

FCC Test Report

Product Name	LCD Monitor
Model No	LT1423pwCA
FCC ID	PU5LT1423PWCA

Applicant	Wistron Corporation
Address	21F., No. 88, Sec. 1, HsinTai 5th Rd., Hsichih Dist, New
	Taipei City 221 Taiwan

Date of Receipt	Jul. 31, 2013
Issued Date	Sep. 14, 2013
Report No.	138069R-RFUSP31V01
Report Version	V1.0



The test results relate only to the samples tested.

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Test Report Certification

Issued Date: Sep. 14, 2013 Report No.: 138069R-RFUSP31V01



Product Name	LCD Monitor	
Applicant	Wistron Corporation	
Address	21F., No. 88, Sec. 1, HsinTai 5th Rd., Hsichih Dist, New Taipei City 221 Taiwan	
Manufacturer	1.Wistron Corporation	
	2.Wistron InfoComm (Zhongshan) Corporation	
	3.Wistron Mexico S.A. DE C.V.	
Model No.	LT1423pwCA	
FCC ID.	PU5LT1423PWCA	
EUT Rated Voltage	AC 100-240V, 50/60Hz	
EUT Test Voltage	AC 120V/60Hz	
Trade Name	lenovo	
Applicable Standard	d FCC CFR Title 47 Part 15 Subpart E: 2012	
	ANSI C63.4: 2003, ANSI C63.10: 2009, FCC KDB-789033	
Test Result	Complied	

The Test Results relate only to the samples tested.

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Documented By :

panne

(Senior Adm. Specialist / Joanne Lin)

Tested By

Jack Hsu

(Engineer / Jack Hsu)

Approved By

(Manager / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	LCD Monitor
Trade Name	lenovo
FCC ID.	PU5LT1423PWCA
Model No.	LT1423pwCA
Eraguanay Danga	802.11a/n-20MHz: 5180-5240MHz
Frequency Range	802.11n-40MHz: 5190-5230MHz
Number of Channels	802.11a/n-20MHz: 4, n-40MHz: 2
Data Rate	802.11a/g: 6-54Mbps, 802.11n: up to 150Mbps
Channel Control	Auto
Type of Modulation	802.11a/n:OFDM, BPSK, QPSK, 16QAM, 64QAM
Antenna Type	Monopole Antenna
Antenna Gain	Refer to the table "Antenna List"
WIFI Dongle	1 Set
Touch Pen	1 Set
Protective Case	1 Set
USB Cable	Shielded, 1m
USB-Y Cable	Shielded, 0.25m
Power Adapter	MFR: Lenovo, M/N: 51J0249
	Input: AC 100-240V, 50/60Hz, 0.6A
	Output: DC 5V, 4.0A
	Cable Out: Non-Shielded, 2m, with one ferrite core bonded.
Contain Module IC	AzureWave / AW-AH389

Note: LCD Monitor must be paired with Wi-Fi Dongle, the Wi-Fi Dongle certification numbers are as follows: FCC ID: NKR03T8726 and IC: 4441A-03T8726.

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	INNOWAVE	25.90ANF.001/640-INNEP0022-A	Monopole	1.36 dBi for 5.15~5.25GHz

Note: The antenna of EUT is conform to FCC 15.203

802.11a/n-20MHz Center Working Frequency of Each Channel:

ChannelFrequencyChannelFrequencyChannelFrequencyChannelChannel 36:5180 MHzChannel 40:5200 MHzChannel 44:5220 MHzChannel 48:5240 MHz

802.11n-40MHz Center Working Frequency of Each Channel:

ChannelFrequencyChannelFrequencyChannel 38:5190 MHzChannel 46:5230 MHz

Note:

- 1. This device is a LCD Monitor with a built-in 2.4GHz and 5GHz Band WLAN transceiver this report for 5Ghz Band.
- 2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
- 3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11a is 6Mbps, 802.11n-20BW is 7.2Mbps and 802.11n-40BW are 15Mbps)
- 4. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart E for Unlicensed National Information Infrastructure devices.
- 5. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode	Mode 1: Transmit (802.11a-6Mbps)
	Mode 2: Transmit (802.11n-20BW 7.2Mbps)
	Mode 3: Transmit (802.11n-40BW 15Mbps)

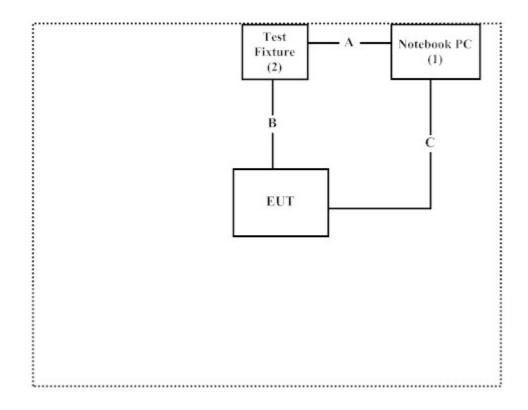
1.3. Tested System Datails

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

Pro	duct	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Notebook PC	DELL	PPT	N/A	N/A	Non-Shielded, 1.8m
2	Test Fixture	Wistron	N/A	N/A	N/A	N/A

	Signal Cable Type	Signal cable Description
А	USB to RS-232 Cable	Shielded, 1.5m
В	Signal Cable	Non-Shielded, 0.3m
С	USB Cable	Shielded, 1m

1.4. Configuration of tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4
- (2) Execute program "Tera Term V4.67" on the EUT.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Start transmits continually.
- (5) Verify that the EUT works properly.

1.6. Test Facility

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

Ambient conditions in the laboratory:

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 : http://www.quietek.com/

Site Description:File onFederal Communications CommissionFCC Engineering Laboratory7435 Oakland Mills RoadColumbia, MD 21046Registration Number: 92195

Site Name:	Quietek Corporation
Site Address:	No.5-22, Ruishukeng Linkou Dist., New Taipei City
	24451, Taiwan, R.O.C.
	TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
	E-Mail : <u>service@quietek.com</u>

FCC Accreditation Number: TW1014

2. Conducted Emission

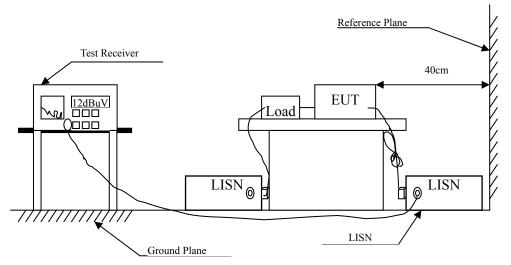
2.1. Test Equipment

	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., 2013	Peripherals
Х	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2013	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar, 2013	EUT
Х	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2013	
	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



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

2.3. Limits

Remarks : In the above table, the tighter limit applies at the band edges.

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.

The EUT was setup to ANSI C63.10, 2009; tested to DTS test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product	:	LCD Monitor
Test Item	:	Conducted Emission Test
Power Line	:	Line 1
Test Mode	:	Mode 3: Transmit (802.11n-40BW 15Mbps) (5190MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 1					
Quasi-Peak					
0.150	9.696	38.030	47.726	-18.274	66.000
0.185	9.698	30.490	40.188	-24.812	65.000
0.212	9.699	28.140	37.839	-26.390	64.229
0.236	9.700	25.400	35.100	-28.443	63.543
0.400	9.708	18.550	28.258	-30.599	58.857
6.060	9.840	15.180	25.020	-34.980	60.000
Average					
0.150	9.696	24.610	34.306	-21.694	56.000
0.185	9.698	18.530	28.228	-26.772	55.000
0.212	9.699	16.100	25.799	-28.430	54.229
0.236	9.700	13.950	23.650	-29.893	53.543
0.400	9.708	12.600	22.308	-26.549	48.857
6.060	9.840	10.520	20.360	-29.640	50.000

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	:	LCD Monitor
Test Item	:	Conducted Emission Test
Power Line	:	Line 2
Test Mode	:	Mode 3: Transmit (802.11n-40BW 15Mbps) (5190MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 2					
Quasi-Peak					
0.181	9.678	32.820	42.498	-22.616	65.114
0.193	9.678	31.810	41.488	-23.283	64.771
0.271	9.682	19.430	29.112	-33.431	62.543
0.388	9.687	19.590	29.277	-29.923	59.200
0.716	9.708	11.410	21.118	-34.882	56.000
6.154	9.840	14.140	23.980	-36.020	60.000
Average					
0.181	9.678	19.980	29.658	-25.456	55.114
0.193	9.678	20.860	30.538	-24.233	54.771
0.271	9.682	8.790	18.472	-34.071	52.543
0.388	9.687	14.320	24.007	-25.193	49.200
0.716	9.708	6.290	15.998	-30.002	46.000
6.154	9.840	9.210	19.050	-30.950	50.000

Note:

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

2. "means the worst emission level.

3. Measurement Level = Reading Level + Correct Factor

3. Maximun conducted output power

3.1. Test Equipment

_	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Х	Power Meter	Anritsu	ML2495A/6K00003357	May, 2013
Х	Power Sensor	Anritsu	MA2411B/0738448	Jun., 2013
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013
Not	. .			

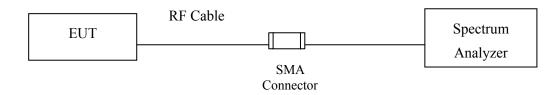
Note:

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

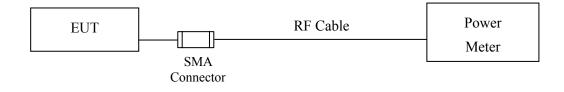
2. The test instruments marked with "X" are used to measure the final test results.

3.2. Test Setup

26dBc Occupied Bandwidth



Conduction Power Measurement



3.3. Limits

- (1) For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the Maximum conducted output power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
- (2) For the band 5.25-5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the Maximum conducted output power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
- (3) For the band 5.725-5.825 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1W or 17 dBm + 10log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the Maximum conducted output power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

3.4. Test Procedure

As an alternative to FCC KDB-789033, the EUT maximum conducted output power was measured with an average power meter employing a video bandwidth greater than 6dB BW of the emission under test. Maximum conducted output power was read directly from the meter across all data rates, and across three channels within each sub-band. Special care was used to make sure that the EUT was transmitting in continuous mode. This method exceeds the limitations of FCC KDB-789033, and provides more accurate measurements.

The Maximum conducted output power using KDB 789033 section E)3)b) Method PM-G (Measurement using a gated RF average power meter).

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Maximum conducted output power

Product	:	LCD Monitor
Test Item	:	Maximum conducted output power
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)

Cable		Maximum conducted output power								
				Γ	Data Rat	e (Mbps	5)			
Channel No.	Frequency (MHz)	6	9	12	18	24	36	48	54	Required Limit
		Measurement Level (dBm)								
36	5180	9.26								<17dBm
44	5220	9.37	9.22	9.15	9.03	8.91	8.79	8.65	8.51	<17dBm
48	5240	9.36								<17dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

Channel Number	Frequency	26dB Bandwidth	Output Power	Output Power Limit		
	(MHz)	(MHz)	(dBm)	(dBm)	dBm+10log(BW)	
36	5180	19.95	9.26	17	17.00	
44	5220	19.95	9.37	17	17.00	
48	5240	20.1	9.36	17	17.03	

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

26dBc Occupied Bandwidth:

			L	hanne	el 36				
	Analyzer - Swept SA								
Center Free	RF 50 Ω AC q 5.180000000) GHz PNO: Fast G	7		Avg Typ	ALIGN AUTO e: Log-Pwr	TRAC	M Sep 09, 2013 E 1 2 3 4 5 6 E M WWWWW T P N N N N N	Frequency
	Ref 20.00 dBm					Mkr		00 GHz 05 dBm	Auto Tun
.og 10.0 0.00		mhn	mmmm	manha	anna				Center Fre 5.180000000 GH
20.0	www.m.joorenala.p.e.d	2				3	Mar and a stranger	-27.63 dBm	Start Fre 5.155000000 Gi
i0.0								Mr Charlen and	Stop Fr 5.205000000 G
enter 5.18 Res BW 20		#VBW	/ 1.0 MHz			Sweep	Span 5 1.20 ms (CF Sto 5.000000 M
	f 5.1	184 20 GHz 170 00 GHz	Y -1.63 dBr -30.05 dBr		TION FU	NCTION WIDTH	FUNCTIO	N VALUE	<u>Auto</u> M
		189 95 GHz	-28.03 dBr						Freq Offs 0
7 8 9									
10 11 12									
G						STATUS	3		

Channel 36

Channel 40

Agilent Spectrum Analyzer - Sw					
⊯ RL RF 50 Ω Center Freq 5.22000		SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	10:13:37 AM Sep 09, 2013 TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
10 dB/div Ref 20.00 (Auto Tune				
10.0 0.00 -10.0	A south A	manaran prima			Center Freq 5.220000000 GHz
-20.0 -30.0 -40.0 -50.0	2 Vuunne herd		3	-28.52 dBm	Start Free 5.195000000 GHz
-50.0				MAN AND AND AND	Stop Fred 5.245000000 GHz
Center 5.22000 GHz #Res BW 200 kHz MKR MODE TRE SCL	#VBW	/ 1.0 MHz	Sweep	Span 50.00 MHz 1.20 ms (1001 pts) FUNCTION VALUE	CF Step 5.000000 MHz <u>Auto</u> Mar
1 N 1 f 2 N 1 f 3 N 1 f 4 5 6 6	5.221 50 GHz 5.210 00 GHz 5.229 95 GHz	-2.51 dBm -29.71 dBm -28.58 dBm			Freq Offset 0 Hz
7 8 9 10 11 12					
MSG	¥	ł	STATUS	3	



		Chain	101 40		
gilent Spectrum Analyzer	- Swept SA				
	50Ω AC	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	10:17:49 AM Sep 09, 2013 TRACE 1 2 3 4 5 6	Frequency
enter Freq 5.240	DUUUUUU GHZ PNO: Fast G IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	TYPE MWWWWW DET P N N N N N	
odB/div Ref 20.0)0 dBm		Mkr	2 5.230 00 GHz -30.13 dBm	Auto Tur
og 10.0					Center Fre
.00					5.240000000 G
0.0	- mark	mar when the second	mannen		
0.0	2		3		Start Fr
0.0				-28.63 dBm	5.215000000 G
0.0	for the second second		Contraction of the second seco	Mr. Marshanna & M. M. Marganipa	0.2100000000
0.0 manufundundund				" www. th. h. m. y - and	
0.0					Stop Fr
0.0					5.265000000 G
enter 5.24000 GH	2			Span 50.00 MHz	
Res BW 200 kHz		V 1.0 MHz	Sweep	1.20 ms (1001 pts)	CF St 5.000000 M
KR MODE TRC SCL	×		NCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> M
1 N 1 f 2 N 1 f	5.237 70 GHz 5.230 00 GHz	-2.63 dBm -30.13 dBm			
3 N 1 f	5.250 10 GHz	-30.52 dBm			Freq Offs
5					0
5					
3					
0 0					
2					
3			STATUS		
3			STATUS		

Channel 48

Product	:	LCD Monitor
Test Item	:	Maximum conducted output power
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-20BW 7.2Mbps)

Cable	Maximum conducted output power									
		Data Rate (Mbps)								
Channel No.	Frequency (MHz)	7.2	14.4	21.7	28.9	43.3	57.8	65	72.2	Required Limit
36	5180	9.22								<17dBm
44	5220	9.37	9.22	9.15	9.03	8.92	8.81	8.70	8.59	<17dBm
48	5240	9.32								<17dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

Channel Number	Frequency	26dB Bandwidth	Output Power	Output Power Limit	
	(MHz)	(MHz)	(dBm)	(dBm)	dBm+10log(BW)
36	5180	20.3	9.22	17	17.07
44	5220	20.25	9.37	17	17.06
48	5240	20.25	9.32	17	17.06

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

26dBc Occupied Bandwidth:

gilent Spectrum Analyzer - Swept SA 10:21:19 AM Sep 09, 2013 TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P N N N N N RL BF SENSE:INT Frequency Center Freq 5.180000000 GHz Avg Type: Log-Pwr Trig: Free Run #Atten: 30 dB PNO: Fast 😱 IFGain:Low Auto Tune Mkr2 5.169 85 GHz -29.00 dBm 10 dB/div Log Ref 20.00 dBm 10.0 **Center Freq** \mathcal{A}^{1} 5.18000000 GHz 0.00 Mar -10.0 -20.0 -3 Start Freq -28.32 dB -30.0 5.155000000 GHz -40.0 mymm 446 marian M. WWW -50.0 Stop Freq -60.0 5.20500000 GHz -70.0 Center 5.18000 GHz #Res BW 200 kHz Span 50.00 MHz Sweep 1.20 ms (1001 pts) CF Step 5.000000 MHz Man #VBW 1.0 MHz <u>Auto</u> MKR MODE TRC SCL FUNCTION FUNCTION WIDTH FUNCTION VALUE 5.183 40 GHz 5.169 85 GHz 5.190 15 GHz -2.32 dBm -29.00 dBm -30.01 dBm 1 N 1 f 2 N 1 f 3 N 1 f 4 **Freq Offset** 0 Hz 5 6 7 8 9 10 11 12 ISG STATUS

Channel 36

Channel 44

Agilent Spectrum Analyzer - Sw					
⊠ RL RF 50 Ω Center Freq 5.22000		SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	10:26:54 AM Sep 09, 2013 TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
10 dB/div Ref 20.00 (Auto Tune				
10.0 0.00		www.man	nonny		Center Freq 5.220000000 GHz
-20.0 -30.0 -40.0 -50.0 <u>whychland</u> roomaate	2		3	-28.36 dBm	Start Freq 5.195000000 GHz
-50.0					Stop Freq 5.245000000 GHz
Center 5.22000 GHz #Res BW 200 kHz	#VBW	/ 1.0 MHz	Sweep	Span 50.00 MHz 1.20 ms (1001 pts) FUNCTION VALUE	CF Step 5.000000 MHz <u>Auto</u> Man
1 N 1 f 2 N 1 f 3 N 1 f 4 5 6	5.223 40 GHz 5.209 85 GHz 5.230 10 GHz	-2.36 dBm -29.59 dBm -28.39 dBm			Freq Offset 0 Hz
7 8 9 10 11 12					
MSG			STATU	IS	



			nnel 48	CI					
							nalyzer - Swe		
Frequency	10:33:11 AM Sep 09, 2013 TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P N N N N N	ALIGNAUTO pe: Log-Pwr		SENSE:II Trig: Free Ru #Atten: 30 dB	NO: Fast 😱	PI	5.24000	er Freq	Cent
Auto Tun	Mkr2 5.229 90 GHz dB/div Ref 20.00 dBm -28.26 dBm								10 dB
Center Fre 5.240000000 GH			2ª	and the second second	man				Log 10.0 - 0.00 - -10.0 -
Start Fre 5.215000000 GH	-27.94 dBm	3			2	Harristory Daved	Murash water	- hundeletor	-20.0 -30.0 -40.0
Stop Fre 5.265000000 GH									-50.0 -60.0 -70.0
CF Ste 5.000000 MH	Span 50.00 MHz I.20 ms (1001 pts)	Sweep		1.0 MHz	#VBW		kHz	er 5.2400 BW 200	Res
Auto Mai FreqOffse 0 H	FUNCTION VALUE	UNCTION WIDTH	FUNCTION	Y -1.94 dBm -28.26 dBm -28.48 dBm	0 GHz	× 5.243 34 5.229 90 5.250 14		DDE TRG SCI N 1 f N 1 f N 1 f N 1 f N 1 f	1 3 4 5 6 7 8 9 10 11
		STATUS							12 sg

Channel 48

Product	:	LCD Monitor
Test Item	:	Maximum conducted output power
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n-40BW 15Mbps)

Cable		Maximum conducted output power								
		Data Rate (Mbps)								
Channel No.	Frequency (MHz)	15	30	45	60	90	120	135	150	Required Limit
		Measurement Level (dBm)								
38	5190	9.21	9.11	9.07	8.99	8.92	8.85	8.78	8.71	<17dBm
46	5230	9.31							-	<17dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

Channel Number	Frequency	26dB Bandwidth	Output Power	Output Power Limit	
	(MHz)	(MHz)	(dBm)	(dBm)	dBm+10log(BW)
38	5190	40.7	9.21	17	20.10
46	5230	40.7	9.31	17	20.10

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

26dBc Occupied Bandwidth:

gilent Spectrum Analyzer - Swept SA 10:36:31 AM Sep 09, 2013 TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P N N N N N RL BF SENSE:INT Frequency Center Freq 5.190000000 GHz Avg Type: Log-Pwr Trig: Free Run #Atten: 30 dB PNO: Fast 😱 IFGain:Low Auto Tune Mkr2 5.169 6 GHz -29.50 dBm 10 dB/div Log Ref 20.00 dBm 10.0 **Center Freq** $\langle \rangle^1$ 0.00 5.19000000 GHz Samo -10.0 -20.0 2 Start Freq -28.30 dB -30.0 5.140000000 GHz -40.0 MANNAN work maria -50.0 Stop Freq -60.0 5.240000000 GHz -70.0 Center 5.19000 GHz #Res BW 390 kHz Span 100.0 MHz Sweep 1.00 ms (1001 pts) **CF Step** 10.000000 MHz <u>0</u> Man #VBW 1.0 MHz <u>Auto</u> MKR MODE TRC SCL FUNCTION FUNCTION WIDTH FUNCTION VALUE 5.195 9 GHz 5.169 6 GHz 5.210 3 GHz -2.30 dBm -29.50 dBm -29.65 dBm 1 N 1 f 2 N 1 f 3 N 1 f 4 **Freq Offset** 0 Hz 5 6 7 8 9 10 11 12 ISG STATUS

Channel 38

Channel 46

1	AM Sep 09, 2013	10/40/06 4	ALIGNAUTO		ISE:INT	CEA			lyzer - Swe 50 Ω	i <mark>m An</mark> a RF	Spectru	rilent RL
Frequency	CE 1 2 3 4 5 6	TRACE 1 2 3 4 5 6		Avg Type			z	0000 GH			er Fr	
Auto Tur	PE MWWWWWW DET P N N N N N	DI				¹ Trig: Free #Atten: 30	IO: Fast 😱 Jain:Low	PI				
	9 6 GHz 58 dBm		Mk					Bm	20.00 d	Ref	/div	0 dB
Center Fre						1						og 10.0
5.230000000 GH				mound	mm	mont	mon).00 10.0
			\3				2					0.0 - 20.0 -
Start Fre 5.18000000 Gi	-28.36 dBm		ζ				/					0.0
	manhungung	and war alphony	اللهمال يعتا ولار وسو					and and a strend	ground for the	www	-ander Markon	40.0 50.0 -
Stop Fr												0.0
5.280000000 G												0.0
CF Ste 10.000000 M	100.0 MHz (1001 pts)		Sweep			1.0 MHz	#VBW) GHz (Hz		er 5.2 BW (
<u>Auto</u> M	ON VALUE	FUNCTIO	CTION WIDTH	TION FU		Y -2.36 dE		× 5.227 8				
Erog Offe					3m	-28.58 dE -28.48 dE	5 GHz	5.209 (f f	N 1 N 1 N 1	2
Freq Offs 0						-20.40 UL	7 0112	0.200		-		4 5
												6 7
												8 9
												0 1 2
		6	STATUS									G

4. Peak Power Spectral Density

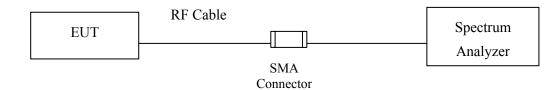
4.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2013
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

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



4.3. Limits

- (4) For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
- (5) For the band 5.25-5.35 GHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
- (6) For the band 5.725-5.825 GHz, the peak power spectral density shall not exceed 17 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

QuieTer

4.4. Test Procedure

The EUT was setup to ANSI C63.10, 2009; tested to DTS test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

The Peak Power Spectral Density using KDB 789033 section F) procedure, Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer. SA-1 method is selected to run the test.

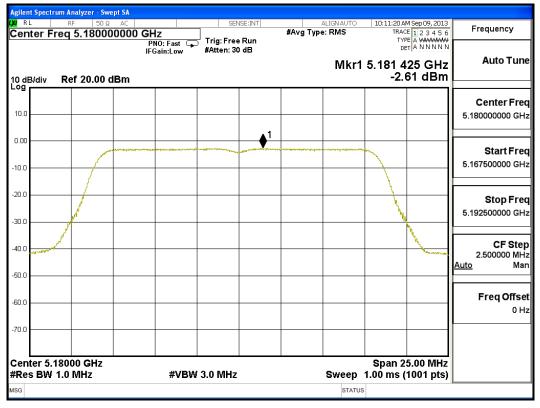
4.5. Uncertainty

± 1.27 dB

4.6. Test Result of Peak Power Spectral Density

Product	:	LCD Monitor
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)

Channel Number	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
36	5180	-2.610	<4	Pass
44	5220	-3.540	<4	Pass
48	5240	-3.210	<4	Pass



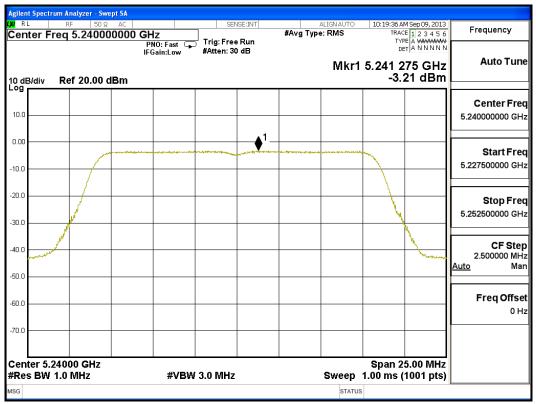
Channel 36:



	rum Analyzer - Swept SA					
a RL Center F	RF 50 Ω AC	0 GHz	SENSE:INT	ALIGNAUTO #Avg Type: RMS	10:14:42 AM Sep 09, 2013 TRACE 1 2 3 4 5 6	Frequency
0 dB/div	Ref 20.00 dBm	PNO: Fast 🌩 IFGain:Low	^J Trig: Free Run #Atten: 30 dB	Mkr1	5.221 600 GHz -3.54 dBm	Auto Tun
10.0						Center Fre 5.220000000 G⊦
0.00			∲ 1			Start Fre 5.207500000 G⊦
20.0						Stop Fre 5.232500000 GH
10.0 						CF Ste 2.500000 MH Auto Ma
60.0						Freq Offs 0 H
70.0						
	22000 GHz 1.0 MHz	#VBW	3.0 MHz	Sweep	Span 25.00 MHz 1.00 ms (1001 pts)	
SG				STATU	s	

Channel 44:

Channel 48:



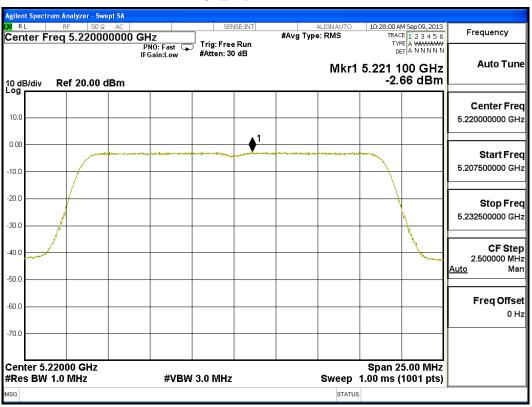
Product	:	LCD Monitor
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-20BW 7.2Mbps)

Channel Number	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
36	5180	-2.670	<4	Pass
44	5220	-2.660	<4	Pass
48	5240	-2.580	<4	Pass

Channel 36

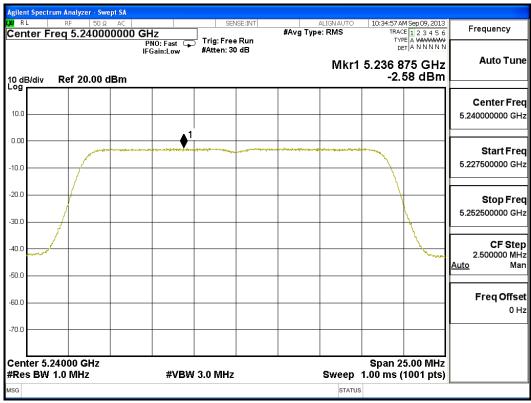
	trum Analyzer - Swe									
w. RL Center F	50 Ω Freq 5.18000	0000 G	Hz]		#Avg Type	ALIGNAUTO e: RMS	TRAC	M Sep 09, 2013	Frequency
10 dB/div	Ref 20.00 c	IF	PNO: Fast 🕞 Gain:Low	#Atten: 30			Mkr1	5.178 7	00 GHz 67 dBm	Auto Tune
10.0										Center Freq 5.180000000 GHz
-10.0				•	al al particular					Start Freq 5.167500000 GHz
-20.0										Stop Fred 5.192500000 GHz
-40.0	/								Mr.	CF Step 2.500000 MH <u>Auto</u> Mar
-50.0										Freq Offse 0 H
-70.0										
	.18000 GHz (1.0 MHz		#VBW	3.0 MHz			Sweep	Span 2 1.00 ms (5.00 MHz 1001 pts)	
MSG							STATU	6		





Channel 44

Channel 48



Product	:	LCD Monitor
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n-40BW 15Mbps)

Channel Number	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
38	5190	-5.870	<4	Pass
46	5230	-5.630	<4	Pass

Channel 38

gilent Spectrum Analyzer - Swept							
a RL RF 50 Ω Center Freq 5.190000	AC 000 GHz TI PN0: Fast T	SENSE:INT	Avg Type	LIGN AUTO : RMS	TYPE A	23456	Frequency
0 dB/div Ref 20.00 dB	IFGain:Low #/	Atten: 30 dB		Mkr	DET <u> A</u> 1 5.193 35	NNNNN	Auto Tune
10.0							Center Freq 5.190000000 GHz
10.0			·····	to the sector of			Start Fred 5.165000000 GHz
30.0							Stop Fred 5.215000000 GH:
40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0						~~~~~	CF Step 5.000000 MH <u>Auto</u> Mar
60.0							Freq Offse 0 H:
70.0 Center 5.19000 GHz Res BW 1.0 MHz	#VBW 3.0			Swoon	Span 50.0 1.00 ms (10	0 MHz	
	#4044 3.0	/ 141112		STATUS	1.00 115 (10	o i proj	

Channel 46

	trum Analyzer - Swe	ept SA							
Center	RF 50 Ω Freq 5.23000	AC 0000 GHz		ISE:INT	#Avg Type	ALIGNAUTO e: RMS	TRAC	M Sep 09, 2013 E 1 2 3 4 5 6	Frequency
10 dB/div	Ref 20.00 d	PNO: F: IFGain:L	ast 🖵 Trig: Free ow #Atten: 30			Mkr	1 5.231	60 GHz 63 dBm	Auto Tune
10.0									Center Freq 5.230000000 GHz
-10.0		n ang pang pang ang pang pang pang pang		• ¹					Start Freq 5.205000000 GHz
-20.0									Stop Freq 5.255000000 GHz
-40.0	~							A horas	CF Step 5.000000 MHz <u>Auto</u> Man
-60.0									Freq Offset 0 Hz
-70.0	22000 CH-						Cnor 5	0.00.041-	
	0.23000 GHz V 1.0 MHz	#	≉VBW 3.0 MH z			Sweep	1.00 ms (0.00 MHz 1001 pts)	

5. Peak Excursion

5.1. Test Equipment

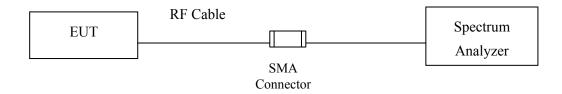
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2013
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

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

Conduction Power Measurement



5.3. Limits

The ratio of the peak excursion of the modulation envelope (measured suing a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

5.4. Test Procedure

The EUT was setup to ANSI C63.10, 2009; tested to DTS test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

- Step 1: Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth.
- Step 2: Find the maximum of the peak-max-hold spectrum.
 - (Set RBW = 1 MHz, VBW \geq 3 MHz, Detector = peak, Trace mode = max-hold, Allow the sweeps to continue until the trace stabilizes,Use the peak search function to find the peak of the spectrum.)
- Step 3: Use the procedure found under KDB-789033 F) to measure the PPSD.
- Step 4: Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

5.5. Uncertainty

± 1.27 dB

QuieTek

5.6. Test Result of Peak Excursion

Product	:	LCD Monitor
Test Item	:	Peak Excursion
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)

Channel No.	Frequency	Data Rate	Measurement Level	Required Limit	Result	
Chamlel No.	(MHz)	(Mbps)	(dB)	(dB)	Kesult	
44	5220	6	7.640	<13	Pass	
		12	8.980	<13	Pass	
		24	7.760	<13	Pass	
		54	7.790	<13	Pass	

Channel 44:

		Analyzer - Sv									
(X) RL Center		RF 50 9	2 AC 00000 G	Hz		E:INT	#Avg T	ALIGN AUTO ype: RMS	TRA	M Sep 09, 2013	Frequency
		012200	1	PNO: Fast ⊂ Gain:Low	Trig: Free #Atten: 30			Mkr1	D		Auto Tune
	0 dB/div Ref 20.00 dBm 4.17 dBm 4.17 dBm										
10.0 0.00				14 en	2	¹		M-Tot			Center Freq 5.220000000 GHz
-10.0		10 th Walter							- Joseph - J	\$	
-30.0	A A A A A A A A A A A A A A A A A A A									Mar Mar and	Start Fred 5.207500000 GHz
-50.0 -60.0											Stop Free 5.232500000 GH
-70.0											0.20200000 011
	enter 5.22000 GHz Span 25.00 MHz Res BW 1.0 MHz #VBW 3.0 MHz Sweep 1.00 ms (1001 pts)									CF Step 2.500000 MH	
MKR MODE		CL F	× 5.221 6	50 GHz	Y 4.17 dB		ICTION	FUNCTION WIDTH	FUNCTIO	IN VALUE	<u>Auto</u> Mar
2 N 3 4 5		F	5.218 8		-3.47 dB						Freq Offset 0 Hz
6 7 8											
9 10 11 12											
MSG								STATU	3		



	Spectr		alyzer - Swe								
Cente	er F	RF req :		AC 0000 GH			#Avg	ALIGNAUTO J Type: RMS	TRA	M Sep 09, 2013 CE 1 2 3 4 5 6 PE A MWMMW	Frequency
				IFO	NO: Fast Gain:Low	#Atten: 3		Mkr	[□] 1 5.225 7	00 GHz	Auto Tune
10 dB/ Log 10.0 —	div	Re	f 20.00 d	Bm		<u>2</u>	 	↓ 1	ə.	64 dBm	Center Freq
0.00 — -10.0 — -20.0 —			4				 		- When the second	N	5.220000000 GHz
-20.0	مر مربعہ م		Walth							and the second	Start Freq 5.207500000 GHz
-50.0 — -60.0 — -70.0 —											Stop Freq 5.232500000 GHz
L			0 GHz MHz		#VE	BW 3.0 MHz		Sweep	Span 2 1.00 ms (25.00 MHz (1001 pts)	CF Step 2.500000 MHz
				× 5.225 700		Y 5.64 di	UNCTION	FUNCTION WIDTH		IN VALUE	<u>Auto</u> Man
2 N 3 4 5 6		f		5.218 500		-3.34 di					Freq Offset 0 Hz
7 8 9 10 11											
12 MSG								STATU	JS		

Agilent Spectrum Analyzer - Sv	wept SA				
₩ RL RF 50 Center Freq 5.2200		SENSE:INT	ALIGNAUTO #Avg Type: RMS	11:31:09 AM Sep 09, 2013 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast G IFGain:Low	Trig: Free Run #Atten: 30 dB		TYPE A MWWWW DET A P N N N N	A
10 dB/div Ref 20.00	dBm		Mkr1	5.218 300 GHz 4.03 dBm	Auto Tune
10.0		↓ ¹			Center Freq
0.00	· · · · · · · · · · · · · · · · · · ·				5.220000000 GHz
-10.0					Ctort Eron
-30.0				huter	Start Freq 5.207500000 GHz
-50.0					
-60.0					Stop Freq 5.232500000 GHz
Center 5.22000 GHz				Span 25.00 MHz	
#Res BW 1.0 MHz	#VB\	N 3.0 MHz	Sweep	1.00 ms (1001 pts)	CF Step 2.500000 MHz
MKR MODE TRC SCL	× 5.218 300 GHz	4.03 dBm	UNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2 N 1 f 3 4	5.218 825 GHz	-3.73 dBm			Freq Offset
5					0 Hz
7 8					
9 10 11					
12 MSG			STATUS	5	

Agilent Spectrum Analyzer - S					
Center Freq 5.2200		SENSE:INT	ALIGNAUTO #Avg Type: RMS	11:32:19 AM Sep 09, 2013 TRACE 1 2 3 4 5 6 TYPE A MWWWW	Frequency
10 dB/div Ref 20.00	IFGain:Low	#Atten: 30 dB	Mkr1	5.218 150 GHz 4.02 dBm	
10.0 -10.0		▲ ¹ → ²			Center Freq 5.220000000 GHz
-20.0 -30.0 -40.0				A mark	Start Freq 5.207500000 GHz
-50.0					Stop Freq 5.232500000 GHz
Center 5.22000 GHz #Res BW 1.0 MHz		W 3.0 MHz	-	Span 25.00 MHz 1.00 ms (1001 pts) FUNCTION VALUE	
MKR MODE TRC SCL 1 N 2 f 2 N 1 f 3	× 5.218 150 GHz 5.219 025 GHz	4.02 dBm -3.77 dBm	NCTION FUNCTION WIDTH		Freq Offset
8 9 10 10 11 12 12 14 14 14 14 14 14 14 14 14 14 14 14 14			STATUS		

Product	:	LCD Monitor
Test Item	:	Peak Excursion
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-20BW 7.2Mbps)

Channel No.	Frequency	Data Rate	Measurement Level	Required Limit	Result
Channel IVO.	(MHz)	(Mbps)	(dB)	(dB)	Result
		MCS (0)	8.320	<13	Pass
	5220	MCS (2)	7.770	<13	Pass
44	5220	MCS (4)	7.830	<13	Pass
		MCS (7)	7.780	<13	Pass

Channel 44:

Agilent Spectrum Analyzer - Sw							
ເ₩ RL RF 50 Ω Center Freq 5.22000		SENSE:INT	#Avg Type	ALIGNAUTO e: RMS	TRAC	M Sep 09, 2013 E 1 2 3 4 5 6 E A MWWWW	Frequency
10 dB/div Ref 20.00	IFGain:Low	#Atten: 30 dB		Mkr1	5.217 8	T A P N N N N	Auto Tune
		● ¹	^2	allo-allo-allo-adore			Center Freq 5.220000000 GHz
-10.0 -20.0 -30.0						the the sur	Start Freq 5.207500000 GHz
-50.0 -60.0 -70.0							Stop Freq 5.232500000 GHz
Center 5.22000 GHz #Res BW 1.0 MHz	#VBV	V 3.0 MHz	JNCTION FUN	Sweep	Span 2 1.00 ms ('		CF Step 2.500000 MHz Auto Man
1 N 2 f 2 N 1 f 3 - - - 4 - - - 5 - - 6	5.217 875 GHz 5.223 925 GHz	5.45 dBm -2.87 dBm					Freq Offset
7 8 9 10 10 11 12 12							
MSG				STATUS			l



	um Analyzer - Sw									
wu RL Center F	RF 50 ۵ req 5.2200	00000 GH				#Avg Typ	ALIGNAUTO e: RMS	TRAG	M Sep 09, 2013 E 1 2 3 4 5 6 E A MWWWW	Frequency
		IFO	NO: Fast 🔾 Gain:Low	#Atten: 30			Mkr1	[⊳] 5.221 4	75 GHz	Auto Tune
10 dB/div Log	Ref 20.00	dBm		1 1			1	5.	39 dBm	
10.0		2				· · · · · · · · · · · · · · · · · · ·	· · · · · · · · ·			Center Freq 5.220000000 GHz
-10.0	<u> </u>								N N	Start Freq
-30.0									a hourself	5.207500000 GHz
-50.0										Stop Freq 5.232500000 GHz
-70.0										5.252500000 GH2
#Res BW			#VBV	V 3.0 MHz			· ·	1.00 ms (5.00 MHz 1001 pts)	CF Step 2.500000 MHz Auto Man
MKR MODE TR	f	× 5.221 47		Y 5.39 dB	m	CTION FU	NCTION WIDTH	FUNCTIO	IN VALUE	<u>Auto</u> Man
2 N 1 3 4 5 6	f	5.212 600	0 GHz	-2.38 dB	m					Freq Offset 0 Hz
7 8 9 10										
11 12 MSG							STATUS	3		

RL RF	50 Ω AC	SENSE:INT	ALIGN AUTO	11:55:58 AM Sep 09, 2013	_
nter Freq 5.22	20000000 GHz PNO: Fast IFGain:Low	Trig: Free Run #Atten: 30 dB	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE A M WWWW DET A P N N N N	Frequency
	.00 dBm		Mkr1	5.221 425 GHz 5.42 dBm	Auto Tur
9 .0 .0					Center Fro 5.220000000 Gi
				A designed	Start Fr 5.207500000 G
0 0 0					Stop Fr 5.232500000 G
nter 5.22000 G es BW 1.0 MHz	#VI	3W 3.0 MHz		Span 25.00 MHz 1.00 ms (1001 pts)	CF Sto 2.500000 M Auto M
R MODE TRC SCL N 2 f N 1 f	× 5.221 425 GHz 5.220 925 GHz	Y FU 5.42 dBm -2.41 dBm	NCTION FUNCTION WIDTH	FUNCTION VALUE	
					Freq Offs 0



		ctru		alyzer - Swe										
Cei		Fre	RF eq (AC				#Avg		ALIGNAUTO RMS	TRAG	M Sep 09, 2013 E 1 2 3 4 5 6 PE A MWWWW	Frequency
						NO: Fast (Gain:Low	#Atten: 3					D	ET A P N N N N	
											Mkr1		50 GHz	Auto Tune
	B/div	,	Ref	f 20.00 c	IBm			-				5.	40 dBm	
Log 10.1								 1						Contor From
0.0	-					· · ·		X	2					Center Freq 5.220000000 GHz
-10.0				Nor and a second		·····		V.				and and		5.22000000 GH2
-20.0			Λ.	/									\mathbf{X}	
		مم	7									1		Start Freq
-30.0			<i>.</i> ,										2 mone	5.207500000 GHz
-40.0		-												
-50.0) —								+					Oton From
-60.0)													Stop Freq 5.232500000 GHz
-70.0)								-					5.232500000 GHz
_	ter	5 2	200	0 GHz								Enan 2	5.00 MHz	
	es Bi					#VB	W 3.0 MHz				Sweep		1001 pts)	с сг эцер
	MODE				×				ICTION	Гля	CTION WIDTH		IN VALUE	2.500000 MHz Auto Man
<u> 1</u>	N	2	f		5.221 65	0 GHz	5.40 dl	Bm	NCTION	FUN	CHON WIDTH	FUNCTIO	IN VALUE	
2	Ν	1	f		5.221 72	5 GHz	-2.38 dl	Bm						F
4														Freq Offset
5 6														0 Hz
7														
8														
10														
11 12										-				
		1		1										
MSG											STATUS	5		

Product	:	LCD Monitor
Test Item	:	Peak Excursion
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n-40BW 15Mbps)

Channel No.	Frequency	Data Rate	Measurement Level	Required Limit	Degult
Channel No.	(MHz)	(Mbps)	(dB)	(dB)	Result
		MCS (0)	7.770	<13	Pass
16	5220	MCS (2)	7.060	<13	Pass
46	5230	MCS (4)	6.270	<13	Pass
		MCS (7)	8.580	<13	Pass

										Chai	nne	1 46	:							
		ctrum		lyzer - Sv																
Cen		Fre	RF q 5	50 s 5.2300		00 G		: Fast (SEI	NSE:IN e Run		#Avg		ALIGN AUTO E: RMS	0	TRA	PM Sep 09 CE 1 2 3 PE A MH ET A P N	456	Frequency
								n:Low	•	#Atten: 3	0 dB				Mk	r1 5		25 G		
	B/div	F	Ref	20.00	dBr	n												27 d		
Log 10.0										1										Center Free
0.00				Jor		-		-		martine a		2					<u>~~</u>			5.230000000 GH;
10.0				4			_								~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		$- \gamma^{h}$			
20.0			e for	<u> </u>												_	\rightarrow	h		01
30.0	August	-	4		_		_		_							_	}	L.		Start Free 5.205000000 GH
40.0	Carl Land	104pr	~				_									_			lenner	3.20300000 GH
50.0					_		_		_							_				
60.0							_									-				Stop Fre
70.0					_		_		_							_				5.255000000 GH
:en	ter :	5 23	001) GHz												S	nan :	50.00	MHZ	
	s Bl							#VB	W 3	.0 MHz					Sweep					
MKR	MODE		SCL			×				Y		FUNC	TION	FUN	CTION WIDTH	1	FUNCTI	ON VALUE		<u>Auto</u> Mai
1 2	N N	2	f			<u>5.227</u> 5.231				2.27 dl -5.50 dl				-		-				
3						0.201				0.00 4										Freq Offse
4 5																				он
6 7	_	-	_																_	
8		_																		
9																-				
11 12																				
SG															STATU	JS				L

Channel 46:



		ctrum		lyzer - Sw	vept SA											
Cen		Fre	RF q 5	50 s .2300				_	S⊟]] Trig:Fre		#Av		ALIGNAUTO e: RMS	TRA	PM Sep 09, 2013 CE 1 2 3 4 5 6 PE A MWWWW	Frequency
10 d	Bídiv		Ref	20.00	dBm		NO: Fas Gain:Lo		#Atten: 3				Mkr	1 5.228	45 GHz 49 dBm	Auto Tune
Log 10.0 0.00 -10.0				7				~		~	~					Center Freq 5.230000000 GHz
-20.0 -30.0 -40.0																Start Freq 5.205000000 GHz
-50.0 -60.0 -70.0																Stop Freq 5.255000000 GHz
Cen #Re	s BV	N 1.	0 N) GHz 1Hz	X		#\	/BW	3.0 MHz		FUNCTION	EUN	Sweep	1.00 ms	50.00 MHz (1001 pts)	CF Step 5.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9 10 11 12	N	2	f		5.	228 4	5 GHz 0 GHz		4.49 dl -2.57 dl	3m						Freq Offset 0 Hz
MSG													STATUS	6		

RL	um Analyzer RF	- Swept SA 50 Ω AC		SENSE:IN	τ.	ALIGN AUTO	01-00-155	M Sep 09, 2013	1
		0000000 GI	PNO: Fast C	Trig: Free Rur	#Avg 1	Type: RMS	TRA	CE 1 2 3 4 5 6 PE A MWWWW ET A P N N N N	Frequency
		IF	Gain:Low	#Atten: 30 dB		Mkr	1 5.228	50 GHz	Auto Tun
0 dB/div	Ref 20.	00 dBm					4.	01 dBm	
10.0									Center Fre
0.00	6								5.230000000 GH
20.0							1 /2		
.0.0	and a start of the							Magnessen and and and	Start Fr
40.0									5.205000000 G
50.0									Oton Er
50.0									Stop Fr 5,255000000 G
70.0									
	23000 GI 1.0 MHz	lz	#VB	A/ 3.0 MHz		Sweep		50.00 MHz (1001 pts)	CF Ste
KR MODE T		×		Y	FUNCTION	FUNCTION WIDTH		DN VALUE	5.000000 M <u>Auto</u> M
<mark>1</mark> N 2 2 N 1			50 GHz 70 GHz	4.01 dBm -2.26 dBm					
3									Freq Offs
5									0
7 8									
9									
10									
0									



Agilent Spectrum Analyzer - Swep					
		SENSE:INT	ALIGNAUTO #Avg Type: RMS	01:10:10 PM Sep 09, 2013 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast G IFGain:Low	┘ Trig: Free Run #Atten: 30 dB		TYPE A MWWWW DET A P N N N N	Auto Tune
10 dB/div Ref 20.00 dl Log	3m		Mkr	1 5.237 30 GHz 3.22 dBm	
10.0			↓		Center Freq
-10.0					5.230000000 GHz
-20.0					Otort From
-30.0				A where we	Start Freq 5.205000000 GHz
-40.0					
-60.0					Stop Freq
-70.0					5.255000000 GHz
Center 5.23000 GHz #Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep	Span 50.00 MHz 1.00 ms (1001 pts)	CF Step 5.000000 MHz
MKR MODE TRC SCL	× 5.237 30 GHz	Y FUI 3.22 dBm	TTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2 N 1 f	5.236 10 GHz	-5.36 dBm			Freq Offset
4 5					0 Hz
6 7					
8 9 10					
11 12					
MSG			STATUS	•	

6. Radiated Emission

6.1. Test Equipment

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

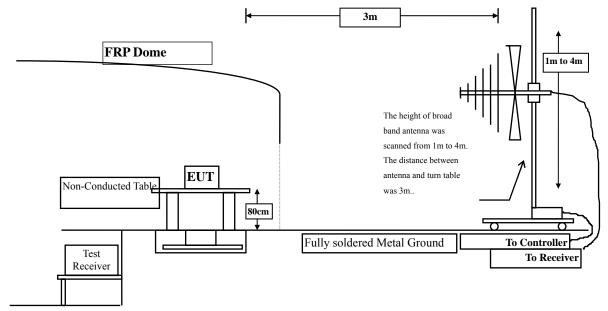
Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
Site # 3	Х	Loop Antenna	Teseq	HLA6120 / 26739	Jul., 2013
	Х	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2013
	Х	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2013
	X Horn Antenna Schwarzbeck BBHA9170/208		BBHA9170/208	Jul., 2013	
	X Pre-Amplifier QTK QTK-AMP-03 / 00		QTK-AMP-03 / 0003	May, 2013	
	X Pre-Amplifier		QTK	AP-180C / CHM_0906076	Sep., 2013
	Х	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar., 2013
	Х	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2013
	Х	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2013
	X Coaxial Cable QuieTek QTK-CABLE/ CAB5		Feb., 2013		
	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.

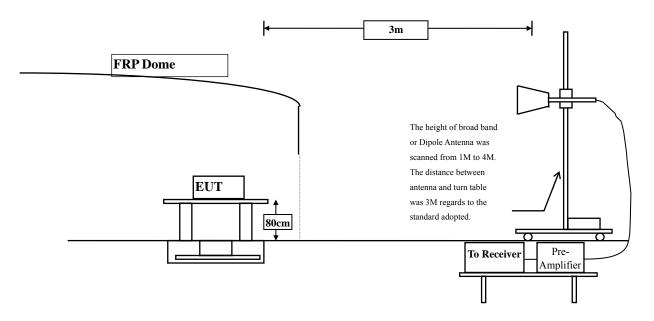
2. The test instruments marked with "X" are used to measure the final test results.

6.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



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.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits						
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (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	40				
88-216	150	43.5				
216-960	200	46				
Above 960	500	54				

Remarks: E field strength $(dBuV/m) = 20 \log E$ field strength (uV/m)

6.4. Test Procedure

The EUT was setup according to ANSI C63.10, 2009 and tested according to FCC KDB-789033 test procedure for compliance to FCC 47CFR 15. 407 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.

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.

6.5. Uncertainty

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

6.6. Test Result of Radiated Emission

Product	:	LCD Monitor
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps) (5180MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
10360.000	12.930	36.480	49.410	-24.590	74.000
15540.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average					
Detector:					
Vertical					
Peak Detector:					
10360.000	13.724	37.540	51.264	-22.736	74.000
15540.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average					
Detector:					

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 Test Item Test Site Test Mode	 LCD Monitor Harmonic Radiated Emission Data No.3 OATS Mode 1: Transmit (802.11a-6Mbps) (5220MHz) 						
Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m		
Horizontal							
Peak Detector:							
10440.000	13.322	37.870	51.192	-22.808	74.000		
15660.000	*	*	*	*	74.000		
20880.000	*	*	*	*	74.000		
26100.000	*	*	*	*	74.000		
Average							
Detector:							
Vertical							
Peak Detector:							
10440.000	14.245	41.220	55.465	-18.535	74.000		
15660.000	*	*	*	*	74.000		
20880.000	*	*	*	*	74.000		
26100.000	*	*	*	*	74.000		
Average							
Detector:							
10440.000	14.245	26.320	40.565	-13.435	54.000		

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 Test Item Test Site Test Mode	: No.3 OA	ic Radiated Emiss ATS	sion Data a-6Mbps) (5240MHz	:)	
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
10480.000	13.693	40.970	54.664	-19.336	74.000
15720.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
Average					
Detector:					
10480.000	13.693	27.400	41.094	-12.906	54.000
Vertical					
Peak Detector:					
10480.000	14.620	42.670	57.291	-16.709	74.000
15720.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
Average					
Detector:					
10480.000	14.620	28.500	43.121	-10.879	54.000

Note:

- 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 Test Item Test Site Test Mode	 LCD Monitor Harmonic Radiated Emission Data No.3 OATS Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5180MHz) 						
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBuV	dBuV/m	dB	dBuV/m		
Horizontal							
Peak Detector:							
10360.000	12.930	38.520	51.450	-22.550	74.000		
15540.000	*	*	*	*	74.000		
20720.000	*	*	*	*	74.000		
25900.000	*	*	*	*	74.000		
Average Detector:							
Vertical Peak Detector:							
10360.000	13.724	37.550	51.274	-22.726	74.000		
15540.000	*	*	*	*	74.000		
20720.000	*	*	*	*	74.000		
25900.000 Average Detector:	*	*	*	*	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 Test Item Test Site Test Mode	 LCD Monitor Harmonic Radiated Emission Data No.3 OATS Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5220MHz) 						
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBuV	dBuV/m	dB	dBuV/m		
Horizontal							
Peak Detector:							
10440.000	13.322	43.430	56.752	-17.248	74.000		
15660.000	*	*	*	*	74.000		
20880.000	*	*	*	*	74.000		
26100.000	*	*	*	*	74.000		
Average Detector:							
10440.000	13.322	28.480	41.802	-12.198	54.000		
Vertical							
Peak Detector:							
10440.000	14.245	42.540	56.785	-17.215	74.000		
15660.000	*	*	*	*	74.000		
20880.000	*	*	*	*	74.000		
26100.000	*	*	*	*	74.000		
Average Detector:							
10440.000	14.245	27.980	42.225	-11.775	54.000		

Note:

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 Test Item	 LCD Monitor Harmonic Radiated Emission Data 							
Test Site	: No.3 OA	: No.3 OATS						
Test Mode	: Mode 2:	Transmit (802.11	n-20BW 7.2Mbps) (3	5240MHz)				
Frequency	Correct	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
MHz	dB	dBuV	dBuV/m	dB	dBuV/m			
Horizontal								
Peak Detector:								
10480.000	13.693	44.770	58.464	-15.536	74.000			
15720.000	*	*	*	*	74.000			
20960.000	*	*	*	*	74.000			
26200.000	*	*	*	*	74.000			
Average								
Detector:								
10480.000	13.693	29.840	43.534	-10.466	54.000			
Vertical								
Peak Detector:								
10480.000	14.620	43.340	57.961	-16.039	74.000			
15720.000	*	*	*	*	74.000			
20960.000	*	*	*	*	74.000			
26200.000	*	*	*	*	74.000			
Average								
Detector:								
10480.000	14.620	28.040	42.661	-11.339	54.000			

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 Test Item Test Site Test Mode	 LCD Monitor Harmonic Radiated Emission Data No.3 OATS Mode 3: Transmit (802.11n-40BW 15Mbps) (5190MHz) 				
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
10380.000	12.939	36.930	49.869	-24.131	74.000
15570.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	74.000
Average					
Detector:					
Vertical					
Peak Detector:					
10380.000	13.796	36.890	50.686	-23.314	74.000
15570.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	74.000
Average					

Detector:

- 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 Test Item Test Site Test Mode	 LCD Monitor Harmonic Radiated Emission Data No.3 OATS Mode 3: Transmit (802.11n-40BW 15Mbps) (5230MHz) 				
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level	-	
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
10460.000	13.508	37.610	51.118	-22.882	74.000
15690.000	*	*	*	*	74.000
20920.000	*	*	*	*	74.000
26150.000	*	*	*	*	74.000
Average					
Detector:					
Vertical					
Peak Detector:					
10460.000	14.433	39.180	53.613	-20.387	74.000
15690.000	*	*	*	*	74.000
20920.000	*	*	*	*	74.000
26150.000	*	*	*	*	74.000
Average Detector:					

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 Test Item Test Site	 LCD Monitor General Radiated Emission No.3 OATS 				
Test Mode	: Mode 1	: Transmit (802.11	a-6Mbps) (5220MHz		
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector					
95.960	-7.820	47.278	39.458	-4.042	43.500
256.980	-5.073	41.108	36.035	-9.965	46.000
600.360	3.977	32.089	36.066	-9.934	46.000
712.880	3.569	25.684	29.253	-16.747	46.000
800.180	5.141	31.888	37.029	-8.971	46.000
961.200	6.450	24.347	30.797	-23.203	54.000
Vertical					
Peak Detector					
97.900	-1.400	38.377	36.976	-6.524	43.500
284.140	-8.194	34.993	26.799	-19.201	46.000
522.760	-0.334	32.147	31.813	-14.187	46.000
617.820	-2.327	33.622	31.295	-14.705	46.000
800.180	2.801	32.478	35.279	-10.721	46.000
961.200	7.260	23.742	31.002	-22.998	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.

Test Item : General Radiated Emission						
Test Site : No.3 OATS						
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5220MHz)						
Frequency Correct Reading Measurement Margin Li	mit					
Factor Level Level						
MHz dB dBuV dBuV/m dB dBu	ıV/m					
Horizontal						
Peak Detector						
97.900 -7.650 46.644 38.993 -4.507 43.	500					
256.980 -5.073 41.273 36.200 -9.800 46 .	000					
522.760 1.786 34.228 36.014 -9.986 46.	000					
600.3603.97732.41336.390-9.61046.	000					
800.180 5.141 31.157 36.298 -9.702 46.	000					
961.200 6.450 25.378 31.828 -22.172 54.	000					
Vertical						
Peak Detector						
97.900 -1.400 39.371 37.970 -5.530 43.	500					
522.760 -0.334 32.411 32.077 -13.923 46.	000					
617.820-2.32734.07831.751-14.24946.	000					
712.880 -0.631 26.966 26.335 -19.665 46.	000					
800.180 2.801 32.297 35.098 -10.902 46.	000					
961.200 7.260 24.593 31.853 -22.147 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	:	LCD Monitor
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n-40BW 15Mbps) (5190MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector					
97.900	-7.650	46.552	38.901	-4.599	43.500
256.980	-5.073	40.429	35.356	-10.644	46.000
600.360	3.977	31.974	35.951	-10.049	46.000
712.880	3.569	25.602	29.171	-16.829	46.000
800.180	5.141	31.409	36.550	-9.450	46.000
903.000	5.646	25.015	30.661	-15.339	46.000
Vertical					
Peak Detector					
284.140	-8.194	39.684	31.490	-14.510	46.000
522.760	-0.334	31.904	31.570	-14.430	46.000
617.820	-2.327	33.867	31.540	-14.460	46.000
687.660	2.444	23.088	25.532	-20.468	46.000
800.180	2.801	32.416	35.217	-10.783	46.000
970.900	7.302	22.551	29.853	-24.147	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.

7. Band Edge

7.1. Test Equipment

RF Conducted Measurement

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2013
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

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.

RF Radiated Measurement:

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

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 3		Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2013
	Х	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2013
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2013
		Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2013
	Х	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2013
		Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar., 2013
	Х	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2013
		Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2013
	Х	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2013
	Х	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	Х	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

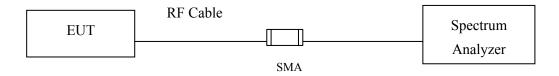
Note:

1. All instruments are calibrated every one year.

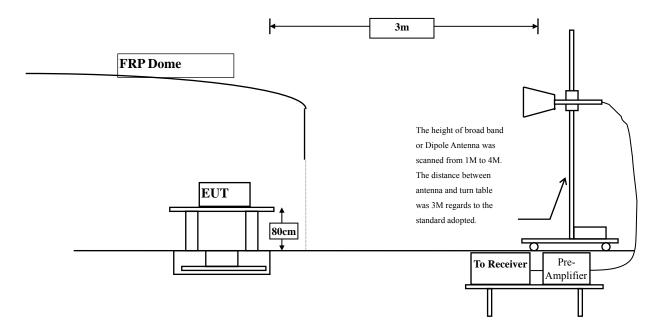
2. The test instruments marked by "X" are used to measure the final test results.

7.2. Test Setup

RF Conducted Measurement



RF Radiated Measurement:



7.3. Limits

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

FCC Part 15 Subpart C Paragraph 15.209(a) Limits				
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (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 : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

7.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 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 can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2009 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz. The EUT was setup to ANSI C63.10, 2009; tested to DTS test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

7.5. Uncertainty

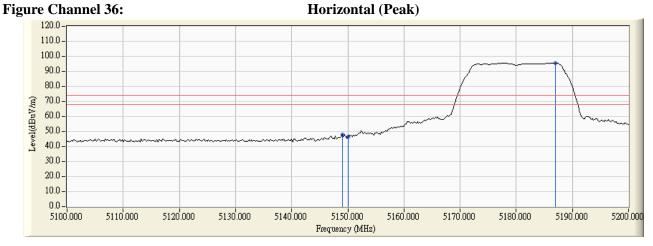
- \pm 3.8 dB below 1GHz
- ± 3.9 dB above 1GHz

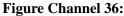
7.6. Test Result of Band Edge

Product	:	LCD Monitor
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)-Channel 36

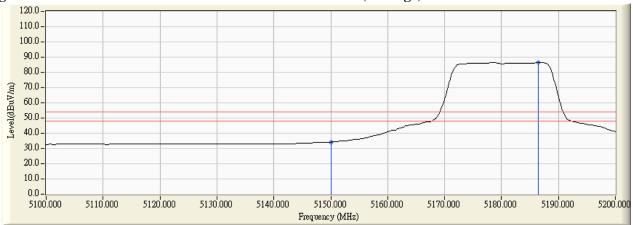
RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
36 (Peak)	5149.000	3.344	44.817	48.161	74.00	54.00	Pass
36 (Peak)	5150.000	3.340	43.369	46.709	74.00	54.00	Pass
36 (Peak)	5187.000	3.209	92.322	95.532			Pass
36 (Average)	5150.000	3.340	30.877	34.217	74.00	54.00	Pass
36 (Average)	5186.400	3.211	83.275	86.487			Pass





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.

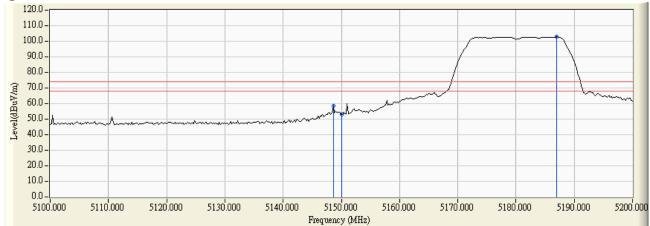
Product	:	LCD Monitor
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)-Channel 36

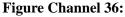
RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
36 (Peak)	5148.600	5.256	53.092	58.348	74.00	54.00	Pass
36 (Peak)	5150.000	5.260	47.846	53.106	74.00	54.00	Pass
36 (Peak)	5187.000	5.361	97.426	102.787			Pass
36 (Average)	5150.000	5.260	33.501	38.761	74.00	54.00	Pass
36 (Average)	5186.200	5.360	88.294	93.653			Pass

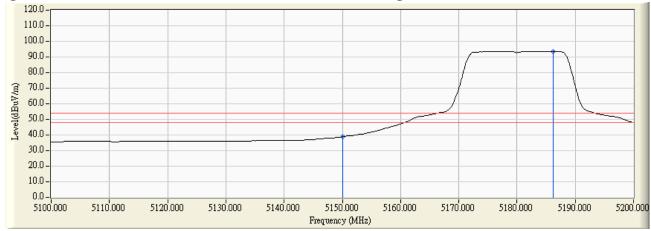
Figure Channel 36:

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	:	LCD Monitor
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)-Channel 48

Test Frequency	Measurement Level (20dB BW)	Limit	Result
(MHz)	(MHz)	(MHz)	
5240	5249.55	<5250	PASS

NOTE: Accordance with 15.215 requirement.

RL RF 50 s enter Freq 5.2400	Ω AC 00000 GHz PNO: Fast C IEGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN AUTO	10:18:29 AM Sep 09, 2013 TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P N N N N N	Frequency
) dB/div Ref 20.00		whiten: 30 db	Mkr	2 5.249 55 GHz -20.79 dBm	Auto Tur
		mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm			Center Fr 5.240000000 G
0.0 0.0 0.0	agendarian -		2 mhon	-20.65 dBm	Start Fr 5.215000000 G
D.0					Stop Fr 5.265000000 G
enter 5.24000 GHz Res BW 300 kHz R MODE TEC SCL	#VB	W 1.0 MHz	#Sweep	Span 50.00 MHz 500 ms (1001 pts)	CF St 5.00000 M Auto M
N 1 F 2 N 1 f 2 N 1 f 3 3 4 4 5 5 5 5 6 6 4 4 5 5 6 6 1 1 7 1 7 1 7 1 7 1 7 1	5.244 10 GHz 5.249 55 GHz	-0.65 dBm -20.79 dBm			Freq Offs
7 8 9 0 1					

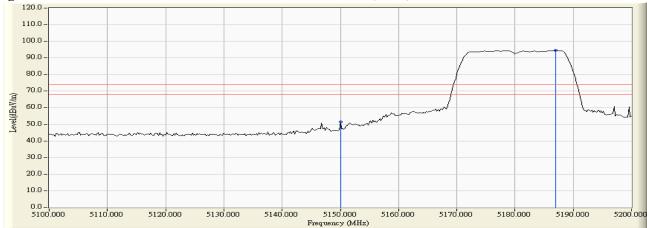
Product	:	LCD Monitor
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-20BW 7.2Mbps) -Channel 36

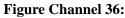
RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
36 (Peak)	5150.000	3.340	48.217	51.557	74.00	54.00	Pass
36 (Peak)	5187.000	3.209	91.242	94.452			Pass
36 (Average)	5150.000	3.340	31.024	34.364	74.00	54.00	Pass
36 (Average)	5177.000	3.246	81.605	84.850			Pass

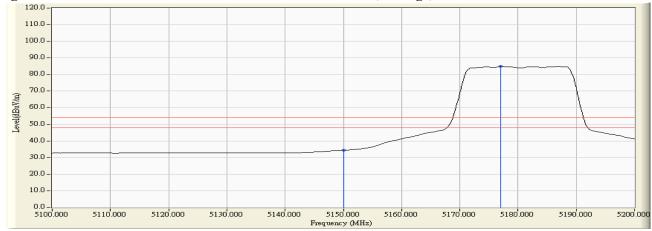
Figure Channel 36:

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.

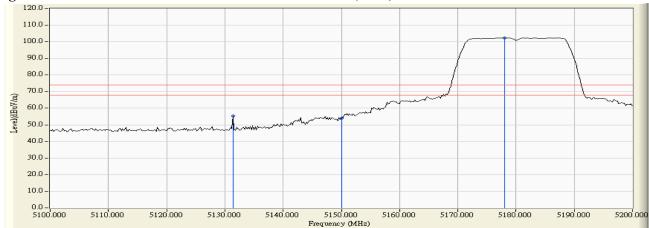
Product	:	LCD Monitor
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-20BW 7.2Mbps) -Channel 36

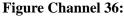
RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
36 (Peak)	5131.400	5.209	50.125	55.333	74.00	54.00	Pass
36 (Peak)	5150.000	5.260	48.811	54.071	74.00	54.00	Pass
36 (Peak)	5178.000	5.335	97.078	102.414			Pass
36 (Average)	5150.000	5.260	34.367	39.627	74.00	54.00	Pass
36 (Average)	5177.000	5.335	87.682	93.016			Pass

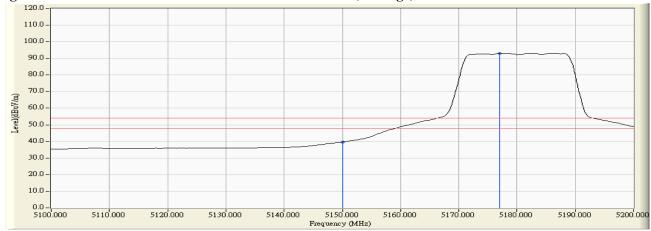
Figure Channel 36:

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	:	LCD Monitor
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-20BW 7.2Mbps) -Channel 48

Test Frequency	Measurement Level (20dB BW)	Limit	Result
(MHz)	(MHz)	(MHz)	
5240	5249.80	<5250	PASS

NOTE: Accordance with 15.215 requirement.

enter Fr	RF 50 9 eq 5.2400	00000 GH	Iz NO: Fast ⊂	Trig: Free		Avg Typ	ALIGNAUTO e: Log-Pwr	TRAC	M Sep 09, 2013 2E 1 2 3 4 5 6 2E M WWWWWW	Frequency
		IF	Gain:Low	#Atten: 30	dB		Mkr	2 5.249	80 GHz	Auto Tui
0 dB/div og 10.0	Ref 20.00	dBm						-20.3	95 dBm	
0.00			Jum	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~1	m				Center Fre 5.240000000 Gi
0.0			/				2		-20.67 dBm	Start Fr
0.0	and and the second	www.					maluma	-	manghine	5.215000000 G
										Stop Fr
0.0										5.265000000 G
enter 5.2 Res BW 3	4000 GHz 300 kHz		#VBV	/ 1.0 MHz			#Sweep		0.00 MHz 1001 pts)	CF St 5.000000 M
krimode tro 1 n 1 2 n 1	SCL f	× 5.243 3 5.249 8		-0.67 dBi -20.95 dBi		TION FUI	NCTION WIDTH	FUNCTIO	IN VALUE	<u>Auto</u> N
2 IN 1 3 4 5		5.249 6		-20.95 061						Freq Offs 0
5 6 7 8										
9 9 0										
2						<u> </u>				

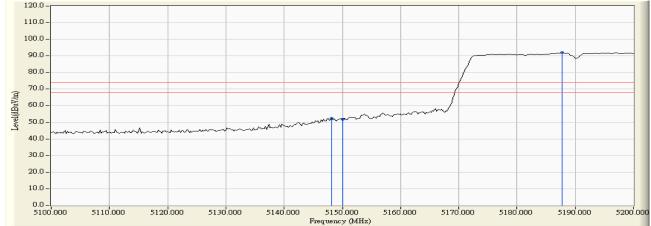
roduct	:	LCD Monitor
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n-40BW 15Mbps) -Channel 38

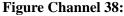
RF Radiated Measurement (Horizontal):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Result
Channel No.	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
38 (Peak)	5148.200	3.347	49.118	52.465	74.00	54.00	Pass
38 (Peak)	5150.000	3.340	48.375	51.715	74.00	54.00	Pass
38 (Peak)	5187.800	3.207	88.723	91.929			Pass
38 (Average)	5150.000	3.340	36.396	39.736	74.00	54.00	Pass
38 (Average)	5198.400	3.159	79.534	82.693			Pass

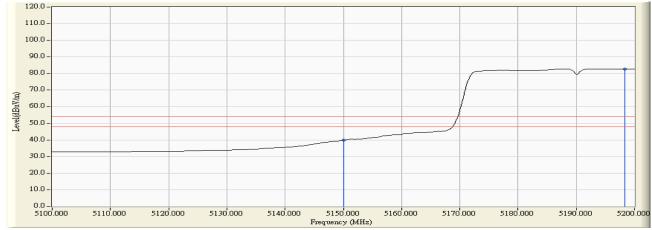
Figure Channel 38:

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.

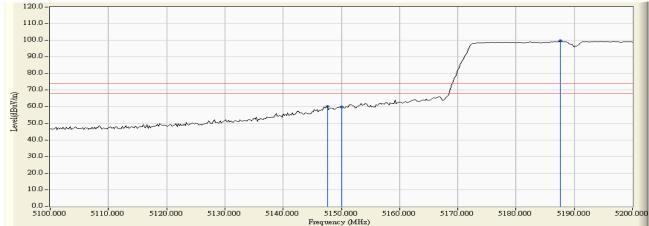
Product	:	LCD Monitor
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n-40BW 15Mbps) -Channel 38

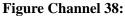
RF Radiated Measurement (Vertical):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Result
Channel No.	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	Result
38 (Peak)	5147.600	5.253	55.009	60.262	74.00	54.00	Pass
38 (Peak)	5150.000	5.260	54.664	59.924	74.00	54.00	Pass
38 (Peak)	5187.600	5.362	94.219	99.582			Pass
38 (Average)	5147.600	5.253	40.630	45.883	74.00	54.00	Pass
38 (Average)	5150.000	5.260	41.846	47.106	74.00	54.00	Pass
38 (Average)	5188.200	5.363	84.687	90.051			Pass

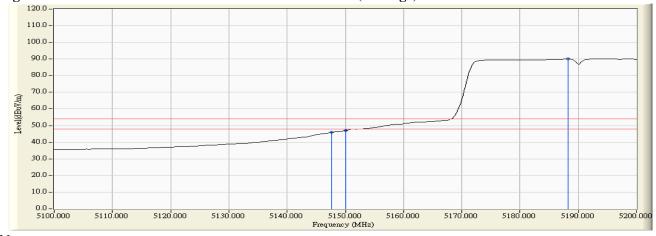
Figure Channel 38:

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	:	LCD Monitor
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n-40BW 15Mbps)-Channel 46

Test Frequency	Measurement Level (20dB BW)	Limit	Result
(MHz)	(MHz)	(MHz)	
5230	5249.70	<5250	PASS

NOTE: Accordance with 15.215 requirement.

RL		RF 50 9			SEM	NSE:INT	A T	ALIGN AUTO		M Sep 09, 2013 E 1 2 3 4 5 6	Frequency
entei	r Frec	5.2300		1Z NO: Fast ⊂ Gain:Low	Trig: Free #Atten: 30		Avgiyp	e: Log-Pwr	TY	ET P N N N N N	
) dB/d	iv R	ef 20.00	dBm					MI		9 7 GHz 14 dBm	Auto Tui
											Center Fr
.00						1					5.230000000 G
0.0				- market	merener	Vunnen		2			
1.0				/				• -		-23.49 dBm	Start Fr
).0).0											5.18000000 G
).0).0	high	atronation the						"add where	mondulum	mound	
0.0											Stop Fr
).0											5.280000000 G
		00 GHz				I				00.0 MHz	CF St
	SW 301			#VB	W 1.0 MHz			-		1001 pts)	10.000000 N Auto N
1 N	E TRC SI	-		9 GHz	-3.49 dE	3m	CTION FU	JNCTION WIDTH	FUNCTIO	IN VALUE	Auto W
2 N 3	1 f	,	5.249	7 GHz	-24.14 dE	3m					Freq Offs
5											0
5 7											
5 7 3											
6 7 8 9 0 1 2											

8. Frequency Stability

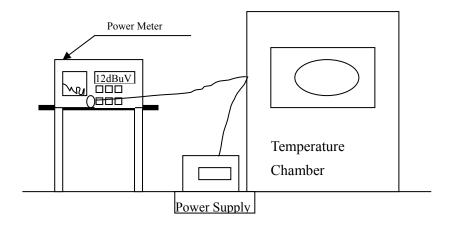
8.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2013
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

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

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified

8.4. Test Procedure

The EUT was setup to ANSI C63.10, 2009; tested to DTS test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

8.5. Uncertainty

± 150 Hz

8.6. Test Result of Frequency Stability

Product	:	LCD Monitor
Test Item	:	Frequency Stability
Test Site	:	Temperature Chamber
Test Mode	:	Carrier Wave

Test C	Conditions	Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
		36	5180.0000	5180.0065	-0.0065
		38	5190.0000	5190.0091	-0.0091
Tnom (20) °C	Vnom (120)V	44	5220.0000	5220.0098	-0.0098
		46	5230.0000	5230.0087	-0.0087
		48	5240.0000	5240.0101	-0.0101
		36	5180.0000	5180.0058	-0.0058
		38	5190.0000	5190.0099	-0.0099
Tnom (50) °C	Vnom (138)V	44	5220.0000	5220.0095	-0.0095
		46	5230.0000	5230.0085	-0.0085
		48	5240.0000	5240.0098	-0.0098
		36	5180.0000	5180.0063	-0.0063
	Vnom (102)V	38	5190.0000	5190.0092	-0.0092
Tnom (50) °C		44	5220.0000	5220.0101	-0.0101
1 noin (50) C		46	5230.0000	5230.0085	-0.0085
		48	5240.0000	5240.0103	-0.0103
		140	5700.0000	5700.0098	-0.0098
		36	5180.0000	5180.0059	-0.0059
		38	5190.0000	5190.0101	-0.0101
Tnom (0) °C	Vnom (138)V	44	5220.0000	5220.0098	-0.0098
		46	5230.0000	5230.0087	-0.0087
		48	5240.0000	5240.0100	-0.0100
		36	5180.0000	5180.0100	-0.0100
		38	5190.0000	5190.0089	-0.0089
Tnom (0) °C	Vnom (102)V	44	5220.0000	5220.0095	-0.0095
		46	5230.0000	5230.0098	-0.0098
		48	5240.0000	5240.0094	-0.0094

9. EMI Reduction Method During Compliance Testing

No modification was made during testing.