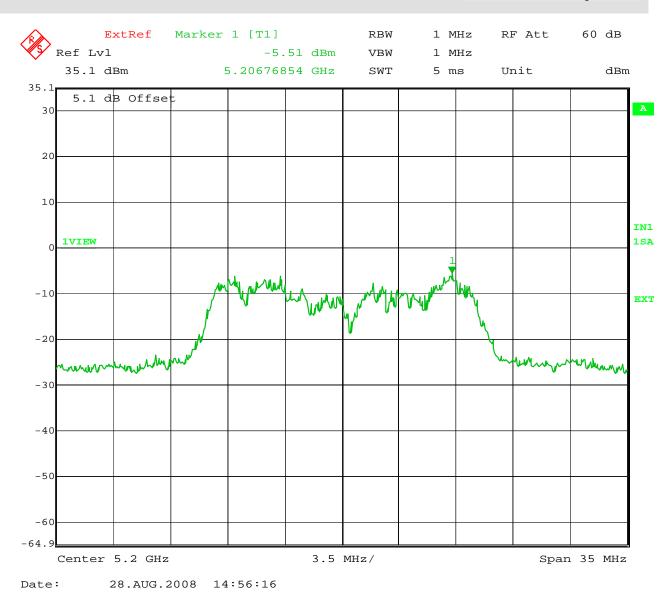
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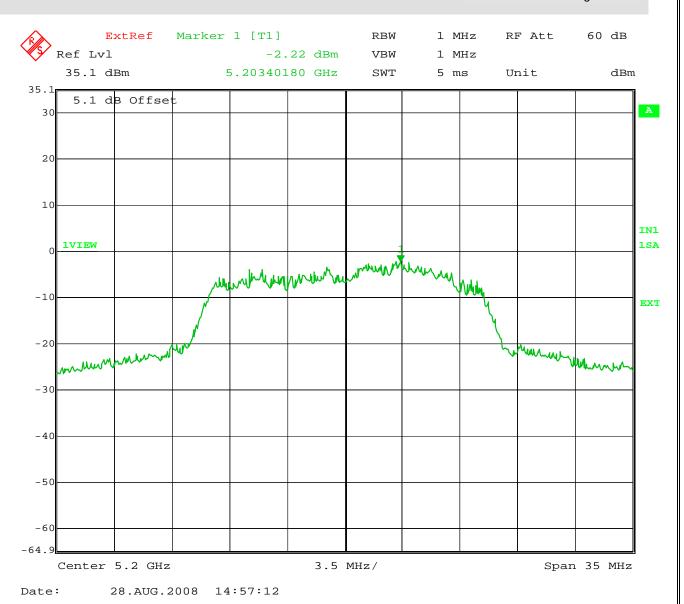
Plot 5 – Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 40 (5200 MHz) at a Transmission rate of 54 Mbits/s with an offset of 5.1 dB for cable loss



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Plot 6 – Peak Power Spectral Density (conducted) in any 1 MHz band

EUT operating on Ch 40 (5200 MHz) at a Transmission rate of 24 Mbits/s with an offset of 5.1 dB for cable loss

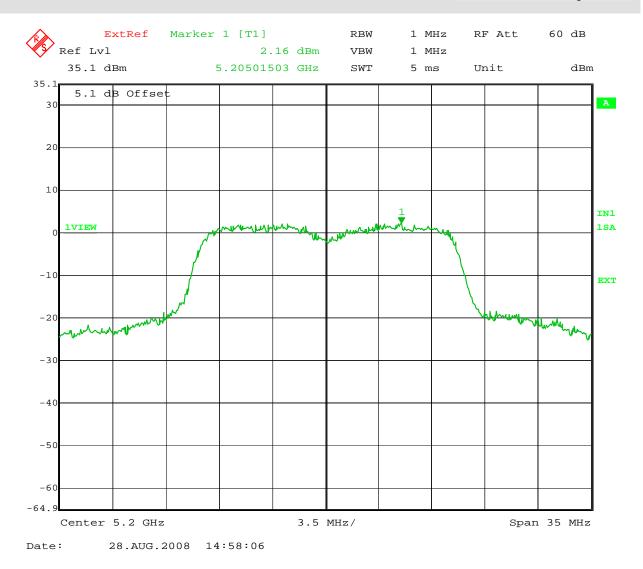
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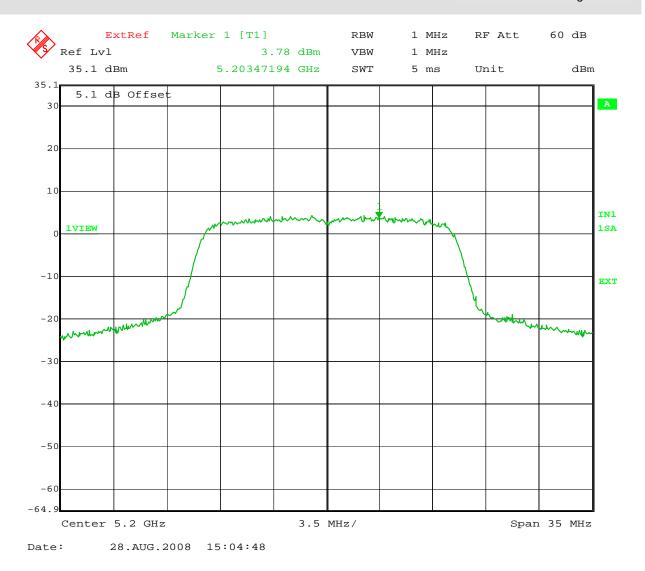
Plot 7 – Peak Power Spectral Density (conducted) in any 1 MHz band EUT operating on Ch 40 (5200 MHz) at a Transmission rate of 12 Mbits/s with an offset of 5.1 dB for cable loss



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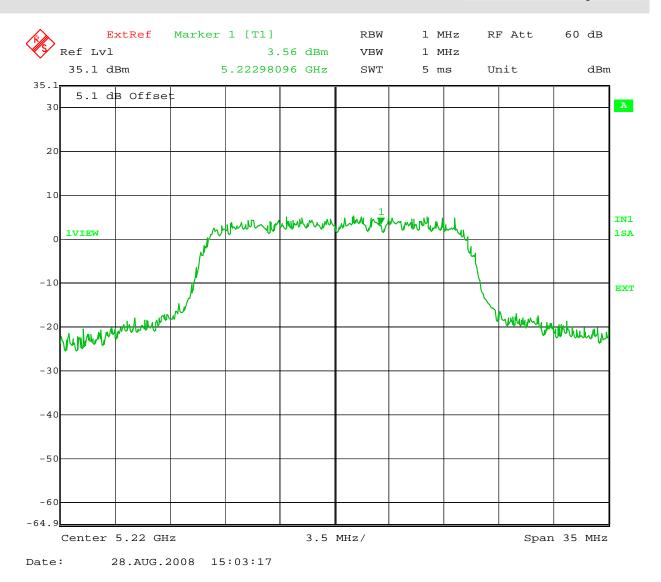
Plot 8 – Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 40 (5200 MHz) at a Transmission rate of 6 Mbits/s with an offset of 5.1 dB for cable loss



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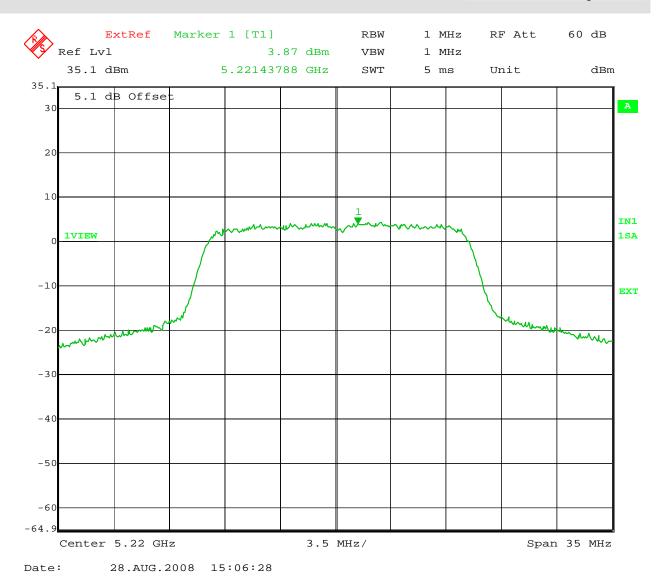
Plot 9 – Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 44 (5220 MHz) at a Transmission rate of 6 Mbits/s with an offset of 5.1 dB for cable loss



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Plot 10 – Peak Power Spectral Density (conducted) in any 1 MHz band EUT operating on Ch 44 (5220 MHz) at a Transmission rate of 12 Mbits/s with an offset of 5.1 dB for cable loss

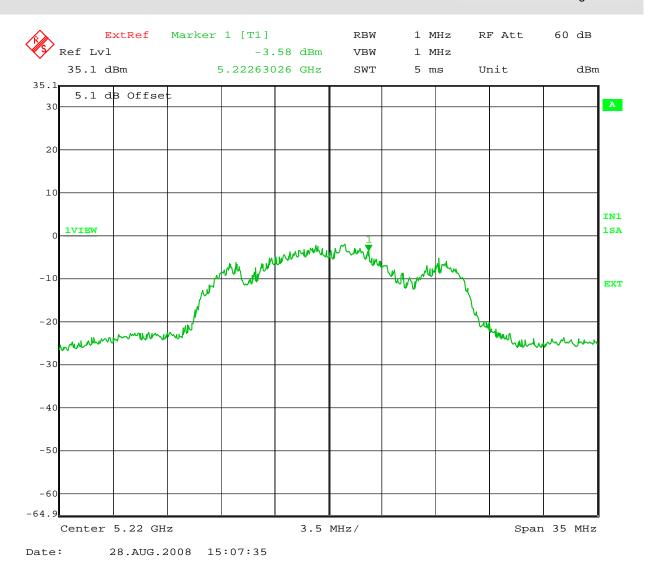
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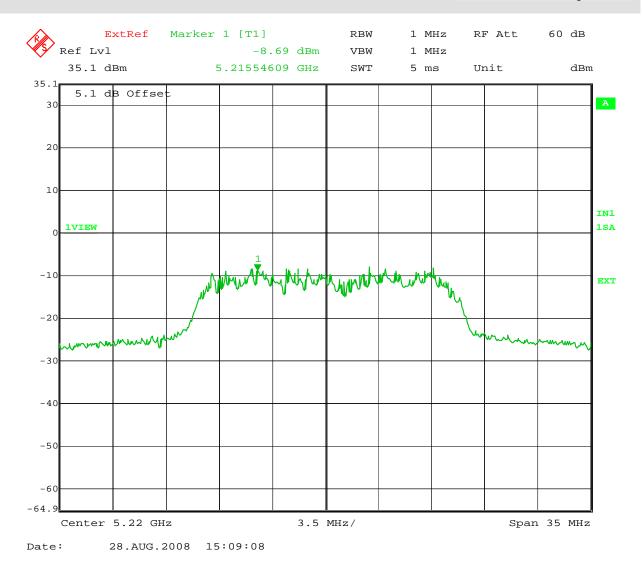
Plot 11 – Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 44 (5220 MHz) at a Transmission rate of 24 Mbits/s with an offset of 5.1 dB for cable loss



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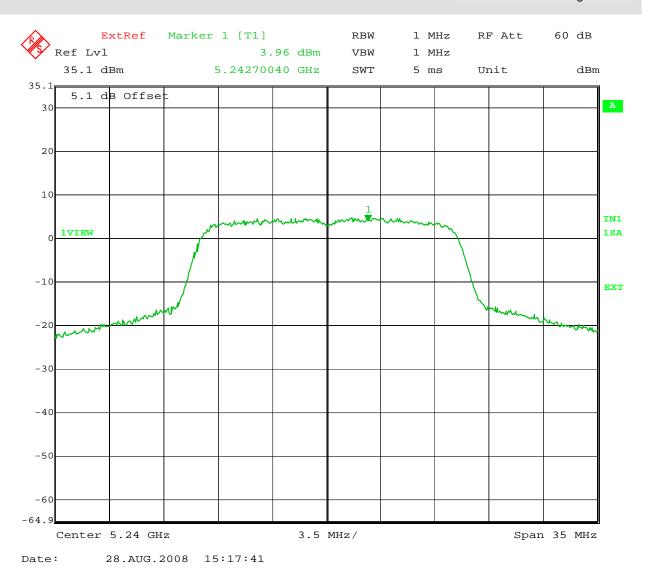
Plot 12 – Peak Power Spectral Density (conducted) in any 1 MHz band EUT operating on Ch 44 (5220 MHz) at a Transmission rate of 54 Mbits/s with an offset of 5.1 dB for cable loss



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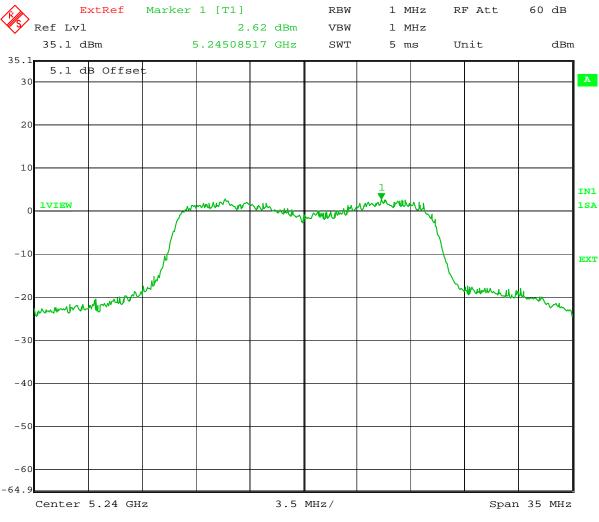
Plot 13 – Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 48 (5240 MHz) at a Transmission rate of 6 Mbits/s with an offset of 5.1 dB for cable loss



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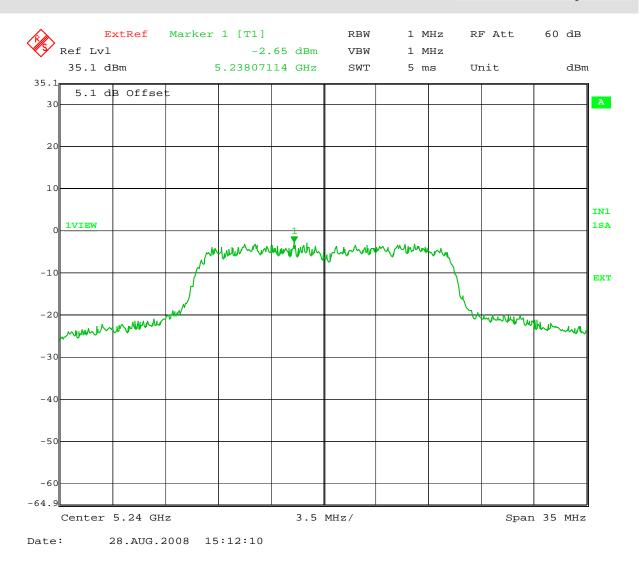
Plot 14 – Peak Power Spectral Density (conducted) in any 1 MHz band EUT operating on Ch 48 (5240 MHz) at a Transmission rate of 12 Mbits/s with an offset of 5.1 dB for cable loss



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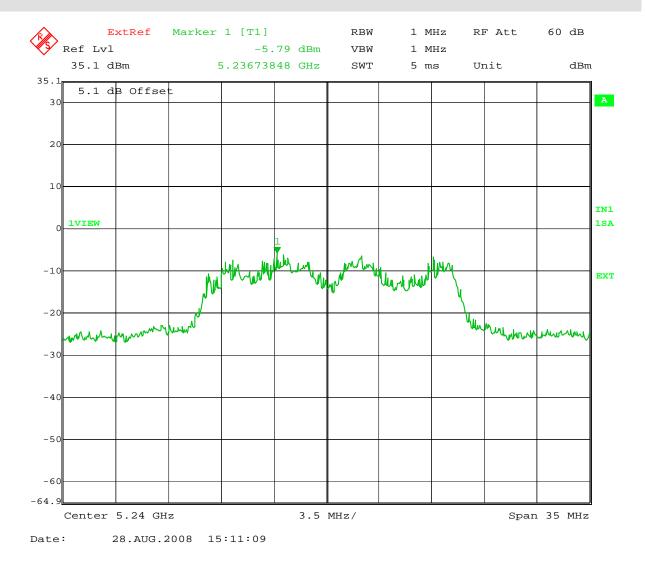
Plot 15 – Peak Power Spectral Density (conducted) in any 1 MHz band EUT operating on Ch 48 (5240 MHz) at a Transmission rate of 24 Mbits/s with an offset of 5.1 dB for cable loss



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Plot 16 – Peak Power Spectral Density (conducted) in any 1 MHz band EUT operating on Ch 48 (5240 MHz) at a Transmission rate of 54 Mbits/s with an offset of 5.1 dB for cable loss



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4.5 Peak Power Excursion

The results of the testing on the EUT, carried out in accordance with 47 CFR Part 15.407(a)(6), are depicted in table 3 below.

4.5.1 Test Results

Transmission Bitrate (Mbits/s)	Ratio of Peak Excursion of the Modulation Envelope				Limit (dB)
	Ch 36 5180 MHz	Ch 40 5200 MHz	Ch 44 5220 MHz	Ch 48 5240 MHz	
6	8.72	8.30	7.95	8.89	<13.0
12	7.99	8.40	8.45	8.29	<13.0
24	8.87	8.11	8.03	9.07	<13.0
54	9.57	9.33	9.42	9.36	<13.0

Table 3 – Ratio of the peak excursion of the modulation envelope

4.5.2 Final Test

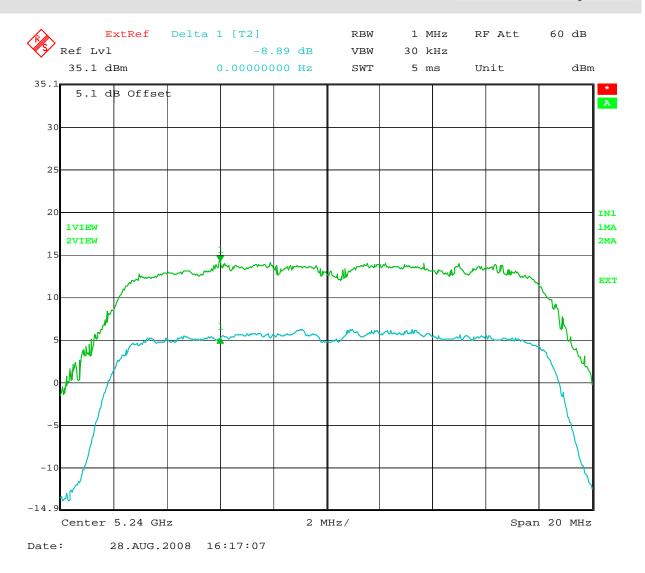
The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.



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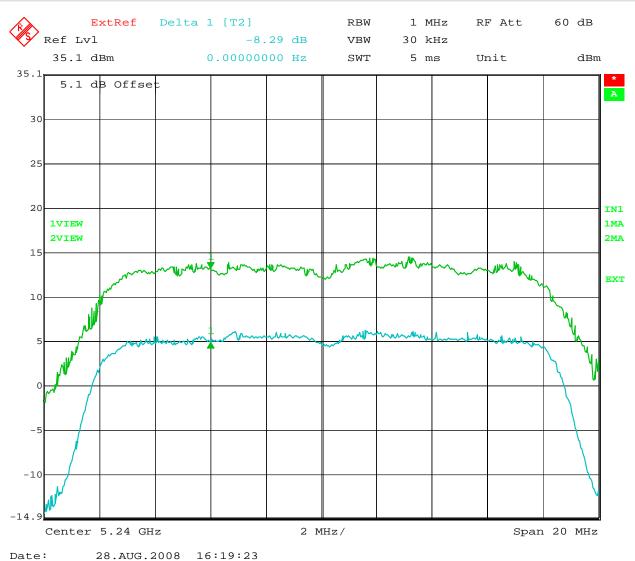
Plot 17 - Ratio of Peak Excursion of the Modulation Envelope
EUT operating on Ch 48 (5240 MHz) at a Transmission rate of 6 Mbits/s with an offset of 5.1 dB for cable loss



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Plot 18 - Ratio of Peak Excursion of the Modulation Envelope

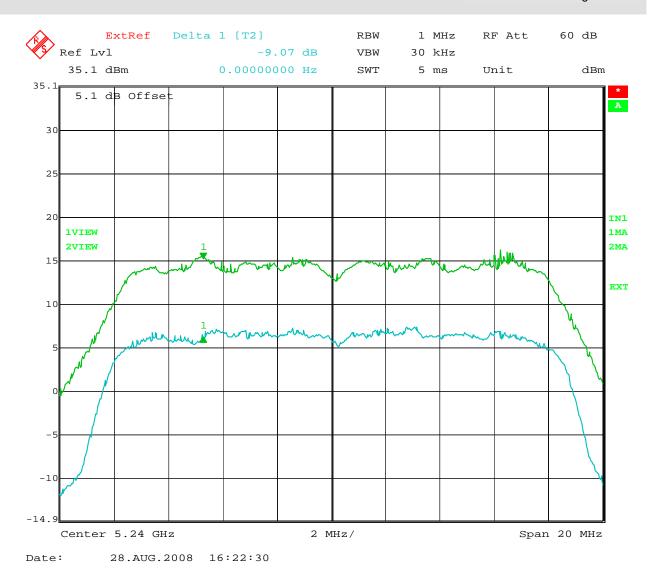
EUT operating on Ch 48 (5240 MHz) at a Transmission rate of 12 Mbits/s with an offset of 5.1 dB for cable loss



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Plot 19 - Ratio of Peak Excursion of the Modulation Envelope

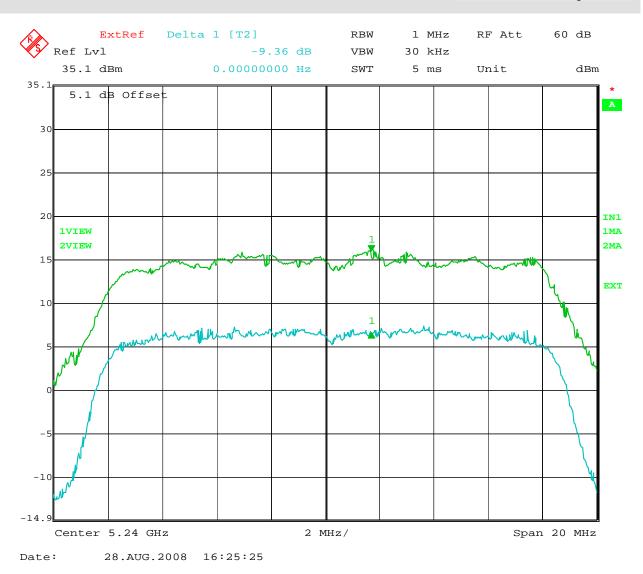
EUT operating on Ch 48 (5240 MHz) at a Transmission rate of 24 Mbits/s with an offset of 5.1 dB for cable loss



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EUT operating on Ch 48 (5240 MHz) at a Transmission rate of 54 Mbits/s with an offset of 5.1 dB for cable loss

Plot 20 - Ratio of Peak Excursion of the Modulation Envelope

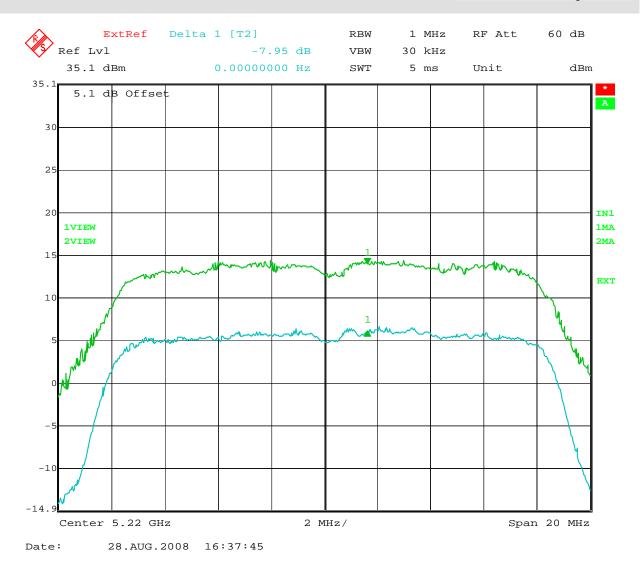
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Plot 21 - Ratio of Peak Excursion of the Modulation Envelope

EUT operating on Ch 44 (5220 MHz) at a Transmission rate of 6 Mbits/s with an offset of 5.1 dB for cable loss

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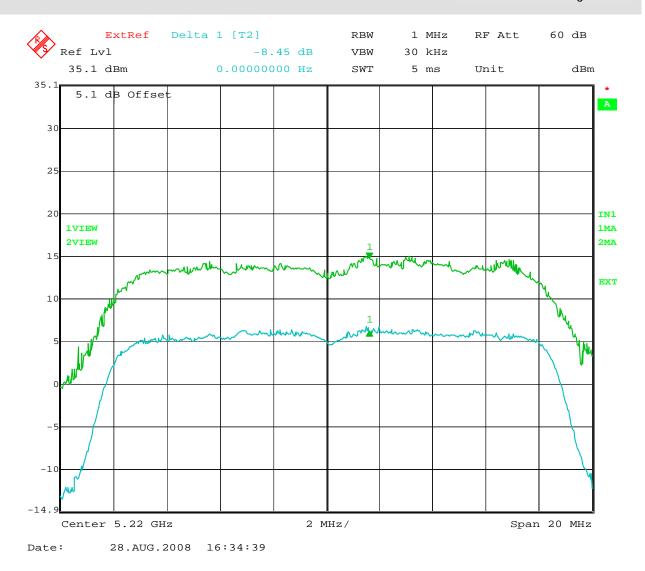
Rev 1.0



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Plot 22 - Ratio of Peak Excursion of the Modulation Envelope

EUT operating on Ch 44 (5220 MHz) at a Transmission rate of 24 Mbits/s with an offset of 5.1 dB for cable loss

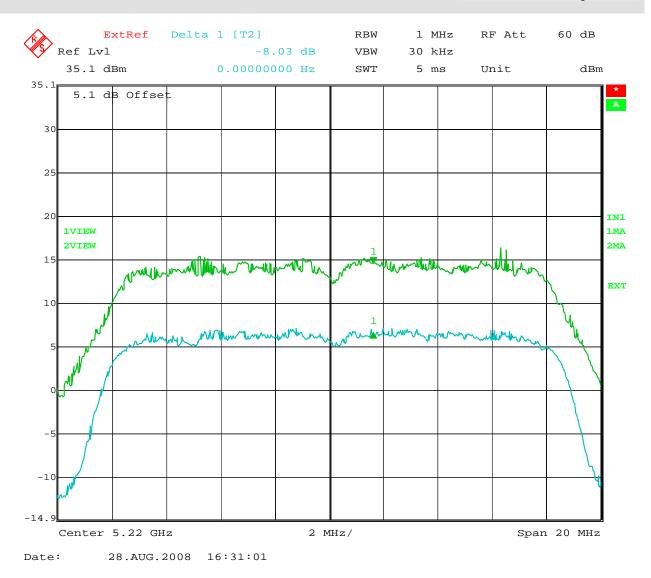
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Plot 23 - Ratio of Peak Excursion of the Modulation Envelope

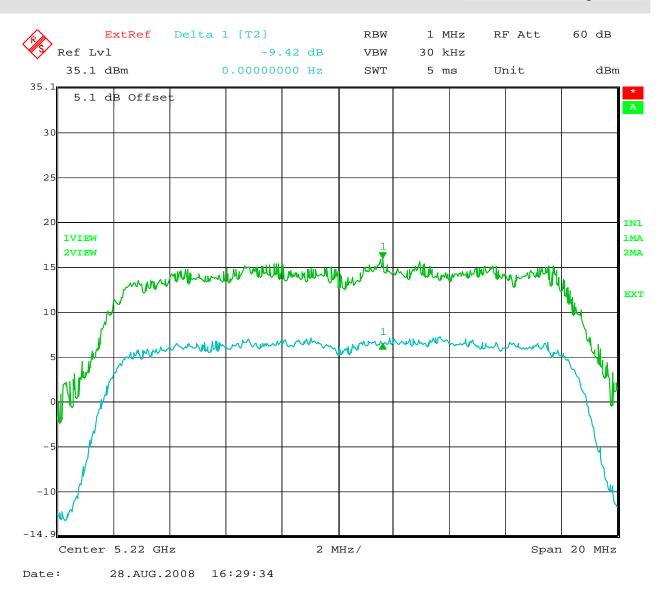
EUT operating on Ch 44 (5220 MHz) at a Transmission rate of 24 Mbits/s with an offset of 5.1 dB for cable loss



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Plot 24 - Ratio of Peak Excursion of the Modulation Envelope

EUT operating on Ch 44 (5220 MHz) at a Transmission rate of 54 Mbits/s with an offset of 5.1 dB for cable loss

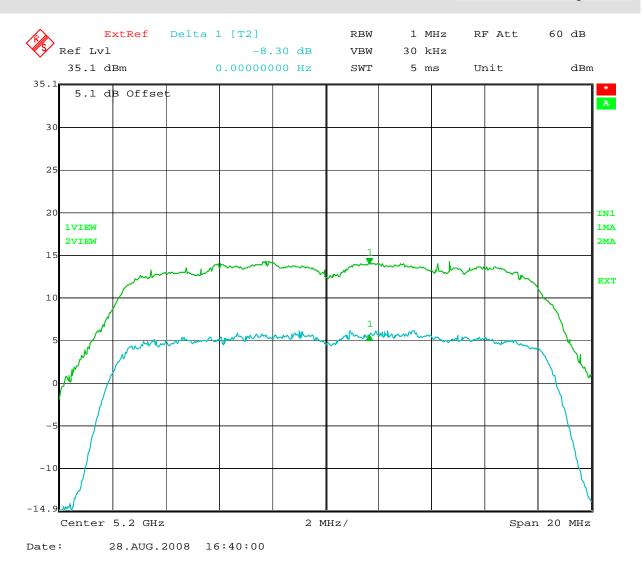
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Plot 24 - Ratio of Peak Excursion of the Modulation Envelope

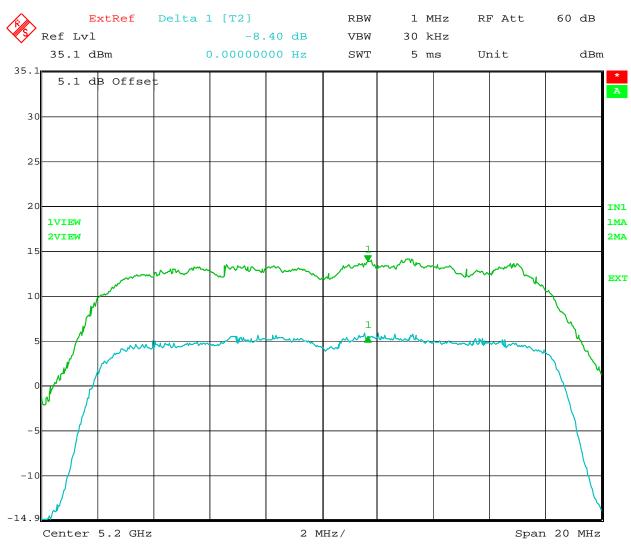
EUT operating on Ch 40 (5200 MHz) at a Transmission rate of 6 Mbits/s with an offset of 5.1 dB for cable loss



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Plot 25 - Ratio of Peak Excursion of the Modulation Envelope

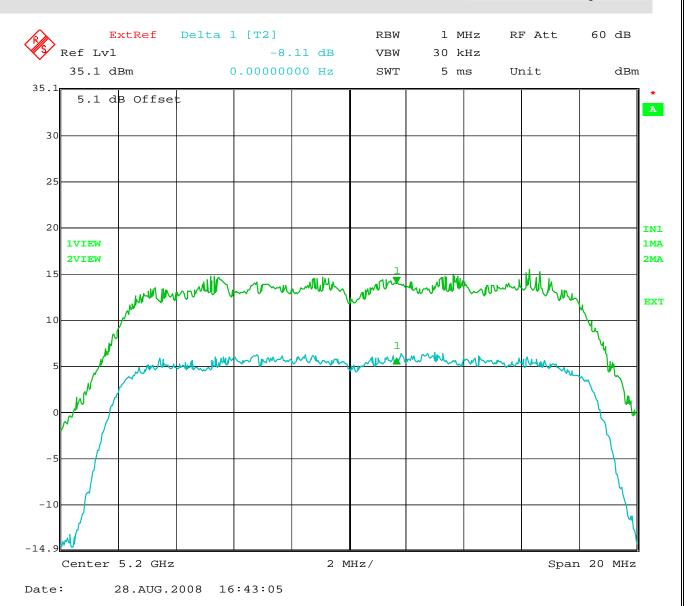
EUT operating on Ch 40 (5200 MHz) at a Transmission rate of 12 Mbits/s with an offset of 5.1 dB for cable loss

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Plot 26 - Ratio of Peak Excursion of the Modulation Envelope

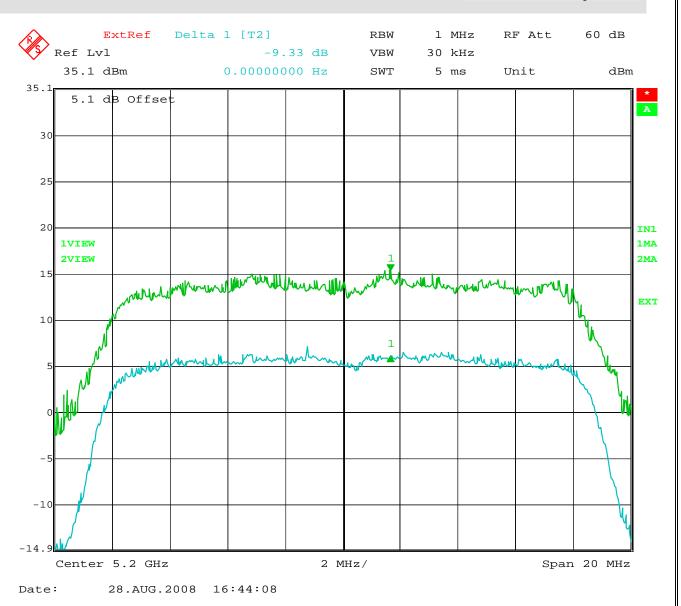
EUT operating on Ch 40 (5200 MHz) at a Transmission rate of 24 Mbits/s with an offset of 5.1 dB for cable loss

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Plot 26 - Ratio of Peak Excursion of the Modulation Envelope

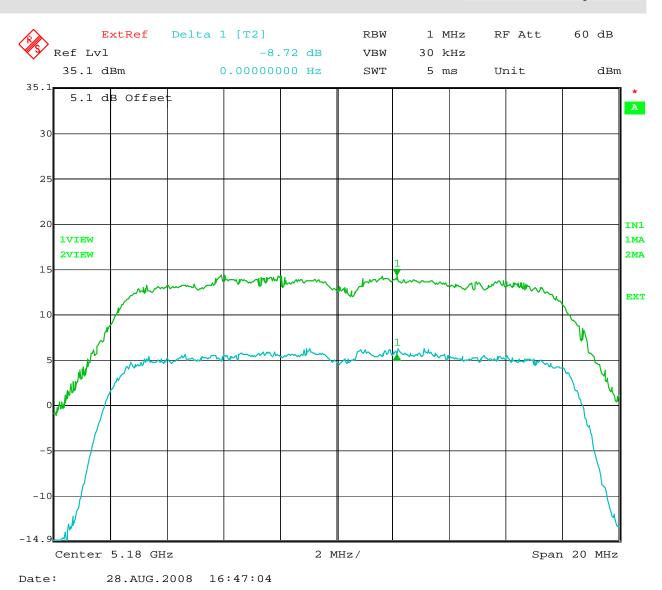
EUT operating on Ch 40 (5200 MHz) at a Transmission rate of 54 Mbits/s with an offset of 5.1 dB for cable loss



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Plot 26 - Ratio of Peak Excursion of the Modulation Envelope

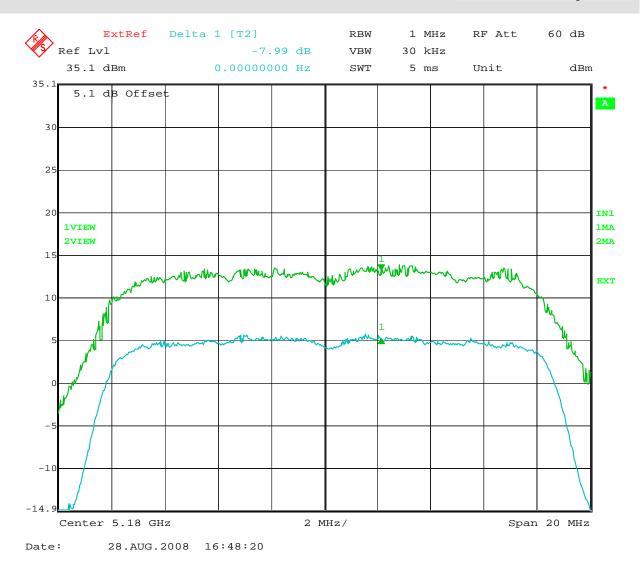
EUT operating on Ch 36 (5180 MHz) at a Transmission rate of 6 Mbits/s with an offset of 5.1 dB for cable loss



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Plot 26 - Ratio of Peak Excursion of the Modulation Envelope

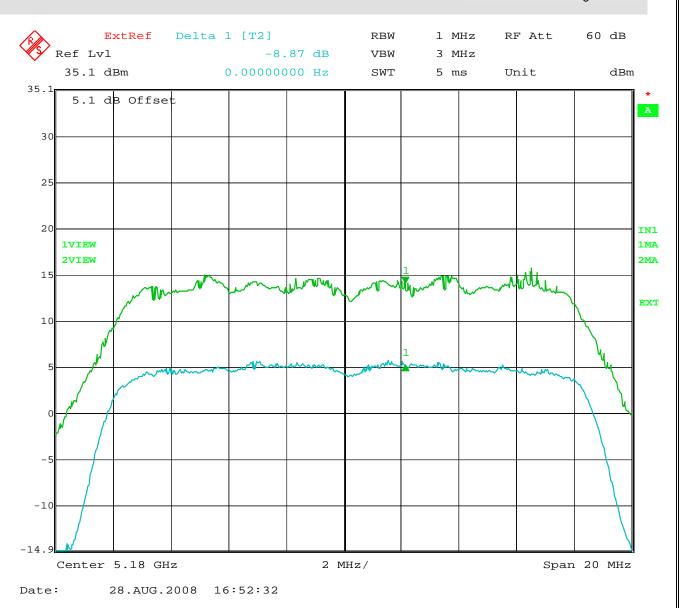
EUT operating on Ch 36 (5180 MHz) at a Transmission rate of 12 Mbits/s with an offset of 5.1 dB for cable loss

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Plot 26 - Ratio of Peak Excursion of the Modulation Envelope

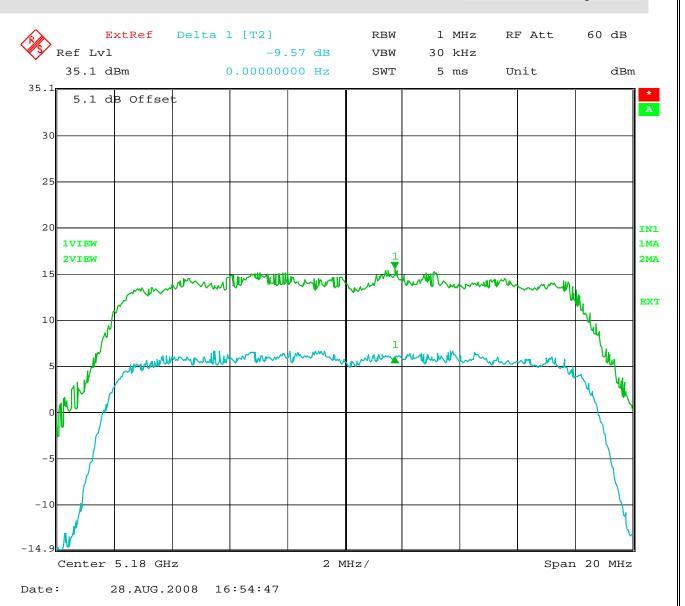
EUT operating on Ch 36 (5180 MHz) at a Transmission rate of 24 Mbits/s with an offset of 5.1 dB for cable loss

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Plot 26 - Ratio of Peak Excursion of the Modulation Envelope

EUT operating on Ch 36 (5180 MHz) at a Transmission rate of 54 Mbits/s with an offset of 5.1 dB for cable loss

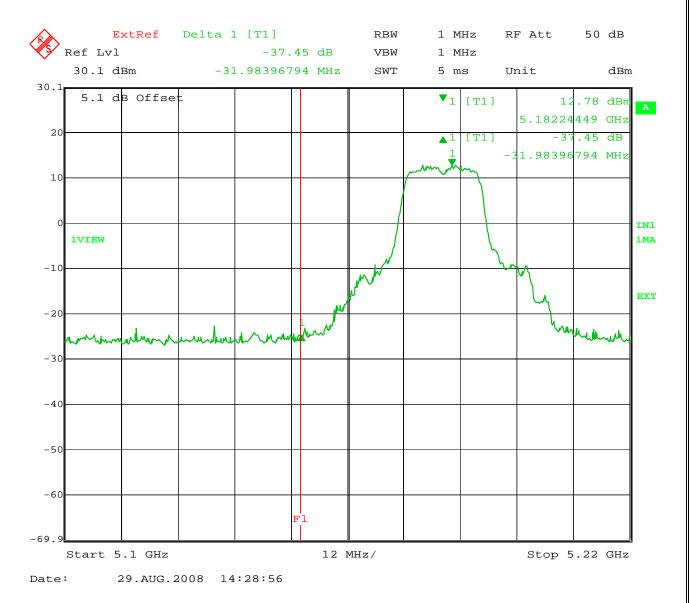
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4.6 Band Edge

In accordance with 47 CFR Part 15.407(b) All emissions outside of the 5.15 - 5.25 GHz Band shall not exceed an EIRP of -27dBm/MHz.



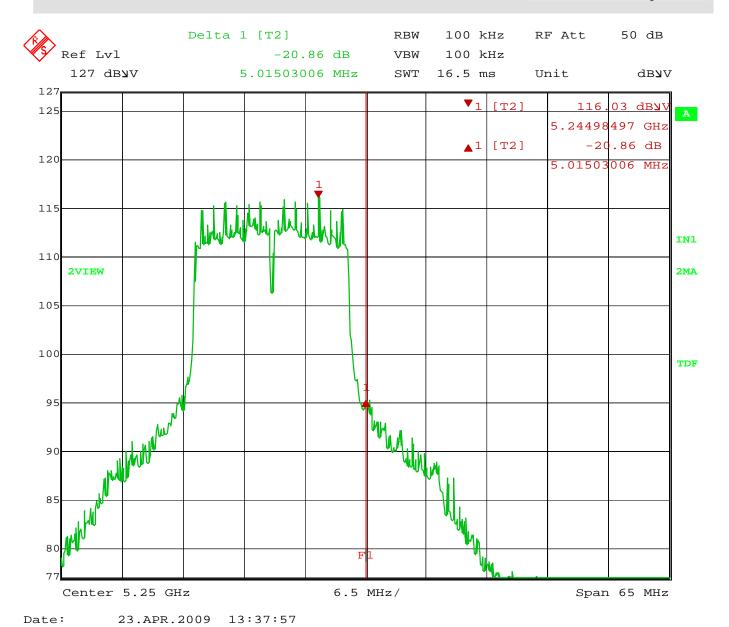
Plot 27 – Lower Band edge at 5150 MHz

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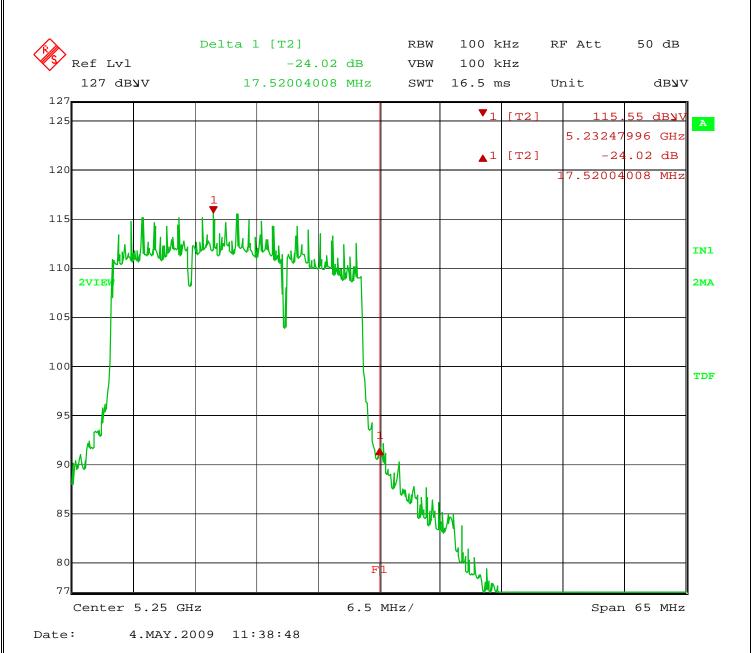
Plot 28 – Upper Band edge at 5250 MHz



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Plot 28a – Upper Band edge at 5250 MHz at 40 MHz bandwidth

4.6.1 Final Test

The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TUV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TUV Rheinland, NVLAP or any agency of the United States Government.

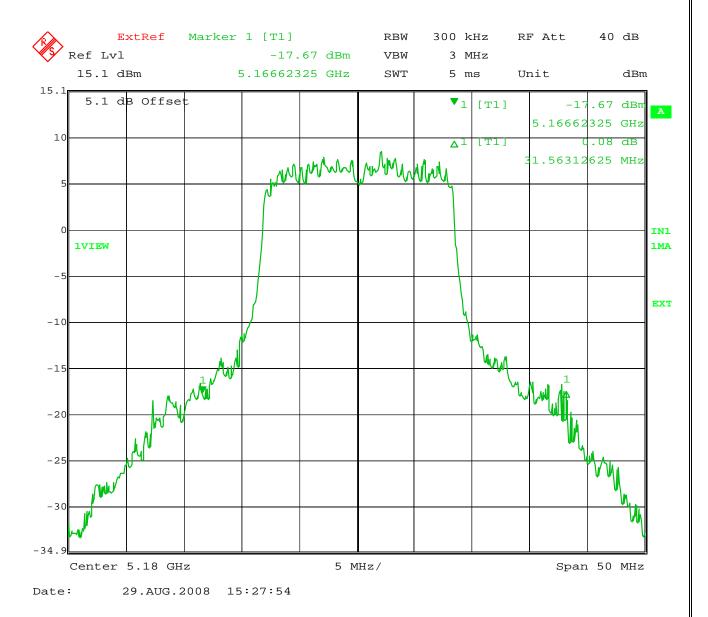
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4.7 -26 dB Bandwidth

In accordance with 47 CFR Part 15.407(a) (1)



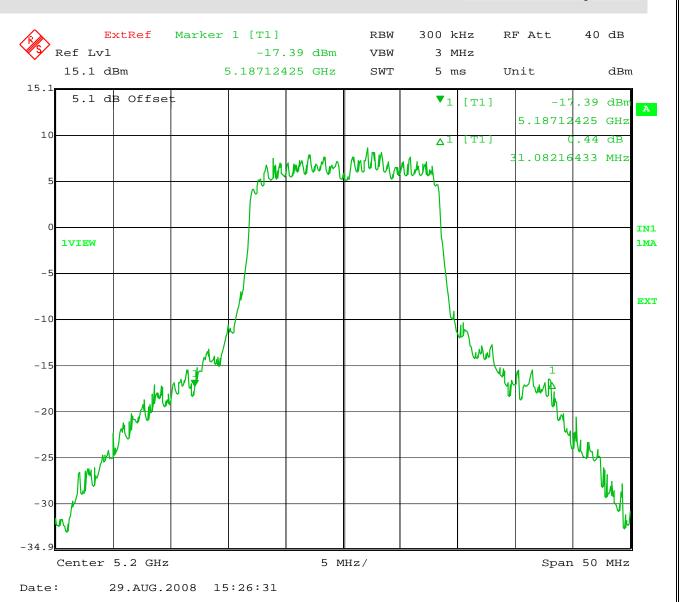
Plot 29 – (-26) dB Bandwidth of EUT operating on Ch 36 at 20 MHz band

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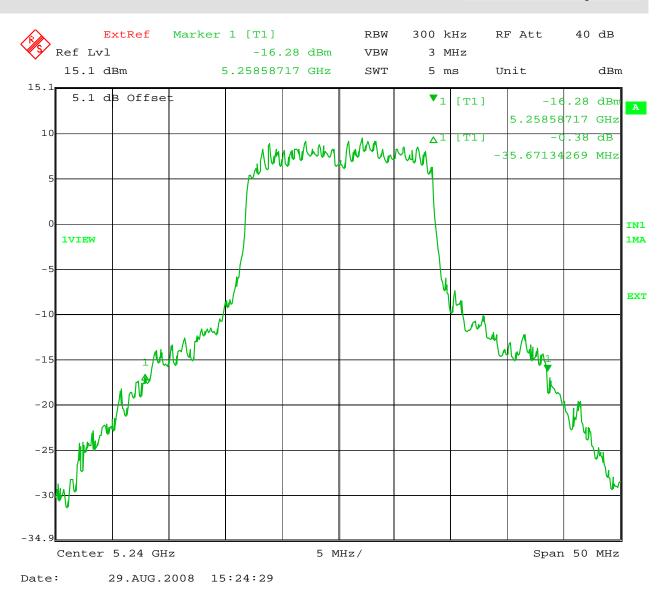
Plot 30 – (-26) dB Bandwidth of EUT operating on Ch 40 at 20 MHz band

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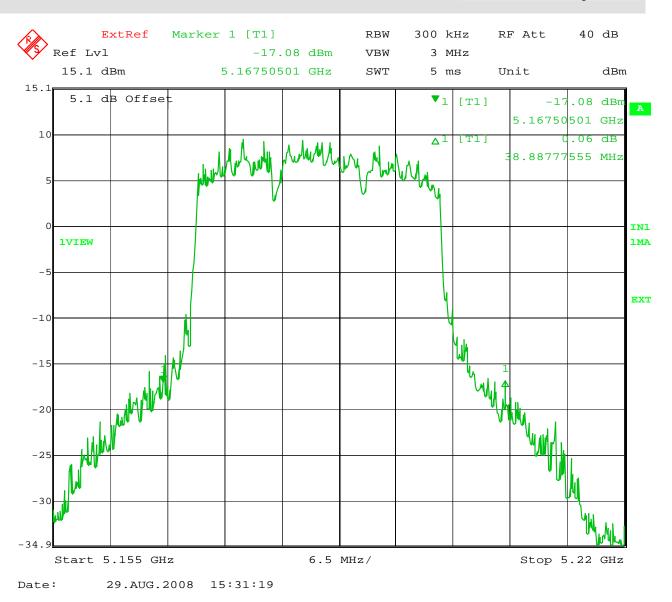
Plot 31 – (-26) dB Bandwidth of EUT operating on Ch 48 at 20 MHz band

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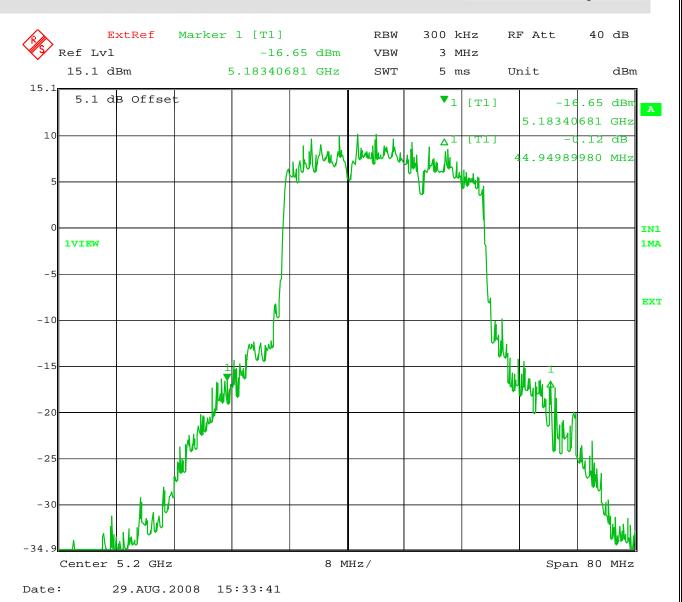
Plot 32 – (-26) dB Bandwidth of EUT operating on Ch 36 at 40 MHz band

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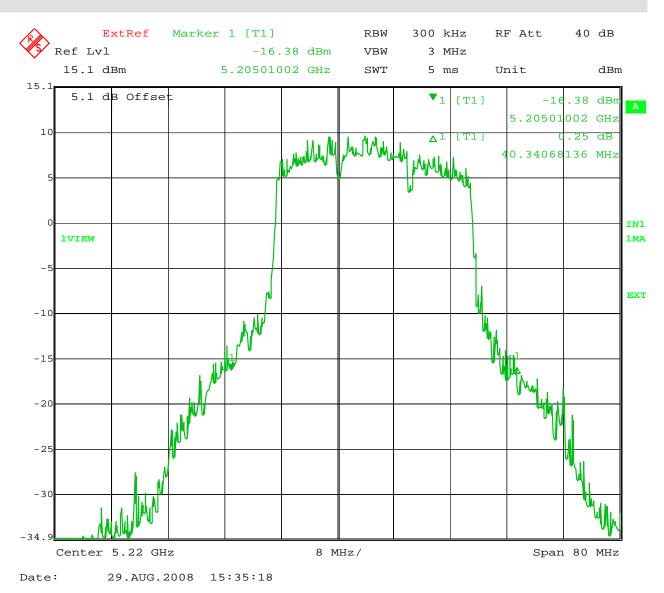
Plot 33 – (-26) dB Bandwidth of EUT operating on Ch 40 at 40 MHz band



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Plot 34 – (-26) dB Bandwidth of EUT operating on Ch 48 at 40 MHz band

4.7.1 Final Test

The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TUV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TUV Rheinland, NVLAP or any agency of the United States Government.



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4.8 Restricted Bands of Operation

In accordance with 47 CFR Part 15.407(b)(6) Intentional radiators need to comply with the provisions of 47 CFR Part 15.205. The results of these measurements can be found in section 4.1

.

4.9 Discontinuance of transmission in absence of Information

In accordance with 47 CFR part 15.407(c) applicants shall include in their application of how this requirement is met.

Carestream 🕖 TO: TUV Rheinland of N.A. 336 Initiative Dr. Rochester, New York 14624 From: Ronald L. Cain Carestream Health, Inc. 1049 West Ridge Rd. Rochester, N.Y. 14615 DATE: September 24, 2008 In my capacity as Electromagnetic Compliance Engineer, Carestream Health, Inc., I confirm that the Carestream DRX-1 radio meets the requirements for discontinuance of transmission contained in 47 CFR 15.407 C. The Carestream DRX-1 radio functions as a station (slave) to a wireless access point. The DRX-1 radio is programmed to respond to the access point and will not transmit unless requested to do so. Since the DRX-1 radio is a station, it does not have the capacity to perform dynamic frequency selection. Regards, thoney h. Cain Ronald L. Cain

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4.10 Frequency Stability

In accordance with 47 CFR Part 15.407(g) the frequency stability of U-NII devices must be such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual. The Manufacturer calls out operating temperature ranges of $+10^{\circ}$ to $+30^{\circ}$ C

4.10.1 Test results

Temperature	Stability	Test							200	
Standard:	Part 15.407							Date:	8/18/2008	
Device Tested:	DRX-1 Radio	Ch 36 5180	MHz	80			0 0	File:	10102409.00	80
Customer:	Carestream	Health Inc.		4						6
8 ===	Frequency in MHz measured 20dB below Peak									
Temperature	Start-up		2min		5min		10min		Permitted Band Edge in MHz	Results
	-dB26	+26dB	-dB26	+26dB	-dB26	+26dB	-dB26	+26dB		
-10°C	5,166.00	5,194.00	5,166.00	5,194.00	5,166.00	5,194.00	5,166.00	5,194.00	5150 - 5250 MHz	Complied
0° C	5,166.00	5,194.00	5,166.00	5,194.00	5,166.00	5,194.00	5,166.00	5,194.00	5150 - 5250 MHz	Complied
+ 30° C	5,166.00	5,194.00	5,166.00	5,194.00	5,166.00	5,194.00	5,166.00	5,194.00	5150 - 5250 MHz	Complied
Tested by:	Dieter Baldamus									60 Ve
TUV Rheinland	of North An	nerica, Inc.	12 Comme	rce Road	Newtown	CT 06470	Tel:(203) 4	126-0888 F	ax: (203) 426-4009	
					0	ly			FCC TempS	tab.xlt Revised 24APR0

Table 4 – Frequency Stability

4.10.2 Final Test

The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TUV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TUV Rheinland, NVLAP or any agency of the United States Government.



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4.11 Antenna Requirements

In accordance with 47 CFR Part 15.203 an intentional radiator shall be designed to ensure that no antenna other then that furnished by the responsible party shall be used with the device.

Carestream (1) Corestream Health, Inc. 150 Verona Strest Rochester, NY 14608 TUV Rheinland of N.A. 336 Initiative Dr. Rochester, New York 14624 From: Ronald L. Cain Carestream Health, Inc. 1049 West Ridge Rd. Rochester, N.Y. 14615 DATE: September 24, 2008 In my capacity as Electromagnetic Compliance Engineer, Carestream Health, Inc., I confirm that only the antennas furnished with the Carestream DRX-1 radio will be used with the device as specified in CFR 47 15.203. The DRX-1 radio antennas are installed inside the case of a wireless X-Ray detector and are accessible only to authorized service personnel.

4.12 Indoor Operations

In accordance with 47 CFR Part 15.407(e) U-NII devices operating in the 5150 – 5250 MHz frequency band are restricted to indoor use only.

This device operates at 5150 - 5250 MHz and the applicant declares the EUT is intended for indoor operation only.

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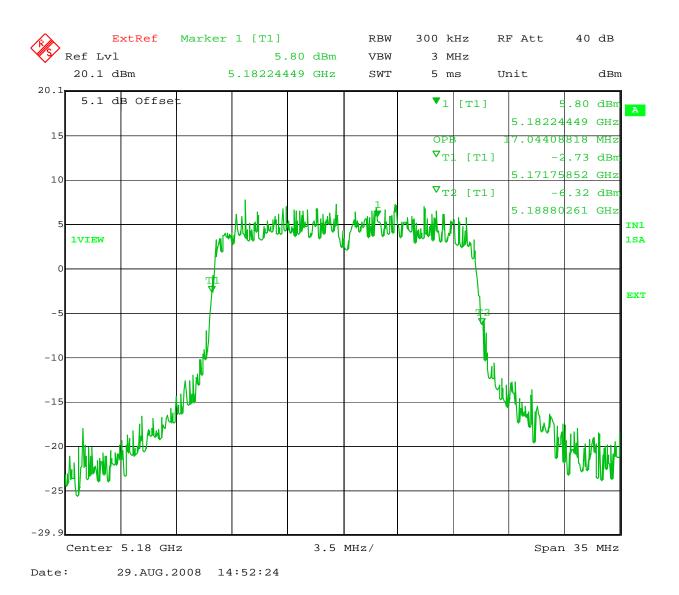
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4.13 99% Bandwidth

In accordance with Industry Canada's RSS-210 Issue 7 Annex 9.2(1)



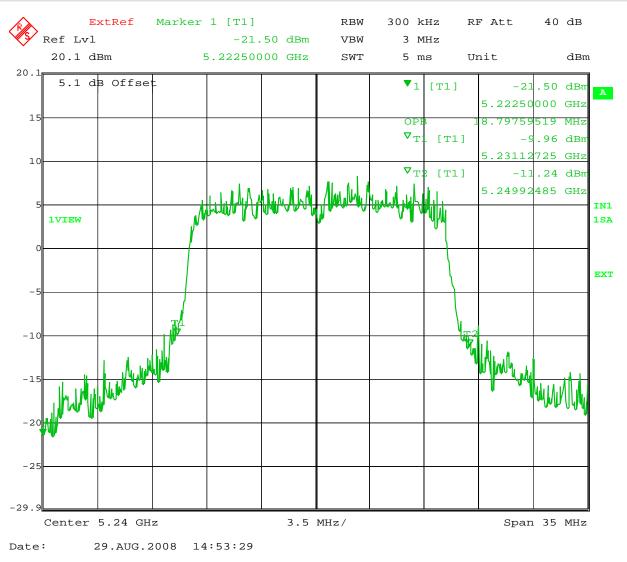
Plot 35 – 99% Bandwidth Ch 36



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Plot 36 – 99% Bandwidth Ch 48

4.13.1 Final Test

The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.

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Appendix A

5 Test Plan

This test report is intended to follow this test plan outlined here in unless other wise stated in this here report. The following test plan will give details on product information, standards to be used, test set ups and refer to TUV test procedures. The test procedures will give the steps to be taken when performing the stated test. The product information below came via client, product manual, product itself and or the internet.

5.1 General Information

Client	Carestream Health Inc.				
Address	150 Verona St				
Address	Rochester NY, 14608				
Contact Person	Ronald Cain				
Telephone	585-627-8321				
Fax	585-477-2718				
e-mail	ronald.cain@carestreamhealth.com				

5.2 Model(s) Name

DRX-1

5.3 Type of Product

DRX-1 Radio

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5.4	FIIT	Electrical	Powered	Information

5.4.1 Electrical Power Type

	AC		DC	\boxtimes	Batteries		Host -
--	----	--	----	-------------	-----------	--	--------

5.5 Electrical Support Equipment

Type	Manufacture	Model	Connected To
Laptop	IBM	Thinkpad T30	Radio

5.6 EUT Test Program

ART V80 – Revision 8.0 Build #39 ART_11N Customer Version (ANWI Build)