FCC Test Report

Product Name	HD-10	
Model No	HD-10	
FCC ID.	PYAHD-10	

Applicant	Microsoft Mobile Oy
Address	Keilalahdentie 4 02150 Espoo Finland

Date of Receipt	Jun. 06, 2014
Issue Date	Jul. 04 , 2014
Report No.	1460214R-RFUSP25V00
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

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Test Report

Issue Date: Jul. 04, 2014 Report No.: 1460214R-RFUSP25V00



Product Name	HD-10	
Applicant	Microsoft Mobile Oy	
Address	Keilalahdentie 4 02150 Espoo Finland	
Manufacturer	Foxconn Interconnection Technology Co,LT	
Model No.	HD-10	
FCC ID.	PYAHD-10	
EUT Rated Voltage	DC 5V	
EUT Test Voltage	DC 5V(Power by USB)	
Trade Name	Microsoft	
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2014	
	ANSI C63.10: 2009, KDB 558074 D01 DTS Meas Guidance v03r02	
Test Result	Complied	

Documented By :

:

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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	HD-10	
Trade Name	Microsoft	
Model No.	HD-10	
FCC ID.	PYAHD-10	
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW, 2422-2452MHz for 802.11n-40BW	
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7	
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 300Mbps	
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK)	
	802.11g/n:OFDM (BPSK, QPSK, 16QAM, 64QAM)	
Antenna Type	Printed on PCB Antenna	
Antenna Gain	Refer to the table "Antenna List"	
Channel Control	Auto	
Contain Module	Alpha / WUS-N15	

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Alpha	N/A	Printed on PCB	0.79dBi for 2.4 GHz

Note:

1. The antenna of EUT is conform to FCC 15.203.

802.11b/g/n-20MHz Center Frequency of Each Channel:

•		· ·					
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel 05:	2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel 09:	2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		
802.11n-40M	Hz Center Fre	equency of Ead	ch Channel:				
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 03:	2422 MHz	Channel 04:	2427 MHz	Channel 05:	2432 MHz	Channel 06:	2437 MHz
Channel 07:	2442 MHz	Channel 08:	2447 MHz	Channel 09:	2452 MHz		

- 1. The EUT is a HD-10 with a built-in 2.4GHz WLAN transceiver.
- 2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
- 3. At result of pretests, module supports dual-channel transmission, only the worst case is shown in the report. (802.11b is chain A \$\circ 802.11g is chain A \$\circ 802.11n is chain A+ chain B)
- 4. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1Mbps \$\sigma 802.11g is 6Mbps \$\sigma 802.11n(20M-BW) is 14.4Mbps and \$\sigma 802.11n(40M-BW) is 30Mbps)
- 5. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.

Test Mode:	Mode 1: Transmit (802.11b 1Mbps)
	Mode 2: Transmit (802.11g 6Mbps)
	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW)
Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW)	

1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Test Fixture	Foxconn	RTD1261	N/A	N/A
2	Notebook PC	DELL	РРТ	N/A	Non-Shielded, 0.8m
3	Monitor	DELL	ST2320L	N/A	Non-Shielded, 1.8m

Signal Cable Type		Signal cable Description
А	Signal Cable	Non-Shielded, 0.3m
В	RS-232 to USB Cable	Shielded, 1.8m
С	USB Cable	Shielded, 1.0m, with one ferrite corebonded.
D	HDMI Cable	Shielded, 1.0m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4
- (2) Execute software "Tera Term V.4.67" on the Notebook PC.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Press "OK" to start the continuous Transmit.
- (5) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from

QuieTek Corporation's Web Site: <u>http://www.quietek.com/tw/ctg/cts/accreditations.htm</u> The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site: <u>http://www.quietek.com/</u>

Site Description:	File on
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	FCC Engineering Laboratory
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	Columbia, MD 21046
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	E-Mail : <u>service@quietek.com</u>

FCC Accreditation Number: TW1014

2. Conducted Emission

2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
Х	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2013	
Х	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2014	Peripherals
Х	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2014	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar, 2014	EUT
Х	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2014	
	No.1 Shielded Room				

Note:

- 1. All equipments are calibrated every one year.
- 2. The test instruments marked by "X" are used to measure the final test results.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBµV) Limit					
Frequency	Limits				
MHz	QP	AVG			
0.15 - 0.50	66-56	56-46			
0.50-5.0	56	46			
5.0 - 30	60	50			

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2009 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product	:	HD-10
Test Item	:	Conducted Emission Test
Power Line	:	Line 1
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW) (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV	dB	dBµV
Line 1					
Quasi-Peak					
0.318	9.744	25.620	35.364	-25.836	61.200
0.740	9.763	19.590	29.353	-26.647	56.000
1.330	9.800	15.790	25.590	-30.410	56.000
3.556	9.860	24.140	34.000	-22.000	56.000
4.201	9.860	23.490	33.350	-22.650	56.000
4.849	9.870	22.910	32.780	-23.220	56.000
Average					
0.318	9.744	18.590	28.334	-22.866	51.200
0.740	9.763	9.740	19.503	-26.497	46.000
1.330	9.800	9.790	19.590	-26.410	46.000
3.556	9.860	20.360	30.220	-15.780	46.000
4.201	9.860	15.260	25.120	-20.880	46.000
4.849	9.870	19.270	29.140	-16.860	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.

2. "means the worst emission level.

3. Measurement Level = Reading Level + Correct Factor

Product	: HD-10							
Test Item	: Conducted Emission Test							
Power Line	: Line 2							
Test Mode	: Mode 4: T	Fransmit (802.11	n MCS8 30Mbps 401	M-BW) (2437MH	z)			
Frequency	Correct	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
MHz	dB	dBµV	dBµV	dB	dBµV			
Line 2								
Quasi-Peak								
0.310	9.744	25.050	34.794	-26.635	61.429			
0.869	9.779	17.880	27.659	-28.341	56.000			
1.716	9.828	16.550	26.378	-29.622	56.000			
2.193	9.849	15.760	25.609	-30.391	56.000			
4.205	9.860	23.810	33.670	-22.330	56.000			
8.404	9.930	18.180	28.110	-31.890	60.000			
Average								
0.310	9.744	16.660	26.404	-25.025	51.429			
0.869	9.779	9.520	19.299	-26.701	46.000			
1.716	9.828	11.250	21.078	-24.922	46.000			
2.193	9.849	5.600	15.449	-30.551	46.000			
4.205	9.860	19.430	29.290	-16.710	46.000			
8.404	9.930	7.100	17.030	-32.970	50.000			

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. "means the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor

3. Peak Power Output

3.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Х	Power Meter	Anritsu	ML2495A/6K00003357	May, 2014
Х	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2014
Note:				
1.	All equipments are	calibrated with trac	eable calibrations. Each calibra	ation is traceable to the
	national or internati	onal standards.		

2. The test instruments marked with "X" are used to measure the final test results.

3.2. Test Setup



3.3. Limits

The maximum peak power shall be less 1 Watt.

3.4. Test Procedure

The EUT was tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using KDB 558074 section 9.1.2 PKPM1 Peak power meter method.

3.5. Uncertainty

 \pm 1.27 dB

3.6. Test Result of Peak Power Output

Product	:	HD-10
Test Item	:	Peak Power Output Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)

Chain A

Channel Na Frequency		Average Power For different Data Rate (Mbps)				Peak Power	Required	Decult
Channel No	(MHz)	1	2	5.5	11	1	Limit	Result
		Measurement Level (dBm)						
01	2412	17.20				19.54	<30dBm	Pass
06	2437	17.21	17.13	17.06	16.92	20.06	<30dBm	Pass
11	2462	17.08				19.45	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain B

Channel Na Frequency		Average Power For different Data Rate (Mbps)				Peak Power	Required	Pogult
	(MHz)	1	2	5.5	11	1	Limit	Kesuit
			Measur	ement Lev	vel (dBm)			
01	2412	17.16				19.42	<30dBm	Pass
06	2437	17.14	16.94	16.81	16.73	19.81	<30dBm	Pass
11	2462	16.51				18.79	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product	:	HD-10
Test Item	:	Peak Power Output Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)

Ch	ain A										-	
	Frequency		Average PowerPeakFor different Data Rate (Mbps)Power									
Channel No	(MHz)	6	9	12	18	24	36	48	54	6	Limit	Result
			Measurement Level (dBm)									
01	2412	15.56								24.53	<30dBm	Pass
06	2437	15.57	15.49	15.46	15.36	15.29	15.22	15.17	15.13	24.48	<30dBm	Pass
11	2462	15.37								24.19	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain B

			Б	lor diffe	Average	e Power	r Mhn	.)		Peak		
Channel No	Frequency (MHz)	6	<u>г</u> 9	12	18	24	36	48	54	6	Required Limit	Result
			Measurement Level (dBm)									
01	2412	15.04								24.21	<30dBm	Pass
06	2437	15.34	15.28	15.21	15.16	15.14	15.08	15.07	15.04	24.33	<30dBm	Pass
11	2462	15.24								24.12	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product	:	HD-10
Test Item	:	Peak Power Output Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW)

Chain A

			Average Power								
	Fraguanov		For different Data Rate (Mbps)								
Channel No	(MHz)	14.4	28.9	43.3	57.8	86.7	115.6	130	144.4	14.4	
			Measurement Level (dBm)								
01	2412	9.96	-	-	-	-	-	-		19.74	
06	2437	10.29	10.21	10.18	10.16	10.12	10.11	10.09	10.07	20.18	
11	2462	10.36								20.19	

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain B

			Average Power								
	Fraguanay		F	or diffe	erent Da	ata Rate	e (Mbps	5)		Power	
Channel No	(MHz)	14.4	28.9	43.3	57.8	86.7	115.6	130	144.4	14.4	
			Measurement Level (dBm)								
01	2412	10.71	-		1		1			19.31	
06	2437	10.31	10.29	10.24	10.16	10.08	9.94	9.89	9.83	19.18	
11	2462	10.07								19.01	

Note: Peak Power Output Value =Reading value on power meter + cable loss

CHAIN A+B

Channel	Frequency	Data Rata	Chain A Power	Chain B Power	Chain A+B Power	Limit	Result
	(MHz)	(Mbps)	(dBm)	(dBm)	(dBm)	(dBm)	
01	2412	14.4	19.74	19.31	22.54	<30dBm	Pass
06	2437	14.4	20.18	19.18	22.72	<30dBm	Pass
11	2462	14.4	20.19	19.01	22.65	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+ Chain B (mW))

Product	:	HD-10
Test Item	:	Peak Power Output Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW)

Chain A												
			Average Power									
	Frequency		For different Data Rate (Mbps)									
Channel No	(MHz)	30	60	90	120	180	240	270	300	30		
			Measurement Level (dBm)									
03	2422	9.93								19.34		
06	2437	9.95	9.88	9.81	9.72	9.63	9.57	9.46	9.39	19.30		
09	2452	9.67								19.04		

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain B

			Average Power								
	Fraguanov		For different Data Rate (Mbps)								
Channel No	(MHz)	30	60	90	120	180	240	270	300	30	
	Measurement Level (dBm)										
03	2422	10.51								19.41	
06	2437	9.86	9.71	9.64	9.53	9.44	9.34	9.31	9.27	18.86	
09	2452	9.58								18.36	

Note: Peak Power Output Value =Reading value on power meter + cable loss

CHAIN A+B

Frequency	Data Rata	Chain A Power	Chain B Power	Chain A+B Power	Limit	Result
(MHz)	(Mbps)	(dBm)	(dBm)	(dBm)	(dBm)	
2422	30	19.34	19.41	22.39	<30dBm	Pass
2437	30	19.30	18.86	22.10	<30dBm	Pass
2452	30	19.04	18.36	21.72	<30dBm	Pass
	Frequency (MHz) 2422 2437 2452	Frequency Data Rata (MHz) (Mbps) 2422 30 2437 30 2452 30	Frequency Data Rata Chain A Power (MHz) (Mbps) (dBm) 2422 30 19.34 2437 30 19.30 2452 30 19.04	Frequency Data Rata Chain A Power Chain B Power (MHz) (Mbps) (dBm) (dBm) 2422 30 19.34 19.41 2437 30 19.30 18.86 2452 30 19.04 18.36	Frequency Data Rata Chain A Power Chain B Power Chain A Power (MHz) (Mbps) (dBm) (dBm) (dBm) 2422 30 19.34 19.41 22.39 2437 30 19.30 18.86 22.10 2452 30 19.04 18.36 21.72	FrequencyData RataChain A PowerChain B PowerChain A+B PowerLimit(MHz)(Mbps)(dBm)(dBm)(dBm)(dBm)24223019.3419.4122.39<30dBm

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+ Chain B (mW))

4. Radiated Emission

4.1. Test Equipment

The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 3	Х	Loop Antenna	Teseq	HLA6120 / 26739	Jul., 2014
	Х	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2013
	Х	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2013
	Х	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2014
	Х	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2013
	Х	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2014
	Х	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2013
	Х	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2014
	Х	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	Х	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2. The test instruments marked with "X" are used to measure the final test results.

4.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits								
Frequency MHz	Field strength	Measurement distance						
	(microvolts/meter)	(meter)						
0.009-0.490	2400/F(kHz)	300						
0.490-1.705	24000/F(kHz)	30						
1.705-30	30	30						
30-88	100	3						
88-216	150	3						
216-960	200	3						
Above 960	500	3						

Remarks: E field strength $(dB\mu V/m) = 20 \log E$ field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2009 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2009 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement. The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna. The worst radiated emission is measured in the Open Area Test Site on the Final Measurement. The frequency range from 9kHz to 10th harmonics is checked.

4.5. Uncertainty

- ± 3.9 dB above 1GHz
- ± 3.8 dB below 1GHz

4.6. Test Result of Radiated Emission

Product	:	HD-10
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$
Horizontal					
Peak Detector:					
4824.000	2.428	55.066	57.495	-16.505	74.000
7236.000	9.177	41.140	50.317	-23.683	74.000
9648.000	10.019	40.130	50.150	-23.850	74.000
Average Detector:					
4824.000	2.428	50.376	52.805	-1.195	54.000
Vertical					
Peak Detector:					
4824.000	2.836	51.198	54.035	-19.965	74.000
7236.000	9.676	40.970	50.646	-23.354	74.000
9648.000	10.556	39.982	50.539	-23.461	74.000
Average Detector:					
4824.000	2.836	46.578	49.415	-4.585	54.000

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	: HD-10						
Test Item	: Harmonic Radiated Emission Data						
Test Site	: No.3 OATS						
Test Mode	st Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)						
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$		
Horizontal							
Peak Detector:							
4874.000	2.076	53.420	55.497	-18.503	74.000		
7311.000	9.512	43.930	53.442	-20.558	74.000		
9748.000	9.630	39.200	48.830	-25.170	74.000		
Average Detector:							
4874.000	2.076	50.650	52.727	-1.273	54.000		
Vertical							
Peak Detector:							
4874.000	2.532	51.470	54.002	-19.998	74.000		
7311.000	10.089	45.090	55.179	-18.821	74.000		
9748.000	10.266	39.330	49.597	-24.403	74.000		
Average Detector:							
4874.000	2.532	48.580	51.112	-2.888	54.000		
7311.000	10.089	37.930	48.019	-5.981	54.000		

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	: HD-10						
Test Item	: Harmonic Radiated Emission Data						
Test Site	: No.3 OATS						
Test Mode	: Mode 1:	Transmit (802.11	b 1Mbps) (2462 MH	z)			
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$		
Horizontal							
Peak Detector:							
4924.000	2.191	45.050	47.241	-26.759	74.000		
7386.000	10.373	39.140	49.514	-24.486	74.000		
9848.000	9.964	39.670	49.634	-24.366	74.000		
Avorago Dotostori							
Average Detector.							
Vertical							
Peak Detector:							
4924.000	2.805	42.150	44.955	-29.045	74.000		
7386.000	11.180	41.110	52.290	-21.710	74.000		
9848.000	10.801	40.140	50.941	-23.059	74.000		

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	: HD-10						
Test Item	: Harmonic Radiated Emission Data						
Test Site	: No.3 OA	ATS					
Test Mode	: Mode 2:	Transmit (802.11	lg 6Mbps) (2412MHz	2)			
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m		
Horizontal							
Peak Detector:							
4824.000	2.428	56.700	59.129	-14.871	74.000		
7236.000	9.177	46.270	55.447	-18.553	74.000		
9648.000	10.019	39.750	49.770	-24.230	74.000		
Average Detector:							
4824.000	2.428	42.550	44.979	-9.021	54.000		
7236.000	9.177	30.960	40.137	-13.863	54.000		
Vertical							
Peak Detector:							
4824.000	2.836	53.510	56.347	-17.653	74.000		
7236.000	9.676	47.180	56.856	-17.144	74.000		
9648.000	10.556	40.720	51.277	-22.723	74.000		
Average Detector:							
4824.000	2.836	39.590	42.427	-11.573	54.000		
7236.000	9.676	31.860	41.536	-12.464	54.000		

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	: HD-10						
Test Item	: Harmonic Radiated Emission Data						
Test Site	ite : No.3 OATS						
Test Mode	Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)						
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$		
Horizontal							
Peak Detector:							
4874.000	2.076	50.130	52.207	-21.793	74.000		
7311.000	9.512	44.930	54.442	-19.558	74.000		
9748.000	9.630	39.390	49.020	-24.980	74.000		
Average Detector:							
7311.000	9.512	29.160	38.672	-15.328	54.000		
Peak Detector:							
4874.000	2.532	47.660	50.192	-23.808	74.000		
7311.000	10.089	45.910	55.999	-18.001	74.000		
9748.000	10.266	39.940	50.207	-23.793	74.000		
Average Detector:							
7311.000	10.089	30.480	40.569	-13.431	54.000		

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	: HD-10						
Test Item	: Harmonic Radiated Emission Data						
Test Site	: No.3 OA	ATS					
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)							
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$		
Horizontal							
Peak Detector:							
4924.000	2.191	44.180	46.371	-27.629	74.000		
7386.000	10.373	40.570	50.944	-23.056	74.000		
9848.000	9.964	40.220	50.184	-23.816	74.000		
Average Detector:							
Vertical							
Peak Detector:							
4924.000	2.191	43.600	45.791	-28.209	74.000		
7386.000	11.180	42.370	53.550	-20.450	74.000		
9848.000	10.801	41.890	52.691	-21.309	74.000		

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- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	: HD-10						
Test Item	: Harmonic Radiated Emission Data						
Test Site	: No.3 OATS						
Test Mode	: Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW)(2412MHz)						
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$		
Horizontal							
Peak Detector:							
4824.000	2.428	51.240	53.669	-20.331	74.000		
7236.000	9.177	40.400	49.577	-24.423	74.000		
9648.000	10.019	39.950	49.970	-24.030	74.000		
Average Detector:							
Vertical							
Peak Detector:							
4824.000	2.836	48.110	50.947	-23.053	74.000		
7236.000	9.676	40.990	50.666	-23.334	74.000		
9648.000	10.556	39.950	50.507	-23.493	74.000		

Note:

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- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	HD-10
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$
Horizontal					
Peak Detector:					
4874.000	2.076	49.720	51.797	-22.203	74.000
7311.000	9.512	39.480	48.992	-25.008	74.000
9748.000	9.630	39.760	49.390	-24.610	74.000
Average Detector:					
Vertical					
Peak Detector:					
4874.000	2.532	45.890	48.422	-25.578	74.000
7311.000	10.089	40.570	50.659	-23.341	74.000
9748.000	10.266	39.910	50.177	-23.823	74.000

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	HD-10
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW) (2462 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector:					
4924.000	2.191	47.740	49.931	-24.069	74.000
7386.000	10.373	39.750	50.124	-23.876	74.000
9848.000	9.964	40.380	50.344	-23.656	74.000
Average Detector:					
Vertical					
Peak Detector:					
4924.000	2.805	45.950	48.755	-25.245	74.000
7386.000	11.180	39.390	50.570	-23.430	74.000
9848.000	10.801	39.930	50.731	-23.269	74.000

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- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	HD-10
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW)(2422MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV/m	dB	$dB\mu V/m$
Horizontal					
Peak Detector:					
4844.000	2.280	47.640	49.921	-24.079	74.000
7266.000	9.106	39.950	49.056	-24.944	74.000
9688.000	9.663	39.570	49.233	-24.767	74.000
Average Detector:					
Vertical					
Peak Detector:					
4844.000	2.707	46.140	48.848	-25.152	74.000
7266.000	9.626	40.460	50.086	-23.914	74.000
9688.000	10.284	39.640	49.924	-24.076	74.000

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product :	HD-10						
Test Item :	Harmonic Radiated Emission Data						
Test Site :	No.3 OATS						
Test Mode :	Mode 4: Transmi	t (802.11n MCS8	30Mbps 40M-BW) (2437 MHz)			
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	dBµV/m	dB	dBµV/m		
Horizontal							
Peak Detector:							
4874.000	2.076	45.410	47.487	-26.513	74.000		
7311.000	9.512	39.650	49.162	-24.838	74.000		
9748.000	9.630	39.400	49.030	-24.970	74.000		
Average Detecto	r:						
Vertical							
Peak Detector:							
4874.000	2.532	44.290	46.822	-27.178	74.000		
7311.000	10.089	40.200	50.289	-23.711	74.000		
9748.000	10.266	39.730	49.997	-24.003	74.000		

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	: HD-10						
Test Item	: Harmonic Radiated Emission Data						
Test Site	: No.3 OATS						
Test Mode	: Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW)(2452 MHz)						
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	dBµV/m	dB	$dB\mu V/m$		
Horizontal							
Peak Detector:							
4904.000	2.000	45.300	47.301	-26.699	74.000		
7356.000	10.308	39.890	50.198	-23.802	74.000		
9808.000	9.850	39.580	49.430	-24.570	74.000		
Average Detector:							
Vertical							
Peak Detector:							
4904.000	2.513	43.200	45.714	-28.286	74.000		
7356.000	11.022	39.120	50.142	-23.858	74.000		
9808.000	10.512	40.130	50.642	-23.358	74.000		

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

	Product	: HD-10						
	Test Item	: General Radiated Emission Data						
	Test Site	: No.3 OATS						
	Test Mode	: Mode 1	: Transmit (802.11	b 1Mbps)(2437 MHz	z)			
	Frequency	Correct	Reading	Measurement	Margin	Limit		
		Factor	Level	Level				
_	MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$		
	Horizontal							
	95.960	-10.326	42.885	32.559	-10.941	43.500		
	216.240	-10.271	46.600	36.329	-9.671	46.000		
	371.440	0.860	38.555	39.415	-6.585	46.000		
	507.240	2.529	37.534	40.063	-5.937	46.000		
	699.300	2.956	40.387	43.343	-2.657	46.000		
	996.120	8.107	35.819	43.926	-10.074	54.000		
	Vertical							
	74.620	-7.726	43.843	36.117	-3.883	40.000		
	179.380	-0.824	36.004	35.180	-8.320	43.500		
	303.540	-3.998	32.465	28.467	-17.533	46.000		
	507.240	0.429	35.550	35.979	-10.021	46.000		
	749.740	2.023	33.365	35.388	-10.612	46.000		
	951.500	3.083	31.625	34.708	-11.292	46.000		

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.

Product	: HD-10						
Test Item	: General Radiated Emission Data						
Test Site	: No.3 OATS						
Test Mode	Test Mode · Mode 2· Transmit (802 11g 6Mbps)(2437 MHz)						
			0 - 1-)(,			
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$		
Horizontal							
191.020	-9.679	46.621	36.942	-6.558	43.500		
371.440	0.860	36.886	37.746	-8.254	46.000		
528.580	3.074	34.429	37.503	-8.497	46.000		
666.320	1.879	34.707	36.586	-9.414	46.000		
769.140	5.118	32.403	37.521	-8.479	46.000		
951.500	6.993	28.330	35.323	-10.677	46.000		
Vertical							
167.740	-4.506	39.969	35.463	-8.037	43.500		
322.940	-3.616	32.862	29.247	-16.753	46.000		
507.240	0.429	35.449	35.878	-10.122	46.000		
664.380	-0.978	37.426	36.448	-9.552	46.000		
769.140	2.558	27.095	29.653	-16.347	46.000		
967.020	3.889	30.016	33.905	-20.095	54.000		

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.

Product	: HD-10						
Test Item	: General Radiated Emission Data						
Test Site	: No.3 OATS						
Test Mode	: Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW)(2437 MHz)						
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$		
Horizontal							
167.740	-9.816	46.976	37.160	-6.340	43.500		
301.600	-4.465	39.622	35.157	-10.843	46.000		
468.440	3.544	32.293	35.837	-10.163	46.000		
608.120	3.925	32.257	36.182	-9.818	46.000		
757.500	5.107	35.688	40.795	-5.205	46.000		
955.380	6.596	28.943	35.539	-10.461	46.000		
Vertical							
191.020	-5.629	45.070	39.441	-4.059	43.500		
348.160	-0.890	39.472	38.582	-7.418	46.000		
507.240	0.429	41.583	42.012	-3.988	46.000		
664.380	-0.978	35.262	34.284	-11.716	46.000		
811.820	2.851	26.711	29.562	-16.438	46.000		
949.560	3.156	29.069	32.225	-13.775	46.000		

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.

Product	: HD-10						
Test Item	: General Radiated Emission Data						
Test Site	: No.3 OATS						
Test Mode	: Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW)(2437 MHz)						
		× ×	1		,		
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m		
Horizontal							
169.680	-9.726	45.942	36.216	-7.284	43.500		
276.380	-6.526	40.060	33.534	-12.466	46.000		
396.660	0.771	35.863	36.634	-9.366	46.000		
608.120	3.925	28.998	32.923	-13.077	46.000		
747.800	3.915	29.860	33.775	-12.225	46.000		
912.700	6.450	26.609	33.059	-12.941	46.000		
Vertical							
191.020	-5.629	42.281	36.652	-6.848	43.500		
328.760	-2.407	31.832	29.425	-16.575	46.000		
503.360	-0.086	32.364	32.278	-13.722	46.000		
666.320	-0.951	38.621	37.670	-8.330	46.000		
846.740	1.855	24.155	26.010	-19.990	46.000		
959.260	3.100	27.707	30.807	-15.193	46.000		

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.
5. **RF** antenna conducted test

5.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2014
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2014
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2. The test instruments marked with "X" are used to measure the final test results.

5.2. Test Setup

RF antenna Conducted Measurement:



5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4. Test Procedure

The EUT was tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

5.5. Uncertainty

The measurement uncertainty Conducted is defined as \pm 1.27dB

5.6. Test Result of RF antenna conducted test

Product	:	HD-10
Test Item	:	RF antenna conducted test
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)

Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)



Product	:	HD-10
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)

Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)



Product	:	HD-10
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW)

Channel 01 (2412MHz) - Chain A



Channel 01 (2412MHz) - Chain B



Channel 06 (2437MHz) - Chain A



Channel 06 (2437MHz) - Chain B



Channel 11 (2462MHz) - Chain A



Channel 11 (2462MHz) - Chain B



Product	:	HD-10
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	No.3 OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW)

Channel 03 (2422MHz) – Chain A



Channel 03 (2422MHz) – Chain B



Channel 06 (2437MHz) – Chain A



Channel 06 (2437MHz) – Chain B



Note: The above test pattern is synthesized by multiple of the frequency range.3

Channel 09 (2452MHz) – Chain A



Channel 09 (2452MHz) – Chain B



Note: The above test pattern is synthesized by multiple of the frequency range.

6. Band Edge

6.1. Test Equipment

RF Radiated Measurement:

The following test equipments are used during the band edge tests:

Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
\square Site # 3	Bilog Antenna S		Schaffner Chase	CBL6112B/2673	Sep., 2013
	Х	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2013
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2014
	X Pre-Amplifier		Agilent	8447D/2944A09549	Sep., 2013
	X Spectrum Analyzer		Agilent	E4407B / US39440758	May, 2014
		Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2013
	Х	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2014
	X Controller		QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	Х	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note: 1. All instruments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

6.2. Test Setup

RF Radiated Measurement:



6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2009 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2009 on radiated measurement.

6.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

6.6. **Test Result of Band Edge**

Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)

RF Radiated Measurement (Horizontal):

Channel Ma	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	(dBµV/m)	Result
01 (Peak)	2387.800	33.737	25.224	58.961	74.00	54.00	Pass
01 (Peak)	2390.000	33.739	25.059	58.798	74.00	54.00	Pass
01 (Peak)	2400.000	33.752	32.245	65.996			
01 (Peak)	2413.200	33.775	70.209	103.984			
01 (Average)	2387.000	33.736	13.020	46.756	74.00	54.00	Pass
01 (Average)	2390.000	33.739	12.574	46.313	74.00	54.00	Pass
01 (Average)	2400.000	33.752	26.040	59.791			
01 (Average)	2411.400	33.771	66.389	100.159			

Figure Channel 01:



Figure Channel 01:

Horizontal (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "*", means this data is the worst emission level.
- 1. 2. 3.
- 4. 5.
- Measurement Level = Reading Level + Correct Factor. The average measurement was not performed when the peak measured data under the limit of average 6. detection.

Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)

	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	(dBµV/m)	(dBµV/m)	Result
01 (Peak)	2387.200	32.287	24.267	56.553	74.00	54.00	Pass
01 (Peak)	2390.000	32.267	23.380	55.647	74.00	54.00	Pass
01 (Peak)	2400.000	32.241	28.759	61.000			
01 (Peak)	2413.000	32.254	65.265	97.518			
01 (Average)	2386.600	32.291	12.473	44.764	74.00	54.00	Pass
01 (Average)	2390.000	32.267	12.277	44.544	74.00	54.00	Pass
01 (Average)	2400.000	32.241	21.444	53.685			
01 (Average)	2411.400	32.247	61.450	93.696			





Vertical (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
11 (Peak)	2463.100	33.895	71.426	105.321			
11 (Peak)	2483.500	33.951	24.507	58.457	74.00	54.00	Pass
11 (Average)	2461.300	33.890	67.718	101.609			
11 (Average)	2483.500	33.951	14.275	48.225	74.00	54.00	Pass

Figure Channel 11:

Horizontal (Peak)





Horizontal (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)

	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
11 (Peak)	2462.900	32.485	64.212	96.697			
11 (Peak)	2483.500	32.586	23.975	56.560	74.00	54.00	Pass
11 (Peak)	2491.500	32.624	24.314	56.938	74.00	54.00	Pass
11 (Average)	2462.700	32.484	60.382	92.866			
11 (Average)	2483.500	32.586	12.842	45.427	74.00	54.00	Pass

Figure Channel 11:

Vertical (Peak)



Figure Channel 11:

Vertical (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Average Limit (dBµV/m)	Result
01 (Peak)	2390.000	33.739	26.404	60.143	74.00	54.00	Pass
01 (Peak)	2400.000	33.752	46.107	79.858			
01 (Peak)	2415.000	33.779	69.873	103.652			
01 (Average)	2390.000	33.739	14.184	47.923	74.00	54.00	Pass
01 (Average)	2400.000	33.752	23.741	57.492			
01 (Average)	2416.400	33.783	61.029	94.811			

Figure Channel 01:

Horizontal (Peak)





Horizontal (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)

	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	(dBµV/m)	Result
01 (Peak)	2385.200	32.301	23.723	56.023	74.00	54.00	Pass
01 (Peak)	2390.000	32.267	23.457	55.724	74.00	54.00	Pass
01 (Peak)	2400.000	32.241	39.768	72.009			
01 (Peak)	2415.000	32.263	63.763	96.025			
01 (Average)	2390.000	32.267	12.867	45.134	74.00	54.00	Pass
01 (Average)	2400.000	32.241	19.070	51.311			
01 (Average)	2416.400	32.269	54.908	87.177			

Figure Channel 01:

Vertical (Peak)





Vertical (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Average Limit (dBµV/m)	Result
11 (Peak)	2458.900	33.885	70.655	104.540			
11 (Peak)	2483.500	33.951	26.011	59.961	74.00	54.00	Pass
11 (Peak)	2485.300	33.954	26.772	60.727	74.00	54.00	Pass
11 (Average)	2459.500	33.886	61.619	95.505			
11 (Average)	2483.500	33.951	14.075	48.025	74.00	54.00	Pass



Horizontal (Peak)





Horizontal (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)

	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	(dBµV/m)	Result
11 (Peak)	2468.300	32.511	63.008	95.519			
11 (Peak)	2483.500	32.586	23.150	55.735	74.00	54.00	Pass
11 (Peak)	2489.300	32.612	24.092	56.705	74.00	54.00	Pass
11 (Average)	2467.300	32.505	54.076	86.582			
11 (Average)	2483.500	32.586	12.757	45.342	74.00	54.00	Pass

Figure Channel 11:

Vertical (Peak)





- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW)

RF Radiated Measurement (Horizontal):

	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	(dBµV/m)	$(dB\mu V/m)$	Result
01 (Peak)	2387.400	33.737	24.661	58.398	74.00	54.00	Pass
01 (Peak)	2390.000	33.739	23.387	57.126	74.00	54.00	Pass
01 (Peak)	2400.000	33.752	42.776	76.527			
01 (Peak)	2406.600	33.762	70.320	104.082			
01 (Average)	2390.000	33.739	12.881	46.620	74.00	54.00	Pass
01 (Average)	2400.000	33.752	20.995	54.746			
01 (Average)	2416.000	33.782	59.445	93.226			





Horizontal (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW)

	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
01 (Peak)	2386.400	32.292	23.736	56.028	74.00	54.00	Pass
01 (Peak)	2390.000	32.267	22.839	55.106	74.00	54.00	Pass
01 (Peak)	2400.000	32.241	35.847	68.088			
01 (Peak)	2414.200	32.259	62.865	95.124			
01 (Average)	2390.000	32.267	12.389	44.656	74.00	54.00	Pass
01 (Average)	2400.000	32.241	16.799	49.040			
01 (Average)	2415.600	32.264	52.543	84.808			



Vertical (Peak)





Vertical (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Average Limit (dBµV/m)	Result
01 (Peak)	2456.700	33.879	69.632	103.511			
01 (Peak)	2483.500	33.951	23.038	56.988	74.00	54.00	Pass
01 (Average)	2457.500	33.881	58.485	92.366			
01 (Average)	2483.500	33.951	13.164	47.114	74.00	54.00	Pass

Figure Channel 01:

Horizontal (Peak)





Horizontal (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW)

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Average Limit (dBµV/m)	Result
01 (Peak)	2468.300	32.511	60.473	92.984			
01 (Peak)	2483.500	32.586	23.906	56.491	74.00	54.00	
01 (Average)	2466.100	32.501	50.123	82.623			
01 (Average)	2483.500	32.586	12.381	44.966	74.00	54.00	Pass

Figure Channel 01:

Vertical (Peak)





Vertical (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW)

RF Radiated Measurement (Horizontal):

	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
03 (Peak)	2383.400	33.734	25.203	58.937	74.00	54.00	Pass
03 (Peak)	2390.000	33.739	23.052	56.791	74.00	54.00	Pass
03 (Peak)	2398.600	33.749	34.308	68.057	74.00	54.00	Pass
03 (Peak)	2400.000	33.752	31.408	65.159			
03 (Peak)	2429.800	33.815	66.600	100.414			
03 (Average)	2390.000	33.739	13.480	47.219	74.00	54.00	Pass
03 (Average)	2398.600	33.749	23.572	57.321	74.00	54.00	Pass
03 (Average)	2400.000	33.752	21.053	54.804			
03 (Average)	2431.400	33.818	55.680	89.498			



Horizontal (Peak)





Horizontal (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW)

	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
03 (Peak)	2389.400	32.271	25.501	57.772	74.00	54.00	Pass
03 (Peak)	2390.000	32.267	23.650	55.917	74.00	54.00	Pass
03 (Peak)	2398.600	32.240	28.931	61.171	74.00	54.00	Pass
03 (Peak)	2400.000	32.241	26.899	59.140			
03 (Peak)	2430.000	32.330	59.502	91.832			
03 (Average)	2390.000	32.267	12.412	44.679	74.00	54.00	Pass
03 (Average)	2398.600	32.240	17.666	49.906	74.00	54.00	Pass
03 (Average)	2400.000	32.241	15.669	47.910			
03 (Average)	2431.600	32.337	48.660	80.997			



Vertical (Peak)





Vertical (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Average Limit (dBµV/m)	Result
09 (Peak)	2459.700	33.886	66.005	99.892			
09 (Peak)	2483.500	33.951	24.546	58.496	74.00	54.00	Pass
09 (Peak)	2489.300	33.964	25.566	59.531	74.00	54.00	Pass
09 (Average)	2461.300	33.890	55.092	88.983			
09 (Average)	2483.500	33.951	14.107	48.057	74.00	54.00	Pass

Figure Channel 09:

Horizontal (Peak)





Horizontal (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD-10
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW)

	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult	
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	Result	
09 (Peak)	2462.700	32.484	56.029	88.513				
09 (Peak)	2483.500	32.586	22.691	55.276	74.00	54.00	Pass	
09 (Average)	2461.500	32.477	45.773	78.251				
09 (Average)	2483.500	32.586	12.417	45.002	74.00	54.00	Pass	

Figure Channel 09:

Vertical (Peak)





Vertical (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

7. Occupied Bandwidth

7.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2014
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2014
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

Note:

- 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
- 2. The test instruments marked with "X" are used to measure the final test results.

7.2. Test Setup



7.3. Limits

The minimum bandwidth shall be at least 500 kHz.

7.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2009; tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

7.5. Uncertainty

 \pm 150Hz

7.6. Test Result of Occupied Bandwidth

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412	10200	>500	Pass

Figure Channel 1:

Agilent	Spectrur	n Ana	alyzer - Swe	pt SA								
Cento	er Fre	RF Pq 2	50 Ω 2.41200	AC 0000 GH	z	SEN		Avg Type	ALIGNAUTO : Log-Pwr	11:01:34 A	M Jun 30, 2014 E 1 2 3 4 5 6	Frequency
10 417	PNO: Fast Ing. the form IFGain:Low #Atten: 30 dB Mkr2 2.406 90 GHz -1.58 dBm											
10.00 =			20.00 u		- Mrl	2 	1 Marris	3			0.57 dBm	Center Freq 2.412000000 GHz
-20.0 - -30.0 - -40.0 -			week the	m	la contra			- V.	h hand	man production		Start Freq 2.387000000 GHz
-50.0 🛰 -60.0 — -70.0 —	VIDWAR/P	-		Υ <u></u>							When a we are	Stop Freq 2.437000000 GHz
Cente #Res	er 2.47 BW 1	120 00	0 GHz kHz	×	#VBW	300 kHz	FIINF	TION FUR	Sweep	Span 5 4.80 ms (0.00 MHz 1001 pts)	CF Step 5.000000 MHz Auto Man
1 N 2 N 3 N 4 5 6	N 1 N 1 N 1	f f f		2.412 50 2.406 90 2.417 10	D GHz D GHz D GHz	6.57 dE -1.58 dE -1.33 dE	3m 3m 3m					Freq Offset 0 Hz
7 8 9 10 11 12												
MSG									STATUS	3		L

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437	10200	>500	Pass

Figure Channel 6:

Agiler	nt Spe	ctrur	n An	alyzer - Swe	pt SA								
(X) R Cen	L nter	Fre	RF Pq 2	50 Ω 2.43700	AC 0000 GH	Iz		NSE:INT	Avg Typ	ALIGNAUTO e: Log-Pwr	11:09:22/ TRA/	AM Jun 30, 2014 CE 1 2 3 4 5 6	Frequency
10 d	D (dis		Pol	7 20 00 d	PI IFC	NO: Fast G Gain:Low	#Atten: 3	0 dB		Mkr	2 2.431 -0.	90 GHz	Auto Tune
10.0 10.0 -10.0				20.00 0		Amary	2 4.4.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	1 Marring	3 /~~			1.51 dBm	Center Freq 2.437000000 GHz
-20.0 -30.0 -40.0				where the have	-					Martin Street	wity where	Patha a la	Start Freq 2.412000000 GHz
-50.0 -60.0 -70.0	لللعم	J*									<u>т</u>	1	Stop Freq 2.462000000 GHz
Cen #Re	ter s B	2.43 W 1	370 00	0 GHz kHz	×	#VB\	V 300 kHz	FUNC	CTION FU	Sweep	Span 5 4.80 ms (60.00 MHz (1001 pts)	CF Step 5.000000 MHz <u>Auto</u> Man
1 3 4 5 6 7 8 9	N N		f f		2.437 5 2.431 9 2.442 1	D GHZ D GHZ D GHZ	7.51 di -0.60 di -0.46 di	3m 3m 3m					Freq Offset 0 Hz
10 11 12 MSG	_									STATU	5		

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11	2462	10200	>500	Pass

Figure Channel 11:

Agilen	nt Spe	ctrun	n Ana	alyzer - Swe	pt SA											
Cen	L Iter	Fre	RF q 2	50 Ω 2 .46200	AC 00000 GH	łz	TriarE	SENSE:I		Avg T	́ype:	LIGNAUTO	11:24:25/ TRA	AM Jun 30, 2014 CE 1 2 3 4 5 6	Frequen	су
10 d	Mu: Fast Might State Det P NNNNN IFGain:Low #Atten: 30 dB Mkr2 2.456 90 GHz dB/div Ref 20.00 dBm -1.15 dBm												Auto	Tune		
Log 10.0 0.00 -10.0						- Colorado	2 12 1/	n M	1 	3				0.92 dBm	Cente 2.46200000	r Freq 00 GHz
-20.0 -30.0 -40.0				, non fre	corner of	ра ^{ди} —					eve v) prano	wy pros		Star 2.43700000	t Freq 00 GHz
-50.0 -60.0 -70.0		W											¥		Stop 2.48700000	o Freq 00 GHz
Cen #Re	iter (s B)	2.46 N 1	520 00 SCL	0 GHz kHz	×	#VE	300 ki	Hz	FUNC	TION	FUNC	Sweep	Span 5 4.80 ms (0.00 MHz (1001 pts)	5.00000	Step 0 MHz Man
1 2 3 4 5 6 7	N N N	1 1	f f		2.463 0 2.456 9 2.467 1	0 GHz 0 GHz 0 GHz	6.92 -1.15 -1.23	dBm dBm dBm							Freq	Offset 0 Hz
8 9 10 11 12 MSG												STATUS				

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412	16600	>500	Pass

Figure Channel 1:

Agilent Spec	ctrum An	alyzer - Swe	pt SA									
Center	Freq 3	50 Ω 2.41200	AC 0000 GH	łz	SEN		Avg Typ	ALIGNAUTO e: Log-Pwr	11:32:44/ TRA	AM Jun 30, 2014 CE 1 2 3 4 5 6	Frequency	
10 dB/div	IFGain:Low #Atten: 30 dB Mkr2 2.403 70 GHz dB/div Ref 20.00 dBm -5.58 dBm											
10.0 0.00 -10.0				2			3			-5.26 dBm	Center Freq 2.412000000 GHz	
-20.0	-	weater and	montestant	A read of the second se				Wull agent	W. Mary Mr.	M M - M - M - M - M - M	Start Freq 2.387000000 GHz	
-50.0 -60.0 -70.0											Stop Freq 2.437000000 GHz	
Center 2 #Res BV	2.4120 N 100	0 GHz kHz	×	#VB	W 300 kHz	FUN	CTION FU	Sweep	Span 5 4.80 ms (0.00 MHz 1001 pts)	CF Step 5.000000 MHz <u>Auto</u> Man	
1 N 2 N 3 N 4 5 6 7	1 f 1 f 1 f		2.416 1 2.403 7 2.420 3	5 GHz 0 GHz 0 GHz	0.74 dE -5.58 dE -5.49 dE	3m 3m 3m 					Freq Offset 0 Hz	
8 9 10 11 12												
MSG								STATU	s			

:	HD-10
:	Occupied Bandwidth Data
:	No.3 OATS
:	Mode 2: Transmit (802.11g 6Mbps) (2437MHz)
	: : : :

Channel No.	Frequency Measurement Lev (MHz) (kHz)		Required Limit (kHz)	Result
6	2437	16600	>500	Pass

Figure Channel 6:

Agilent	Spectru	ım An	alyzer - Sw	ept SA								
Cento	er Fr	RF eq 2	50 Ω 2.43700	AC 00000 G	Hz			Ауд Туре	ALIGNAUTO : Log-Pwr	11:40:01 / TRA	AM Jun 30, 2014 CE 1 2 3 4 5 6 PE M MANANAN	Frequency
10 dB/	PN0: Fast C Ing. Tree Run IFGain:Low #Atten: 30 dB Det P NNNN Mkr2 2.428 70 GHz dB/div Ref 20.00 dBm -5.43 dBm											
Log 10.0 - 0.00 - -10.0 -					∮ ²			3			-4.96 dBm	Center Freq 2.437000000 GHz
-20.0 -30.0 -40.0	ለፈውላካለ	w-m ⁶	William	Monto and	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				M. M. Marchan	and	Munning	Start Free 2.412000000 GHz
-50.0 - -60.0 - -70.0 -												Stop Fred 2.462000000 GHz
Cente #Res	er 2.4 BW 1	370 100	0 GHz kHz	X	#VE	W 300 kHz	FUNC	CTION FUR	Sweep	Span 5 4.80 ms (0.00 MHz 1001 pts)	CF Step 5.000000 MHz <u>Auto</u> Mar
1 N 2 N 3 N 4 5 6		f f		2.441 2.428 2.445	15 GHz 70 GHz 30 GHz	1.04 di -5.43 di -5.46 di	3m 3m 3m					Freq Offset 0 Hz
7 9 10 11 12												
MSG									STATUS	3		

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11	2462	16600	>500	Pass

Figure Channel 11:

Agiler	nt Spe	ctru	m An	alyzer - Swe	ept SA								
Cen	L nter	Fre	RF eq 2	50 Ω 2.46200	AC 00000 GH	łz	SE Tria: Fra		Avg Ty	ALIGN AUTO pe: Log-Pwr	11:47:00. TRA	AM Jun 30, 2014 CE 1 2 3 4 5 6	Frequency
10 d	PN0: Fast C 119: Free Run IFGain:Low #Atten: 30 dB Mkr2 2.453 70 GHz dB/div Ref 20.00 dBm -5.57 dBm												Auto Tune
Log 10.0 0.00 -10.0						¢ ²	1			3		-5.13 dBm	Center Freq 2.462000000 GHz
-20.0 -30.0 -40.0	Mare	ন্যক	, und	M MANA	to a contraction of the contract					Low Manager	all and when y	Munn	Start Freq 2.437000000 GHz
-50.0 -60.0 -70.0													Stop Freq 2.487000000 GHz
Cen #Re	nter s Bl	2.4(W 1	620 00	0 GHz kHz		#VE	300 kH2	2 F	UNCTION	Sweep	Span \$ 4.80 ms	50.00 MHz (1001 pts)	CF Step 5.000000 MHz <u>Auto</u> Man
1 3 4 5 6	N N N	1 1	f f		2.459 5 2.453 7 2.470 3	0 GHz 0 GHz 0 GHz	0.87 d -5.57 d -5.94 d	Bm Bm Bm					Freq Offset 0 Hz
9 9 10 11 12													
MSG										STATU	IS		

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW) (2412MHz)

Chain - A

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412	17850	>500	Pass

Figure Channel 1:

Agilent Spect	rum Analyze	r - Swept SA										
Center F	_R , Freq 2.4′	50 Ω AC 12000000 GH	łz	SENS		Avg Type	ALIGNAUTO : Log-Pwr	01:06:07 F	M Jun 30, 2014	Frequency		
10 dB/div	PNU: Fast Ing. 1: So tal. IFGain:Low #Atten: 30 dB Mkr2 2.403 10 GHz dB/div Ref 20.00 dBm											
Log 10.0 0.00			2 ******		Januaryaanaa	3			-10.81 dBm	Center Fred 2.412000000 GHz		
-20.0 -30.0 -40.0		No. No. of Ward of March 1997	and the second s				Marinnuralisa	WWW.		Start Fred 2.387000000 GHz		
-50.0 -60.0 -70.0	Whatter patrice							Mun and	apple of solution way	Stop Fred 2.437000000 GH:		
Center 2. #Res BW	41200 G 100 kHz	Hz	#VB\	V 300 kHz		-	Sweep	Span 5 4.80 ms (0.00 MHz 1001 pts)	CF Step 5.000000 MH		
1 N 2 N 3 N 4 5 6	1 f 1 f 1 f	× 2.408 6 2.403 1 2.420 9	0 GHz 0 GHz 5 GHz	-4.81 dB -11.04 dB -11.98 dB	m m m			FUNCTIO		Freq Offset		
7 8 9 10 11 12												
MSG							STATUS	3				
Product	:	HD-10										
-----------	---	---										
Test Item	:	Occupied Bandwidth Data										
Test Site	:	No.3 OATS										
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW) (2412MHz)										

Chain - B

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412	17750	>500	Pass

Figure Channel 1:

Agilent Spec	trum An	alyzer - Swe	pt SA										
Center	Freq 2	50 Ω 2.41200	AC 0000 GH	łz	SEM		Avg Type	ALIGNAUTO E: Log-Pwr	01:13:25 F	PM Jun 30, 2014 CE 1 2 3 4 5 6	Frequency		
10 dB/div	PRU: Fast IffGain:Low #Atten: 30 dB Mkr2 2.403 15 GHz dB/div Ref 20.00 dBm -9.57 dBm												
10.0 0.00				2 Marine	st martoling	1 proceeding	mm	8		-9.00 dBm	Center Freq 2.412000000 GHz		
-20.0 -30.0 -40.0		NWN	Samawan and a start of the star	ر مربع				Actor Marine	www.e.e		Start Fred 2.387000000 GHz		
-50.0 -60.0	VI-VI-W/10/00	Meduna								and an opping of the second stand	Stop Fred 2.437000000 GHz		
Center 2 #Res BV	2.4120 V 100	0 GHz kHz	X	#VBI	W 300 kHz	FUNC	CTION FUR	Sweep	Span 5 4.80 ms (0.00 MHz 1001 pts)	CF Step 5.000000 MHz <u>Auto</u> Mar		
1 N 2 N 3 N 4 5 6	1 f 1 f 1 f		2.415 1 2.403 1 2.420 9	5 GHz 5 GHz 0 GHz	-3.00 dE -9.57 dE -10.13 dE	3m 3m 3m					Freq Offset 0 Hz		
7 8 9 10 11													
MSG		1				1	I	STATU	is				

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW) (2437MHz)

Chain - A

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437	17750	>500	Pass

Figure Channel 6:

Agilen	it Spec	strum	Ana	lyzer - Swe	ept SA										
uxu ⊪ Cen	ter	Fre	RF q 2	50 Ω 2.43700	AC	SHz		SEI		Avg Ty	ALIGN e: Log	NAUTO g-Pwr	01:20:39 F	M Jun 30, 2014 E 1 2 3 4 5 6	Frequency
10 di	B/div Ref 20.00 dBm 44tten: 30 dB 0er /P NNNN B/div Ref 20.00 dBm -9.35 dBm													Auto Tune	
Log 10.0 0.00 -10.0							2	and the second second	1 munihur	monter	3			-8.85 dBm	Center Freq 2.437000000 GHz
-20.0 -30.0 -40.0		1		an allow	and and and and	and and					hu have	mulado	Warner		Start Freq 2.412000000 GHz
-50.0 -60.0 -70.0	_{ውብ} ኒስኪ	ANI/IN	~	ad part									" Heat	and the second sec	Stop Freq 2.462000000 GHz
Cen #Re:	ter 2 s BV	2.43 N 10	70()0 301) GHz (Hz	X		#VBW	/ 300 kHz	FUN	CTION F	Sw	veep 4	Span 5 4.80 ms (0.00 MHz 1001 pts) NVALUE	CF Step 5.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6	N N N	1 1	f f		2.440 2.428 2.445	10 (15 (90 (GHz GHz GHz	-2.85 di -9.35 di -10.42 di	3m 3m 3m						Freq Offset 0 Hz
7 9 10 11 12													1		
MSG												STATUS			

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW) (2437MHz)

Chain - B

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437	17750	>500	Pass

Figure Channel 6:

Agilent	Spectru	m An	alyzer - Swe	ept SA										
Cento	er Fr	RF eq 2	50 Ω 2.43700	AC 00000 GH	-Iz	Si Tria: Fra		Avg Type	ALIGNAUTO : Log-Pwr	01:27:37 F	M Jun 30, 2014 E 1 2 3 4 5 6	Frequency		
10 dB/	dB/div Ref 20.00 dBm #Atten: 30 dB Mkr2 2.428 15 GHz10.14 dBm													
Log - 10.0 - 0.00 - -10.0 =					2 2	materilitration	1 yummhun	how when a	8		-9.35 dBm	Center Freq 2.437000000 GHz		
-20.0 - -30.0 - -40.0 -				Alterno agence and and					The way we have	Why Man Called a		Start Freq 2.412000000 GHz		
-50.0 - -60.0 - -70.0 -	ywan an	ww.ih	port front								an martifly of the	Stop Freq 2.462000000 GHz		
Cente #Res	er 2.4 BW /	370 100	0 GHz kHz	×	#VE	BW 300 kH	Z	CTION FUI	Sweep	Span 5 4.80 ms (0.00 MHz 1001 pts) N VALUE	CF Step 5.000000 MHz <u>Auto</u> Man		
1 N 2 N 3 N 4 5 6	N 1 N 1 N 1	f f		2.440 1 2.428 1 2.445 9	5 GHz 5 GHz 0 GHz	-3.35 c -10.14 c -10.93 c	IBM IBM IBM					Freq Offset 0 Hz		
7 9 10 11 12														
MSG									STATU	s				

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW) (2462MHz)
lest Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW) (2462MHz

Chain - A

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11	2462	17850	>500	Pass

Figure Channel 11:

Agilent	t Spec	trum	Ana	lyzer - Swe	ept SA											
Cent	ter	Free	RF q 2	50 Ω .46200	AC 10000 G	Hz	_	SEF	NSE:INT		Avg Ty	ALIGN AUT	0 Vr	01:34:51 F	M Jun 30, 2014 E 1 2 3 4 5 6	Frequency
10 dE	dB/div Ref 20.00 dBm 48tten: 30 dB 0er ^P NNNNN dB/div Ref 20.00 dBm -11.30 dBm														Auto Tune	
Log 10.0 0.00 -10.0						¢2	~~~~N	1	~ ^{]]~}	مساليكواحال	m	3			-10.39 dBm	Center Freq 2.462000000 GHz
-20.0 -30.0 -40.0						af and a second						huncesman	dro la hu			Start Freq 2.437000000 GHz
-50.0 -60.0 -70.0	٨	w _{re} nchi		AND ALANA AND AND AND AND AND AND AND AND AND										- Marthaden	nnapronen (~~nturk	Stop Freq 2.487000000 GHz
Cent #Res	ter 2 s BV	2.46: V 10	20()0) GHz (Hz		#V	вw	300 kHz				Swee	р4.	Span 5 .80 ms (0.00 MHz 1001 pts)	CF Step 5.000000 MHz
1 2 3 4 5 6 7 8 9 10			f		× 2.459 (2.453 / 2.470 (90 GHz 10 GHz 95 GHz		<u>-4.39 df</u> - <u>11.30 df</u> - <u>11.87 df</u>	3m 3m 3m	FUNCT				FUNCTIL		Freq Offset 0 Hz
12 MSG												STA	ATUS			

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW) (2462MHz)

Chain - B

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11	2462	17750	>500	Pass

Figure Channel 11:

Agilent Spect	rum Anal	yzer - Swep	ot SA								
KARL Center F	RF req 2	50 Ω . 46200 (AC 0000 GH	łz	SEN		Avg Type	ALIGNAUTO : Log-Pwr	01:41:57 F	PM Jun 30, 2014 CE 1 2 3 4 5 6	Frequency
10 dB/div	Ref	20.00 d	Bm	NO: Fast G Gain:Low	#Atten: 30	dB		Mkr	2 2.453 -10.	15 GHz 72 dBm	Auto Tune
Log 10.0 0.00 -10.0				2 Marina	444~10 ¹¹ ~4~4~10 ¹¹ ~4~4~4~1	- Marine Marine	nthermones 3	8		-10.10 dBm	Center Freq 2.462000000 GHz
-20.0 -30.0 -40.0		- 10-57	provortunity of					A who was a second	Tuta o		Start Freq 2.437000000 GHz
-50.0 -60.0 -70.0	erter in or									Hor University	Stop Freq 2.487000000 GHz
Center 2 #Res BW	.46200 100 k	GHz Hz	×	#VBV	№ 300 kHz	FUNC	TION FUN	Sweep	Span 5 4.80 ms (0.00 MHz 1001 pts)	CF Step 5.000000 MHz <u>Auto</u> Man
1 N 2 N 3 N 4 5 6	1 f 1 f 1 f		2.465 1 2.453 1 2.470 9	5 GHz 5 GHz 0 GHz	-4.10 dB -10.72 dB -11.67 dB	sm sm sm					Freq Offset
7 8 9 10 11											
MSG				I				STATU	5		<u></u>

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW) (2422MHz)

Chain - A

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
3	2422	36400	>500	Pass

Figure Channel 1:

Agilent S	pectru	ım An	alyzer - Swe	pt SA								
Cente	er Fr	RF eq	: 50 Ω 2.42200	AC 0000 GH	Iz			Avg Type	ALIGNAUTO : Log-Pwr	01:51:29 F TRA	PM Jun 30, 2014 CE 1 2 3 4 5 6 PE M MANANAN	Frequency
10 dB/	div	Re	f 20.00 d	Pr IFC	NO: Fast 🕞 Gain:Low	#Atten: 30) dB		Mk	(r2 2.40 -13.	3 9 GHz 01 dBm	Auto Tune
Log 10.00 -10.0					¢ ²	alertin sole they		manum	3		-12.91 dDm	Center Freq 2.422000000 GHz
-20.0 — -30.0 — -40.0 —				- 74					W. Mar			Start Freq 2.372000000 GHz
-50.0 -60.0	en and an a	-	nillesindesteringen a						· ••• ••••	(Verkelindred)	and for the start of the start	Stop Freq 2.472000000 GHz
Cente #Res	r 2.4 BW	220 100	0 GHz kHz	×	#VBV	V 300 kHz	FUN	CTION FUR	Sweep	Span 1 9.60 ms (00.0 MHz 1001 pts)	CF Step 10.000000 MHz Auto Man
1 N 2 N 3 N 4 5 6		f f		2.426 2.403 2.440	7 GHz 9 GHz 3 GHz	-6.91 dE -13.01 dE -14.23 dE	3m 3m 3m					Freq Offset 0 Hz
7 8 9 10 11 12												
MSG									STATUS	3		<u>L</u>

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW) (2422MHz)

Chain - B

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
3	2422	36600	>500	Pass

Figure Channel 1:

Agilen	nt Spe	ctrur	n An	alyzer - Swe	ept SA								
גע R Cen	L nter	Fre	RF Pq 2	50 Ω 2.42200	AC 10000 GH	lz	SE Tria: Fro		Avg Type	ALIGNAUTO : Log-Pwr	01:59:47 F	M Jun 30, 2014	Frequency
10 di	B/div	,	Ref	f 20.00 c	PI IFC	NO: Fast G Gain:Low	Atten: 3	0 dB		MI	(r2 2.40 -15.	3 7 GHz 39 dBm	Auto Tune
Log 10.0 0.00 -10.0						€ ² .mbs.r	Jel and a set whether	21	-	3		-12.32 dBm	Center Freq 2.422000000 GHz
-20.0 -30.0 -40.0										W.			Start Freq 2.372000000 GHz
-50.0 -60.0 -70.0	n-frad	arken w	- Marte	W-n-River-Arneyedi	**************************************						UMUL Accurry grand	wall-dependences	Stop Freq 2.472000000 GHz
Cen #Re	s Bl	2.42 N 1	220 00	0 GHz kHz	X	#VB	W 300 kHz	FUNC	CTION FUR	Sweep	Span 1 9.60 ms (00.0 MHz 1001 pts) NVALUE	CF Step 10.000000 MHz <u>Auto</u> Man
2 3 4 5 6 7		1	f		2.423	7 GHz 3 GHz	-6.32 d -15.39 dl -14.33 dl	Bm Bm Bm					Freq Offset 0 Hz
8 9 10 11 12										077			

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW) (2437MHz)

Chain - A

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437	36400	>500	Pass

Figure Channel 4:

Agiler	nt Spe	ectru	m An	alyzer - Swe	ept SA								
<mark>⊯</mark> R Cer	L nter	Fre	RF eq 2	50 Ω 2.43700	AC 10000 GH	z	SE		Avg Ty	ALIGNAUTO pe: Log-Pwr	02:07:03 I TRA	PM Jun 30, 2014 CE 1 2 3 4 5 6	Frequency
10 d	PNO: Fast Ing. root kin Det P N N N N IFGain:Low #Atten: 30 dB Mkr2 2.418 9 GHz IB/div Ref 20.00 dBm -13.88 dBm												Auto Tune
10.0 10.0 0.00		•		20.00 0		▲ ²		1		3		-1373 dEm	Center Freq 2.437000000 GHz
-20.0 -30.0 -40.0					. Ala					W			Start Fred 2.387000000 GHz
-50.0 -60.0 -70.0	MULA	lender a	1-1414	h-street white a							anter (manya filipika anteraj	All Markey and	Stop Fred 2.487000000 GHz
Cer #Re	nter sB	2.43 W 1	370 00	0 GHz kHz	×	#VI	BW 300 kHz	FIIN	CTION F	Sweep	Span 1 9.60 ms (00.0 MHz 1001 pts)	CF Step 10.000000 MHz Auto Mar
1 2 3 4 5 6 7	N N N	1 1 1	f f		2.441 2.418 2.455	7 GHz 9 GHz 3 GHz	-7.73 d -13.88 di -15.07 di	Bm 3m 3m					Freq Offset 0 Hz
8 9 10 11 12													

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW) (2437MHz)

Chain - B

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437	36600	>500	Pass

Figure Channel 4:

Agilen	t Spe	ctrur	n An	alyzer - Swe	pt SA									
Cen	ter	Fre	RF Pq 2	50 Ω 2.43700	AC 0000 GH	z	SE		Avg	ALIG Type: Lo	GN AUTO O g-Pwr	02:14:07 F	M Jun 30, 2014	Frequency
10 dF	3/div	,	Ref	70.00 d		NO: Fast Gain:Low	#Atten: 3	ie Kun 30 dB			Mk	r2 2.41	87 GHz 58 dBm	Auto Tune
10.0 10.0 0.00				20.00 u		≜ ²	patrimento a			{\} ³			-12:67 dBm	Center Freq 2.437000000 GHz
-20.0 -30.0 -40.0								¥			/\			Start Freq 2.387000000 GHz
-50.0 -60.0 -70.0	wee	<u>M</u>	~~~	~~~							- un - 144	and the shirt and an	mallennaluse	Stop Freq 2.487000000 GHz
Cent #Res	ter : s B\ smma	2.4: N 1	370 00	0 GHz kHz		#VE	300 kHz	2	INFTION	S	weep	Span 1 9.60 ms (00.0 MHz 1001 pts)	CF Step 10.000000 MHz Auto Man
1 2 3 4 5 6 7 8	N N N	1	f f		2.438 2.418 2.455	3 GHz 7 GHz 3 GHz	-6.67 d -15.58 d -14.78 d	Bm Bm Bm						Freq Offset 0 Hz
9 10 11 12											STATUS			

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW) (2452MHz)

Chain - A

Channel No. Frequency		Measurement Level	Required Limit	Result
(MHz)		(kHz)	(kHz)	
9	2452	36500	>500	Pass

Figure Channel 7:

Agilent Spectrum Analyzer - S	wept SA					
RE RE 50	Ω AC 000000 GHz	SENSE:INT	ALIGM Avg Type: Lo	NAUTO 02:21:36 g-Pwr TRA T	PM Jun 30, 2014 CE 1 2 3 4 5 6	Frequency
10 dB/div Ref 20.00	PNO: Fast IFGain:Low	#Atten: 30 dB		Mkr2 2.43 -14	3 8 GHz 06 dBm	Auto Tune
Log 10.0 0.00	2	مرور مردا مردور م	1		-13.67 dBm	Center Freq 2.452000000 GHz
-20.0				a		Start Freq 2.402000000 GHz
-50.0 -60.0					t muser and a	Stop Freq 2.502000000 GHz
Center 2.45200 GHz #Res BW 100 kHz	#VI	300 kHz		Span veep 9.60 ms	100.0 MHz (1001 pts)	CF Step 10.000000 MHz Auto Man
1 N 1 f 2 N 1 f 3 N 1 f 4 - - - 5 - - - 6 - - - 7 - - - 9 - - -	2.462 3 GHz 2.433 8 GHz 2.470 3 GHz	-7.67 dBm -14.06 dBm -14.92 dBm				Freq Offset 0 Hz

Product	:	HD-10
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW) (2452MHz)

Chain - B

Channel No. Frequency (MHz)		Measurement Level (kHz)	Required Limit (kHz)	Result
9	2452	36600	>500	Pass

Figure Channel 7:

Agilent	Spec	trun	n An	alyzer - Swe	pt SA								
Cent	ter	Fre	RF q	50 Ω 2.45200	AC 0000 GH	lz	SE		Avg Ty	ALIGNAUTO (pe: Log-Pwr	02:28:33 F TRA	M Jun 30, 2014 E 1 2 3 4 5 6	Frequency
10 dB	3/div		Ref	f 20.00 d	IBm	NO: Fast Gain:Low	#Atten: 3	0 dB		М	kr2 2.43 -16.	3 7 GHz 07 dBm	Auto Tune
Log 10.0 - 0.00 - -10.0 -						2	and allocated and a	1 1	termined an endersty			-13.28 dBm	Center Freq 2.452000000 GHz
-20.0 - -30.0 - -40.0 -													Start Freq 2.402000000 GHz
-50.0 - -60.0 - -70.0 -	a, in Aa	with	~~~	hadgentyref Hilleren	w ^{orn} v ⁽¹						an the search	dunda adipations	Stop Freq 2.502000000 GHz
Cent #Res	ter 2 SBV	2.45 V 1	520 00	0 GHz kHz	X	#VE	300 kHz	:	UNCTION	Sweep	Span 1 9.60 ms (00.0 MHz 1001 pts)	CF Step 10.000000 MHz Auto Man
1 3 4 5 6	N N N	1 1	f f		2.453 2.433 2.470	3 GHz 7 GHz 3 GHz	-7.28 d -16.07 d -15.45 d	Bm Bm Bm					Freq Offset 0 Hz
7 8 9 10 11 12													
MSG										STATI	JS		

8. **Power Density**

8.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2014
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2014
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

Note:

- 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
- 2. The test instruments marked with "X" are used to measure the final test results.

8.2. Test Setup



8.3. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

8.4. Test Procedure

The EUT was setup according to ANSI C63.10, 2009; tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The maximum power spectral density using KDB 558074 section 10.2 PKPSD (peak PSD) method.

8.5. Uncertainty

 \pm 1.27 dB

8.6. Test Result of Power Density

Product	:	HD-10
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	4.910	< 8dBm	Pass

Figure Channel 1:

Agilen	t Spectru	n Analyzer - Swo	ept SA								
Cen	ter Fre	RF 50 Ω eq 2.41200	AC 0000 GH	łz		ISE:INT	Avg Type	ALIGNAUTO : Log-Pwr	11:02:52 A	M Jun 30, 2014	Frequency
10 dE	3/div	Ref 20.00 d	P IF(JBm	NO: Fast 🕞 Gain:Low) Trig: Free #Atten: 30) dB		Mkr1 2	.412 70: 4.:	3 8 GHz 91 dBm	Auto Tune
10.0						1-					Center Freq 2.412000000 GHz
0.00 -10.0	man	why wh	ᢪᡕᡣᠳᡘᢑᡭᡉᡊᡐᢧᡡ							Mulling	Start Freq 2.404350000 GHz
-20.0 -30.0											Stop Freq 2.419650000 GHz
-40.0 -50.0											CF Step 1.530000 MHz <u>Auto</u> Man
-60.0											Freq Offset 0 Hz
-70.0 Cent #Res	ter 2.4′ s BW 6	12000 GHz 8 kHz		#VBW	300 kHz			Sweep	Span 1 3.13 ms (5.30 MHz 1001 pts)	

Product	:	HD-10
Test Item	:	Power Density Data
Test Site	:	No.3OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
6	2437	4.970	< 8dBm	Pass

Figure Channel 6:

Agilen	it Spectru	m Analyzer - Sv	wept SA								
l xi ri	L	RF 50 9	Ω AC		SEI	NSE:INT		ALIGN AUTO	11:11:10 A	M Jun 30, 2014	Englisher
Cen	iter Fr	eq 2.4370	00000	GHz]	_	Avg Type	: Log-Pwr	TRAC	E123456	Frequency
				PNO: Fast 😱 IFGain:Low	7 Trig: Fre #Atten: 30	eRun)dB		Mkr1 2	.437 70		Auto Tune
10 dE Log	B/div	Ref 20.00	dBm						4.	97 abm	
10.0						1					Center Freq 2.437000000 GHz
0.00				WWWWWWW	hanning	MAM	WWWWWW	Anthenen -	1		
-10.0	MAN	www. ~/W	w www.		Υ,	¢.		· · · · · · · · · · · · · · · · · · ·		MWWWWWWWWW	Start Freq 2.429350000 GHz
-20.0											
-30.0											Stop Freq 2.444650000 GHz
-40.0											CF Step 1.530000 MHz <u>Auto</u> Man
-50.0			-								
-60.0											Freq Offset 0 Hz
-70.0											
Cen #Re	ter 2.4 s BW 5	37000 GHz i1 kHz	2	#VBW	300 kHz	1	1	Sweep	Span 1 5.47 ms (5.30 MHz 1001 pts)	
MSG								STATU	Б		

Product	:	HD-10
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11	2462	4.900	< 8dBm	Pass

Figure Channel 11:

Agilen	t Spectri	ım Ana	lyzer - Sw	ept SA									
LXI RI		RF	50 Ω	AC			SEN	ISE:INT		ALIGN AUTO	11:25:58 A	M Jun 30, 2014	Frequency
Cen	ter Fr	eq 2	2.46200	00000	GHz			Run	Avg Type	: Log-Pwr	TRAC		Trequency
					PNO: IEGair	Fast ⊆ _⊫ _ ⊪Inwr	#Atten: 30	dB			D	ET P N N N N N	
										Mkr1 S	162 70	2 0 0 11-	Auto Tune
			~~ ~~							IVINI 1 2	402 70. /	00 dBm	
10 dE	3/div	Ref	20.00 (dBm							4.	SU UBIII	
a													0
10.0													Center Freq
10.0								1					2.462000000 GHz
						A . A.A.A	LA AM	Maria	and a do a				
0.00			~^	MAN AN	www	rww.ww	MAL N	1	I'' WWW	Mandan have	1 km		
		m	. `` ^۲ ``	1			6	j –			h A	hm	Start Freq
-10.0	L WWW	ר אי	<u>\</u>				1				4 10	Www	2.454350000 GHz
10.0			m								W	1 14	
-20.0													Stop Freg
													2 469650000 GHz
-30.0													2.403000000 0112
												I	
40.0													CF Step
-40.0													1.530000 MHz
													<u>Auto</u> Man
-50.0		_											
0.03-													Freq Offset
-00.0													0 Hz
												I	
-70.0				+									
												I	
Cen	ter 2.4	6200	0 GHz							_	Span 1	5.30 MHz	
#Res	s BW (62 kl	IZ			#VBW	300 kHz			Sweep	3.73 ms (1001 pts)	
MSG										STATU	s		

Product	:	HD-10
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412	0.650	< 8dBm	Pass

Figure Channel 1:

Agilen	t Spectr	um Analyze	r - Swept SA									
(X) RL	tor E	RF	50 Ω AC			SEN	ISE:INT	Ava Type	ALIGNAUTO	11:33:18 / TRA	M Jun 30, 2014	Frequency
<u>10 dF</u>		Ref 20	00 dBm	PNO: I IFGain:	Fast 😱 Low	Trig: Free #Atten: 30	eRun ≬dB		Mkr1	™ ≥ 2.416 1 0.	58 GHz	Auto Tune
10.0								▲1				Center Freq 2.412000000 GHz
0.00 -10.0			frank		PULLAN	M	Martin	দিক পদেশ নায় বিয়ালক	סאיסאיינטיי			Start Freq 2.399550000 GHz
-20.0 -30.0	ww	wwww									whow have	Stop Freq 2.424450000 GHz
-40.0 -50.0												CF Step 2.490000 MHz <u>Auto</u> Man
-60.0												Freq Offset 0 Hz
-70.0 Cent	ter 2.4	41200 G	Hz		#\/B\^(300 kHz			Sween	Span 2	4.90 MHz	
MSG		100 112				570 NHZ			STATU	3	1001 hra)	

Product	:	HD-10
Test Item	:	Power Density Data
Test Site	:	No.3OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
6	2437	0.870	< 8dBm	Pass

Figure Channel 6:

Agilen	t Spectru	m Analyzer - Sv	wept SA								
LXI RI		RF 50 9	Ω AC		SEN	ISE:INT		ALIGN AUTO	11:40:34 A	AM Jun 30, 2014	Frequency
Cen	ter Fre	eq 2.4370	00000	GHz	Tria: Free	Run	Avg Type	: Log-Pwr	TY	-= 1 2 3 4 5 6 PE MWWWWW	
				IFGain:Low	#Atten: 30) dB			DI	ET P N N N N N	
								Mkr1	2.441 1	58 GHz	Auto Tune
10 dE	3/div	Ref 20.00	dBm						0.	87 dBm	
Log											
											Center Freq
10.0							-				2.437000000 GHz
							♦'				
0.00		r	www	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Mr. Marine	wwwwwww	**************************************	www.www	in		
						1					StartFreq
-10.0					1						2.424550000 GHz
									L.		
-20.0									M.		Stop Eron
		M								Mr	Stop Freq
-30.0	AL MA	- -								" " " WY	2.449450000 GHZ
-40.0											CF Step
-40.0											2.490000 MHz
50.0											<u>Auto</u> Man
-50.0											
											Freg Offset
-60.0											0 Hz
											0112
-70.0		-						-		<u> </u>	
Com	tor 0.4	2700 CH-							Cnon 2		
ten #Po	ERM 1	00 GHZ		#\/B\A(300 kHz			Sween	əpan 2 2 40 me /	4.90 MINZ	
#RC:	5 WW 1			#¥0VV	500 KHZ			oweeh	2.40 113 (1001 hrs)	
MSG								STATU	3		

Product	:	HD-10
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11	2462	0.660	< 8dBm	Pass

Figure Channel 11:

Agilen	t Spect	rum Anal	yzer - Swe	pt SA									
IXI RI	L	RF	50 Ω	AC			SEN	ISE:INT	Aug Type		11:47:33 A	M Jun 30, 2014	Frequency
Cen	ter F	req z	.46200	0000	PNO: Fa	ist 🖵	Trig: Free	Run	ALB I MA	. Log-r wi	TYI		
					IFGain:L	ow	#Atten: 30) dB		5.41			Auto Tune
10 dF	Bidiv	Ref	20 00 d	IBm						WKr1	2.466 1 0.	58 GHZ 66 dBm	
Log		Kei	20.00 0										
													Center Freq
10.0													2.462000000 GHz
									♦'				
0.00			pro	www	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m	man	Manan	᠉ᡭᡒ᠊᠈ᡃᢕ᠋᠋ᢦᡃᢑᢋᡪᢚᡟᠥ᠆	ᡐ᠕ᡃᡅᢦᠬᡗᡐᢦ	wmy		Start Fred
10.0							1	1					2.449550000 GHz
-10.0			}								L.		
-20.0			رم م								V.		
		www									VI	man	Stop Freq
-30.0	Nor V											r ~~ 6	2.474450000 GHz
-40.0													CF Step
													Auto Man
-50.0		_											
													Fred Offset
-60.0													0 Hz
-70.0													
Cen	ter 2.	46200	GHz							_	Span 2	4.90 MHz	
#Re	s BW	100 k	Hz		#	VBW	300 kHz			Sweep	2.40 ms (1001 pts)	
MSG										STATU	s		

Product	:	HD-10
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW) (2412MHz)

CHAIN	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)1	Limit	Result
А	-4.800	-1.790	< 8dBm	Pass
В	-2.950	0.060	< 8dBm	Pass

Figure	Channel	1:	(Chain A)
--------	---------	----	-----------

Agilen	t Spectru	m Analyzer - Sw	ept SA								
Cen	ter Fr	RF 50 Ω eq 2.41200	AC 00000 GH	łz			Avg Type	ALIGNAUTO :: Log-Pwr	01:06:40 F	M Jun 30, 2014 E 1 2 3 4 5 6	Frequency
10 dE	3/div	Ref 20.00 d	P IF0 JBm	NO: Fast 🕞 Gain:Low) Trig: Free #Atten: 30) dB		Mkr1	2.409 8 -4.1	85 GHz 80 dBm	Auto Tune
10.0											Center Freq 2.412000000 GHz
0.00 -10.0			wanguna	wohnum	normann	man	ᠰᡙᠺᠬᡧᠣᠾᢉᢦ᠊ᠯᡐ᠆ᢧ	mnnunnya	hin 1		Start Freq 2.398612500 GHz
-20.0 -30.0		- A							h Uviny	PRUMA.	Stop Freq 2.425387500 GHz
-40.0 -50.0	U. N. W. W.									WWW	CF Step 2.677500 MHz <u>Auto</u> Man
-60.0											Freq Offset 0 Hz
-70.0 Cent #Res	ter 2.4 s BW 1	1200 GHz 100 kHz		#VBW	7 300 kHz			Sweep	Span 2 2.60 ms (6.78 MHz 1001 pts)	
MSG								STATUS	3		

Agilen	it Spectrum A	nalyzer - Sw	vept SA								
Cen	ter Freq	F 50 Ω 2.4120	AC 00000 GI	-lz	SEN		Avg Type	align auto :: Log-Pwr	01:13:58 P TRAC	M Jun 30, 2014 E 1 2 3 4 5 6	Frequency
10 dE	3/div Re	ef 20.00	dBm	NO: Fast () Gain:Low	#Atten: 30) dB		Mkr1	2.415 1 -2.	42 GHz 95 dBm	Auto Tune
10.0											Center Free 2.412000000 GH:
0.00		m	Jawaman	Alson and	mhung	hunn	1 Winning	Whithhar	Why		Start Fre 2.398687500 GH
-20.0 -30.0		J varant							L Marine Marine		Stop Fre 2.425312500 G⊢
-40.0	manner									· · · · · · · · · · · · · · · · · · ·	CF Ste 2.662500 MF <u>Auto</u> Ma
-50.0											Freq Offs 0 F
-70.0											
Cent #Re	ter 2.4120 s BW 100)0 GHz kHz		#VBW	300 kHz			Sweep	Span 2 2.60 ms (6.63 MHz 1001 pts)	
MSG								STATU	s		<u></u>

Figure Channel 1: (Chain B)

Product	:	HD-10
Test Item	:	Power Density Data
Test Site	:	No.3OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW) (2437MHz)

CHAIN	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)1	Limit	Result
А	-4.550	-1.540	< 8dBm	Pass
В	-3.240	-0.230	< 8dBm	Pass

Figure Channel 6: (Chain A)

Agilen	t Spectrum	Analyzer - Sw	ept SA								
גע RI Cen	ter Fre	RF 50 Ω q 2.43700	AC 00000 GH	łz			Avg Type	ALIGN AUTO : Log-Pwr	01:21:12 F	M Jun 30, 2014	Frequency
10 dE	3/div i	Ref 20.00 (P IFI dBm	NO: Fast 🕞 Gain:Low	#Atten: 30) dB		Mkr1	2.434 8 -4.	70 GHz 55 dBm	Auto Tune
10.0											Center Freq 2.437000000 GHz
0.00 -10.0			warrow	WENNEN	n n n n n n n n n n n n n n n n n n n	phonen	-Augrange	mmg2Aurnapa	ww.		Start Freq 2.423687500 GHz
-20.0 -30.0	~~	Manna							North North	M.Mar.	Stop Freq 2.450312500 GHz
-40.0	PANNY									"UNN	CF Step 2.662500 MHz <u>Auto</u> Man
-60.0											Freq Offset 0 Hz
-70.0 Cent #Re:	ter 2.43 s BW 10	700 GHz 00 kHz		#VBW	300 kHz			Sweep	Span 2 2.60 ms (6.63 MHz 1001 pts)	
MSG								STATUS	5		



gilen	t Spectrum A	nalyzer - Swe	ept SA								L
l RI	ter Freg	F 50 Ω 2.43700	AC 00000 GH	7	SEN	ISE:INT	Avg Type	ALIGNAUTO : Log-Pwr	01:28:10 P TRAC	M Jun 30, 2014 E 1 2 3 4 5 6	Frequency
0 dE	3/div Re	ef 20.00 c	PI IFC	io: Fast 🕞 Sain:Low	┘ Trig: Free #Atten: 30	eRun)dB		Mkr1	تبر 2.440 1 -3.2	42 GHz 24 dBm	Auto Tun
0.0											Center Fre 2.437000000 GF
0.00 0.0		prof	hardowar	ላしላቶኊՆኆኯቑ	mhynyn	mmm	1 Mwwww	᠕ᠰᡘᢇᡧᠩᢧ	m		Start Fre 2.423687500 GF
0.0 0.0		and the second s							h	^{kult} hing	Stop Fr 2.450312500 G
0.0 0.0	contract '									AN CORP.	CF Ste 2.662500 M <u>Auto</u> M
).0											Freq Offs 0
0.0 en	ter 2 4 3 7 (10 GHz							Snan 2	6 63 MHz	
Res	s BW 100	kHz		#VBW	300 kHz			Sweep	2.60 ms (1001 pts)	
G								STATU	s		

Figure Channel 6: (Chain B)

Product	:	HD-10
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n MCS8 14.4Mbps 20M-BW) (2462MHz)

CHAIN	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)1	Limit	Result
А	-4.490	-1.480	< 8dBm	Pass
В	-4.130	-1.120	< 8dBm	Pass

Figure Channel 11: (Chain A)



Agilen	nt Spectrum An	alyzer - Sw	ept SA								
Cen	ter Freq (: 50 Ω 2.46200	AC 00000 GH	łz	SEN	ISE:INT	Avg Type	ALIGNAUTO : Log-Pwr	01:42:30 F	M Jun 30, 2014 E 1 2 3 4 5 6	Frequency
10 dE	B/div Re f	f 20.00 d	P IFO d B m	NO: Fast 🕞 Gain:Low	∫ Trig: Free #Atten: 30	eRun)dB		Mkr1	™⊡ 2.465 1 -4.	42 GHz 13 dBm	Auto Tune
10.0											Center Freq 2.462000000 GHz
0.00 -10.0		pril	huunun	hlanhaganh	mburn	mmmm	1 Marina	Manha	m		Start Freq 2.448687500 GHz
-20.0		h h							h h		Stop Freq 2.475312500 GHz
-40.0	MProvenand"									when when a	CF Step 2.662500 MHz <u>Auto</u> Man
-60.0											Freq Offset 0 Hz
-70.0	ter 2 4620	0 GHz							Snap 2	6 63 MHz	
#Re	s BW 100	kHz		#VBW	300 kHz			Sweep	2.60 ms (1001 pts)	
MSG								STATUS	3		

Figure Channel 11: (Chain B)

Product	:	HD-10
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW) (2422MHz)

CHAIN	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)1	Limit	Result
А	-7.510	-4.500	< 8dBm	Pass
В	-6.390	-3.380	< 8dBm	Pass

Figure Channel 3: (Chain A)





Figure Channel 3: (Chain B)

Product	:	HD-10
Test Item	:	Power Density Data
Test Site	:	No.3OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW) (2437MHz)

CHAIN	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)1	Limit	Result
А	-7.890	-4.880	< 8dBm	Pass
В	-6.740	-3.730	< 8dBm	Pass

Figure Channel 6: (Chain A)

Agilent	Spectru	ım Analyzer - Sv	wept SA								
Cent	ter Fr	RF 50 req 2.4370	Ω AC	GHz	Trij	SENSE:INT	Avg T _i	ALIGN AUTO ype: Log-Pwr	02:07:36 F TRAC TY	M Jun 30, 2014 E 1 2 3 4 5 6	Frequency
10 dB	/div	Ref 20.00	dBm	PNO: Fas IFGain:Lo	w #At	ten: 30 dB		Mkr1 2	2.447 26 -7.	4 8 GHz 89 dBm	Auto Tune
10.0 -											Center Freq 2.437000000 GHz
0.00 - -10.0 -				unter and and an and	harrow John and	the second second	وتشارعه المحروسية المحروسية المحروسية	1 Mirlungar produce	pharen		Start Freq 2.409700000 GHz
-20.0 -											Stop Freq 2.464300000 GHz
-40.0 -	~/~								- North Market	V WWW	CF Step 5.460000 MHz <u>Auto</u> Man
-50.0 -											Freq Offset 0 Hz
-70.0 - Cent	er 2.4	3700 GHz							Span 5	4.60 MHz	
#Res MSG	S R M	TUU KHZ		#\	/ВW 300	KHZ		Sweep Statu	5.27 MS (1001 pts)	



Agiler	nt Spectrum Ana	lyzer - Swe	pt SA								
اللا Cer	L RF nter Freq 2	50 Ω 2.43700	AC 00000 GH	IZ	SEN	ISE:INT	Avg Type	ALIGN AUTO : Log-Pwr	02:14:41 P TRAC TYF	M Jun 30, 2014 E 1 2 3 4 5 6 E M WWWWW	Frequency
10 d	B/div Ref	20.00 d	iFo IBm	Gain:Low	#Atten: 30) dB		Mkr1 2	2.438 262 -6.3	2 7 GHz 74 dBm	Auto Tune
10.0											Center Freq 2.437000000 GHz
0.00 -10.0		h.h.h.	yaliste altranseet	antrajph www.	uteledatulynation	1 plpsprnhmle	<u>ระสุรปญใหารุงหมูล</u> ,	des proposed	why		Start Freq 2.409550000 GHz
-20.0											Stop Freq 2.464450000 GHz
-40.0	m. / M	All and a second se								PRIA LALI	CF Step 5.490000 MHz <u>Auto</u> Man
-60.0	*¥Ļ¢										Freq Offset 0 Hz
-70.0											
Cen #Re	ter 2.43700 s BW 100	GHZ (HZ		#VBW	300 kHz			Sweep	span 54 5.27 ms (4.90 MHz 1001 pts)	

Figure Channel 6: (Chain B)

Product	:	HD-10
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 4: Transmit (802.11n MCS8 30Mbps 40M-BW) (2452MHz)

CHAIN	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)1	Limit	Result
А	-7.820	-4.810	< 8dBm	Pass
В	-7.370	-4.360	< 8dBm	Pass

Figure Channel 9: (Chain A)





Figure Channel 9: (Chain B)

9. EMI Reduction Method During Compliance Testing

No modification was made during testing.