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TEST REPORT

ACCORDING TO: FCC CFR 47 Part 15 subpart E, subpart B

FOR:

Alvarion Ltd. WiMAX base station Model: BreezeMAX Extreme 5.3GHz

This report is in conformity with ISO/ IEC 17025. The "A2LA Accredited" symbol endorsement applies only to the tests and calibrations that are listed in the scope of Hermon Laboratories accreditation. The test results relate only to the items tested. This test report shall not be reproduced in any form except in full with the written approval of Hermon Laboratories Ltd.



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1 Applicant information

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Contact name:	Mr. Sergiu Iordanescu

2 Equipment under test attributes

Product name:	WiMAX base station
Product type:	Transceiver
Model(s):	BreezeMAX Extreme 5.3GHz
Serial number:	90047967 - RF head 1 (with antenna 1), 90047969 - RF head 2 (with antenna 2)
Receipt date	9/1/2009

3 Manufacturer information

Manufacturer name:	Alvarion Ltd.
Address:	21A Habarzel street, Ramat Hachayal, Tel Aviv 69710, Israel
Telephone:	+972 3645 7859
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E-Mail:	sergiu.iordanescu@alvarion.com
Contact name:	Mr. Sergiu Iordanescu

4 Test details

Project ID:	19997
Location:	Hermon Laboratories Ltd. Harakevet Industrial Zone, Binyamina 30500, Israel
Test started:	9/1/2009
Test completed:	11/13/2009
Test specification(s):	FCC 47CFR Part 15 subpart E; subpart B



5 Tests summary

Test	Status
FCC Section 15.407(a)(2), Occupied 26 dB bandwidth	Measured
FCC Section 15.407(a)(2), Maximum peak output power	Pass
FCC Section 15.407(a)(2), Peak power spectral density	Pass
FCC Section 15.407(a)(6), Ratio of the peak excursion of the modulation envelope	Pass
to the peak transmit power	
FCC Section 15.407(b)(2), Unwanted radiated emission	Pass
FCC Section 15.407(b)(2), Unwanted conducted emission	Pass
FCC Section 15.407(b)(6), 15.207, Conducted emission	Pass
FCC Section 15.407(f), RF exposure	Pass
FCC Section 15.407(g), Frequency stability	Pass

The results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested. Pass/ fail decision was based on nominal values.

Name and Title		Date	Signature
Tested by: Mr. L. Markel, test engineer		November 13, 2009	K
Reviewed by:	Mrs. M. Cherniavsky, certification engineer	November 23, 2009	Chun
Approved by:	Mr. M. Nikishin, EMC and Radio group leader	December 9, 2009	545



6 EUT description

6.1 General information

The EUT, base station, is a part of BreezeMAX Extreme 5.3GHz high capacity, IP services oriented Broadband Wireless Access system. The BreezeMAX Extreme 5.3GHz is digital modulated TDD system which contains a base station unit and a subscriber unit.

The basic base station system configuration is all outdoor-box configurations that contain a power supply, a MODEM and the radio part.

6.2 EUT modules and sub-assemblies

Description Manufacturer		Model or P/N	Hardware rev.	Serial number
AC power adaptor	PS1126-01	0525B5570	А	A30906120564

6.3 EUT options/configurations

Number	Operating mode description
Transmit	MIMO transmitting mode via both Tx chains/SISO transmit mode via each chain
Option 1	EUT powered via AC power adaptor 120 VAC to 55VDC
Option 2	EUT powered via external 48VDC PS

6.4 Ports and lines

Port type	Port description	Conn. from	Conn. to	Qty.	Cable type	Cable length	Indoor / outdoor
RF	Antenna	Base station	Termination	2	Coax	NA	Outdoor
RF GPS	Antenna GPS	Base station	Antenna external	1	Coax	15 m	Outdoor
Signal	GPS In/Out	Base station (GPS Out)	Base station (GPS In)	1	Shielded	2 m	Outdoor
Option 1							
Power	AC power	AC mains	Power adaptor	1	Unshielded	1.5 m	Indoor
Signal	DATA/DC	Power adaptor	Base station	1	Shielded	3 m	Outdoor
Power	DC power	Base station (DC in)	Open circuit	1	Shielded	20 m	Outdoor
Signal	Ethernet	Power adaptor	Laptop	1	Unshielded	10 m	Indoor
Option 2							
Power	DC power	48 VDC supply	Base station (DC in)	1	Shielded	20 m	Outdoor
Signal	Ethernet	Base station	Laptop	1	Shielded	10 m	Outdoor

6.5 Support and test equipment

Description	Manufacturer	Model number	Serial number
Laptop	Lenovo	T60	L3-DZK37-07/01



Operating frequencies 6.6

Source	Frequency, MHz
Tx/Rx	5260.0 - 5340.0
LO	4440.0 – 4540.0

Changes made in the EUT 6.7

To withstand the standard requirements the following changes were implemented in the EUT:

1) An absorber material was installed around the RF head connector as shown in Photograph 6.7.1;

 2) The 10 MHz clock of GPS synchronization was disabled.
It is manufacturer responsibility to implement the change in the production version of the EUT. In any case the test report applies to the tested item only.



Photograph 6.7.1 RF head connector



6.8 Test configuration

Option 1





Option 2





6.9 Transmitter characteristics

Type of equipment								
V Stand-alone (Equipme	ent with or with	out its c	wn contro	l provisio	ns)			
Combined equipment	(Equipment whether the second	nere the	radio par	t is fully ir	itegrated within ar	nother type	of equipme	ent)
Plug-in card (Equipme	ent intended for	r a varie	ty of host	systems)				
Intended use	Condition of	use						
V fixed	Always at a d	istance	more than	2 m from	all people			
mobile	Always at a d	istance	more thar	20 cm fr	om all people			
portable	May operate	at a dist	ance close	er than 20	cm to human boo	dy		
Assigned frequency range		5250.	0 – 5350.0) MHz				
Operating frequency range		5260. 5265.	0 – 5340.0 0 – 5335.0) MHz for) MHz for	5 MHz EBW 10 MHz EBW			
RF channel spacing		2.5 M	Hz for 5M	Hz BW, 5	MHz for 10MHz B	W		
Maximum rated output powe	r	At trar	nsmitter 50) Ω RF οι	tput connectors			18.75 dBm in SISO mode 18.45 dBm in MIMO mode
			No					
					continuous vari	able		
Is transmitter output power variable?		v	Yes	V	stepped variabl	e with	1 dB	
				minimu	m RF power		0 dBm	
				maximu	m RF power		18.75 dE	3m
Antenna connection								
	eta	odard o	onnector	v	Integral	V	with tem	porary RF connector
	310		JIIIECIUI	without temporary RF connector			emporary RF connector	
Antenna/s technical charact	eristics							
Туре	Manufa	cturer		Mode	l number		Gain	
Integral antenna, dual slant	PCTEL,	Inc.		AN1428-02 14.5 dBi			dBi	
External sector antenna	MTI Wir	eless E	dge, Ltd.	td. AL-484032/NV 17 dBi, feeder l			Bi, feeder loss 0.7 dB	
External omni directional anter	nna MTI Wir	eless E	dge, Ltd.	td. AL-462008/N 9.5 dBi, feeder loss 0.7 dl				Bi, feeder loss 0.7 dB
Omni directional antenna	MTI Wir	eless E	dge, Ltd.	td. MT-481003/NV 5.5±1 dB, fee				I dB, feeder loss 0.7 dB
Transmitter 99% power band	lwidth		5 N	5 MHz, 10 MHz				
Transmitter aggregate data ra	ite/s		9.3	9.36 Mbps @ 64QAM5/6 for 5MHz BW; 18.72 Mbps @ 64QAM5/6 for 10MHz BW				
Transmitter aggregate symbol	l (baud) rate/s		1.5	1.56 Msps @ 64QAM5/6 for 5MHz BW; 3.12 Msps @ 64QAM5/6 for 10MHz BW				
Type of modulation			QF	QPSK, 16QAM, 64QAM				
Type of multiplexing			OF	OFDMA				
Modulating test signal (baseband)			PR	BS				
Maximum transmitter duty cycle in normal use			60	%	Tx ON time 3 r	nsec	Period	5 msec
Transmitter duty cycle suppli	ed for test		100) %	Tx ON time		Period	
Transmitter power source								
Non	ninal rated vol	tage			Battery t	уре		
V DC Non	ninal rated vol	tage	48	48 V (option 2)				
V AC mains Non	ninal rated vol	tage	120	V (option	n 1) Frequenc	cy 60 l	Hz	
Common power source for t	ransmitter and	d receiv	/er		V	yes		no



Test specification:	FCC section 15. 407(a)(2)	FCC section 15. 407(a)(2), 26 dB bandwidth			
Test procedure:	FCC New Guidance on Measu	CC New Guidance on Measurements for DTS in section 15.247(a)(2)			
Test mode:	Compliance	Verdict	DV66		
Date & Time:	9/21/2009 3:58:40 PM	verdict.	FA33		
Temperature: 25°C	Air Pressure: 1015 hPa	Relative Humidity: 40 %	Power Supply: 120 VAC		
Remarks:					

7 Transmitter tests according to 47CFR part 15 subpart E requirements

7.1 The 26 dB bandwidth

7.1.1 General

This test was performed to measure 26 dB bandwidth of the EUT carrier frequency. Specification test limits are given in Table 7.1.1.

Table 7.1.1 The 26 dB bandwidth limits

Assigned frequency, MHz	Modulation envelope reference points*, dBc	Minimum bandwidth, kHz
5250.0 – 5350.0	26.0	NA

* - Modulation envelope reference points provided in terms of attenuation below the peak of modulated carrier.

7.1.2 Test procedure

- 7.1.2.1 The EUT was set up as shown in Figure 7.1.1, energized and its proper operation was checked.
- 7.1.2.2 The EUT was set to transmit modulated carrier.
- **7.1.2.3** The transmitter minimum 26 dB bandwidth was measured with spectrum analyzer RBW=1% of EBW as frequency delta between reference points on modulation envelope and provided in Table 7.1.2 and the associated plots.

Figure 7.1.1 The 26 dB bandwidth test setup





Test specification:	FCC section 15. 407(a)(2)	FCC section 15. 407(a)(2), 26 dB bandwidth			
Test procedure:	FCC New Guidance on Measu	rements for DTS in section 15.247(a)(2)			
Test mode:	Compliance	Vordict	DASS		
Date & Time:	9/21/2009 3:58:40 PM	veraict:	FA33		
Temperature: 25°C	Air Pressure: 1015 hPa	Relative Humidity: 40 %	Power Supply: 120 VAC		
Remarks:					

Table 7.1.2 The 26 dB bandwidth test results

ASSIGNED FREQUENCY BAI DETECTOR USED: SWEEP MODE: SWEEP TIME: RESOLUTION BANDWIDTH: VIDEO BANDWIDTH: MODULATION ENVELOPE RI MODULATING SIGNAL: EBW:	ND: EFERENCE POINTS:	5250.0 – 5350.0 MHz Peak Single Auto 1% of the EBW 3000 kHz 26 dBc PRBS 5 MHz	
Carrier frequency, MHz	Modulation	26 dB bandwidth, MHz	
Low frequency			
5260.00	64QAM	4.905	
Mid frequency			
5300.00	64QAM	4.905	
High frequency			
5340.00	64QAM	4.905	
EBW:		10 MHz	
Carrier frequency, MHz	Modulation	26 dB bandwidth, MHz	
Low frequency			
5265.00	64QAM	9.51	
Mid frequency			
5300.00	64QAM	9.51	
High frequency			
5335.00	64QAM	9.51	

Reference numbers of test equipment used

HL 2909	HL 2952	HL 3440			

Full description is given in Appendix A.



Test specification:	FCC section 15. 407(a)(2), 26 dB bandwidth				
Test procedure:	FCC New Guidance on Measu	surements for DTS in section 15.247(a)(2)			
Test mode:	Compliance	Vordict	DASS		
Date & Time:	9/21/2009 3:58:40 PM	verdict.	FA33		
Temperature: 25°C	Air Pressure: 1015 hPa	Relative Humidity: 40 %	Power Supply: 120 VAC		
Remarks:					

Plot 7.1.1 The 26 dB bandwidth test result at low frequency, 64QAM modulation, 5 MHz EBW



Plot 7.1.2 The 26 dB bandwidth test result at mid frequency, 64QAM modulation, 5 MHz EBW





Test specification:	FCC section 15. 407(a)(2), 26 dB bandwidth				
Test procedure:	FCC New Guidance on Measu	surements for DTS in section 15.247(a)(2)			
Test mode:	Compliance	Vordict	DASS		
Date & Time:	9/21/2009 3:58:40 PM	verdict.	FA33		
Temperature: 25°C	Air Pressure: 1015 hPa	Relative Humidity: 40 %	Power Supply: 120 VAC		
Remarks:					

Plot 7.1.3 The 26 dB bandwidth test result at high frequency, 64QAM modulation, 5 MHz EBW



Plot 7.1.4 The 26 dB bandwidth test result at low frequency, 64QAM modulation, 10 MHz EBW





Test specification:	FCC section 15. 407(a)(2), 26 dB bandwidth				
Test procedure:	FCC New Guidance on Measu	surements for DTS in section 15.247(a)(2)			
Test mode:	Compliance	Vordict	DASS		
Date & Time:	9/21/2009 3:58:40 PM	verdict.	FA33		
Temperature: 25°C	Air Pressure: 1015 hPa	Relative Humidity: 40 %	Power Supply: 120 VAC		
Remarks:					

Plot 7.1.5 The 26 dB bandwidth test result at mid frequency, 64QAM modulation, 10 MHz EBW



Plot 7.1.6 The 26 dB bandwidth test result at high frequency, 64QAM modulation, 10 MHz EBW





Test specification:	FCC section 15. 407(a)	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2	138, Appendix A			
Test mode:	Compliance	Vardict: DASS			
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33		
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC		
Remarks:					

7.2 Peak output power and power spectral density

7.2.1 General

This test was performed to measure the maximum peak output power at the transmitter RF antenna connector. Specification test limits are given in Table 7.2.1.

Table 7.2.1	Peak output	power and	power s	pectral	density	/ limits
-------------	-------------	-----------	---------	---------	---------	----------

Assigned frequency range	Maximum	Peak output power*			
MHz	antenna gain, dBi	W	dBm		
		The lesser 250 mW or 11+10LOG(B**, MHz)	According to associated tables		
5250.0 - 5350.0	6.0	Peak power s	pectral density*		
	1	dBm			
		11.0			

*- If transmitting antennas of directional gain greater than 6 dBi are used, the both peak output power and power density limit shall be reduced below the stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

** - B, MHz - 26 dB EBW

7.2.2 Test procedure

- 7.2.2.1 The EUT was set up as shown in Figure 7.2.1, energized and its proper operation was checked.
- 7.2.2.2 The EUT was adjusted to produce maximum available for end user RF output power.
- **7.2.2.3** The 1 MHz resolution bandwidth of spectrum analyzer was set, VBW was set to 3 MHz and sum across emission bandwidth function was used. Power-averaging mode within 100 sweeps was used for averaging. The maximum power spectral density was measured as provided in associated tables and plots.

Figure 7.2.1 Peak output power test setup

EUT Attenuator	Spectrum analyzer
----------------	----------------------



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density						
Test procedure:	FCC Public Notice DA 02-2138, Appendix A						
Test mode:	Compliance	Vardiat: DASS					
Date & Time:	10/14/2009 3:23:52 PM	Verdict: PASS					
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC				
Remarks:							

Table 7.2.2 Conducted output power test results

ASSIGNED FREQUENCY:	5250.0 – 5350.0 MHz
MODULATION:	64QAM (worst case power and power density)
MODULATING SIGNAL:	PRBS
DETECTOR USED:	Sample
RESOLUTION BANDWIDTH:	1 MHz
VIDEO BANDWIDTH:	3 MHz
POWER MEASUREMENT OPTION:	1
ANTENNA GAIN:	9.5 dBi
FEEDER LOSS:	0.7 dB
ANTENNA ASSEMBLY GAIN:	8.8 dBi (Antenna gain, dBi – feeder loss, dB)
MODE:	MIMO

Channel, MHz	26 dB BW MHz	Pmeas (Ant.1), dBm	Pmeas (Ant.2), dBm	P _{meas} dBm*	Antenna assembly gain dBi	EIRP total, dBm**	Limit EIRP, dBm***	Margin, dB****	Verdict
5260.0	4.905	9.31	9.25	12.29	8.80	21.09	23.91	-2.82	Pass
5300.0	4.905	9.74	9.82	12.79	8.80	21.59	23.91	-2.32	Pass
5340.0	4.905	9.42	9.29	12.37	8.80	21.17	23.91	-2.74	Pass

* - Pmeas, dBm = 10 log(10^((P(dBm,Ant1)/10)+ 10^((P(dBm,Ant2))/10))

*** - EIRP total, dBm = Pmeas, dBm+ Antenna Assembly Gain, dBi
*** - Limit EIRP, dBm = 11+10LOG(26 dB BW, MHz) + 6 dBi

**** - Margin, dB = EIRP total, dBm – Limit EIRP, dBm

Table 7.2.3 Conducted output power spectral density test results

ASSIGNED FREQUENCY: MODULATION: MODULATING SIGNAL: DETECTOR USED: RESOLUTION BANDWIDTH: VIDEO BANDWIDTH: POWER MEASUREMENT OPTION: ANTENNA GAIN: FEEDER LOSS: ANTENNA ASSEMBLY GAIN: EBW: MODE:		5250.0 – 5350 64QAM (worst PRBS Sample 1 MHz 3 MHz 2 9.5 dBi 0.7 dB 8.8 dBi (Anten 5 MHz MIMO	.0 MHz case power a na gain, dBi –	and power o - feeder loss	density) s, dB)
	Antonna				

Channel,	Pmeas (Ant.1), dBm/MHz	Pmeas (Ant.2), dBm/MHz	P _{meas} , dBm/MHz*	assembly gain	EIRP total, dBm/MHz**	Limit EIRP, dBm/MHz***	Margin, dB****	Verdict
IVITIZ				uы				
5260.0	4.62	4.49	7.57	8.80	16.37	17.00	-0.63	Pass
5300.0	4.71	4.88	7.81	8.80	16.61	17.00	-0.39	Pass
5340.0	4.34	4.70	7.53	8.80	16.33	17.00	-0.67	Pass

* - Pmeas, dBm/MHz = 10 log(10^((P(dBm/MHz,Ant1)/10)+ 10^((P(dBm/MHz,Ant2))/10))

** - EIRP total, dBm = Pmeas, dBm/MHz + Antenna Assembly Gain, dBi

*** - Limit EIRP, dBm/MHz = 11+ 6 dBi

**** - Margin, dB = EIRP total, dBm/MHz – Limit EIRP, dBm/MHz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density						
Test procedure:	FCC Public Notice DA 02-2138, Appendix A						
Test mode:	Compliance						
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC				
Remarks:			· · · · ·				

Plot 7.2.1 Peak output power and spectral power density, Antenna 1, 9.5 dBi, MIMO mode, 5 MHz EBW



Plot 7.2.2 Peak output power and spectral power density, Antenna 1, 9.5 dBi, MIMO mode, 5 MHz EBW

Frequency:	5300 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density							
Test procedure:	FCC Public Notice DA 02-2138, Appendix A							
Test mode:	Compliance	Vordict	DASS					
Date & Time:	10/14/2009 3:23:52 PM	verdict.	LY22					
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC					
Remarks:								

Plot 7.2.3 Peak output power and spectral power density, Antenna 1, 9.5 dBi, MIMO mode, 5 MHz EBW

Fre	equency	<i>'</i> :					5340 MI	Ηz				
Cha	annel B	W:					5 MHz					
Мо	dulatior	n parar	nete	rs:			64QAM					
🔆 A	gilent								R	Т		
	-									M	kr1 5.33	9400 GHz
Ref 30	dBm			#Atten 10) dB	Ext P	G -31.03 dB				4	.335 dBm
#Samp	P									1		
Log						1						
dB/						<u> </u>						
40/										~	~	
											~~~	
												~~~
	~~~~											
DA												
PAVg												
Center	r 5.34 GHz										Sp	an 10 MHz
#Res E	3W 1 MHz				#\	VBW 3	MHz			Swee	ep4ms	(401 pts)
Cha	nnel Pow	er						F	owe	r Spe	ectral D	ensity
9.4	12 dBm	ו /4.	9050	) MHz	2				-:	57.4	8 dB	m/Hz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density							
Test procedure:	FCC Public Notice DA 02-2138, Appendix A							
Test mode:	Compliance	Vordict	DASS					
Date & Time:	10/14/2009 3:23:52 PM	verdict.	LY22					
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC					
Remarks:								

### Plot 7.2.4 Peak output power and spectral power density, Antenna 2, 9.5 dBi, MIMO mode, 5 MHz EBW



Plot 7.2.5 Peak output power and spectral power density, Antenna 2, 9.5 dBi, MIMO mode, 5 MHz EBW

Frequency:	5300 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density								
Test procedure:	FCC Public Notice DA 02-2	2138, Appendix A							
Test mode:	Compliance	Verdiet: DACC							
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33						
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC						
Remarks:									

### Plot 7.2.6 Peak output power and spectral power density, Antenna 2, 9.5 dBi, MIMO mode, 5 MHz EBW

Freque Channe	ncy: el BW:	motore		5340 M 5 MHz	MHz : M			
wouua	lion parai	neters.		04QAI	VI			
🔆 Agilent						RΤ		
Ref 30 dBm		#Atte	n 10 dB l	xt PG -31.03	dB		Mkr1 5.33 4	8575 GHz .701 dBm
#Samp Log 10 dB/			1 <b>Ý</b>					
PAvg								
Center 5.34 #Res BW 1 M	GHz MHz		#VE	W 3 MHz		Sv	Sp veep 4 ms	an 10 MHz (401 pts)
Channel F	Power				F	ower S	ipectral D	ensity
9.29 d	Bm /4.	9050 M	Hz			-57	.62 dB	m/Hz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density							
Test procedure:	FCC Public Notice DA 02-2138, Appendix A							
Test mode:	Compliance	Vardiati DACC						
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33					
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC					
Remarks:								

### Table 7.2.4 Conducted output power test results

ASSIGNED MODULATI MODULATI DETECTOF RESOLUTIO VIDEO BAN POWER ME ANTENNA ( MODE:	FREQUENC ON: NG SIGNAL USED: ON BANDW IDWIDTH: EASUREME GAIN:	CY: : IDTH: NT OPTION	:	5250.0 – 5350.0 MHz 64QAM (worst case power and PRBS Sample 1 MHz 3 MHz 1 14.5 dBi MIMO				power densi	ity)
Channel, MHz	26 dB BW MHz	Pmeas (Ant.1), dBm	Pmeas (Ant.2), dBm	eas L.2), P _{meas} , dBm* Antenna gain, gain, dBm** BIRP total, dBm** dBm*** dBm*** dBm*** dBm*** dBm*** dB****					Verdict
5260.0	4.905	3.59	3.81	3.81 6.71 14.5 21.21 23.91 -2.70 Pass					
5300.0	4.905	3.89	3.56	6.74 14.5 21.24 23.91 -2.67 Pass					
5340.0	4.905	3.76	2.98	6.40	14.5	20.90	23.91	-3.01	Pass

5340.0 4.905 5.70 2.00 * - Pmeas, dBm = 10 log(10^((P(dBm,Ant1)/10)+ 10^((P(dBm,Ant2))/10))

** - EIRP total, dBm = Pmeas, dBm + Antenna Gain, dBi

*** - Limit EIRP, dBm = 11+10LOG(26 dB BW, MHz) + 6 dBi

**** - Margin, dB = EIRP total, dBm - Limit EIRP, dBm

### Table 7.2.5 Conducted output power spectral density test results

MODULATION: MODULATING SIGNAL: DETECTOR USED: RESOLUTION BANDWIDTH: VIDEO BANDWIDTH: POWER MEASUREMENT OPTION:					64QAM (worst PRBS Sample 1 MHz 3 MHz 2 14 5 dBi	case power a	and power o	lensity)	
EBW: MODE:					5 MHz MIMO				
	Durana	Durana		Antonna	_				

Channel,	Pmeas (Ant.1),	Pmeas (Ant.2),	P _{meas} ,	Antenna gain,	EIRP total,	Limit EIRP,	Margin,	Verdict
MHz	dBm/MHz	dBm/MHz	abm/wHz*	dBi	abm/MHz**	aBm/IviHz***	aB	
5260.0	-1.42	-1.23	1.68	14.5	16.18	17.00	-0.82	Pass
5300.0	-1.25	-1.40	1.69	14.5	16.19	17.00	-0.81	Pass
5340.0	-1.06	-1.93	1.54	14.5	16.04	17.00	-0.96	Pass

* - Pmeas, dBm/MHz = 10 log(10^((P(dBm/MHz,Ant1)/10)+ 10^((P(dBm/MHz,Ant2))/10))

** - EIRP total, dBm = Pmeas, dBm/MHz + Antenna Gain, dBi

*** - Limit EIRP, dBm/MHz = 11+ 6 dBi

**** - Margin, dB = EIRP total, dBm/MHz – Limit EIRP, dBm/MHz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density								
Test procedure:	FCC Public Notice DA 02-2	2138, Appendix A							
Test mode:	Compliance	Verdiet: DACC							
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33						
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC						
Remarks:									

Plot 7.2.7 Peak output power and spectral power density, Antenna 1, 14.5 dBi, MIMO mode, 5 MHz EBW



Plot 7.2.8 Peak output power and spectral power density, Antenna 1, 14.5 dBi, MIMO mode, 5 MHz EBW

Frequency:	5300 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density								
Test procedure:	FCC Public Notice DA 02-2	CC Public Notice DA 02-2138, Appendix A							
Test mode:	Compliance	Vardiati DACC							
Date & Time:	10/14/2009 3:23:52 PM	verdict.	PA33						
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 % Power Supply: 120 VAC							
Remarks:		-							

### Plot 7.2.9 Peak output power and spectral power density, Antenna 1, 14.5 dBi, MIMO mode, 5 MHz EBW

Eroqu	ionov					5340 MI	47				
						5540 101	12				
Channel BW:						5 MHz					
Modu	lation	parar	neters:			64QAM					
Arile	mf							D -	г		
- A A A A A A A A A A A A A A A A A A A	111							П		4 5 220	260 CU-
Dof 30 dB	lm		#8#6	n 10 dB	Evt D	C 31 03 4B			MK	1 0.339	200 GHZ
#Samp	/		#Alle		LAUF	G -51.05 UD		- 1		-1.0	55 0.511
Log											
10 –					1						
dB/ -					<b>e</b>						
			- man								
								_		-	
		£								~~	
											~
DAve											
PAvg											
Center 5.	34 GHz									Spa	n 10 MHz
#Res BW	1 MHz			#	VBW 3	MHz		9	Swee	p4 ms(4	01 pts)
Channe	el Powe	۰r					F	ower	Spe	ctral De	nsity
3.76	dBm	/4.	9050 M	Hz				-6	3.1	4 dBn	n/Hz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density								
Test procedure:	FCC Public Notice DA 02-2	FCC Public Notice DA 02-2138, Appendix A							
Test mode:	Compliance								
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33						
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC						
Remarks:		-							

### Plot 7.2.10 Peak output power and spectral power density, Antenna 2, 14.5 dBi, MIMO mode, 5 MHz EBW



Plot 7.2.11 Peak output power and spectral power density, Antenna 2, 14.5 dBi, MIMO mode, 5 MHz EBW

Frequency:	5300 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density						
Test procedure:	FCC Public Notice DA 02-2138, Appendix A						
Test mode:	Compliance	Vordict	DASS				
Date & Time:	10/14/2009 3:23:52 PM	verdict.	PA33				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC				
Remarks:		-					

### Plot 7.2.12 Peak output power and spectral power density, Antenna 2, 14.5 dBi, MIMO mode, 5 MHz EBW





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density						
Test procedure:	FCC Public Notice DA 02-2138, Appendix A						
Test mode:	Compliance	Verdict: PASS					
Date & Time:	10/14/2009 3:23:52 PM						
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC				
Remarks:							

### Table 7.2.6 Conducted output power test results

ASSIGNED	FREQUENC	ENCY: 5250.0 – 5350.0 MHz								
MODULATI	ON:				64QAM	(worst case	power and	power densi	ity)	
MODULATI	NG SIGNAL	:			PRBS					
DETECTOR	USED:				Sample					
RESOLUTIO	ON BANDW	IDTH:			1 MHz					
VIDEO BAN	DWIDTH:			3 MHz						
POWER ME	ASUREME	NT OPTION	:	1						
ANTENNA GAIN:				17 dBi						
FEEDER LC	DSS:			0.7 dB						
ANTENNA ASSEMBLY GAIN:				16.30 dBi (Antenna gain, dBi – feeder loss, dB )						
MODE:					MIMO					
					Antonno					

Channel, MHz	26 dB BW MHz	Pmeas (Ant.1), dBm	Pmeas (Ant.2), dBm	P _{meas} , DBm*	Antenna assembly gain dBi	EIRP total, dBm**	Limit EIRP, dBm***	Margin, dB****	Verdict
5260.0	4.905	1.76	2.29	5.04	16.30	21.34	23.91	-2.56	Pass
5300.0	4.905	1.67	2.33	5.02	16.30	21.32	23.91	-2.58	Pass
5340.0	4.905	1.59	1.77	4.69	16.30	20.99	23.91	-2.92	Pass

* - Pmeas, dBm = 10 log(10^((P(dBm,Ant1)/10)+ 10^((P(dBm,Ant2))/10))

*** - EIRP total, dBm = Pmeas, dBm + Antenna Assembly Gain, dBi
*** - Limit EIRP, dBm = 11+10LOG(26 dB BW, MHz) + 6 dBi

**** - Margin, dB = EIRP total, dBm – Limit EIRP, dBm

### Table 7.2.7 Conducted output power spectral density test results

ASSIGNED FREQUENCY:	5250.0 – 5350.0 MHz
MODULATION:	64QAM (worst case power and power density)
MODULATING SIGNAL:	PRBS
DETECTOR USED:	Sample
RESOLUTION BANDWIDTH:	1 MHz
VIDEO BANDWIDTH:	3 MHz
POWER MEASUREMENT OPTION:	2
ANTENNA GAIN:	17 dBi
FEEDER LOSS:	0.7 dB
ANTENNA ASSEMBLY GAIN:	16.30 dBi (Antenna gain, dBi – feeder loss, dB )
EBW:	5 MHz
MODE:	MIMO

Channel, MHz	Pmeas (Ant.1), dBm/MHz	Pmeas (Ant.2), dBm/MHz	P _{meas} , dBm/MHz*	Antenna assembly gain dBi	EIRP total, dBm/MHz**	Limit EIRP, dBm/MHz***	Margin, dB****	Verdict
5260.0	-3.20	-2.56	0.15	16.30	16.45	17.00	-0.55	Pass
5300.0	-3.30	-2.57	0.09	16.30	16.39	17.00	-0.61	Pass
5340.0	-3.33	-3.18	-0.24	16.30	16.06	17.00	-0.94	Pass

* - Pmeas, dBm/MHz = 10 log(10^((P(dBm/MHz,Ant1)/10)+ 10^((P(dBm/MHz,Ant2))/10))

** - EIRP total, dBm = Pmeas, dBm/MHz + Antenna Assembly Gain, dBi

*** - Limit EIRP, dBm/MHz = 11+ 6 dBi

**** - Margin, dB = EIRP total, dBm/MHz – Limit EIRP, dBm/MHz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density						
Test procedure:	FCC Public Notice DA 02-2138, Appendix A						
Test mode:	Compliance	Vardiaty					
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC				
Remarks:		-					

Plot 7.2.13 Peak output power and spectral power density, Antenna 1, 17 dBi, MIMO mode, 5 MHz EBW



Plot 7.2.14 Peak output power and spectral power density, Antenna 1, 17 dBi, MIMO mode, 5 MHz EBW

Frequency:	5300 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density						
Test procedure:	FCC Public Notice DA 02-2138, Appendix A						
Test mode:	Compliance	Vardiate DACC					
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC				
Remarks:			· · · · ·				

### Plot 7.2.15 Peak output power and spectral power density, Antenna 1, 17 dBi, MIMO mode, 5 MHz EBW

Ero	auono	<i>.</i> .				5240 M	<b>⊔</b> -7				
Flequency.						5540 MHZ					
Cha	annel B	SW:				5 MHz					
Mo	dulatio	n parar	neters	S:		64QAM					
		-									
							_	_	_		
- 🔆 A(	gilent							R	T		
									Mk	r1 5.341	150 GHz
Ref 30	dBm		##	Atten 10 dB	Ext P	G -31.03 dB				-3.3	33 dBm
#Samp											
Log											
10							1				
aB/							Q				
		-								- m	
PAva											
Center	5.34 GHz									Spa	n 10 MHz
#Res B	W 1 MHz				#VBW 3	MHz			Swee	p4 ms(4	l01 pts)
Char	nnel Pow	er						Powe	r Spe	ctral De	nsity
1.5	9 dBm	n /4.	9050	MHz				-6	65.3	2 dBn	n/Hz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density						
Test procedure:	FCC Public Notice DA 02-2138, Appendix A						
Test mode:	Compliance	Vardiate DACC					
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC				
Remarks:			· · · · ·				

Plot 7.2.16 Peak output power and spectral power density, Antenna 2, 17 dBi, MIMO mode, 5 MHz EBW



Plot 7.2.17 Peak output power and spectral power density, Antenna 2, 17 dBi, MIMO mode, 5 MHz EBW

Frequency:	5300 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density					
Test procedure:	FCC Public Notice DA 02-2	02-2138, Appendix A				
Test mode:	Compliance	Vardiat: DASS				
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33			
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 % Power Supply: 120 VAC				
Remarks:						

### Plot 7.2.18 Peak output power and spectral power density, Antenna 2, 17 dBi, MIMO mode, 5 MHz EBW

Frequency: Channel BW: Modulation param	5340 MHz 5 MHz 64QAM			
* Adilent			RT	
Ref 10 dBm	#Atten 10 dB Ex	t PG -31.03 dB	Mkr1 5.3	38550 GHz 3.181 dBm
#Samp Log 0 dB/				
PAvg				
Center 5.34 GHz #Res BW 1 MHz	#VBW	/ 3 MHz	S Sweep 4 m	pan 10 MHz s (401 pts)
1.77 dBm /4.90	050 MHz		-65.14 dE	3m/Hz

-1.93

-2.31

Pass

Pass



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2	2138, Appendix A			
Test mode:	Compliance	- Verdict: PASS			
Date & Time:	10/14/2009 3:23:52 PM				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 % Power Supply: 120 VAC			
Remarks:					

### Table 7.2.8 Conducted output power test results

ASSIGNED FREQUENCY: MODULATION: MODULATING SIGNAL: DETECTOR USED: RESOLUTION BANDWIDTH: VIDEO BANDWIDTH: POWER MEASUREMENT OPTION: ANTENNA GAIN: FEEDER LOSS: ANTENNA ASSEMBLY GAIN: MODE: ANTENNA PORT:		5250.0 – 5350.0 MHz 64QAM (worst case power and power density) PRBS Sample 1 MHz 3 MHz 1 9.5 dBi 0.7 dB 8.8 dBi (Antenna gain, dBi – feeder loss, dB ) SISO					
Channel,	26 dB BW	Pmeas (Ant.2). dBm	Antenna assembly	EIRP total,	Limit EIRP,	Margin,	Verdict
MHz	MHz		dBi	aBw.	asm**	aB***	
5260.0	4.905	12.35	8.80	21.15	23.91	-2.76	Pass

5340.0 4.905 8.80 * - EIRP total, dBm = Pmeas, dBm + Antenna Assembly Gain, dBi

13.18

12.80

*** - Limit EIRP, dBm = 11+10LOG(26 dB BW, MHz) + 6 dBi

**** - Margin, dB = EIRP total, dBm – Limit EIRP, dBm

4.905

5300.0

5260.0

5300.0

5340.0

### Table 7.2.9 Conducted output power spectral density test results

8.80

21.98

21.60

23.91

23.91

ASSIGNED MODULATIO MODULATIO	5250.0 – 5350.0 MHz 64QAM (worst case power and power density) PRBS						
DETECTOR	USED:/	Sample	:				
RESOLUTIO	ON BANDWIDTH:	1 MHz					
VIDEO BAN	DWIDTH:	3 MHz					
POWER ME	ASUREMENT OPTION:	2					
ANTENNA (	GAIN:	9.5 dBi					
FEEDER LC	DSS:	0.7 dB					
ANTENNA A	ASSEMBLY GAIN:	8.8 dBi (Antenna gain, dBi – feeder loss, dB)					
EBW:		5 MHz					
MODE:		SISO					
ANTENNA F	PORT:	Antenna	a 2 (worst ca	ase power ar	nd power dei	nsity)	
Channel,	Pmeas (Ant.2), dBm/MHz	Antenna assembly gain	EIRP total, dBm/MHz*	Limit EIRP, dBm/MHz**	Margin, DB***	Verdict	
MHz		dBi					

8.80

8.80

8.80

16.12

16.93

16.62

17.00

17.00

17.00

-0.88

-0.07

-0.38

8.13 7.82 * - EIRP total, dBm = Pmeas, dBm/MHz + Antenna Assembly Gain, dBi

7.32

** - Limit EIRP, dBm/MHz = 11+ 6 dBi

*** - Margin, dB = EIRP total, dBm/MHz - Limit EIRP, dBm/MHz

Pass

Pass

Pass



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2138, Appendix A				
Test mode:	Compliance	Vardiat: DASS			
Date & Time:	10/14/2009 3:23:52 PM	Verdict. PASS			
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 % Power Supply: 120 VAC			
Remarks:					

Plot 7.2.19 Peak output power and spectral power density, Antenna 2, 9.5 dBi, SISO mode, 5 MHz EBW



Plot 7.2.20 Peak output power and spectral power density, Antenna 2, 9.5 dBi, SISO mode, 5 MHz EBW

Frequency:	5300 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density					
Test procedure:	FCC Public Notice DA 02-2138, Appendix A					
Test mode:	Compliance	Vordict: DASS				
Date & Time:	10/14/2009 3:23:52 PM	Verdict. PASS				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 % Power Supply: 120 VAC				
Remarks:						

### Plot 7.2.21 Peak output power and spectral power density, Antenna 2, 9.5 dBi, SISO mode, 5 MHz EBW

Frequency:	5340 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2138, Appendix A				
Test mode:	Compliance	Verdict: PASS			
Date & Time:	10/14/2009 3:23:52 PM				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 % Power Supply: 120 VAC			
Remarks:					

### Table 7.2.10 Conducted output power test results

			Antenna				(isity)	
	ANTENNA PORT		Antenna 2 (worst case nower and nower density)					
MODE:			SISO					
	ANTENNA GAIN:		15 dBi					
	POWER MEASUREME	ENT OPTION:	1					
	VIDEO BANDWIDTH:		3 MHz					
RESOLUTION BANDWIDTH:			1 MHz					
	DETECTOR USED:		Sample	9				
	MODULATING SIGNAI	_:	PRBS					
	MODULATION:		64QAM	l (worst case	e power and	power dens	ity)	
ASSIGNED FREQUENCY:			5250.0 – 5350.0 MHz					

Channel,	26 dB BW	Pmeas (Ant.2), dBm	Antenna gain	EIRP total, dBm*	Limit EIRP, dBm**	Margin,\ dB***	Verdict
MHz	MHz		dBi	•==	•=	1	
5260.0	4.905	6.32	15.00	21.32	23.91	-2.59	Pass
5300.0	4.905	6.39	15.00	21.39	23.91	-2.52	Pass
5340.0	4.905	7.00	15.00	22.00	23.91	-1.91	Pass

* - EIRP total, dBm = Pmeas, dBm + Antenna Gain, dBi *** - Limit EIRP, dBm = 11+10LOG(26 dB BW, MHz) + 6 dBi **** - Margin, dB = EIRP total, dBm – Limit EIRP, dBm

### Table 7.2.11 Conducted output power spectral density test results

ASSIGNED FREQUENCY	5250 0 – 5350 0 MHz
MODULATION	640AM (worst case power and power density)
	PRBS
DETECTOR USED	Sample
RESOLUTION BANDWIDTH	1 MHz
VIDEO BANDWIDTH	3 MHz
POWER MEASUREMENT OPTION:	2
ANTENNA GAIN:	_ 15 dBi
EBW:	5 MHz
MODE:	SISO
ANTENNA PORT:	Antenna 2 (worst case power and power density)

Channel,	Pmeas (Ant.2), dBm/MHz	Antenna gain	EIRP total,	Limit EIRP,	Margin,	Verdict
MHz		dBi	GDIII/MITZ	(Dim/Will)2	üb	
5260.0	1.26	15.00	16.26	17.00	-0.74	Pass
5300.0	1.51	15.00	16.51	17.00	-0.49	Pass
5340.0	1.86	15.00	16.86	17.00	-0.14	Pass

* - EIRP total, dBm = Pmeas, dBm/MHz + Antenna Gain, dBi

** - Limit EIRP, dBm/MHz = 11+ 6 dBi

*** - Margin, dB = EIRP total, dBm/MHz – Limit EIRP, dBm/MHz



Test specification: FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Vordict	DASS	
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC	
Remarks:				

Plot 7.2.22 Peak output power and spectral power density, Antenna 2, 15 dBi, SISO mode, 5 MHz EBW

requency:		5260 MHz			
hannel BW:		5 MHz			
Iodulation parame	eters:	64QAM	64QAM		
•					
🔆 Agilent			RT		
Ref 30 dBm	#Atten 10 dB E	kt PG -31.03 dB	Mkr1 5.259375 GHz 1.257 dBm		
#Samp					
10	1				
dB/	×		~		
PAvg					
Center 5.26 GHz #Res BW 1 MHz #VBW		W 3 MHz	Span 10 MH: Sweep 4 ms (401 pts)		
Channel Power			Power Spectral Density		

6.32 dBm / 4.9050 MHz -60.59 dBm/Hz

Plot 7.2.23 Peak output power and spectral power density, Antenna 2, 15 dBi, SISO mode, 5 MHz EBW

Frequency:	5300 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM




Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2138, Appendix A				
Test mode:	Compliance	Verdict: PASS			
Date & Time:	10/14/2009 3:23:52 PM				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC		
Remarks:		-			

## Plot 7.2.24 Peak output power and spectral power density, Antenna 2, 15 dBi, SISO mode, 5 MHz EBW

Fre	quency	:				5340 MI	Ηz				
Cha	annel B	W:				5 MHz					
Mo	dulatior	n paran	neters			64QAM					
🔆 🔆 Ag	gilent							R	Т		
									M	kr1 5.339	075 GHz
Ref 30	dBm		#A1	ten 10 dB	Ext	PG -31.03 dB				1.	B63 dBm
#Samp									1		
Log											
10 JD/					ò						
aD/			~~~					m	~		
		1								~	
		and the second s									-
PAvg											
Contor	5 24 CHz									Eng	n 10 Mila
#Res B	W 1 MHz			#	VBW 3	8 MHz			Swee	opa an4ms/	10 mili2 101 nts)
										-p (	
Char	Channel Power						⊃owe	r Spe	ectral De	nsity	
7.0	0 dBm	n /4.9	9050 N	ИНz				-{	59.9	0 dBr	n/Hz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2138, Appendix A				
Test mode:	Compliance	Vardiat: DASS			
Date & Time:	10/14/2009 3:23:52 PM	Verdict: PASS			
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC		
Remarks:					

#### Table 7.2.12 Conducted output power test results

	Channel, 26 dB B	W Pmeas (Ant.2), dBm	assembly gain	EIRP total, dBm*	Limit EIRP, dBm**	Margin, dB***	Verdict	
Antenna								
ANTENNA PORT:			Antenna 2 (worst case power and power density)					
	MODE:		SISO					
	ANTENNA ASSEME	BLY GAIN:	16.30 dBi (Antenna gain, dBi – feeder loss, dB)					
	FEEDER LOSS:		0.7 dB					
ANTENNA GAIN:			17 dBi					
POWER MEASUREMENT OPTION:			1					
	VIDEO BANDWIDTH	4:	3 MHz					
	<b>RESOLUTION BANI</b>	OWIDTH:	1 MHz					
	DETECTOR USED:		Sample	9				
	MODULATING SIGN	IAL:	PRBS		•		• /	
MODULATION:			64QAM (worst case power and power density)					
	ASSIGNED FREQU	ENCY:	5250.0	– 5350.0 Mł	Ηz			

Channel,	26 dB BW	Pmeas (Ant.2), dBm	assembly gain	EIRP total, dBm*	Limit EIRP, dBm**	Margin, dB***	Verdict
MHz	MHz		dBi				
5260.0	4.905	4.90	16.30	21.20	23.91	-2.71	Pass
5300.0	4.905	5.34	16.30	21.64	23.91	-2.27	Pass
5340.0	4.905	5.37	16.30	21.67	23.91	-2.24	Pass

* - EIRP total, dBm = Pmeas, dBm + Antenna Assembly Gain, dBi

*** - Limit EIRP, dBm = 11+10LOG(26 dB BW, MHz) + 6 dBi

**** - Margin, dB = EIRP total, dBm – Limit EIRP, dBm

#### Table 7.2.13 Conducted output power spectral density test results

POWER MEASUREMENT OPTION:	2					
ANTENNA GAIN:	17 dBi					
ANTENNA ASSEMBLY GAIN:	0.7 dB 16.30 dBi (Antenna gain, dBi – feeder loss, dB )					
EBW:	W: 5 MHz					
MODE:	SISO					
ANTENNA PORT:	Antenna 2 (worst case power and power density)					
ANTENNA PORT:	Antenna 2 (worst case power and power de	nsity)				
Channol						

Channel,	Pmeas (Ant.2), dBm/MHz	Antenna assembly gain	EIRP total, dBm/MHz*	Limit EIRP, dBm/MHz**	Margin, dB***	Verdict
MHz		dBi				
5260.0	0.09	16.30	16.39	17.00	-0.61	Pass
5300.0	0.50	16.30	16.80	17.00	-0.20	Pass
5340.0	0.25	16.30	16.55	17.00	-0.45	Pass

* - EIRP total, dBm = Pmeas, dBm/MHz + Antenna Assembly Gain, dBi ** - Limit EIRP, dBm/MHz = 11+ 6 dBi

*** - Margin, dB = EIRP total, dBm/MHz – Limit EIRP, dBm/MHz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2138, Appendix A				
Test mode:	Compliance	Verdict: PASS			
Date & Time:	10/14/2009 3:23:52 PM				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC		
Remarks:					

Plot 7.2.25 Peak output power and spectral power density, Antenna 2, 17 dBi, SISO mode, 5 MHz EBW



Plot 7.2.26 Peak output power and spectral power density, Antenna 2, 17 dBi, SISO mode, 5 MHz EBW

Frequency:	5300 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2138, Appendix A				
Test mode:	Compliance	Vardiat: DASS			
Date & Time:	10/14/2009 3:23:52 PM	Verdict: PASS			
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC		
Remarks:					

## Plot 7.2.27 Peak output power and spectral power density, Antenna 2, 17 dBi, SISO mode, 5 MHz EBW

Frequency:	5340 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2138, Appendix A				
Test mode:	Compliance	Vardiat: DASS			
Date & Time:	10/14/2009 3:23:52 PM	Verdict. PASS			
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC		
Remarks:					

#### Table 7.2.14 Conducted output power test results

ASSIGNED FREQUENCY:	5250.0 – 5350.0 MHz
MODULATION:	64QAM (worst case power and power density)
MODULATING SIGNAL:	PRBS
DETECTOR USED:	Sample
RESOLUTION BANDWIDTH:	1 MHz
VIDEO BANDWIDTH:	3 MHz
POWER MEASUREMENT OPTION:	1
ANTENNA GAIN:	9.5 dBi
FEEDER LOSS:	0.7 dB
ANTENNA ASSEMBLY GAIN:	8.8 dBi (Antenna gain, dBi – feeder loss, dB )
MODE:	MIMO
	Antonna

Channel, MHz	26 dB BW MHz	Pmeas (Ant.1), dBm	Pmeas (Ant.2), dBm	P _{meas} ,dBm*	Antenna assembly gain dBi	EIRP total, dBm**	Limit EIRP, dBm***	Margin, dB****	Verdict
5265.0	9.51	12.38	12.25	15.33	8.80	24.13	26.78	-2.66	Pass
5300.0	9.51	12.68	12.64	15.67	8.80	24.47	26.78	-2.31	Pass
5335.0	9.51	12.76	12.59	15.69	8.80	24.49	26.78	-2.30	Pass

* - Pmeas, dBm = 10 log(10^((P(dBm,Ant1)/10)+ 10^((P(dBm,Ant2))/10))

*** - EIRP total, dBm = Pmeas, dBm + Antenna Assembly Gain, dBi
 *** - Limit EIRP, dBm = 11+10LOG(26 dB BW, MHz) + 6 dBi

**** - Margin, dB = EIRP total, dBm – Limit EIRP, dBm

#### Table 7.2.15 Conducted output power spectral density test results

MODE:				MIMO			
EBW:				10 MHz			
ANTENNA A	SSEMBLY	gain:		8.8 dBi (Anteni	na gain, dBi –	- feeder loss	s, dB)
FEEDER LO	SS:			0.7 dB			
ANTENNA G	GAIN:			9.5 dBi			
POWER ME	ASUREME	NT OPTION	:	2			
VIDEO BANI	DWIDTH:			3 MHz			
RESOLUTIO	N BANDWI	DTH:		1 MHz			
DETECTOR	USED:			Sample			
MODULATIN	IG SIGNAL:			PRBS			
MODULATIC	DN:			64QAM (worst	case power a	and power c	lensity)
ASSIGNED I	FREQUENC	CY:		5250.0 - 5350	.0 MHz		

Channel, MHz	Pmeas (Ant.1), dBm/MHz	Pmeas (Ant.2), dBm/MHz	P _{meas} , dBm/MHz*	Antenna assembly gain, dBi	EIRP total, dBm/MHz**	Limit EIRP, dBm/MHz***	Margin, dB***	Verdict
5265.0	4.79	4.75	7.78	8.80	16.58	17.00	-0.42	Pass
5300.0	5.04	4.88	7.97	8.80	16.77	17.00	-0.23	Pass
5335.0	5.03	5.00	8.02	8.80	16.82	17.00	-0.18	Pass

* - Pmeas, dBm/MHz = 10 log(10^((P(dBm/MHz,Ant1)/10)+ 10^((P(dBm/MHz,Ant2))/10))

** - EIRP total, dBm = Pmeas, dBm/MHz + Antenna Assembly Gain, dBi

*** - Limit EIRP, dBm/MHz = 11+ 6 dBi

**** - Margin, dB = EIRP total, dBm/MHz – Limit EIRP, dBm/MHz



Test specification:	FCC section 15. 407(a)	FCC section 15. 407(a)(2), Peak output power and peak power spectral density					
Test procedure:	FCC Public Notice DA 02-2	138, Appendix A					
Test mode:	Compliance	Vordict	DASS				
Date & Time:	10/14/2009 3:23:52 PM	verdict.	PA33				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC				
Remarks:		-					

#### Plot 7.2.28 Peak output power and spectral power density, Antenna 1, 9.5 dBi, MIMO mode, 10 MHz EBW



Plot 7.2.29 Peak output power and spectral power density, Antenna 1, 9.5 dBi, MIMO mode, 10 MHz EBW

Frequency:	5300 MHz
Channel BW:	10 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)	FCC section 15. 407(a)(2), Peak output power and peak power spectral density					
Test procedure:	FCC Public Notice DA 02-2	138, Appendix A					
Test mode:	Compliance	Vordict	DASS				
Date & Time:	10/14/2009 3:23:52 PM	verdict.	PA33				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC				
Remarks:		-					

## Plot 7.2.30 Peak output power and spectral power density, Antenna 1, 9.5 dBi, MIMO mode, 10 MHz EBW

Frequency:		5335 MHz					
Channel BW:		10 MHz					
Modulation para	ameters:	64QAM					
🔆 Agilent			RT				
Ref 30 dBm	#Atten 10 dB	Ext PG -31.03 dB	Mkr1	5.3317750 GHz 5.029 dBm			
Samp	ř			1			
.og	1						
U IB/	×						
				Mark and a second secon			
PAvg							
Careta - E 22E CUI-				Caran de Mi			
#Res BW 1 MHz #VB		VBW 3 MHz	Span 15 Mi V 3 MHz Sweep 4 ms (401 pts)				
Channel Power			Power Spec	tral Density			
12.76 dBm /9	.5100 MHz		-57.02	2 dBm/Hz			



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density					
Test procedure:	FCC Public Notice DA 02-2	138, Appendix A				
Test mode:	Compliance	Vordict	DASS			
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33			
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC			
Remarks:			· · · · ·			

#### Plot 7.2.31 Peak output power and spectral power density, Antenna 2, 9.5 dBi, MIMO mode, 10 MHz EBW



Plot 7.2.32 Peak output power and spectral power density, Antenna 2, 9.5 dBi, MIMO mode, 10 MHz EBW

Frequency:	5300 MHz
Channel BW:	10 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)	FCC section 15. 407(a)(2), Peak output power and peak power spectral density					
Test procedure:	FCC Public Notice DA 02-2	138, Appendix A					
Test mode:	Compliance	Vordict	DASS				
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC				
Remarks:		-					

## Plot 7.2.33 Peak output power and spectral power density, Antenna 2, 9.5 dBi, MIMO mode, 10 MHz EBW

Fre	anency.					5335 M	Hz				
Cha	annel BM	٧·				10 MH ₇	12				
Mo	dulation	v. parar	neters:			64QAM					
🔆 Ag	gilent							RΤ			
Ref 30	dBm		#Att	en 10 dB	Ext P	'G -31.03 dB	1	М	kr1 5.3	33331 4.9	25 GHz 95 dBm
#Samp		f							7		
Log 10				1							
dB/				~~~~~	~~~~~	~~~~~			-		
										~	
											~
	mark -										
PAvg											
Center 5.335 GHz #Res BW 1 MHz #VBW		VBW 3	Span 15 Mi V 3 MHz Sweep 4 ms (401 pts)				n 15 MH 01 pts)				
Char	nel Power						F	Power S	oectral	l Der	nsity
12.	.59 dBm	ı /9.	5100 N	1Hz				-57	19 d	lBm	ı/Hz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2138, Appendix A				
Test mode:	Compliance	Verdict: PASS			
Date & Time:	10/14/2009 3:23:52 PM				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC		
Remarks:					

#### Table 7.2.16 Conducted output power test results

ASSIGNED MODULATI MODULATI DETECTOF RESOLUTIO VIDEO BAN POWER ME ANTENNA ( MODE:	FREQUENC ON: NG SIGNAL USED: ON BANDW IDWIDTH: EASUREME GAIN:	CY: : IDTH: NT OPTION	5250.0 – 5350.0 MHz 64QAM (worst case power and power density) PRBS Sample 1 MHz 3 MHz I: 1 14.5 dBi MIMO				ity)		
Channel, MHz	26 dB BW MHz	Pmeas (Ant.1), dBm	Pmeas (Ant.2), dBm	eas t.2), dBm* Antenna gain dBi EIRP total, Limit EIRP, Margin, dBi dBm** dBm** dBm***				Verdict	
5265.0	9.51	5.56	6.00	8.80	14.5	23.30	26.78	-3.48	Pass
5300.0	9.51	6.83	6.05	9.47	14.5	23.97	26.78	-2.81	Pass
5335.0	9.51	6.36	5.99	9.19	14.5	23.69	26.78	-3.09	Pass

5335.0 9.51 0.00
* - Pmeas, dBm = 10 log(10^((P(dBm,Ant1)/10)+ 10^((P(dBm,Ant2))/10))

** - EIRP total, dBm = Pmeas, dBm + Antenna Gain, dBi

*** - Limit EIRP, dBm = 11+10LOG(26 dB BW, MHz) + 6 dBi

**** - Margin, dB = EIRP total, dBm – Limit EIRP, dBm

## Table 7.2.17 Conducted output power spectral density test results

ASSIGNED FREQUENCY:	5250.0 – 5350.0 MHz
MODULATION:	64QAM (worst case power and power density)
MODULATING SIGNAL:	PRBS
DETECTOR USED:	Sample
RESOLUTION BANDWIDTH:	1 MHz
VIDEO BANDWIDTH:	3 MHz
POWER MEASUREMENT OPTION:	2
ANTENNA GAIN:	14.5 dBi
EBW:	10 MHz
MODE:	MIMO
	Antonna

Channel,	Pmeas (Ant.1),	Pmeas (Ant.2),	P _{meas} ,	Antenna gain,	EIRP total,	Limit EIRP,	Margin,	Verdict
MHz	dBm/MHz	dBm/MHz	abm/winz"	dBi	abm/MHz**	abm/winz****	aB	
5265.0	-1.86	-1.21	1.49	14.5	15.99	17.00	-1.01	Pass
5300.0	-0.87	-1.59	1.79	14.5	16.29	17.00	-0.71	Pass
5335.0	-1.20	-1.59	1.62	14.5	16.12	17.00	-0.88	Pass

* - Pmeas, dBm/MHz = 10 log(10^((P(dBm/MHz,Ant1)/10)+ 10^((P(dBm/MHz,Ant2))/10))

** - EIRP total, dBm = Pmeas, dBm/MHz + Antenna Gain, dBi

*** - Limit EIRP, dBm/MHz = 11+ 6 dBi

**** - Margin, dB = EIRP total, dBm/MHz – Limit EIRP, dBm/MHz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2138, Appendix A				
Test mode:	Compliance	Vardiat: DASS			
Date & Time:	10/14/2009 3:23:52 PM	Verdict. PASS			
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC		
Remarks:					

#### Plot 7.2.34 Peak output power and spectral power density, Antenna 1, 14.5 dBi, MIMO mode, 10 MHz EBW



Plot 7.2.35 Peak output power and spectral power density, Antenna 1, 14.5 dBi, MIMO mode, 10 MHz EBW

Frequency:	5300 MHz
Channel BW:	10 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2138, Appendix A				
Test mode:	Compliance	Vardiat: DASS			
Date & Time:	10/14/2009 3:23:52 PM	Verdict: PASS			
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC		
Remarks:					

## Plot 7.2.36 Peak output power and spectral power density, Antenna 1, 14.5 dBi, MIMO mode, 10 MHz EBW

Fre	quency	:			5335	5 MHz				
Channel BW: 10 MHz				1Hz						
Modulation parameters: 64QA				AM						
🔆 Ag	jilent						R	Т		
Ref 30	dBm		#Atten 10 d	IB E:	xt PG -31.	)3 dB		Mkr1	5.33185 -1.2	i00 GHz D4 dBm
#Samp			<u>د ا</u>					,		
Log										
10			1							
dB/					~~~					
		/							~	~
										~~
PAvg										
Center	5.335 GHz	z							Spa	n 15 MHz
#Res B	W 1 MHz			#VB\	N 3 MHz			Sweep	4 ms (4	01 pts)
Char	nel Powe	∋r					Powe	r Spec	tral Dei	nsity
6.3	6 dBm	n /9	.5100 MHz				-1	63.42	2 dBn	ı/Hz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2138, Appendix A				
Test mode:	Compliance	Vardiat: DACC			
Date & Time:	10/14/2009 3:23:52 PM	verdict.	PA33		
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC		
Remarks:		-			

#### Plot 7.2.37 Peak output power and spectral power density, Antenna 2, 14.5 dBi, MIMO mode, 10 MHz EBW

Frequency:		5265 MHz	
Channel BW	1:	10 MHz	
Modulation p	parameters:	64QAM	
🔆 Agilent			RT
			Mkr1 5.2633500 GHz
Ref 30 dBm	#Atten 10 dB	Ext PG -31.03 dB	-1.21 dBm
#Samp			
Log			
10	1		
dB/	×		
			N



Plot 7.2.38 Peak output power and spectral power density, Antenna 2, 14.5 dBi, MIMO mode, 10 MHz EBW

Frequency:	5300 MHz
Channel BW:	10 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2138, Appendix A				
Test mode:	Compliance	Vardiat: DASS			
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33		
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC		
Remarks:		-			

## Plot 7.2.39 Peak output power and spectral power density, Antenna 2, 14.5 dBi, MIMO mode, 10 MHz EBW

Fre	quency	:			3	5335 M	Hz			
Cha	annel B	VV:				10 MHz				
Mo	dulatior	n para	meters		1	64QAM				
-										
🔆 A(	gilent							RΤ		
					<b>F</b> . <b>B</b>			Mk	1 5.3323	375 GHz
Ket 30	dBm		#A1	ten 10 dB	ExtP	G -31.03 dB		1	-1.5	89 dBm
#Samp	·									
10										
dB/										
		~	- manual - m		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				-	
									1 m	
		<u> </u>								h~
	men									
PAvg										
Center	5.335 GH	z							Spa	n 15 MHz
#Res B	W 1 MHz			#	VBW 3	MHz		Swe	ep4ms(4	l01 pts)
Channel Power						F	ower Spe	ectral De	nsity	
5.9	99 dBm	n /9	.5100 1	٨Hz				-63.7	′9 dBn	n/Hz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density							
Test procedure:	FCC Public Notice DA 02-2138, Appendix A							
Test mode:	Compliance	Vardiat: DASS						
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33					
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC					
Remarks:								

#### Table 7.2.18 Conducted output power test results

ASSIGNED FREQUENCY:	5250.0 – 5350.0 MHz					
MODULATION:	64QAM (worst case power and power density)					
MODULATING SIGNAL:		PRBS		•		3,
DETECTOR USED:		Sample				
RESOLUTION BANDWIDTH:		1 MHz				
VIDEO BANDWIDTH:	3 MHz					
POWER MEASUREMENT OPTION:		1				
ANTENNA GAIN:		17 dBi				
FEEDER LOSS:	0.7 dB					
ANTENNA ASSEMBLY GAIN:		16.3 dB	i (Antenna g	jain, dBi – fe	eder loss, d	B)
MODE:		MIMO				
						1

Channel, MHz	26 dB BW MHz	Pmeas (Ant.1), dBm	Pmeas (Ant.2), dBm	P _{meas} ,dBm*	Antenna assembly gain dBi	EIRP total, dBm**	Limit EIRP, dBm***	Margin, dB****	Verdict
5265.0	9.51	5.33	4.83	8.10	16.30	24.40	26.78	-2.38	Pass
5300.0	9.51	5.41	5.33	8.38	16.30	24.68	26.78	-2.10	Pass
5335.0	9.51	5.28	4.78	8.05	16.30	24.35	26.78	-2.43	Pass

* - Pmeas, dBm = 10 log(10^((P(dBm,Ant1)/10)+ 10^((P(dBm,Ant2))/10))

** - EIRP total, dBm = Pmeas, dBm + Antenna Assembly Gain, dBi
 *** - Limit EIRP, dBm = 11+10LOG(26 dB BW, MHz) + 6 dBi

**** - Margin, dB = EIRP total, dBm – Limit EIRP, dBm

#### Table 7.2.19 Conducted output power spectral density test results

ASSIGNED FREQUENCY: MODULATION: MODULATING SIGNAL: DETECTOR USED: RESOLUTION BANDWIDTH: VIDEO BANDWIDTH: POWER MEASUREMENT OPTION: ANTENNA GAIN: EEEDED LOSS:	5250.0 – 5350.0 MHz 64QAM (worst case power and power density) PRBS Sample 1 MHz 3 MHz 2 17 dBi
ANTENNA GAIN:	17 dBi
ANTENNA ASSEMBLY GAIN:	16.3 dBi (Antenna gain, dBi – feeder loss, dB )
EBW: MODE:	10 MHz MIMO

Channel, MHz	Pmeas (Ant.1), dBm/MHz	Pmeas (Ant.2), dBm/MHz	P _{meas} , dBm/MHz*	Antenna assembly gain, dBi	EIRP total, dBm/MHz**	Limit EIRP, dBm/MHz***	Margin, dB****	Verdict
5265.0	-2.26	-2.83	0.48	16.30	16.78	17.00	-0.22	Pass
5300.0	-2.27	-2.45	0.65	16.30	16.95	17.00	-0.05	Pass
5335.0	-2.80	-2.82	0.20	16.30	16.50	17.00	-0.50	Pass

* - Pmeas, dBm/MHz = 10 log(10^((P(dBm/MHz,Ant1)/10)+ 10^((P(dBm/MHz,Ant2))/10))

** - EIRP total, dBm = Pmeas, dBm/MHz + Antenna Assembly Gain, dBi

*** - Limit EIRP, dBm/MHz = 11+ 6 dBi

**** - Margin, dB = EIRP total, dBm/MHz – Limit EIRP, dBm/MHz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density							
Test procedure:	FCC Public Notice DA 02-2	Public Notice DA 02-2138, Appendix A						
Test mode:	Compliance	Vordict	DASS					
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33					
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC					
Remarks:		-						

## Plot 7.2.40 Peak output power and spectral power density, Antenna 1, 17 dBi, MIMO mode, 10 MHz EBW

requency:		5265 MHz				
Channel BW:		10 MHz	10 MHz			
Iodulation param	neters:	64QAM				
🔆 Agilent			RT			
Ref 20 dBm	#Atten 20 dB	Ext PG -31.03 dB	Mkr1 5.2629750 GHz -2.259 dBm			
#Samp						
Log 10						
dB/		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
PAvg						
Contor 5 265 CHz			Enon 15 MHz			
#Res BW 1 MHz	#\	/BW 3 MHz	Sweep 4 ms (401 pts)			
Channel Power			Power Spectral Density			
5.33 dBm /9	.5100 MHz		-64.45 dBm/Hz			

Plot 7.2.41 Peak output power and spectral power density, Antenna 1, 17 dBi, MIMO mode, 10 MHz EBW

Frequency:	5300 MHz
Channel BW:	10 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density							
Test procedure:	FCC Public Notice DA 02-2	2138, Appendix A						
Test mode:	Compliance	Vardiate DACC						
Date & Time:	10/14/2009 3:23:52 PM	verdict: PASS						
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC					
Remarks:								

## Plot 7.2.42 Peak output power and spectral power density, Antenna 1, 17 dBi, MIMO mode, 10 MHz EBW

Ero	auonov					5225 M				
FIE	quency	•				5555 IVII	ΠZ			
Cha	annel B	W:				10 MHz				
Mo	dulatior	n para	ameters:			64QAM				
	ailent							RТ		
	3							M	u1 5.3319	250 GHz
Ref 30	dBm		#Atte	n 10 dB	Ext P	G -31.03 dB			-2.7	'98 dBm
#Samp	p								7	
Log										
10			1							
aB/			A		~~~~~	-				
										~
PAvg										
Center	5 335 GHz	,							Sna	n 15 MHz
#Res B	3W 1 MHz	-		#	VBW 3	MHz		Swe	ep 4 ms (	101 pts)
Char	nnel Powe	ər					F	ower Sp	ectral De	nsity
5.2	28 dBm	n /9	.5100 M	Hz				-64.	50 dBr	n/Hz

Power Spectral Density

-64.95 dBm/Hz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density							
Test procedure:	FCC Public Notice DA 02-2	2-2138, Appendix A						
Test mode:	Compliance	Vordict	DASS					
Date & Time:	10/14/2009 3:23:52 PM	verdict.	PA33					
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC					
Remarks:		-						

#### Plot 7.2.43 Peak output power and spectral power density, Antenna 2, 17 dBi, MIMO mode, 10 MHz EBW

requency:		5265 MHz			
hannel BW:		10 MHz	MHz		
odulation para	meters:	64QAM			
🔆 Agilent			RT		
Ref 20 dBm	#Atten 20 dB	Ext PG -31.03 dB	Mkr1 5.2618500 GHz -2.828 dBm		
#Samp					
Log 10	1				
dB/		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
PAvg					
Center 5.265 GHz			Span 15 MH		

Plot 7.2.44 Peak output power and spectral power density, Antenna 2, 17 dBi, MIMO mode, 10 MHz EBW

Channel Power

4.83 dBm /9.5100 MHz

Frequency:	5300 MHz
Channel BW:	10 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2138, Appendix A				
Test mode:	Compliance				
Date & Time:	10/14/2009 3:23:52 PM	Verdict: PASS			
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC		
Remarks:					

## Plot 7.2.45 Peak output power and spectral power density, Antenna 2, 17 dBi, MIMO mode, 10 MHz EBW

Fre	quency	:				5335 M	Hz			
Cha	annel B'	W:				10 MHz				
Mo	dulation	nara	meter	s.		64QAM				
1010	adiation	pure		0.						
🔆 🔆 A(	gilent							RT		
								Mkr	1 5.33290	000 GHz
Ref 30	dBm		#	Atten 10 dB	Ext P	G -31.03 dB			-2.8	18 dBm
#Samp									1	
Log										
dB/				1						
ab/				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			-	
PAvg										
Center	5 335 GHz								Sna	n 15 MHz
#Res B	W 1 MHz	•		#	VBW 3	MHz		Swee	ep 4 ms (4	01 pts)
										• •
Char	nnel Powe	er					F	Power Spe	ectral De	nsity
4 7	70 dDm		<b>5100</b>	MLL				65.0		a/L   =
4.7	ouBm	19	.5100					-05.0	o abn	



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density				
Test procedure:	FCC Public Notice DA 02-2138, Appendix A				
Test mode:	Compliance	Verdict: PASS			
Date & Time:	10/14/2009 3:23:52 PM				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC		
Remarks:					

#### Table 7.2.20 Conducted output power test results

ASSIGNED MODULATI MODULATI DETECTOF RESOLUTIO VIDEO BAN POWER ME ANTENNA FEEDER LO ANTENNA MODE: ANTENNA	FREQUENC ON: NG SIGNAL USED: ON BANDW IDWIDTH: EASUREME GAIN: DSS: ASSEMBLY	CY: : IDTH: NT OPTION: GAIN:	5250.0 64QAW PRBS Sample 1 MHz 3 MHz 1 9.5 dBi 0.7 dB 8.8 dBi SISO Antenn	– 5350.0 Mł I (worst case (Antenna ga	Hz power and ain, dBi – fee	power dens eder loss, dB	ity)
	-		Antenna				
Channel,	26 dB BW	Pmeas (Ant.1), dBm	assembly gain	EIRP total, dBm*	Limit EIRP, dBm**	Margin, dB***	Verdict
MHz	MHz		dBi				
5265.0	9.51	15.40	8.80	24.20	26.78	-2.58	Pass

5335.0 8.80 * - EIRP total, dBm = Pmeas, dBm + Antenna Assembly Gain, dBi

15.78

15.40

*** - Limit EIRP, dBm = 11+10LOG(26 dB BW, MHz) + 6 dBi

**** - Margin, dB = EIRP total, dBm – Limit EIRP, dBm

9.51

9.51

5300.0

Table 7.2.21	Conducted o	utput	power s	pectral	densitv	/ test	results

8.80

24.58

24.20

26.78

26.78

-2.20

-2.58

Pass

Pass

ASSIGNED   MODULATIO	SSIGNED FREQUENCY:5250.0 – 5350.0 MHzODULATION:64QAM (worst case power and power density)ODULATION:5250.0 mm and power density)					ty)	
DETECTOR	IG SIGNAL:	PRBS Sample					
RESOLUTIC	DN BANDWIDTH:	1 MHz	•				
VIDEO BAN	DWIDTH:	3 MHz					
POWER ME	ASUREMENT OPTION:	2					
ANTENNA G	SAIN:	9.5 dBi					
FEEDER LO	ISS:	0.7 dB					
ANTENNA A	SSEMBLY GAIN:	8.8 dBi (Antenna gain, dBi – feeder loss, dB)					
EBW:		10 MHz					
MODE:		SISO					
ANTENNA F	Antenna 1 (worst case power and power density)						
Channel,	Pmeas (Ant.1), dBm/MHz	Antenna assembly gain	EIRP total, dBm/MHz*	Limit EIRP, dBm/MHz**	Margin, dB***	Verdict	

	Pmeas (Ant.1), dBm/MHz	gain	dBm/MHz*	dBm/MHz**	dB***	Verdict
MHz		dBi				
5260.0	8.09	8.80	16.89	17.00	-0.11	Pass
5300.0	8.17	8.80	16.97	17.00	-0.04	Pass
5335.0	7.86	8.80	16.66	17.00	-0.34	Pass

* - EIRP total, dBm = Pmeas, dBm/MHz + Antenna Assembly Gain, dBi ** - Limit EIRP, dBm/MHz = 11+ 6 dBi

*** - Margin, dB = EIRP total, dBm/MHz – Limit EIRP, dBm/MHz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density					
Test procedure:	FCC Public Notice DA 02-2138, Appendix A					
Test mode:	Compliance	Vordict	DASS			
Date & Time:	10/14/2009 3:23:52 PM	verdict.	PA33			
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC			
Remarks:		-				

Plot 7.2.46 Peak output power and spectral power density, Antenna 1, 9.5 dBi, SISO mode, 10 MHz EBW



Plot 7.2.47 Peak output power and spectral power density, Antenna 1, 9.5 dBi, SISO mode, 10 MHz EBW

Frequency:	5300 MHz
Channel BW:	10 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density					
Test procedure:	FCC Public Notice DA 02-2138, Appendix A					
Test mode:	Compliance	Verdiet				
Date & Time:	10/14/2009 3:23:52 PM	Verdict. PASS				
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC			
Remarks:						

# Plot 7.2.48 Peak output power and spectral power density, Antenna 1, 9.5 dBi, SISO mode, 10 MHz EBW

equency:		5335 MHz		
hannel BW:		10 MHz		
odulation param	eters:	64QAM		
Sec. Autour			D T	
Ref 30 dBm	#Atten 20 dB	vt PG 31 / dB	Mkr1 5.3	321875 GHz
#Samp				1.00 abiii
Log	1			
10 dB/	A management		and the second s	
				~~
and				
PAvg				
Center 5.335 GHz				Span 15 MHz
#Res BW 1 MHz	# <b>V</b> B	W 3 MHz	Sweep 4 m	ns (401 pts)
Channel Power			Power Spectral	Density
15.40 dBm /9	5100 MHz		-54 39 d	Bm/Hz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	10/14/2009 3:23:52 PM	Verdict: PASS		
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC	
Remarks:				

#### Table 7.2.22 Conducted output power test results

Channel,	26 dB BW		Antenna	FIRP total	Limit FIRP	Margin	
ANTENNA P	ORT:		Antenna 1 (worst case power and power density)			ensity)	
MODE:			SISO				
ANTENNA G	GAIN:		15 dBi				
POWER ME	ASUREME	IT OPTION:	1				
VIDEO BANI	DWIDTH:		3 MHz				
RESOLUTIC	N BANDW	DTH:	1 MHz				
DETECTOR	USED:		Sample	•			
MODULATIN	IG SIGNAL		PRBS	,			2,
MODULATIC	DN:		64QAM (worst case power and power density)				
ASSIGNED I	FREQUEN	Y:	5250.0 – 5350.0 MHz				

Channel,	26 dB BW	Pmeas (Ant.1), dBm	Antenna gain	EIRP total,	Limit EIRP, dBm**	Margin, dB***	Verdict
MHz	MHz		dBi	ubiii	ubiii	9	
5265.0	9.51	8.81	15.00	23.81	26.78	-2.97	Pass
5300.0	9.51	9.03	15.00	24.03	26.78	-2.75	Pass
5335.0	9.51	8.46	15.00	23.46	26.78	-3.32	Pass

* - EIRP total, dBm = Pmeas, dBm + Antenna Gain, dBi *** - Limit EIRP, dBm = 11+10LOG(26 dB BW, MHz) + 6 dBi **** - Margin, dB = EIRP total, dBm – Limit EIRP, dBm

#### Table 7.2.23 Conducted output power spectral density test results

Channel,	Pmeas (Ant.1), dBm/MHz	Antenna gain	EIRP total,	Limit EIRP,	Margin,	Verdict
ANTENNA F	PORT:	Antenna 1 (worst case power and power density)			nsity)	
MODE:		SISO				
EBW:		10 MHz	<u> </u>			
ANTENNA G	GAIN:	15 dBi				
POWER ME	ASUREMENT OPTION:	2				
VIDEO BAN	DWIDTH:	3 MHz				
RESOLUTIO	ON BANDWIDTH:	1 MHz				
DETECTOR	USED:	Sample				
MODULATIN	NG SIGNAL:	PRBS	,			
MODULATIO	ON:	64QAM (worst case power and power density)				ty)
ASSIGNED	FREQUENCY:	5250.0 – 5350.0 MHz				

	Pmeas (Ant.1), dBm/MHz	yanı	dBm/MHz*	dBm/MHz**	dB***	Verdict
MHz		dBi	CIDITI/INTIZ	CDIII/WITZ	üb	
5265.0	1.15	15.00	16.15	17.00	-0.85	Pass
5300.0	1.57	15.00	16.57	17.00	-0.43	Pass
5335.0	1.06	15.00	16.06	17.00	-0.94	Pass

* - EIRP total, dBm = Pmeas, dBm/MHz + Antenna Gain, dBi

** - Limit EIRP, dBm/MHz = 11+ 6 dBi *** - Margin, dB = EIRP total, dBm/MHz – Limit EIRP, dBm/MHz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC	
Remarks:		-		

Plot 7.2.49 Peak output power and spectral power density, Antenna 1, 15 dBi, SISO mode, 10 MHz EBW

Frequency:		5265 MHz		
Channel BW:		10 MHz		
Modulation para	ameters:	64QAM		
Arilant			рт	
Def 20 dBm	#Atton 10 dP	Evet D.C. 21 02 dB	Mkr1 5	.2618500 GHz
#Same	#Allen To ub	EXT FG -51.05 UD		1.147 0.011
#Samp				
10				
10	ò			
dB/				



Plot 7.2.50 Peak output power and spectral power density, Antenna 1, 15 dBi, SISO mode, 10 MHz EBW

Frequency:	5300 MHz
Channel BW:	10 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC	
Remarks:				

## Plot 7.2.51 Peak output power and spectral power density, Antenna 1, 15 dBi, SISO mode, 10 MHz EBW

Frequency:	5335 MHz
Channel BW:	10 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	10/14/2009 3:23:52 PM	Verdict: PASS		
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC	
Remarks:				

#### Table 7.2.24 Conducted output power test results

ASSIGNED MODULATI DETECTOF RESOLUTIO VIDEO BAN POWER ME ANTENNA FEEDER LO ANTENNA MODE:	FREQUENC ON: NG SIGNAL VSED: ON BANDW IDWIDTH: EASUREME GAIN: DSS: ASSEMBLY	CY: : IDTH: NT OPTION: GAIN:	5250.0 – 5350.0 MHz 64QAM (worst case power and power density) PRBS Sample 1 MHz 3 MHz 2 17 dBi 0.7 dB 16.3 dBi (Antenna gain, dBi – feeder loss, dB ) SISO					
			Antenna	,			<i>,</i>	
Channel,	26 dB BW	Pmeas (Ant.1), dBm	assembly gain	EIRP total, dBm*	Limit EIRP, dBm**	Margin, dB***	Verdict	
5265.0	0.51	8.23	16.20	24.52	26.79	2.25	Pass	
5205.0	9.01	0.23	10.30	24.00	20.78	-2.25	Fass	

9.51 16.30 5335.0 * - EIRP total, dBm = Pmeas, dBm + Antenna Assembly Gain, dBi

7.55

7.48

*** - Limit EIRP, dBm = 11+10LOG(26 dB BW, MHz) + 6 dBi

**** - Margin, dB = EIRP total, dBm – Limit EIRP, dBm

9.51

5300.0

Table 7.2.25	Conducted	output	power s	pectral	density	test results

16.30

23.85

23.78

26.78

26.78

-2.93

-3.00

Pass

Pass

ASSIGNED MODULATIO MODULATIO DETECTOR RESOLUTIO VIDEO BAN POWER ME ANTENNA O FEEDER LO ANTENNA O EBW: MODE:	FREQUENCY: DN: NG SIGNAL: USED: DN BANDWIDTH: DWIDTH: GASUREMENT OPTION: GAIN: DSS: ASSEMBLY GAIN:	5250.0 64QAM PRBS Sample 1 MHz 3 MHz 2 17 dBi 0.7 dB 16.3 dE 10 MHz SISO	– 5350.0 MH I (worst case Bi (Antenna g	lz power and μ ain, dBi – fe	power densi eder loss, dl	ty) B)
ANTENNA F	PORT:	Antenna 1 (worst case power and power density)				
Channel,	Pmeas (Ant.1), dBm/MHz	Antenna assembly gain	EIRP total, dBm/MHz*	Limit EIRP, dBm/MHz**	Margin, dB***	Verdict

,	Pmeas (Ant.1), dBm/MHz	gain	dBm/MHz*	dBm/MHz**	dB***	Verdict
MHz		dBi				
5265.0	0.54	16.30	16.84	17.00	-0.16	Pass
5300.0	0.09	16.30	16.39	17.00	-0.61	Pass
5335.0	-0.16	16.30	16.14	17.00	-0.86	Pass

* - EIRP total, dBm = Pmeas, dBm/MHz + Antenna Assembly Gain, dBi

** - Limit EIRP, dBm/MHz = 11+ 6 dBi

*** - Margin, dB = EIRP total, dBm/MHz – Limit EIRP, dBm/MHz



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density					
Test procedure:	FCC Public Notice DA 02-2	2138, Appendix A				
Test mode:	Compliance	Vordict	DASS			
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33			
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC			
Remarks:						

Plot 7.2.52 Peak output power and spectral power density, Antenna 1, 17 dBi, SISO mode, 10 MHz EBW

Frequency		5265 ML		
	5205 IVI	72		
Channel BW:		10 MHz		
Modulation parame	ters:	64QAM		
🔆 Agilent			RT	
Ref 30 dBm	#Atten 10 dB	Ext PG .31 03 dB	Mkr1 5.	2618125 GHz 0 539 dBm
#Samp				
Log				
10 dB/				
ub/				
PAvg				
Center 5.265 GHz				Span 15 MHz
#Res BW 1 MHz	#	VBW 3 MHz	Sweep 4	ms (401 pts)
Channel Power			Power Spectra	l Density
8.23 dBm /9.5	100 MHz		-61.55 c	dBm/Hz

Plot 7.2.53 Peak output power and spectral power density, Antenna 1, 17 dBi, SISO mode, 10 MHz EBW

Frequency:	5300 MHz
Channel BW:	10 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density					
Test procedure:	FCC Public Notice DA 02-2	2138, Appendix A				
Test mode:	Compliance	Vordict	DASS			
Date & Time:	10/14/2009 3:23:52 PM	verdict.	FA33			
Temperature: 24°C	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 120 VAC			
Remarks:		-				

## Plot 7.2.54 Peak output power and spectral power density, Antenna 1, 17 dBi, SISO mode, 10 MHz EBW





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density					
Test procedure:	FCC Public Notice DA 02-2	2138, Appendix A				
Test mode:	Compliance	Verdict:	DV66			
Date & Time:	11/11/2009 1:10:18 PM	verdict.	FA33			
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC			
Remarks: 6.5 dBi antenna						

#### Table 7.2.26 Conducted output power test results

ASSIGNED FREQUENCY:	5250.0 – 5350.0 MHz
MODULATION:	64QAM (worst case power and power density)
MODULATING SIGNAL:	PRBS
DETECTOR USED:	Sample
RESOLUTION BANDWIDTH:	1 MHz
VIDEO BANDWIDTH:	3 MHz
POWER MEASUREMENT OPTION:	1
ANTENNA GAIN:	6.5 dBi
FEEDER LOSS:	0.7 dB
ANTENNA ASSEMBLY GAIN:	5.8 dBi max (Antenna gain, dBi – feeder loss, dB)
MODE:	MIMO

Channel MHz	26 dB BW, MHz	Pmeas (Ant.1), dBm	Pmeas (Ant.2), dBm	P _{meas} *, dBm	Limit, dBm	Margin, dB	Verdict
5260.0	4.905	12.37	12.23	15.31	17.91	-2.60	Pass
5300.0	4.905	12.59	13.01	15.82	17.91	-2.09	Pass
5340.0	4.905	12.78	12.28	15.55	17.91	-2.36	Pass

* - Pmeas, dBm = 10 log(10^((P(dBm,Ant1)/10)+ 10^((P(dBm,Ant2))/10))

**** - Limit, dBm = 11+10LOG(26 dB BW, MHz) + 6 dBi **** - Margin, dB, Pmeas dBm – Limit, dBm

## Table 7.2.27 Conducted output power spectral density test results

ASSIGNED MODULATI MODULATI DETECTOF RESOLUTIO VIDEO BAN POWER ME ANTENNA	FREQUENCY: ON: NG SIGNAL: USED: ON BANDWIDT IDWIDTH: EASUREMENT GAIN:	'H: Option:		5250.0 – 5350 64QAM (worst PRBS Sample 1 MHz 3 MHz 2 6.5 dBi	5250.0 – 5350.0 MHz 64QAM (worst case power and power density) PRBS Sample 1 MHz 3 MHz 2 6.5 dBi			
ANTENNA / EBW: MODE:	ASSEMBLY GA	IN:		5.8 dBi max (Antenna gain, dBi – feeder loss, dB) 5 MHz MIMO				
Channel, MHz	Pmeas (Ant.1), dBm	Pmeas (Ant.2), dBm	P _{meas} *,dBm	Limit, dBm	Margin**, dB	Verdict		

11.00

11.00

-0.68

-0.09

-0.29

11.00 * - Pmeas, dBm/MHz = 10 log(10^((P(dBm/MHz,Ant1)/10)+ 10^((P(dBm/MHz,Ant2))/10))

10.32

10.91

10.71

6.99

7.90

7.63

** - Margin, dB = Pmeas (A),dBm - Limit, dBm

7.61

7.90

7.77

5260.0

5300.0

5340.0

Pass

Pass

Pass



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Verdict: PASS		
Date & Time:	11/11/2009 1:10:18 PM			
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC	
Remarks: 6.5 dBi antenna				

Plot 7.2.55 Peak output power and spectral power density, Antenna 1, 6.5 dBi, MIMO mode, 5 MHz EBW



Plot 7.2.56 Peak output power and spectral power density, Antenna 1, 6.5 dBi, MIMO mode, 5 MHz EBW

Frequency:	5300 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Verdict: PASS		
Date & Time:	11/11/2009 1:10:18 PM			
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC	
Remarks: 6.5 dBi antenna				

## Plot 7.2.57 Peak output power and spectral power density, Antenna 1, 6.5 dBi, MIMO mode, 5 MHz EBW





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	- Verdict: PASS		
Date & Time:	11/11/2009 1:10:18 PM			
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC	
Remarks: 6.5 dBi antenna				

Plot 7.2.58 Peak output power and spectral power density, Antenna 2, 6.5 dBi, MIMO mode, 5 MHz EBW



Plot 7.2.59 Peak output power and spectral power density, Antenna 2, 6.5 dBi, MIMO mode, 5 MHz EBW

Frequency:	5300 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Verdict: PASS		
Date & Time:	11/11/2009 1:10:18 PM			
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC	
Remarks: 6.5 dBi antenna				

## Plot 7.2.60 Peak output power and spectral power density, Antenna 2, 6.5 dBi, MIMO mode, 5 MHz EBW





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	11/11/2009 1:10:18 PM	Verdict. PASS		
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC	
Remarks: 6.5 dBi antenna				

## Table 7.2.28 Conducted output power test results

ASSIGNED FREQUENCY: MODULATION: MODULATING SIGNAL:		5250.0 – 5350.0 MHz 64QAM (worst case power and power density) PRBS			
DETECTOR	R USED:		Sample		
VIDEO BAN	JN BANDW	DTH:	3 MHz		
POWER ME	EASUREME	NT OPTION:	1		
ANTENNA	GAIN:		6.5 dBi		
FEEDER LO	DSS:		0.7 dB		
ANTENNA ASSEMBLY GAIN:		5.8 dBi (Antenna gain, dBi – feeder loss, dB)			
MODE:		SISO			
ANTENNA PORT:		Antenna 1 (worst case power and power density)			
Channel 26 dB BW, Pmeas dBm		Limit dBm	Margin* dB	Verdict	
MHz	MHz	r nicus, ubin	Linit, dbii	margin , ab	Verdict
5260.0	4.905	15.17	17.91	-2.74	Pass

* - Margin, dB = Pmeas, dBm – Limit, dBm

15.46

15.80

4.905

4.905

5300.0

5340.0

5300.0

5340.0

## Table 7.2.29 Conducted output power spectral density test results

17.91

17.91

-2.45

-2.11

-0.55

-0.29

Pass

Pass

ASSIGNED MODULATI MODULATI DETECTOR RESOLUTIO VIDEO BAN POWER ME ANTENNA EBW: MODE: ANTENNA	FREQUENCY: ON: NG SIGNAL: USED: DN BANDWIDTH: IDWIDTH: ASUREMENT OPTION: GAIN: DSS: ASSEMBLY GAIN:	5250.0 64QAM PRBS Sample 1 MHz 3 MHz 2 6.5 dBi 0.7 dB 5.8 dBi 5 MHz SISO Antenna	– 5350.0 MHz (worst case power and (Antenna gain, dBi – fe a 1 (worst case power a	d power density) eeder loss, dB) and power density)
Channel, MHz	Pmeas, dBm	Limit, dBm	Margin, dB	Verdict
5260.0	10.23	11.00	-0.77	Pass

11.00

10.71 11.00 * - Margin, dB = EIRP total, dBm/MHz – Limit EIRP, dBm/MHz

10.45

Pass Pass



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	- Verdict: PASS		
Date & Time:	11/11/2009 1:10:18 PM			
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC	
Remarks: 6.5 dBi antenna				

Plot 7.2.61 Peak output power and spectral power density, Antenna 1, 6.5 dBi, SISO mode, 5 MHz EBW



Plot 7.2.62 Peak output power and spectral power density, Antenna 1, 6.5 dBi, SISO mode, 5 MHz EBW

Frequency:	5300 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Verdict: PASS		
Date & Time:	11/11/2009 1:10:18 PM			
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC	
Remarks: 6.5 dBi antenna				

## Plot 7.2.63 Peak output power and spectral power density, Antenna 1, 6.5 dBi, SISO mode, 5 MHz EBW




Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Vardict: DASS		
Date & Time:	11/11/2009 1:10:18 PM	verdict.	FA33	
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC	
Remarks: 6.5 dBi antenna	а			

#### Table 7.2.30 Conducted output power test results

ASSIGNED FREQUENCY:	5250.0 – 5350.0 MHz
MODULATION:	64QAM (worst case power and power density)
MODULATING SIGNAL:	PRBS
DETECTOR USED:	Sample
RESOLUTION BANDWIDTH:	1 MHz
VIDEO BANDWIDTH:	3 MHz
POWER MEASUREMENT OPTION:	1
ANTENNA GAIN:	6.5 dBi
FEEDER LOSS:	0.7 dB
ANTENNA ASSEMBLY GAIN:	5.8 dBi (Antenna gain, dBi – feeder loss, dB)
MODE:	MIMO

Channel MHz	26 dB BW, MHz	Pmeas (Ant.1), dBm	Pmeas (Ant.2), dBm	P _{meas} *, dBm	Limit, dBm	Margin, dB	Verdict
5265.00	9.51	15.19	15.26	18.24	20.78	-2.55	Pass
5300.00	9.51	15.54	14.37	18.00	20.78	-2.78	Pass
5335.00	9.51	15.22	15.65	18.45	20.78	-2.33	Pass

* - Pmeas, dBm = 10 log(10^((P(dBm,Ant1)/10)+ 10^((P(dBm,Ant2))/10))

**** - Limit, dBm = 11+10LOG(26 dB BW, MHz) + 6 dBi **** - Margin, dB, Pmeas dBm – Limit, dBm

#### Table 7.2.31 Conducted output power spectral density test results

ASSIGNED FREQUENCY: MODULATION: MODULATING SIGNAL: DETECTOR USED: RESOLUTION BANDWIDTH: VIDEO BANDWIDTH: POWER MEASUREMENT OPTION: ANTENNA GAIN: FEEDER LOSS: ANTENNA ASSEMBLY GAIN: FBW:		5250.0 – 5350 64QAM (worst PRBS Sample 1 MHz 3 MHz 2 6.5 dBi 0.7 dB 5.8 dBi (Anteni 10 MHz	.0 MHz case power and pov na gain, dBi – feeder	wer density) r loss, dB )	
MODE:			MIMO		
Channel, Pmeas (Ant 1)	Pmeas (Ant 2)				

Channel, MHz	Pmeas (Ant.1), dBm	Pmeas (Ant.2), dBm	P _{meas} *,dBm	Limit, dBm	Margin**, dB	Verdict
5265.00	7.63	7.84	10.75	11.00	-0.25	Pass
5300.00	8.16	7.10	10.67	11.00	-0.33	Pass
5335.00	7.53	7.75	10.65	11.00	-0.35	Pass

* - Pmeas, dBm/MHz = 10 log(10^((P(dBm/MHz,Ant1)/10)+ 10^((P(dBm/MHz,Ant2))/10))

** - Margin, dB = Pmeas (A),dBm - Limit, dBm



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	11/11/2009 1:10:18 PM	verdict.	FA33	
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC	
Remarks: 6.5 dBi antenn	a	-		

Plot 7.2.64 Peak output power and spectral power density, Antenna 1, 6.5 dBi, MIMO mode, 10 MHz EBW

Frequency:	5265 MHz
Channel BW:	10 MHz
Modulation parameters:	64QAM



Plot 7.2.65 Peak output power and spectral power density, Antenna 1, 6.5 dBi, MIMO mode, 10 MHz EBW





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	11/11/2009 1:10:18 PM	verdict.	FA33	
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC	
Remarks: 6.5 dBi antenn	a			

# Plot 7.2.66 Peak output power and spectral power density, Antenna 1, 6.5 dBi, MIMO mode, 10 MHz EBW





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	11/11/2009 1:10:18 PM	verdict.	FA33	
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC	
Remarks: 6.5 dBi antenn	าล			

#### Plot 7.2.67 Peak output power and spectral power density, Antenna 2, 6.5 dBi, MIMO mode, 10 MHz EBW



Plot 7.2.68 Peak output power and spectral power density, Antenna 2, 6.5 dBi, MIMO mode, 10 MHz EBW

Frequency:	5300 MHz
Channel BW:	10 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	11/11/2009 1:10:18 PM	verdict.	FA33	
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC	
Remarks: 6.5 dBi antenn	a			

# Plot 7.2.69 Peak output power and spectral power density, Antenna 2, 6.5 dBi, MIMO mode, 10 MHz EBW





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	11/11/2009 1:10:18 PM	verdict.	FA33	
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC	
Remarks: 6.5 dBi antenna	а			

# Table 7.2.32 Conducted output power test results

ASSIGNED MODULATI MODULATI DETECTOF RESOLUTIO VIDEO BAN POWER ME ANTENNA FEEDER LO ANTENNA MODE: ANTENNA	FREQUENC ON: NG SIGNAL USED: ON BANDW IDWIDTH: EASUREME GAIN: DSS: ASSEMBLY PORT:	CY: : IDTH: NT OPTION: GAIN:	5250.0 – 5350.0 64QAM (worst ca PRBS Sample 1 MHz 3 MHz 1 6.5 dBi 0.7 dB 5.8 dBi (Antenna SISO Antenna 1 (worst	MHz ase power and p gain, dBi – feed t case power an	oower density) der loss, dB) d power density)
Channel MHz	26 dB BW, MHz	Pmeas, dBm	Limit, dBm	Margin*, dB	Verdict
5265.00	9.51	18.20	20.78	-2.58	Pass

5335.00 18.75 * - Margin, dB = Pmeas, dBm – Limit, dBm

18.67

9.51

9.51

5300.00

5265.00

5300.00 5335.00

# Table 7.2.33 Conducted output power spectral density test results

20.78

20.78

-2.11

-2.03

-0.47

-0.12

-0.34

Pass Pass

ASSIGNED MODULATI	FREQUENCY: ON:	5250.0 – 5350.0 MHz 64QAM (worst case power and power density)			
DETECTOR	NG SIGNAL:	PRBS			
RESOLUTIO	ON BANDWIDTH:	1 MHz			
VIDEO BAN	IDWIDTH:	3 MHz			
POWER ME	EASUREMENT OPTION:	2			
ANTENNA (	GAIN:	6.5 dBi			
FEEDER LC	DSS:	0.7 dB			
ANTENNA /	ASSEMBLY GAIN:	5.8 dBi	(Antenna gain, dBi - fe	eder loss, dB)	
EBW:		10 MHz			
MODE:		SISO			
ANTENNA PORT:		Antenna 1 (worst case power and power density)			
Channel, MHz	Pmeas, dBm	Limit, dBm	Margin, dB	Verdict	

11.00

11.00

11.00

10.66 * - Margin, dB = EIRP total, dBm/MHz - Limit EIRP, dBm/MHz

10.53

10.88

Pass

Pass

Pass



Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density						
Test procedure:	FCC Public Notice DA 02-2	iblic Notice DA 02-2138, Appendix A					
Test mode:	Compliance	- Verdict: PASS					
Date & Time:	11/11/2009 1:10:18 PM						
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC				
Remarks: 6.5 dBi antenna							

Plot 7.2.70 Peak output power and spectral power density, Antenna 1, 6.5 dBi, SISO mode, 10 MHz EBW



Plot 7.2.71 Peak output power and spectral power density, Antenna 1, 6.5 dBi, SISO mode, 10 MHz EBW

Frequency:	5300 MHz
Channel BW:	10 MHz
Modulation parameters:	64QAM





Test specification:	FCC section 15. 407(a)(2), Peak output power and peak power spectral density						
Test procedure:	FCC Public Notice DA 02-2	iblic Notice DA 02-2138, Appendix A					
Test mode:	Compliance	- Verdict: PASS					
Date & Time:	11/11/2009 1:10:18 PM						
Temperature: 25.3 °C	Air Pressure: 1010 hPa	Relative Humidity: 44 %	Power Supply: 120 VAC				
Remarks: 6.5 dBi antenna							

# Plot 7.2.72 Peak output power and spectral power density, Antenna 1, 6.5 dBi, SISO mode, 10 MHz EBW





Test specification:	FCC section 15. 407(f), RF exposure					
Test procedure:	47 CFR, Section 1.1307(b)1					
Test mode:	Compliance	Vordict	DASS			
Date & Time:	9/21/2009 4:19:02 PM	verdict.	FA33			
Temperature: 25°C	Air Pressure: 1015 hPa	Relative Humidity: 40 %	Power Supply: 120 VAC			
Remarks:						

# 7.3 RF exposure

#### 7.3.1 General

This test was performed to determine the minimum safe distance between the transmitter antenna and human to avoid public exposure in excess of limits for general population (uncontrolled exposure). Specification test limits are given in Table 7.3.1.

#### Table 7.3.1 RF exposure limits

Frequency range MHz	Power density			
Trequency range, wriz	mW/cm ²	W/m ²		
5250.0 – 5350.0 MHz	1.00	10.0		

*- Power density limit within 300 - 1500 MHz was calculated according to the following equation: S = F / 1500, where S is power density in mW/cm² and F is frequency in MHz.

# 7.3.2 Safe distance calculation for fixed transmitter

The minimum safe distance was calculated from the following equation as provided in Table 7.3.2:

#### $r = sqrt[P \times G / (4 \times \pi \times S)],$

where S is power density in  $W/m^2$ , P is the transmitter output power in W, G is the transmitter antenna numeric gain and r is distance to transmit antenna in m.

With power density equal to the RF exposure limit the minimum safe distance was calculated according to the following equation:  $r = sqrt[P \times G / (4 \times \pi \times S])$ 

### Table 7.3.2 Safe distance calculation

ASSIGNED FREQUENCY: EQUIPMENT INTENDED USE:	5250.0 – 5350.0 MHz Fixed*
EBW:	10 MHz
MODE:	Low Channel MIMO mode with 9.5 dBi antenna
	Mid Channel SISO mode with 17 dBi antenna
	High Channel SISO mode with 9.5 dBi antenna

carrier frequency	Peak output	Antenna	El	RP	Power density	Safe distance,	Intended	Verdict
MHz	power, dBm	gain, dBi	dBm	W	limit, W/m ²	m**	eparation, r	Verticit
5265.0	15.03	9.5	24.53	0.2838	10.00	0.05	2.0	Pass
5300.0	7.7	17	24.70	0.2951	10.00	0.05	2.0	Pass
5335.0	14.97	9.5	24.47	0.2799	10.00	0.05	2.0	Pass
5265.00	18.20	6.50	24.70	0.30	10.00	0.05	2.0	Pass
5300.00	18.67	6.50	25.17	0.33	10.00	0.05	2.0	Pass
5335.00	18 75	6.50	25 25	0.33	10.00	0.05	20	Pass

* - The equipment deemed fixed as intended for use at a distance of more than 2.0 m from humans.



Test specification:	FCC section 15.407(a)(6), Ratio of the peak excursion of the modulation envelope to the peak transmit power						
Test procedure:	FCC Public Notice DA 02-2	02-2138, Appendix A					
Test mode:	Compliance	Verdict: PASS					
Date & Time:	9/21/2009 3:50:54 PM						
Temperature: 25 °C	Air Pressure: 1015 hPa	Relative Humidity: 38 %	Power Supply: 120 VAC				
Remarks:							

# 7.4 Ratio of the peak excursion of the modulation envelope to the peak transmit power

# 7.4.1 General

This test was performed to measure the ratio of the peak excursion of the modulation envelope to the peak transmit power at RF antenna connector. Specification test limits are given in Table 7.4.1.

#### Table 7.4.1 Peak excursion limits

Assigned frequency, MHz	Maximum peak excursion, dB/MHz	
5250 - 5350	13.0	

#### 7.4.2 Test procedure

7.4.2.1 The EUT was set up as shown in Figure 7.4.1, energized and its proper operation was checked.

- 7.4.2.2 The EUT was adjusted to produce maximum available to end user RF output power.
- **7.4.2.3** The measurements were performed in continuous transmission mode of operation for carrier (channel) frequency at low and high edges and at the middle of the frequency range.
- 7.4.2.4 The maximum peak excursion of modulation envelope was measured as a difference between 2 traces.

**7.4.2.5** The test results were recorded in, and shown in the associated plots.

# Figure 7.4.1 Peak excursion ratio measurement setup





Test specification:	FCC section 15.407(a)(6), Ratio of the peak excursion of the modulation envelope to the peak transmit power						
Test procedure:	FCC Public Notice DA 02-2	-2138, Appendix A					
Test mode:	Compliance	Vardiat: DASS					
Date & Time:	9/21/2009 3:50:54 PM	verdict.	FA33				
Temperature: 25 °C	Air Pressure: 1015 hPa	Relative Humidity: 38 %	Power Supply: 120 VAC				
Remarks:							

# Table 7.4.2 Peak excursion test results

ASSIGNED FREQUENCY RANGE: DETECTOR USED: TRANSMITTER OUTPUT POWER RESOLUTION BANDWIDTH:			5250.0 – 5350.0 MHz 1-st trace : Peak, Max Hold 2-nd trace : Sample, 100 Power Averaging Maximum for each EBW 1 MHz				
VIDEO BAN EBW:	IDWIDTH:		3 MHz 5 MHz				
Frequency, MHz	Modulation	1-st trace, dBm	2-nd trace, dBm	Peak excursion, dB	Limit, dB	Margin, dB	Verdict
Low channe	el						
5260.0	64QAM	17.42	7.974	9.45	13.0	-3.55	Pass
Mid channe	I						
5300.0	64QAM	18.28	7.804	10.48	13.0	-2.52	Pass
High channe	el						
5340.0	64QAM	18.27	8.179	10.09	13.0	-2.91	Pass
EBW:			10 MHz				
Frequency, MHz	Modulation	1-st trace, dBm	2-nd trace, dBm	Peak excursion, dB	Limit, dB	Margin, dB	Verdict
Low channe	əl						
5265.0	64QAM	17.24	6.129	11.11	13.0	-1.89	Pass
Mid channe	I						
5300.0	64QAM	17.81	8.362	9.45	13.0	-3.55	Pass
High channe	el						
5335.0	64QAM	17.52	7.757	9.76	13.0	-2.24	Pass

# Reference numbers of test equipment used

HL 2909	HL 2952	HL 3440			

Full description is given in Appendix A.



Test specification:	FCC section 15.407(a)(6), Ratio of the peak excursion of the modulation envelope to the peak transmit power			
Test procedure:	FCC Public Notice DA 02-	2138, Appendix A		
Test mode:	Compliance	Vordict	DASS	
Date & Time:	9/21/2009 3:50:54 PM	verdict.	FA33	
Temperature: 25 °C	Air Pressure: 1015 hPa	Relative Humidity: 38 %	Power Supply: 120 VAC	
Remarks:				

# Plot 7.4.1 Peak excursion measurement



#### Plot 7.4.2 Peak excursion values





Test specification:	FCC section 15.407(a)(6), Ratio of the peak excursion of the modulation envelope to the peak transmit power			
Test procedure:	FCC Public Notice DA 02-	2138, Appendix A		
Test mode:	Compliance	Vardiaty DACC		
Date & Time:	9/21/2009 3:50:54 PM	verdict.	FA33	
Temperature: 25 °C	Air Pressure: 1015 hPa	Relative Humidity: 38 %	Power Supply: 120 VAC	
Remarks:				

# Plot 7.4.3 Peak excursion measurement



#### Plot 7.4.4 Peak excursion values





Test specification:	FCC section 15.407(a)(6), Ratio of the peak excursion of the modulation envelope to the peak transmit power			
Test procedure:	FCC Public Notice DA 02-	2138, Appendix A		
Test mode:	Compliance	Vordict	DASS	
Date & Time:	9/21/2009 3:50:54 PM	verdict.	FA33	
Temperature: 25 °C	Air Pressure: 1015 hPa	Relative Humidity: 38 %	Power Supply: 120 VAC	
Remarks:				

# Plot 7.4.5 Peak excursion measurement



#### Plot 7.4.6 Peak excursion values





Test specification:	FCC section 15.407(a)(6), Ratio of the peak excursion of the modulation envelope to the peak transmit power			
Test procedure:	FCC Public Notice DA 02-	2138, Appendix A		
Test mode:	Compliance			
Date & Time:	9/21/2009 3:50:54 PM	verdict.	FA33	
Temperature: 25 °C	Air Pressure: 1015 hPa	Relative Humidity: 38 %	Power Supply: 120 VAC	
Remarks:				

# Plot 7.4.7 Peak excursion measurement



#### Plot 7.4.8 Peak excursion values





Test specification:	FCC section 15.407(a)(6), Ratio of the peak excursion of the modulation envelope to the peak transmit power			
Test procedure:	FCC Public Notice DA 02-	2138, Appendix A		
Test mode:	Compliance	Vardiaty DACC		
Date & Time:	9/21/2009 3:50:54 PM	verdict.	FA33	
Temperature: 25 °C	Air Pressure: 1015 hPa	Relative Humidity: 38 %	Power Supply: 120 VAC	
Remarks:				

# Plot 7.4.9 Peak excursion measurement



#### Plot 7.4.10 Peak excursion values





Test specification:	FCC section 15.407(a)(6), Ratio of the peak excursion of the modulation envelope to the peak transmit power			
Test procedure:	FCC Public Notice DA 02-	2138, Appendix A		
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	9/21/2009 3:50:54 PM	verdict.	FA33	
Temperature: 25 °C	Air Pressure: 1015 hPa	Relative Humidity: 38 %	Power Supply: 120 VAC	
Remarks:				

# Plot 7.4.11 Peak excursion measurement



#### Plot 7.4.12 Peak excursion values





Test specification:	FCC section 15.407(a)(6), Ratio of the peak excursion of the modulation envelope to the peak transmit power			
Test procedure:	FCC Public Notice DA 02-2	2138, Appendix A		
Test mode:	Compliance	Vordict	DASS	
Date & Time:	11/11/2009 2:08:29 PM	verdict.	FA33	
Temperature: 25.5 °C	Air Pressure: 1010 hPa	Relative Humidity: 46 %	Power Supply: 120 VAC	
Remarks: 6.5 dBi antenna				

#### ASSIGNED FREQUENCY: 5250.0 - 5350.0 MHz DETECTOR USED: 1-st trace : Peak, Max Hold 2-nd trace : Sample, 100 Power Averaging TRANSMITTER OUTPUT POWER Maximum for each EBW **RESOLUTION BANDWIDTH:** 1 MHz VIDEO BANDWIDTH: 3 MHz EBW: 5 MHz Frequency, Peak excursion, 2-nd trace, dBm Verdict Modulation 1-st trace, dBm Limit, dB Margin, dB MHz dB Low channel 5260.0 64QAM 19.52 9.81 9.71 13.0 -3.29 Pass Mid channel 5300.0 64QAM 19.91 10.16 9.75 13.0 -3.25 Pass High channel 64QAM 19.58 10.03 9.55 13.0 5340.0 -3.45 Pass EBW: 10 MHz Frequency, Peak excursion, Modulation 1-st trace, dBm 2-nd trace, dBm Limit. dB Margin, dB Verdict MHz dB Low channel 5260.0 64QAM 19.88 9.85 10.03 13.0 -2.97 Pass Mid channel 64QAM 9.80 20.58 10.78 13.0 -3.20 Pass 5300.0 High channel 5340.0 64QAM 20.08 9.98 10.10 13.0 -2.90 Pass

#### Table 7.4.3 Peak excursion test results



Test specification:	FCC section 15.407(a)(6), Ratio of the peak excursion of the modulation envelope to the peak transmit power			
Test procedure:	FCC Public Notice DA 02-2138, Appendix A			
Test mode:	Compliance	Vordict	DAGG	
Date & Time:	11/11/2009 2:08:29 PM	verdict.	FA33	
Temperature: 25.5 °C	Air Pressure: 1010 hPa	Relative Humidity: 46 %	Power Supply: 120 VAC	
Remarks: 6.5 dBi antenna				

#### Plot 7.4.13 Peak excursion measurement

Frequency:	5260 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM



#### Plot 7.4.14 Peak excursion measurement

Γ	Frequency:	5300 MHz
	Channel BW:	5 MHz
	Modulation parameters:	64QAM





Test specification:	FCC section 15.407(a)(6), Ratio of the peak excursion of the modulation envelope to the peak transmit power					
Test procedure:	FCC Public Notice DA 02-	A 02-2138, Appendix A				
Test mode:	Compliance	Vordict	DASS			
Date & Time:	11/11/2009 2:08:29 PM	Veruici. PASS				
Temperature: 25.5 °C	Air Pressure: 1010 hPa	Relative Humidity: 46 %	Power Supply: 120 VAC			
Remarks: 6.5 dBi antenna						

#### Plot 7.4.15 Peak excursion measurement

Frequency:	5340 MHz
Channel BW:	5 MHz
Modulation parameters:	64QAM



#### Plot 7.4.16 Peak excursion measurement

Frequency:		5265 MHz		
Channel BW:		10 MHz		
Modulation param	neters:	64QAM		
🔆 Agilent 15:05:55	Nov 11, 2009		RΤ	
∰ Agilent 15:05:55	Nov 11, 2009		R T M	kr2 5.262550 GHz
	Nov 11, 2009 #Atten 10 dB E:	xt PG -31 dB	R T M	kr2 5.262550 GHz 9.849 dBm
# Agilent 15:05:55   Ref 31 dBm   #Samp	Nov 11, 2009 #Atten 10 dB E:	xt PG -31 dB	R T M	kr2 5.262550 GHz 9.849 dBm

Enon 10 Mi
s (401 pts)
_,,



Test specification:	FCC section 15.407(a)(6), Ratio of the peak excursion of the modulation envelope to the peak transmit power					
Test procedure:	FCC Public Notice DA 02-	A 02-2138, Appendix A				
Test mode:	Compliance	Vordict	DASS			
Date & Time:	11/11/2009 2:08:29 PM	Veruici. PASS				
Temperature: 25.5 °C	Air Pressure: 1010 hPa	Relative Humidity: 46 %	Power Supply: 120 VAC			
Remarks: 6.5 dBi antenna						

#### Plot 7.4.17 Peak excursion measurement

Frequency:	5300 MHz
Channel BW:	10 MHz
Modulation parameters:	64QAM



# Plot 7.4.18 Peak excursion measurement

Frequency:	5335 MHz
Channel BW:	10 MHz
Modulation parameters:	64QAM

m	#	Atten 10 dB	Ext PG .	31 dB		m	عد عن مد	52.5 GHZ
	1	Atten to ub		51 40			5.	
	0							
	Ô							<u>+</u>
						~~~~~~	· · · · · · · · · · · · · · · · · · ·	
35 GHz							Spa	n 10 MH
1 MHz		1	#VBW 3 MF	z		Swee	ep 4 ms (4	01 pts)
Trace	Туре	XA	loxis		Amplitude			
(1)	Freq	5.332525	5 GHz		20.08 dBm			
(2)	Freq	5.332525	5 GHz		9.977 dBm			
	m 35 GHz Trace (2)	m #	m #Atten 10 dB	m #Atten 10 dB Ext PG	m #Atten 10 dB Ext PG 31 dB	m #Atten 10 dB Ext PG -31 dB	m #Atten 10 dB Ext PG - 31 dB 1 1 1 1 2 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 35 GHz #VBW 3 MHz Sweet Amplitude 10 1 1 1 2008 dBm (2) Freq 5.332625 6Hz 9.977 dBm	m #Atten 10 dB Ext PG - 31 dB 9.9



Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions					
Test procedure:	Public notice DA 00-705 / ANS	GI C63.4, Section 13.1.4				
Test mode:	Compliance	Verdict	DV66			
Date & Time:	9/23/2009 9:27:24 AM	Verdici. PASS				
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC			
Remarks: Integral antenna						

7.5 Field strength of spurious emissions with integral antenna

7.5.1 General

This test was performed to measure field strength of spurious emissions from the EUT. Specification test limits are given in Table 7.5.1.

Frequency, MHz	Field streng	th at 3 m within res dB(μV/m)*	Attenuation of field strength of spurious versus	
· · · · · · · · · · · · · · · · · · ·	Peak	Quasi Peak	Average	carrier outside restricted bands, dBc***
0.009 - 0.090	148.5 – 128.5	NA	128.5 - 108.5**	
0.090 – 0.110	NA	108.5 - 106.8**	NA	
0.110 – 0.490	126.8 – 113.8	NA	106.8 – 93.8**	
0.490 – 1.705		73.8 – 63.0**		
1.705 – 30.0*		69.5	NIA	20.0
30 – 88	NIA	40.0		
88 – 216	INA	43.5	IN/A	
216 – 960		46.0		
960 - 1000		54.0		
1000 – 10 th harmonic	74.0	NA	54.0	1

	Table 7.5.1	Radiated s	spurious	emissions	limits
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*- The limit for 3 m test distance was calculated using the inverse square distance extrapolation factor as follows: $\lim_{S^2} = \lim_{S^1} + 40 \log (S_1/S_2),$

where S_1 and S_2 – standard defined and test distance respectively in meters.

**- The limit decreases linearly with the logarithm of frequency.

*** - The field strength limits applied from the lowest radio frequency generated in the device, without going below 9 kHz up to the tenth harmonic of the highest fundamental frequency.

7.5.2 Test procedure for spurious emission field strength measurements in 9 kHz to 30 MHz band

- 7.5.2.1 The EUT was set up as shown in Figure 7.5.1, energized and the performance check was conducted.
- **7.5.2.2** The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360⁰ and the measuring antenna was rotated around its vertical axis.
- **7.5.2.3** The worst test results (the lowest margins) were recorded and shown in the associated plots.

7.5.3 Test procedure for spurious emission field strength measurements above 30 MHz

- 7.5.3.1 The EUT was set up as shown in Figure 7.5.2, energized and the performance check was conducted.
- **7.5.3.2** The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360⁰, the measuring antenna height was changed from 1 to 4 m, its polarization was switched from vertical to horizontal.
- 7.5.3.3 The worst test results (the lowest margins) were recorded and shown in the associated plots.



Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions					
Test procedure:	Public notice DA 00-705 / ANS	e DA 00-705 / ANSI C63.4, Section 13.1.4				
Test mode:	Compliance	Verdict:	DV66			
Date & Time:	9/23/2009 9:27:24 AM	verdict.	FA33			
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC			
Remarks: Integral antenna						

Figure 7.5.1 Setup for spurious emission field strength measurements below 30 MHz



Figure 7.5.2 Setup for spurious emission field strength measurements above 30 MHz





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions					
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4					
Test mode:	Compliance	Verdict	DV66			
Date & Time:	9/23/2009 9:27:24 AM	veruict.	FA33			
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC			
Remarks: Integral antenna						

Table 7.5.2 Field strength of emissions outside restricted bands

ASSIGNED FREQUENCT RANGE: 5250-5350 MHZ INVESTIGATED FREQUENCY RANGE: 0.009 - 40000 MHz TEST DISTANCE: 3 m MODULATION: 64QAM (worst case power and power density) MODULATING SIGNAL: PRBS DUTY CYCLE: 100 % TRANSMITTER OUTPUT POWER: Maximum DETECTOR USED: Peak RESOLUTION BANDWIDTH: 100 kHz VIDEO BANDWIDTH: 300 kHz EBW: 10 MHz (maximum aggregate power)					ity)				
EBW:				10) MHz (maximu	ım, aggregate p	ower)		
Frequency MHz	⁻ ield strengtł of spurious, dB(μV/m)	Antenna polarization	Antenna height, m	Azimuth, degrees*	Field strengtl of carrier, dB(µV/m)	Attenuation below carrier, dBc	Limit, dBc	Margin, dB**	Verdic
Low carrier	frequency								-
All emission were found more than 20 dB below the limit						Pass			
Mid carrier frequency									
		All emissio	n were foun	d more that	n 20 dB below	the limit			Pass
High carrier	frequency								
		All emissio	n were foun	d more that	n 20 dB below	the limit			Pass

*- EUT front panel refers to 0 degrees position of turntable.

**- Margin = Attenuation below carrier – specification limit.



Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4						
Test mode:	Compliance	Verdict	DASS				
Date & Time:	9/23/2009 9:27:24 AM		FA33				
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC				
Remarks: Integral antenna							

Table 7.5.3 Field strength of spurious emissions above 1 GHz within restricted bands

requeres	Antenna	Azimuth	'eak field strength	VBW=3 MHz	Average field strength(VBW=10 Hz)			
EBW:			10 MHz (maximum, aggregate power)					
TEST ANTI	TEST ANTENNA TYPE:			Double ridged guide				
RESOLUTI	RESOLUTION BANDWIDTH:				1000 kHz			
DETECTOR	R USED:			Peak				
TRANSMIT	TER OUTPUT POW	/ER:		Maximum				
TRANSMIT	TER OUTPUT POW	ER SETT	INGS:	Maximum				
DUTY CYC	LE:			100 %				
MODULAT	NG SIGNAL:			PRBS				
MODULAT	ON:			64QAM (wor	rst case power and power density)			
TEST DIST	ANCE:			3 m				
INVESTIGA	ATED FREQUENCY	RANGE:		0.009 - 4000	00 MHz			
ASSIGNED	FREQUENCY RAN	GE:	5250 - 5350 MHz					

roquones	Antenna 'eak field strength(VBW=3 MHz Ave		Average	je field strength(VBW=10 Hz)							
MHz	'olarizatio	leight m	Jegrees	/leasured dB(μV/m)	Limit, IB(µV/m	Margin, dB**	/leasured dB(μV/m)	¦alculatec dB(μV/m)	Limit, IB(µV/m	Margin dB***	Verdict
Low carrie	r frequency										
1440.000	Horizontal	1.2	30	46.62	74.0	-27.38	43.95	39.52	54.0	-14.48	Pass
Mid carrier	frequency										
1440.003	Horizontal	1.2	30	46.60	74.0	-27.4	43.95	39.52	54.0	-14.48	Pass
High carrier frequency											
1440.000	Horizontal	1.2	30	46.55	74.0	-27.35	43.97	39.54	54.0	-14.46	Pass

*- EUT front panel refers to 0 degrees position of turntable. **- Margin = Measured field strength - specification limit. ***- Margin = Calculated field strength - specification limit,

where Calculated field strength = Measured field strength + average factor.

Table 7.5.4 Average factor calculation

Transmis	sion pulse	Transmis	sion burst	Transmission train Average fa	
Duration, ms	Period, ms	Duration, ms	Period, ms	duration, ms	dB
3	5	-	-	-	-4.43
*- Average factor was for pulse tra for pulse tra	s calculated as follows in shorter than 100 m in longer than 100 ms	s Average factor =20×lo S: Average factor =20×lo	$pg_{10} \left(\frac{Pulse duration}{Pulse period} \times \frac{Burs}{Train} \\ pg_{10} \left(\frac{Pulse duration}{Pulse period} \times \frac{Burs}{1} \right)$	t duration a duration t duration 20 ms × Number of burs	ts within pulse train) ts within 100 ms)



Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4						
Test mode:	Compliance	Verdict	DV66				
Date & Time:	9/23/2009 9:27:24 AM	verdict.	FA33				
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC				
Remarks: Integral antenna							

Table 7.5.5 Field strength of spurious emissions below 1 GHz within restricted bands

Frequency Peak Quasi-peak	Antenna Antenna Turn-table					
EBW:	10 MHz (maximum, aggregate power)					
	Biconiloa (30 MHz – 1000 MHz)					
	Biconical (30 MHz – 200 MHz)					
TEST ANTENNA TYPE:	Active loop (9 kHz – 30 MHz)					
VIDEO BANDWIDTH:	> Resolution bandwidth					
	120 kHz (30 MHz – 1000 MHz)					
	9.0 kHz (150 kHz – 30 ŃHz)					
RESOLUTION BANDWIDTH:	1 kHz (9 kHz – 150 kHz)					
TRANSMITTER OUTPUT POWER:	Maximum					
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum					
DUTY CYCLE:	100 %					
MODULATING SIGNAL:	PRBS					
MODULATION.	640AM (worst case power and power density)					
TEST DISTANCE.	3 m					
	0.009 - 40000 MHz					
ASSIGNED FREQUENCY RANGE	5250 - 5350 MHz					

Frequency	Fean	ົບເບ	isi-peak		Antonna	Antonna	i uni-table	
MHz	emission, dB(μV/m)	Measured emission, dB(μV/m)	Limit, dB(µV/m)	Margin, dB [,]	polarization	height, m	position**, degrees	Verdict
Low carrier	frequency							
All emission were found more than 20 dB below the limit							Pass	
Mid carrier	frequency							
All emission were found more than 20 dB below the limit						Pass		
High carrie	High carrier frequency							
		All emission were f	ound more th	nan 20 dB bel	ow the limit			Pass

*- Margin = Measured emission - specification limit.

**- EUT front panel refer to 0 degrees position of turntable.

Table 7.5.6 Restricted bands

MHz	MHz	MHz	MHz	MHz	GHz
0.09 - 0.11	8.37625 - 8.38675	73 - 74.6	399.9 - 410	2690 - 2900	10.6 - 12.7
0.495 - 0.505	8.41425 - 8.41475	74.8 - 75.2	608 - 614	3260 - 3267	13.25 - 13.4
2.1735 - 2.1905	12.29 - 12.293	108 - 121.94	960 - 1240	3332 - 3339	14.47 - 14.5
4.125 - 4.128	12.51975 - 12.52025	123 - 138	1300 - 1427	3345.8 - 3358	15.35 - 16.2
4.17725 - 4.17775	12.57675 - 12.57725	149.9 - 150.05	1435 - 1626.5	3600 - 4400	17.7 - 21.4
4.20725 - 4.20775	13.36 - 13.41	156.52475 - 156.52525	1645.5 - 1646.5	4500 - 5150	22.01 - 23.12
6.215 - 6.218	16.42 - 16.423	156.7 - 156.9	1660 - 1710	5350 - 5460	23.6 - 24
6.26775 - 6.26825	16.69475 - 16.69525	162.0125 - 167.17	1718.8 - 1722.2	7250 - 7750	31.2 - 31.8
6.31175 - 6.31225	16.80425 - 16.80475	167.72 - 173.2	2200 - 2300	8025 - 8500	36.43 - 36.5
8.291 - 8.294	25.5 - 25.67	240 - 285	2310 - 2390	9000 - 9200	Abovo 28.6
8.362 - 8.366	37.5 - 38.25	322 - 335.4	2483.5 - 2500	9300 - 9500	ADOVE 30.0

Reference numbers of test equipment used

HL 0446	HL 0521	HL 0604	HL 0768	HL 0769	HL 1424	HL 1425	HL 2254
HL 2387	HL 2432	HL 2697	HL 2883	HL 2909	HL 2952	HL 3123	HL 3286
HL 3351	HL 3352	HL 3616					

Full description is given in Appendix A.



Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4						
Test mode:	Compliance	Vordict	DASS				
Date & Time:	9/23/2009 9:27:24 AM	veruict.	FA33				
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC				
Remarks: Integral antenna							

Plot 7.5.1 Radiated emission measurements from 9 to 150 kHz at the low carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical



Plot 7.5.2 Radiated emission measurements from 9 to 150 kHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict: PASS	
Date & Time:	9/23/2009 9:27:24 AM		
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC
Remarks: Integral antenna			

Plot 7.5.3 Radiated emission measurements from 9 to 150 kHz at the high carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical



Plot 7.5.4 Radiated emission measurements from 0.15 to 30 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict: PASS	
Date & Time:	9/23/2009 9:27:24 AM		
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC
Remarks: Integral antenna			

Plot 7.5.5 Radiated emission measurements from 0.15 to 30 MHz at the mid carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical



Plot 7.5.6 Radiated emission measurements from 0.15 to 30 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict: PASS	
Date & Time:	9/23/2009 9:27:24 AM		
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC
Remarks: Integral antenna			

Plot 7.5.7 Radiated emission measurements from 30 to 1000 MHz at the low carrier frequency

TEST SITE: TEST DISTANCE: ANTENNA POLARIZATION:	Anechoic chamber 3 m Vertical and Horizontal	
(M)	ACTV DET: Meas det:	РЕАК РЕАК ОР АУС МКК 100.8 М Ч1.31 dBuv



Plot 7.5.8 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency



Ø

ACTU DET: PEAK Meas det: Peak op avg Mkr 100.8 MHz 41.10 dbµV/m





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	- Verdict: PASS	
Date & Time:	9/23/2009 9:27:24 AM		
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC
Remarks: Integral antenna		-	

Plot 7.5.9 Radiated emission measurements from 30 to 1000 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	- Verdict: PASS	
Date & Time:	9/23/2009 9:27:24 AM		
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC
Remarks: Integral antenna			

Plot 7.5.10 Radiated emission measurements from 1000 to 2900 MHz at the low carrier frequency



Plot 7.5.11 Radiated emission measurements from 1000 to 2900 MHz at the low carrier frequency

TEST SITE:	Anechoic chamber
ANTENNA POLARIZATION:	3 m Vertical and Horizontal
DETECTOR	Average

(D)





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	- Verdict: PASS	
Date & Time:	9/23/2009 9:27:24 AM		
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC
Remarks: Integral antenna			

Plot 7.5.12 Radiated emission measurements from 1000 to 2900 MHz at the mid carrier frequency



Plot 7.5.13 Radiated emission measurements from 1000 to 2900 MHz at the mid carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
DETECTOR	Average

(D)





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4			
Test mode:	Compliance	Verdict:	PASS	
Date & Time:	9/23/2009 9:27:24 AM			
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: Integral antenna				

Plot 7.5.14 Radiated emission measurements from 1000 to 2900 MHz at the high carrier frequency



Plot 7.5.15 Radiated emission measurements from 1000 to 2900 MHz at the high carrier frequency



6





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4			
Test mode:	Compliance	Verdict:	PASS	
Date & Time:	9/23/2009 9:27:24 AM			
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: Integral antenna				

Plot 7.5.16 Radiated emission measurements from 2900 to 8000 MHz at the low carrier frequency



Plot 7.5.17 Radiated emission measurements from 2900 to 8000 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4			
Test mode:	Compliance	Verdict:	PASS	
Date & Time:	9/23/2009 9:27:24 AM			
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: Integral antenna				

Plot 7.5.18 Radiated emission measurements from 2900 to 8000 MHz at the mid carrier frequency



Plot 7.5.19 Radiated emission measurements from 2900 to 8000 MHz at the mid carrier frequency




Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4			
Test mode:	Compliance	Vordict	DASS	
Date & Time:	9/23/2009 9:27:24 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: Integral antenna				

Plot 7.5.20 Radiated emission measurements from 2900 to 8000 MHz at the high carrier frequency



Plot 7.5.21 Radiated emission measurements from 2900 to 8000 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4			
Test mode:	Compliance	Vordict	DV66	
Date & Time:	9/23/2009 9:27:24 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: Integral antenna				

Plot 7.5.22 Radiated emission measurements from 8000 to 14000 MHz at the low carrier frequency



Plot 7.5.23 Radiated emission measurements from 8000 to 14000 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4			
Test mode:	Compliance	Vordict: DASS		
Date & Time:	9/23/2009 9:27:24 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: Integral antenna				

Plot 7.5.24 Radiated emission measurements from 8000 to 14000 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4			
Test mode:	Compliance	Vordict	DASS	
Date & Time:	9/23/2009 9:27:24 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: Integral antenna				

Plot 7.5.25 Radiated emission measurements from 14000 to 18000 MHz at the low carrier frequency



Plot 7.5.26 Radiated emission measurements from 14000 to 18000 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4			
Test mode:	Compliance	Verdict	DV66	
Date & Time:	9/23/2009 9:27:24 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: Integral antenna				

Plot 7.5.27 Radiated emission measurements from 14000 to 18000 MHz at the mid carrier frequency



Plot 7.5.28 Radiated emission measurements from 14000 to 18000 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4			
Test mode:	Compliance	Verdict	DV66	
Date & Time:	9/23/2009 9:27:24 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: Integral antenna				

Plot 7.5.29 Radiated emission measurements from 14000 to 18000 MHz at the high carrier frequency



Plot 7.5.30 Radiated emission measurements from 14000 to 18000 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4			
Test mode:	Compliance	Vordict	DV66	
Date & Time:	9/23/2009 9:27:24 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: Integral antenna				

Plot 7.5.31 Radiated emission measurements from 18000 to 26500 MHz at the low carrier frequency



Plot 7.5.32 Radiated emission measurements from 18000 to 26500 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4			
Test mode:	Compliance	Vordict	DV66	
Date & Time:	9/23/2009 9:27:24 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: Integral antenna				

Plot 7.5.33 Radiated emission measurements from 18000 to 26500 MHz at the high carrier frequency



Plot 7.5.34 Radiated emission measurements from 26500 to 40000 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4			
Test mode:	Compliance	Verdict	DV66	
Date & Time:	9/23/2009 9:27:24 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: Integral antenna				

Plot 7.5.35 Radiated emission measurements from 26500 to 40000 MHz at the mid carrier frequency



Plot 7.5.36 Radiated emission measurements from 26500 to 40000 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4			
Test mode:	Compliance	Vordict: DASS		
Date & Time:	9/23/2009 9:28:56 AM	veruict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: External 9.5 dBi antenna				

7.6 Field strength of spurious emissions with 9.5 dBi external antenna

7.6.1 General

This test was performed to measure field strength of spurious emissions from the EUT. Specification test limits are given in Table 7.6.1.

Frequency, MHz	Field strength at 3 m within restricted bands, dB(μV/m)*			Attenuation of field strength of spurious versus
· · · · · · · · · · · · · · · · · · ·	Peak	Quasi Peak	Average	carrier outside restricted bands, dBc***
0.009 - 0.090	148.5 – 128.5	NA	128.5 - 108.5**	
0.090 – 0.110	NA	108.5 - 106.8**	NA	
0.110 – 0.490	126.8 – 113.8	NA	106.8 – 93.8**	
0.490 – 1.705		73.8 – 63.0**		
1.705 – 30.0*		69.5		20.0
30 – 88	NA	40.0	NIA	20.0
88 – 216	INA	43.5	INA	
216 – 960		46.0		
960 - 1000		54.0		
1000 – 10 th harmonic	74.0	NA	54.0	

Table 7.6.1	Radiated	spurious	emissions	limits

*- The limit for 3 m test distance was calculated using the inverse square distance extrapolation factor as follows: $\lim_{S^2} = \lim_{S^1} + 40 \log (S_1/S_2),$

where S_1 and S_2 – standard defined and test distance respectively in meters.

**- The limit decreases linearly with the logarithm of frequency.

*** - The field strength limits applied from the lowest radio frequency generated in the device, without going below 9 kHz up to the tenth harmonic of the highest fundamental frequency.

7.6.2 Test procedure for spurious emission field strength measurements in 9 kHz to 30 MHz band

- 7.6.2.1 The EUT was set up as shown in Figure 7.6.1, energized and the performance check was conducted.
- **7.6.2.2** The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360⁰ and the measuring antenna was rotated around its vertical axis.
- 7.6.2.3 The worst test results (the lowest margins) were recorded and shown in the associated plots.

7.6.3 Test procedure for spurious emission field strength measurements above 30 MHz

- 7.6.3.1 The EUT was set up as shown in Figure 7.6.2, energized and the performance check was conducted.
- **7.6.3.2** The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360⁰, the measuring antenna height was changed from 1 to 4 m, its polarization was switched from vertical to horizontal.
- 7.6.3.3 The worst test results (the lowest margins) were recorded and shown in the associated plots.



Test specification:	FCC section 15.407(b)(2)	FCC section 15.407(b)(2), Unwanted radiated emissions							
Test procedure:	Public notice DA 00-705 / AN	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4							
Test mode:	Compliance	Vordict	DASS						
Date & Time:	9/23/2009 9:28:56 AM	verdict.	FA33						
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC						
Remarks: External 9.5 dBi antenna									

Figure 7.6.1 Setup for spurious emission field strength measurements below 30 MHz



Figure 7.6.2 Setup for spurious emission field strength measurements above 30 MHz





Test specification:	FCC section 15.407(b)(2),	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4							
Test mode:	Compliance	Verdict: PASS						
Date & Time:	9/23/2009 9:28:56 AM							
Temperature: 24°C Air Pressure: 1009 hPa Relative Humidity: 39 % Power Supply: 120VAC								
Remarks: External 9.5 dBi antenna								

Table 7.6.2 Field strength of emissions outside restricted bands

ASSIGNED FREQUENCY RANGE:	5250 - 5350 MHz
INVESTIGATED FREQUENCY RANGE:	0.009 - 40000 MHz
TEST DISTANCE:	3 m
MODULATION:	64QAM (worst case power and power density)
MODULATING SIGNAL:	PRBS
DUTY CYCLE:	100 %
TRANSMITTER OUTPUT POWER:	Maximum
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	100 kHz
VIDEO BANDWIDTH:	300 kHz
TEST ANTENNA TYPE:	Active loop (9 kHz – 30 MHz)
	Biconilog (30 MHz – 1000 MHz)
	Double ridged guide (above 1000 MHz)

EBW:	10 MHz (maximum, aggregate power)								
Frequency MHz	⁻ ield strengtł of spurious, dB(μV/m)	Antenna polarization	Antenna height, m	Azimuth, degrees*	⁻ ield strengtł of carrier, dB(μV/m)	Attenuation below carrier, dBc	Limit, dBc	Margin, dB**	Verdict
Low carrier	Low carrier frequency								
All emission were found more than 20 dB below the limit P								Pass	
Mid carrier	requency								
	All emission were found more than 20 dB below the limit								Pass
High carrier	High carrier frequency								
		All emission	n were foun	d more that	n 20 dB below	the limit			Pass

*- EUT front panel refers to 0 degrees position of turntable. **- Margin = Attenuation below carrier – specification limit.



High carrier frequency

Test specification:	FCC section 15.407(b)(2),	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4						
Test mode:	Compliance	Vordict	DASS					
Date & Time:	9/23/2009 9:28:56 AM	verdict.	FA33					
Temperature: 24°C Air Pressure: 1009 hPa Relative Humidity: 39 % Power Supply: 120VAC								
Remarks: External 9.5 dBi antenna								

Table 7.6.3 Field strength of spurious emissions above 1 GHz within restricted bands

ASSIGNED FREQUENCY RANGE:				52	250 - 5350	MHz					
INVESTIGATED FREQUENCY RANGE:				0.	009 - 4000	00 MHz					
TEST DISTANCE:				3	m						
MODULATION:			64	4QAM (wo	rst case pov	wer and pov	wer density	y)			
MODULATING SIGNAL:			P	PRBS							
DUTY CYCLE:				1(00 %						
TRANSMITTER OUTPUT POWER:			Μ	aximum							
DETECTOR USED:			P	eak							
RESOLUTI	ON BANDW	IDTH:			1(000 kHz					
TEST ANT	ENNA TYPE	:			D	ouble ridge	ed guide				
EBW:					1() MHz (ma	iximum, agg	gregate pow	/er)		
requency	Anten	na	Azimuth	'eak field s	strength(VE	3W=3 MHz	Average	e field stren	gth(VBW=1	0 Hz)	
MHz	Polarization	leight	Jearees	Measured	Limit,	Margin,	Aeasured	;alculatec	Limit,	Margin	Verdict
	olulization	m	g	dB(µV/m)	lB(μV/m	dB**	dB(µV/m)	dB(µV/m)	lB(μV/m	dB***	
Low carrie	r frequency	-							-		
2487.003	Vertical	1.0	350	51.19 74.0 -22.81 50.09 45.86 54.0					-8.14	Pass	
Mid carrier	frequency	-					-	-		-	-
2487.003	Vertical	1.0	350	51.10	74.0	-22.90	49.85	45.42	54.0	-8.58	Pass

-22.87

49.27

44.84

54.0

-9.16

Pass

2487.003 Vertical 350 51.13 74.0 1.0

*- EUT front panel refers to 0 degrees position of turntable.

**- Margin = Measured field strength - specification limit.

***- Margin = Calculated field strength - specification limit,

where Calculated field strength = Measured field strength + average factor.

Table 7.6.4 Average factor calculation

Transmis	sion pulse	Transmis	sion burst	Transmission train Average fact		
Duration, ms	Period, ms	Duration, ms	Period, ms	duration, ms	dB	
3	5	-	-	-	-4.43	
*- Average factor was for pulse tra	s calculated as follow: in shorter than 100 m	S S: Average factor =20×lo	$g_{10}\left(\frac{Pulseduration}{Pulseperiod} \times \frac{Burs}{Train}\right)$	$\frac{t duration}{u duration} \times Number of burst$	ts within pulse train	
for pulse tra	in longer than 100 ms	Average factor = 20×10^{-10}	$g_{10}\left(\frac{Pulse\ duration}{Pulse\ period}\times\frac{Burs}{1}\right)$	$\frac{t duration}{00 ms} \times Number of burst$	ts within 100 ms	



Test specification:	FCC section 15.407(b)(2),	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4						
Test mode:	Compliance	Vardict: DASS						
Date & Time:	9/23/2009 9:28:56 AM	veruict.	FA33					
Temperature: 24°CAir Pressure: 1009 hPaRelative Humidity: 39 %Power Supply: 120VAC								
Remarks: External 9.5 dBi antenna								

Table 7.6.5 Field strength of spurious emissions below 1 GHz within restricted bands

Frequency	Peak emission.	Qua Measured emission.	si-peak Limit.		Antenna	Antenna	l urn-table position**.	Verdict		
EBW:				10 MHz (maximum, ago	pregate pow	/er)			
				Biconilog	(30 MHz - 10	00 MHz)				
				Log perio	dic (200 MHz	– 1000 MH	z)			
				Biconical	(30 MHz - 20	0 MHz)				
TEST ANTE	NNA TYPE:			Active loc	op (9 kHz – 30	MHz)				
VIDEO BAN	DWIDTH:			> Resolu	tion bandwidth	, I				
				120 kHz	(30 MHz – 100	00 MHz)				
				9.0 kHz (150 kHz – 30 l	MHz)				
RESOLUTIO	ON BANDWIE	DTH:		0.2 kHz (9 kHz – 150 kł	Hz)				
TRANSMITT	ER OUTPU	T POWER:		Maximum	า					
DUTY CYCL	.E:			100 %						
MODULATIN	NG SIGNAL:			PRBS	(, , ,		
MODULATIO	DN:			OFDM 64	QAM (worst c	ase power	and power der	nsitv)		
TEST DISTA	NCE:			3 m						
INVESTIGA	TED FREQU	ENCY RANGE:		0.009 - 4	0000 MHz					
ASSIGNED	FREQUENC	Y RANGE:		5250 - 53	50 MHz					

Frequency	Peak	Qua	Quasi-peak Antenna				l urn-table		
MHz	emission,	Measured emission,	Limit,	Margin dB ¹	polarization	height. m	position**,	Verdict	
	dB(µV/m)	dB(μV/m)	dB(µV/m)	nargin, ab	P	3 ,	degrees		
Low carrier frequency									
All emission were found more than 20 dB below the limit								Pass	
Mid carrier	frequency								
		All emission were f	ound more th	an 20 dB bel	ow the limit			Pass	
High carrier	frequency								
		All emission were f	ound more th	an 20 dB bel	ow the limit			Pass	

*- Margin = Measured emission - specification limit.

**- EUT front panel refer to 0 degrees position of turntable.

Table 7.6.6 Restricted bands

MHz	MHz	MHz	MHz	MHz	GHz
0.09 - 0.11	8.37625 - 8.38675	73 - 74.6	399.9 - 410	2690 - 2900	10.6 - 12.7
0.495 - 0.505	8.41425 - 8.41475	74.8 - 75.2	608 - 614	3260 - 3267	13.25 - 13.4
2.1735 - 2.1905	12.29 - 12.293	108 - 121.94	960 - 1240	3332 - 3339	14.47 - 14.5
4.125 - 4.128	12.51975 - 12.52025	123 - 138	1300 - 1427	3345.8 - 3358	15.35 - 16.2
4.17725 - 4.17775	12.57675 - 12.57725	149.9 - 150.05	1435 - 1626.5	3600 - 4400	17.7 - 21.4
4.20725 - 4.20775	13.36 - 13.41	156.52475 - 156.52525	1645.5 - 1646.5	4500 - 5150	22.01 - 23.12
6.215 - 6.218	16.42 - 16.423	156.7 - 156.9	1660 - 1710	5350 - 5460	23.6 - 24
6.26775 - 6.26825	16.69475 - 16.69525	162.0125 - 167.17	1718.8 - 1722.2	7250 - 7750	31.2 - 31.8
6.31175 - 6.31225	16.80425 - 16.80475	167.72 - 173.2	2200 - 2300	8025 - 8500	36.43 - 36.5
8.291 - 8.294	25.5 - 25.67	240 - 285	2310 - 2390	9000 - 9200	Abovo 28.6
8.362 - 8.366	37.5 - 38.25	322 - 335.4	2483.5 - 2500	9300 - 9500	AD0ve 30.0

Reference numbers of test equipment used

HL 0446	HL 0521	HL 0604	HL 0768	HL 0769	HL 1424	HL 1425	HL 2254
HL 2387	HL 2432	HL 2697	HL 2883	HL 2909	HL 2952	HL 3123	HL 3286
HL 3351	HL 3352	HL 3616					

Full description is given in Appendix A.



Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict	DASS
Date & Time:	9/23/2009 9:28:56 AM	verdict.	FA33
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC
Remarks: External 9.5 dBi antenna			

Plot 7.6.1 Radiated emission measurements from 9 to 150 kHz at the low carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical



Plot 7.6.2 Radiated emission measurements from 9 to 150 kHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict	DASS
Date & Time:	9/23/2009 9:28:56 AM	verdict.	FA33
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC
Remarks: External 9.5 dBi antenna			

Plot 7.6.3 Radiated emission measurements from 9 to 150 kHz at the high carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical



Plot 7.6.4 Radiated emission measurements from 0.15 to 30 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict	DASS
Date & Time:	9/23/2009 9:28:56 AM	verdict.	FA33
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC
Remarks: External 9.5 dBi antenna			

Plot 7.6.5 Radiated emission measurements from 0.15 to 30 MHz at the mid carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical



Plot 7.6.6 Radiated emission measurements from 0.15 to 30 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict	DASS
Date & Time:	9/23/2009 9:28:56 AM	verdict.	FA33
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC
Remarks: External 9.5 dBi antenna			

Plot 7.6.7 Radiated emission measurements from 30 to 1000 MHz at the low carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal



Plot 7.6.8 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS	
Date & Time:	9/23/2009 9:28:56 AM	verdict.	FA33
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC
Remarks: External 9.5 dBi antenna			

Plot 7.6.9 Radiated emission measurements from 30 to 1000 MHz at the high carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal



Plot 7.6.10 Radiated emission measurements from 1000 to 2900 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict	DAGG
Date & Time:	9/23/2009 9:28:56 AM	verdict.	FA33
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC
Remarks: External 9.5 dBi antenna			

Plot 7.6.11 Radiated emission measurements from 1000 to 2900 MHz at the mid carrier frequency









Test specification:	FCC section 15.407(b)(2),	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vordict	DASS	
Date & Time:	9/23/2009 9:28:56 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: External 9.5 dBi antenna				

Plot 7.6.13 Radiated emission measurements from 2900 to 8000 MHz at the low carrier frequency



Plot 7.6.14 Radiated emission measurements from 2900 to 8000 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict: PASS	
Date & Time:	9/23/2009 9:28:56 AM		
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC
Remarks: External 9.5 dBi antenna			

Plot 7.6.15 Radiated emission measurements from 2900 to 8000 MHz at the mid carrier frequency



Plot 7.6.16 Radiated emission measurements from 2900 to 8000 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2),	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	9/23/2009 9:28:56 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: External 9.5 dBi antenna				

Plot 7.6.17 Radiated emission measurements from 2900 to 8000 MHz at the high carrier frequency



Plot 7.6.18 Radiated emission measurements from 2900 to 8000 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	9/23/2009 9:28:56 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: External 9.5 dBi antenna				

Plot 7.6.19 Radiated emission measurements from 8000 to 14000 MHz at the low carrier frequency



Plot 7.6.20 Radiated emission measurements from 8000 to 14000 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	- Verdict: PASS		
Date & Time:	9/23/2009 9:28:56 AM			
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: External 9.5 dBi antenna				

Plot 7.6.21 Radiated emission measurements from 8000 to 14000 MHz at the mid carrier frequency



Plot 7.6.22 Radiated emission measurements from 8000 to 14000 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	9/23/2009 9:28:56 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: External 9.5 dBi antenna				

Plot 7.6.23 Radiated emission measurements from 8000 to 14000 MHz at the high carrier frequency



Plot 7.6.24 Radiated emission measurements from 8000 to 14000 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2),	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	9/23/2009 9:28:56 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: External 9.5 dBi antenna				

Plot 7.6.25 Radiated emission measurements from 14000 to 18000 MHz at the low carrier frequency



Plot 7.6.26 Radiated emission measurements from 14000 to 18000 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2),	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	9/23/2009 9:28:56 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: External 9.5 dBi antenna				

Plot 7.6.27 Radiated emission measurements from 14000 to 18000 MHz at the mid carrier frequency



Plot 7.6.28 Radiated emission measurements from 14000 to 18000 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict: PASS	
Date & Time:	9/23/2009 9:28:56 AM		
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC
Remarks: External 9.5 dBi antenna			

Plot 7.6.29 Radiated emission measurements from 14000 to 18000 MHz at the high carrier frequency



Plot 7.6.30 Radiated emission measurements from 14000 to 18000 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2),	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict: PASS		
Date & Time:	9/23/2009 9:28:56 AM			
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: External 9.5 dBi antenna				

Plot 7.6.31 Radiated emission measurements from 18000 to 26500 MHz at the low carrier frequency



Plot 7.6.32 Radiated emission measurements from 18000 to 26500 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2),	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict: PASS		
Date & Time:	9/23/2009 9:28:56 AM			
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: External 9.5 dBi antenna				

Plot 7.6.33 Radiated emission measurements from 18000 to 26500 MHz at the high carrier frequency



Plot 7.6.34 Radiated emission measurements from 26500 to 40000 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	- Verdict: PASS		
Date & Time:	9/23/2009 9:28:56 AM			
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120VAC	
Remarks: External 9.5 dBi antenna				

Plot 7.6.35 Radiated emission measurements from 26500 to 40000 MHz at the mid carrier frequency



Plot 7.6.36 Radiated emission measurements from 26500 to 40000 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	- Verdict: PASS	
Date & Time:	9/23/2009 9:29:01 AM		
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC
Remarks: External 17 dBi antenna			

7.7 Field strength of spurious emissions with 17 dBi external antenna

7.7.1 General

This test was performed to measure field strength of spurious emissions from the EUT. Specification test limits are given in Table 7.7.1.

Frequency, MHz	Field streng	th at 3 m within res dB(μV/m)*	Attenuation of field strength of spurious versus		
· · · · · · · · · · · · · · · · · · ·	Peak Quasi Peak Average		carrier outside restricted bands, dBc***		
0.009 - 0.090	148.5 – 128.5	NA	128.5 - 108.5**		
0.090 – 0.110	NA	108.5 - 106.8**	NA		
0.110 – 0.490	126.8 – 113.8	NA	106.8 - 93.8**		
0.490 – 1.705		73.8 – 63.0**			
1.705 – 30.0*		69.5		20.0	
30 – 88	NIA	40.0	ΝΑ	20.0	
88 – 216	INA	43.5	INA		
216 – 960		46.0			
960 - 1000		54.0			
1000 – 10 th harmonic	74.0	NA	54.0		

Table 7.7.1	Radiated	spurious	emissions	limits

*- The limit for 3 m test distance was calculated using the inverse square distance extrapolation factor as follows: $\lim_{S^2} = \lim_{S^1} + 40 \log (S_1/S_2),$

where S_1 and S_2 – standard defined and test distance respectively in meters.

**- The limit decreases linearly with the logarithm of frequency.

*** - The field strength limits applied from the lowest radio frequency generated in the device, without going below 9 kHz up to the tenth harmonic of the highest fundamental frequency.

7.7.2 Test procedure for spurious emission field strength measurements in 9 kHz to 30 MHz band

- 7.7.2.1 The EUT was set up as shown in Figure 7.7.1, energized and the performance check was conducted.
- **7.7.2.2** The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360⁰ and the measuring antenna was rotated around its vertical axis.
- 7.7.2.3 The worst test results (the lowest margins) were recorded and shown in the associated plots.

7.7.3 Test procedure for spurious emission field strength measurements above 30 MHz

- 7.7.3.1 The EUT was set up as shown in Figure 7.7.2, energized and the performance check was conducted.
- **7.7.3.2** The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360⁰, the measuring antenna height was changed from 1 to 4 m, its polarization was switched from vertical to horizontal.
- 7.7.3.3 The worst test results (the lowest margins) were recorded and shown in the associated plots.



Test specification:	FCC section 15.407(b)(2),	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4						
Test mode:	Compliance	Vordict	DV66					
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33					
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC					
Remarks: External 17 dBi antenna								

Figure 7.7.1 Setup for spurious emission field strength measurements below 30 MHz



Figure 7.7.2 Setup for spurious emission field strength measurements above 30 MHz





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4						
Test mode:	Compliance	Vardict: DASS					
Date & Time:	9/23/2009 9:29:01 AM	veruict.	FA33				
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC				
Remarks: External 17 dBi antenna							

Table 7.7.2 Field strength of emissions outside restricted bands

ASSIGNED INVESTIGA TEST DISTA MODULATIO MODULATIO DUTY CYCL TRANSMITT DETECTOR RESOLUTIO VIDEO BAN TEST ANTE EBW:	ASSIGNED FREQUENCY RANGE:5250 - 5350 MHzNVESTIGATED FREQUENCY RANGE:0.009 - 40000 MHzIEST DISTANCE:3 mMODULATION:OFDM 64QAM (worst case power and power density)MODULATING SIGNAL:PRBSDUTY CYCLE:100 %IRANSMITTER OUTPUT POWER:MaximumDETECTOR USED:PeakRESOLUTION BANDWIDTH:100 kHz/IDEO BANDWIDTH:300 kHzIEST ANTENNA TYPE:Active loop (9 kHz – 30 MHz)Biconical (30 MHz – 200 MHz)Double ridged guide (above 1000 MHz)						er density)		
Frequency MHz	Frequency MHz ⁻ ield strength of spurious, dB(μV/m) Antenna polarization height, m height, m degrees* ⁻ ield strength degrees* ⁻ ield strength of carrier, dB(μV/m) dBc							Verdict	
Low carrier	Low carrier frequency								
All emission were found more than 20 dB below the limit						Pass			
Mid carrier frequency									
All emission were found more than 20 dB below the limit							Pass		
High carrier	frequency								
All emission were found more than 20 dB below the limit								Pass	

*- EUT front panel refers to 0 degrees position of turntable. **- Margin = Attenuation below carrier – specification limit.



Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4						
Test mode:	Compliance	Verdict	DV66				
Date & Time:	9/23/2009 9:29:01 AM	veruict.	FA33				
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC				
Remarks: External 17 dBi antenna							

Table 7.7.3 Field strength of spurious emissions above 1 GHz within restricted bands

ASSIGNED	FREQUEN	CY RAN	IGE:	5250 - 5350 MHz							
INVESTIGA	ATED FREQ	UENCY	RANGE:		0.	009 - 4000	00 MHz				
TEST DIST	ANCE:				3	m					
MODULAT	ION:				64	4QAM (wo	rst case pov	wer and pov	wer density	y)	
MODULAT	ING SIGNAL	.:			PI	RBS					
DUTY CYC	LE:				10	00 %					
TRANSMIT	TER OUTPU	JT POW	/ER:	Maximum							
DETECTO	R USED:			Peak							
RESOLUTI	ON BANDW	IDTH:			10	000 kHz					
TEST ANT	EST ANTENNA TYPE: Double ridged guide										
EBW:					10) MHz (ma	iximum, agg	gregate pow	/er)		
requeses	Anten	na	Azimuth	'eak field s	trength(VE	3W=3 MHz	Average	e field stren	gth(VBW=1	0 Hz)	
MHz	Polarizatio	leight	Jearees'	Measured	Limit,	Margin,	Aeasured	;alculatec	Limit,	Margin	Verdict
	olarization	m		$dB(\mu V/m)$ $iB(\mu V/m$ dB^{**} $dB(\mu V/m)$ $dB(\mu V/m)$ $iB(\mu V/m$ dB^{***}							
Low carrier frequency											
1440.000	Horizontal	1.2	30	46.62	46.62 74.0 -27.38 43.95 39.52 54.0 -10.48 Pas						Pass
Mid carrier	frequency	-	-				-	-			-
1440.003	Horizontal	1.2	30	46.60	74.0	-27.4	43.95	39.52	54.0	-10.48	Pass

74.0

1440.000 Horizontal 46.55 1.2 *- EUT front panel refers to 0 degrees position of turntable.

**- Margin = Measured field strength - specification limit.

High carrier frequency

***- Margin = Calculated field strength - specification limit,

where Calculated field strength = Measured field strength + average factor.

30

Table 7.7.4 Average factor calculation

-27.35

43.97

39.54

54.0

-14.46

Pass

Transmission pulse		Transmiss	sion burst	Transmission train	Average factor, dB	
Duration, ms	Period, ms	Duration, ms Period, ms		duration, ms		
3	5	-	-	-	-4.43	
*- Average factor was for pulse tra	s calculated as follow: in shorter than 100 m	s: Average factor =20×lo	$\mathbf{g}_{10}\left(\frac{Pulseduration}{Pulseperiod} \times \frac{Burs}{Train}\right)$	$\frac{t duration}{u duration} \times Number of burst$	ts within pulse train	
for pulse tra	in longer than 100 ms	Average factor = 20×10^{-10}	$g_{10}\left(\frac{Pulse\ duration}{Pulse\ period}\times\frac{Burs}{1}\right)$	$\frac{t duration}{00 ms} \times Number of burst$	ts within 100 ms	


Test specification:	FCC section 15.407(b)(2),	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4			
Test mode:	Compliance	Vardiat: DASS			
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33		
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC		
Remarks: External 17 dBi a	Remarks: External 17 dBi antenna				

Table 7.7.5 Field strength of spurious emissions below 1 GHz within restricted bands

ASSIGNED FREQUENCY RANGE:	5250 - 5350 MHz
INVESTIGATED FREQUENCY RANGE:	0.009 - 40000 MHz
TEST DISTANCE:	3 m
MODULATION:	64QAM (worst case power and power density)
MODULATING SIGNAL:	PRBS
DUTY CYCLE:	100 %
TRANSMITTER OUTPUT POWER:	Maximum
RESOLUTION BANDWIDTH:	0.2 kHz (9 kHz – 150 kHz)
	9.0 kHz (150 kHz – 30 MHz)
	120 kHz (30 MHz – 1000 MHz)
VIDEO BANDWIDTH:	> Resolution bandwidth
TEST ANTENNA TYPE:	Active loop (9 kHz – 30 MHz)
	Biconilog (30 MHz – 1000 MHz)
EBW:	10 MHz (maximum, aggregate power)

Frequency MHz	Peak emission, dB(μV/m)	Qua Measured emission, dB(µV/m)	isi-peak Limit, dB(μV/m)	Vargin, dB'	Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
Low carrier	frequency							
All emission were found more than 20 dB below the limit					Pass			
Mid carrier frequency								
All emission were found more than 20 dB below the limit					Pass			
High carrier frequency								
		All emission were f	ound more th	nan 20 dB bel	ow the limit			Pass

*- Margin = Measured emission - specification limit.

**- EUT front panel refer to 0 degrees position of turntable.

Table 7.7.6 Restricted bands

MHz	MHz	MHz	MHz	MHz	GHz
0.09 - 0.11	8.37625 - 8.38675	73 - 74.6	399.9 - 410	2690 - 2900	10.6 - 12.7
0.495 - 0.505	8.41425 - 8.41475	74.8 - 75.2	608 - 614	3260 - 3267	13.25 - 13.4
2.1735 - 2.1905	12.29 - 12.293	108 - 121.94	960 - 1240	3332 - 3339	14.47 - 14.5
4.125 - 4.128	12.51975 - 12.52025	123 - 138	1300 - 1427	3345.8 - 3358	15.35 - 16.2
4.17725 - 4.17775	12.57675 - 12.57725	149.9 - 150.05	1435 - 1626.5	3600 - 4400	17.7 - 21.4
4.20725 - 4.20775	13.36 - 13.41	156.52475 - 156.52525	1645.5 - 1646.5	4500 - 5150	22.01 - 23.12
6.215 - 6.218	16.42 - 16.423	156.7 - 156.9	1660 - 1710	5350 - 5460	23.6 - 24
6.26775 - 6.26825	16.69475 - 16.69525	162.0125 - 167.17	1718.8 - 1722.2	7250 - 7750	31.2 - 31.8
6.31175 - 6.31225	16.80425 - 16.80475	167.72 - 173.2	2200 - 2300	8025 - 8500	36.43 - 36.5
8.291 - 8.294	25.5 - 25.67	240 - 285	2310 - 2390	9000 - 9200	Abovo 28.6
8.362 - 8.366	37.5 - 38.25	322 - 335.4	2483.5 - 2500	9300 - 9500	Above 36.0

Reference numbers of test equipment used

HL 0446	HL 0521	HL 0604	HL 0768	HL 0769	HL 1424	HL 1425	HL 2254
HL 2387	HL 2432	HL 2697	HL 2883	HL 2909	HL 2952	HL 3123	HL 3286
HL 3351	HL 3352	HL 3616					

Full description is given in Appendix A.



Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions				
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4				
Test mode:	Compliance	Vardiat: DASS			
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33		
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 % Power Supply: 120 VAC			
Remarks: External 17 dBi ar	Remarks: External 17 dBi antenna				

Plot 7.7.1 Radiated emission measurements from 9 to 150 kHz at the low carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical



Plot 7.7.2 Radiated emission measurements from 9 to 150 kHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions				
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4				
Test mode:	Compliance	Vardiat: DASS			
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33		
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 % Power Supply: 120 VAC			
Remarks: External 17 dBi ar	Remarks: External 17 dBi antenna				

Plot 7.7.3 Radiated emission measurements from 9 to 150 kHz at the high carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical



Plot 7.7.4 Radiated emission measurements from 0.15 to 30 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions				
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4			
Test mode:	Compliance	Vardiat: DASS			
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33		
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC		
Remarks: External 17 dBi antenna					

Plot 7.7.5 Radiated emission measurements from 0.15 to 30 MHz at the mid carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical



Plot 7.7.6 Radiated emission measurements from 0.15 to 30 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions				
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4				
Test mode:	Compliance	Vardiat: DASS			
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33		
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 % Power Supply: 120 VAC			
Remarks: External 17 dBi ar	Remarks: External 17 dBi antenna				

Plot 7.7.7 Radiated emission measurements from 30 to 1000 MHz at the low carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal



Plot 7.7.8 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS	
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC
Remarks: External 17 dBi antenna			

Plot 7.7.9 Radiated emission measurements from 30 to 1000 MHz at the high carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
ആ	



Plot 7.7.10 Radiated emission measurements from 1000 to 2900 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS	
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC
Remarks: External 17 dBi antenna			

Plot 7.7.11 Radiated emission measurements from 1000 to 2900 MHz at the mid carrier frequency



START 1.000 GHz RL JF BW 1.0 MHz



AVO BW 3 MHz

STOP 2.900 OHz SWP 38.0 msec





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vordict	DASS	
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC	
Remarks: External 17 dBi antenna				

Plot 7.7.13 Radiated emission measurements from 2900 to 8000 MHz at the low carrier frequency



Plot 7.7.14 Radiated emission measurements from 2900 to 8000 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vordict	DASS	
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC	
Remarks: External 17 dBi antenna				

Plot 7.7.15 Radiated emission measurements from 2900 to 8000 MHz at the mid carrier frequency



Plot 7.7.16 Radiated emission measurements from 2900 to 8000 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC	
Remarks: External 17 dBi antenna				

Plot 7.7.17 Radiated emission measurements from 2900 to 8000 MHz at the high carrier frequency



Plot 7.7.18 Radiated emission measurements from 2900 to 8000 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC	
Remarks: External 17 dBi antenna				

Plot 7.7.19 Radiated emission measurements from 8000 to 14000 MHz at the low carrier frequency



Plot 7.7.20 Radiated emission measurements from 8000 to 14000 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC	
Remarks: External 17 dBi antenna				

Plot 7.7.21 Radiated emission measurements from 8000 to 14000 MHz at the mid carrier frequency



Plot 7.7.22 Radiated emission measurements from 8000 to 14000 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS	
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC
Remarks: External 17 dBi antenna			

Plot 7.7.23 Radiated emission measurements from 8000 to 14000 MHz at the high carrier frequency



Plot 7.7.24 Radiated emission measurements from 8000 to 14000 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS	
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC
Remarks: External 17 dBi antenna			

Plot 7.7.25 Radiated emission measurements from 14000 to 18000 MHz at the low carrier frequency



Plot 7.7.26 Radiated emission measurements from 14000 to 18000 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions			
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS		
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33	
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC	
Remarks: External 17 dBi antenna				

Plot 7.7.27 Radiated emission measurements from 14000 to 18000 MHz at the mid carrier frequency



Plot 7.7.28 Radiated emission measurements from 14000 to 18000 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2),	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4						
Test mode:	Compliance	Verdict	DASS					
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33					
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC					
Remarks: External 17 dBi antenna								

Plot 7.7.29 Radiated emission measurements from 14000 to 18000 MHz at the high carrier frequency



Plot 7.7.30 Radiated emission measurements from 14000 to 18000 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2),	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4						
Test mode:	Compliance	Verdict	DASS					
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33					
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC					
Remarks: External 17 dBi antenna								

Plot 7.7.31 Radiated emission measurements from 18000 to 26500 MHz at the low carrier frequency



Plot 7.7.32 Radiated emission measurements from 18000 to 26500 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2),	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4						
Test mode:	Compliance	Vordict	DASS					
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33					
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC					
Remarks: External 17 dBi antenna								

Plot 7.7.33 Radiated emission measurements from 18000 to 26500 MHz at the high carrier frequency



Plot 7.7.34 Radiated emission measurements from 26500 to 40000 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2),	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4						
Test mode:	Compliance	Vordict	DASS					
Date & Time:	9/23/2009 9:29:01 AM	verdict.	FA33					
Temperature: 24°C	Air Pressure: 1009 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC					
Remarks: External 17 dBi antenna								

Plot 7.7.35 Radiated emission measurements from 26500 to 40000 MHz at the mid carrier frequency



Plot 7.7.36 Radiated emission measurements from 26500 to 40000 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4						
Test mode:	Compliance	Verdict	DASS				
Date & Time:	11/13/2009 2:25:19 PM	verdict.	FA33				
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC				
Remarks: 6.5 dBi antenna							

7.8 Field strength of spurious emissions with 6.5 dBi external antenna

7.8.1 General

This test was performed to measure field strength of spurious emissions from the EUT. Specification test limits are given in Table 7.8.1.

Frequency MHz	Field streng	th at 3 m within res dB(μV/m)*	tricted bands,	Attenuation of field strength of spurious versus
	Peak	Quasi Peak	carrier outside restricted bands, dBc***	
0.009 - 0.090	148.5 – 128.5	NA	128.5 - 108.5**	
0.090 – 0.110	NA	108.5 - 106.8**	NA	
0.110 - 0.490	126.8 – 113.8	NA	106.8 - 93.8**	
0.490 – 1.705		73.8 – 63.0**		
1.705 – 30.0*		69.5		20.0
30 – 88	NΙΔ	40.0	ΝΑ	20.0
88 – 216	INA.	43.5	117	
216 – 960		46.0		
960 - 1000		54.0		
1000 – 10 th harmonic	74.0	NA	54.0	

Table 7.8.1 Radiated spurious emissions limits

*- The limit for 3 m test distance was calculated using the inverse square distance extrapolation factor as follows: $\lim_{S^2} = \lim_{S^1} + 40 \log (S_1/S_2),$

where S_1 and S_2 – standard defined and test distance respectively in meters.

**- The limit decreases linearly with the logarithm of frequency.

*** - The field strength limits applied from the lowest radio frequency generated in the device, without going below 9 kHz up to the tenth harmonic of the highest fundamental frequency.

7.8.2 Test procedure for spurious emission field strength measurements in 9 kHz to 30 MHz band

- **7.8.2.1** The EUT was set up as shown in Figure 7.8.1, energized and the performance check was conducted.
- **7.8.2.2** The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360⁰ and the measuring antenna was rotated around its vertical axis.
- 7.8.2.3 The worst test results (the lowest margins) were recorded and shown in the associated plots.

7.8.3 Test procedure for spurious emission field strength measurements above 30 MHz

- 7.8.3.1 The EUT was set up as shown in Figure 7.8.2, energized and the performance check was conducted.
- **7.8.3.2** The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360⁰, the measuring antenna height was changed from 1 to 4 m, its polarization was switched from vertical to horizontal.
- 7.8.3.3 The worst test results (the lowest margins) were recorded and shown in the associated plots.



Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANS	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4					
Test mode:	Compliance	Verdict:	DV66				
Date & Time:	11/13/2009 2:25:19 PM	verdict.	FA33				
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC				
Remarks: 6.5 dBi antenna		•					

Figure 7.8.1 Setup for spurious emission field strength measurements below 30 MHz



Figure 7.8.2 Setup for spurious emission field strength measurements above 30 MHz





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANS	notice DA 00-705 / ANSI C63.4, Section 13.1.4					
Test mode:	Compliance	Verdict	DASS				
Date & Time:	11/13/2009 2:25:19 PM	verdict.	FA33				
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC				
Remarks: 6.5 dBi antenna							

Table 7.8.2 Field strength of emissions outside restricted bands

INVESTIGATED FREQUENCY RANGE: INVESTIGATED FREQUENCY RANGE: TEST DISTANCE: MODULATION: MODULATING SIGNAL: BIT RATE: DUTY CYCLE: TRANSMITTER OUTPUT POWER: DETECTOR USED: RESOLUTION BANDWIDTH: VIDEO BANDWIDTH: TEST ANTENNA TYPE: EBW:				52 0. 3 0 PI M 10 10 30 4 4 8 0 0	250.0 – 5350.0 009 - 40000 Ml m FDM 64QAM (v RBS laximum o0 % laximum eak 00 kHz 00 kHz 00 kHz ctive loop (9 kH iconilog (30 MH ouble ridged gu	MHz Hz worst case powe z – 30 MHz) z – 1000 MHz) uide (above 100	er and powe	er density)	
EBW:	Field strenati			10) MHz (maximu Field strenati	m, aggregate p Attenuation	ower)	Manaia	
Frequency MHz	of spurious, dB(μV/m)	Antenna polarization	Antenna height, m	Azimuth, degrees*	of carrier, dB(μV/m)	below carrier, dBc	Limit, dBc	Margin, dB**	Verdict
Low carrier	frequency								
		All emis	sion were n	nore than 2	0 dB below the	limit			Pass
Mid carrier	frequency								1
		All emis	sion were n	nore than 2	0 dB below the	limit			Pass
High carrier	frequency								1
		All emis	sion were n	nore than 2	0 dB below the	limit			Pass

*- EUT front panel refers to 0 degrees position of turntable.

**- Margin = Attenuation below carrier – specification limit.



Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions						
Test procedure:	Public notice DA 00-705 / ANS	ublic notice DA 00-705 / ANSI C63.4, Section 13.1.4					
Test mode:	Compliance	Vordict	DAGG				
Date & Time:	11/13/2009 2:25:19 PM	veruict.	FA33				
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC				
Remarks: 6.5 dBi antenna							

Table 7.8.3 Field strength of spurious emissions above 1 GHz within restricted bands

ASSIGNED	FREQUEN	CY:			52	250.0 - 53	50.0 MHz				
INVESTIGATED FREQUENCY RANGE:				0.	009 - 4000	00 MHz					
TEST DIST	ANCE:				3	m					
MODULAT	ION:				0	FDM 64QA	AM (worst c	ase power a	and power	density)	
MODULAT	ING SIGNAL	:			PI	RBS					
BIT RATE:					Μ	aximum					
DUTY CYC	LE:				10	00 %					
TRANSMIT	TER OUTPL	JT POW	/ER:		Μ	Maximum					
DETECTOR	R USED:				Pe	Peak					
RESOLUTI	ON BANDW	IDTH:			10	1000 kHz					
TEST ANTI	ENNA TYPE	:			D	ouble ridge	ed guide				
EBW:					10) MHz (ma	ximum, agg	gregate pow	/er)		
requency	Antenr	na	Azimuth	'eak field s	strength(VE	SW=3 MHz	Average	e field streng	gth(VBW=1	0 Hz)	
MHz	Polarizatio	leight	Jearees'	Neasured	Limit,	Margin,	l easured	;alculatec	Limit,	Margin	Verdict
	olalizatio	m	g	dB(μV/m)	lB(μV/m	dB**	dB(μV/m)	dB(µV/m)	lB(μV/m	dB***	
I ow carrie	r frequency										

Low carrie	r frequency										
2487.003	Vert	1.0	350	51.19	74.0	-22.81	50.09	45.86	54.0	-8.14	Pass
Mid carrier frequency											
2487.003	Vert	1.0	350	51.10	74.0	-22.90	49.85	45.42	54.0	-8.58	Pass
High carrier frequency											
2487.003	Vert	1.0	350	51.13	74.0	-22.87	49.27	44.84	54.0	-9.16	Pass

*- EUT front panel refers to 0 degrees position of turntable. **- Margin = Measured field strength - specification limit. ***- Margin = Calculated field strength - specification limit,

where Calculated field strength = Measured field strength + average factor.

Table 7.8.4 Average factor calculation

Transmis	Transmission pulse Transmission burst		Transmission train	Average factor,	
Duration, ms	Period, ms	Duration, ms	Period, ms	duration, ms	dB
3	5	-	-	-	-4.43
*- Average factor was for pulse tra for pulse tra	s calculated as follows in shorter than 100 m in longer than 100 ms	s: Average factor =20×lo : Average factor =20×lo	$pg_{10} \left(\frac{Pulse duration}{Pulse period} \times \frac{Burs}{Train} \\ pg_{10} \left(\frac{Pulse duration}{Pulse period} \times \frac{Burs}{1} \right)$	t duration a duration t duration 20 ms × Number of burs	's within pulse train) ts within 100 ms)



Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions				
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4				
Test mode:	Compliance	Vardiat: DASS			
Date & Time:	11/13/2009 2:25:19 PM	verdict.	FA33		
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC		
Remarks: 6.5 dBi antenna					

Table 7.8.5 Field strength of spurious emissions below 1 GHz within restricted bands

ASSIGNED FREQUENCY:	5250.0 – 5350.0 MHz 0.009 - 40000 MHz
TEST DISTANCE:	3 m
MODULATION:	OFDM 64QAM (worst case power and power density)
MODULATING SIGNAL:	PRBS
BIT RATE:	Maximum
DUTY CYCLE:	100 %
TRANSMITTER OUTPUT POWER:	Maximum
RESOLUTION BANDWIDTH:	0.2 kHz (9 kHz – 150 kHz)
	9.0 kHz (150 kHz – 30 MHz)
	120 kHz (30 MHz – 1000 MHz)
VIDEO BANDWIDTH:	> Resolution bandwidth
TEST ANTENNA TYPE:	Active loop (9 kHz – 30 MHz)
	Biconical (30 MHz – 200 MHz)
	Log periodic (200 MHz – 1000 MHz)
	Biconilog (30 MHz – 1000 MHz)
EBW:	10 MHz (maximum, aggregate power)

Frequency	Peak emission,	Qua Measured emission,	isi-peak Limit,	Mangin dDt	Antenna	Antenna	Turn-table position**,	Verdict
IVITIZ	dB(μV/m)	dB(µV/m)	dB(µV/m)	viargin, dB'	polarization	neight, m	degrees	
Low carrier	Low carrier frequency							
All emission were more than 20 dB below the limit					Pass			
Mid carrier	Mid carrier frequency							
All emission were more than 20 dB below the limit						Pass		
High carrier frequency								
All emission were more than 20 dB below the limit					Pass			

*- Margin = Measured emission - specification limit.

**- EUT front panel refer to 0 degrees position of turntable.

Table 7.8.6 Restricted bands

MHz	MHz	MHz	MHz	MHz	GHz
0.09 - 0.11	8.37625 - 8.38675	73 - 74.6	399.9 - 410	2690 - 2900	10.6 - 12.7
0.495 - 0.505	8.41425 - 8.41475	74.8 - 75.2	608 - 614	3260 - 3267	13.25 - 13.4
2.1735 - 2.1905	12.29 - 12.293	108 - 121.94	960 - 1240	3332 - 3339	14.47 - 14.5
4.125 - 4.128	12.51975 - 12.52025	123 - 138	1300 - 1427	3345.8 - 3358	15.35 - 16.2
4.17725 - 4.17775	12.57675 - 12.57725	149.9 - 150.05	1435 - 1626.5	3600 - 4400	17.7 - 21.4
4.20725 - 4.20775	13.36 - 13.41	156.52475 - 156.52525	1645.5 - 1646.5	4500 - 5150	22.01 - 23.12
6.215 - 6.218	16.42 - 16.423	156.7 - 156.9	1660 - 1710	5350 - 5460	23.6 - 24
6.26775 - 6.26825	16.69475 - 16.69525	162.0125 - 167.17	1718.8 - 1722.2	7250 - 7750	31.2 - 31.8
6.31175 - 6.31225	16.80425 - 16.80475	167.72 - 173.2	2200 - 2300	8025 – 8500	36.43 - 36.5
8.291 - 8.294	25.5 - 25.67	240 - 285	2310 - 2390	9000 - 9200	Abovo 28.6
8.362 - 8.366	37.5 - 38.25	322 - 335.4	2483.5 - 2500	9300 - 9500	Above 38.0

Reference numbers of test equipment used

HL 0521	HL 0604	HL 0768	HL 0769	HL 1424	HL 1425	HL 2254	HL 2387
HL 2432	HL 2697	HL 2883	HL 2909	HL 2952	HL 3123	HL 3286	HL 3351
HL 3352	HL 3616						

Full description is given in Appendix A.



Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions					
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4					
Test mode:	Compliance	Vardiat: DASS				
Date & Time:	11/13/2009 2:25:19 PM	verdict.	FA33			
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC			
Remarks: 6.5 dBi antenna		-				

Plot 7.8.1 Radiated emission measurements from 9 to 150 kHz at the low carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical



Plot 7.8.2 Radiated emission measurements from 9 to 150 kHz at the mid carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical

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ACTV DET: PEAK MEAS DET: PEAK OP AVG MKR 9.8 kHz B0.62 dBµV/m 10 dB/ \$ATN 50 dB VA SB SC FC ACORR START 9.0 kHz RT #JF BW 1.0 kHz #AV0 BW 3 kHz SWP 700 msec



Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions				
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4				
Test mode:	Compliance	Vardiat: DASS			
Date & Time:	11/13/2009 2:25:19 PM	verdict.	FA33		
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC		
Remarks: 6.5 dBi antenna		-	-		

Plot 7.8.3 Radiated emission measurements from 9 to 150 kHz at the high carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical



Plot 7.8.4 Radiated emission measurements from 0.15 to 30 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions				
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4				
Test mode:	Compliance	Vardiat: DASS			
Date & Time:	11/13/2009 2:25:19 PM	verdict.	FA33		
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC		
Remarks: 6.5 dBi antenna		-	-		

Plot 7.8.5 Radiated emission measurements from 0.15 to 30 MHz at the mid carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical



Plot 7.8.6 Radiated emission measurements from 0.15 to 30 MHz at the high carrier frequency

AVO BW 30 kHz

STOP 30.00 MHz SWP 2.49 sec

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical

START 150 kHz RL #JF BW 9.0 kHz



RL.





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vordict	DASS
Date & Time:	11/13/2009 2:25:19 PM	verdict.	FA33
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna		-	-

Plot 7.8.7 Radiated emission measurements from 30 to 1000 MHz at the low carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal

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Plot 7.8.8 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal

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Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vordict	DASS
Date & Time:	11/13/2009 2:25:19 PM	verdict.	FA33
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna		-	

Plot 7.8.9 Radiated emission measurements from 30 to 1000 MHz at the high carrier frequency



Plot 7.8.10 Radiated emission measurements from 1000 to 2900 MHz at the low carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal



Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat	DASS
Date & Time:	11/13/2009 2:25:19 PM	verdict.	FA33
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna			

Plot 7.8.11 Radiated emission measurements from 1000 to 2900 MHz at the mid carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal

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Plot 7.8.12 Radiated emission measurements from 1000 to 2900 MHz at the high carrier frequency

TEST SITE:	Anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal

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Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vordict	DASS
Date & Time:	11/13/2009 2:25:19 PM	veruict.	FA33
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna			

Plot 7.8.13 Radiated emission measurements from 2900 to 8000 MHz at the low carrier frequency



Plot 7.8.14 Radiated emission measurements from 2900 to 8000 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS	
Date & Time:	11/13/2009 2:25:19 PM	verdict.	FA33
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna		-	

Plot 7.8.15 Radiated emission measurements from 2900 to 8000 MHz at the mid carrier frequency



Plot 7.8.16 Radiated emission measurements from 2900 to 8000 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/13/2009 2:25:19 PM		
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna		-	

Plot 7.8.17 Radiated emission measurements from 2900 to 8000 MHz at the high carrier frequency



Plot 7.8.18 Radiated emission measurements from 2900 to 8000 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/13/2009 2:25:19 PM		
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna			

Plot 7.8.19 Radiated emission measurements from 8000 to 14000 MHz at the low carrier frequency



Plot 7.8.20 Radiated emission measurements from 8000 to 14000 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/13/2009 2:25:19 PM		
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna		-	

Plot 7.8.21 Radiated emission measurements from 8000 to 14000 MHz at the mid carrier frequency



Plot 7.8.22 Radiated emission measurements from 8000 to 14000 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/13/2009 2:25:19 PM		
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna		-	

Plot 7.8.23 Radiated emission measurements from 8000 to 14000 MHz at the high carrier frequency



Plot 7.8.24 Radiated emission measurements from 8000 to 14000 MHz at the high carrier frequency




Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS	
Date & Time:	11/13/2009 2:25:19 PM	veruict.	FA33
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna			

Plot 7.8.25 Radiated emission measurements from 14000 to 18000 MHz at the low carrier frequency



Plot 7.8.26 Radiated emission measurements from 14000 to 18000 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS	
Date & Time:	11/13/2009 2:25:19 PM	veruict.	FA33
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna			

Plot 7.8.27 Radiated emission measurements from 14000 to 18000 MHz at the mid carrier frequency



Plot 7.8.28 Radiated emission measurements from 14000 to 18000 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS	
Date & Time:	11/13/2009 2:25:19 PM	veruict.	FA33
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna			

Plot 7.8.29 Radiated emission measurements from 14000 to 18000 MHz at the high carrier frequency



Plot 7.8.30 Radiated emission measurements from 14000 to 18000 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS	
Date & Time:	11/13/2009 2:25:19 PM	verdict.	FA33
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna			

Plot 7.8.31 Radiated emission measurements from 18000 to 26500 MHz at the low carrier frequency



Plot 7.8.32 Radiated emission measurements from 18000 to 26500 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vordict	DASS
Date & Time:	11/13/2009 2:25:19 PM	verdict.	FA33
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna			

Plot 7.8.33 Radiated emission measurements from 18000 to 26500 MHz at the high carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS	
Date & Time:	11/13/2009 2:25:19 PM	veruict.	FA33
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna			

Plot 7.8.34 Radiated emission measurements from 26500 to 40000 MHz at the low carrier frequency



Plot 7.8.35 Radiated emission measurements from 26500 to 40000 MHz at the low carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS	
Date & Time:	11/13/2009 2:25:19 PM	veruict.	FA33
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna			

Plot 7.8.36 Radiated emission measurements from 26500 to 40000 MHz at the mid carrier frequency



Plot 7.8.37 Radiated emission measurements from 26500 to 40000 MHz at the mid carrier frequency





Test specification:	FCC section 15.407(b)(2), Unwanted radiated emissions		
Test procedure:	Public notice DA 00-705 / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Vardiat: DASS	
Date & Time:	11/13/2009 2:25:19 PM	veruict.	FA33
Temperature: 26 °C	Air Pressure: 1015 hPa	Relative Humidity: 45 %	Power Supply: 120 VAC
Remarks: 6.5 dBi antenna			

Plot 7.8.38 Radiated emission measurements from 26500 to 40000 MHz at the high carrier frequency



Plot 7.8.39 Radiated emission measurements from 26500 to 40000 MHz at the high carrier frequency

