FCC Test Report

Report No.: AGC00074141101FE01

FCC ID	:	XBI19003200
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Cloud Digital Photo Frame
BRAND NAME	:	SUNGALE
MODEL NAME	:	Refer to page 5
CLIENT	:	SUNGALE ELECTRONICS (SHENZHEN) CO., LTD.
DATE OF ISSUE	:	Dec.15, 2014
STANDARD(S) **TEST PROCEDURE(S)**	:	FCC Part 15.247 KDB 558074 v03r02
REPORT VERSION	:	V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Dec.15, 2014	Valid	Original Report

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1. VERIFICATION OF CONFORMITY

Applicant	SUNGALE ELECTRONICS (SHENZHEN) CO., LTD.
Address	Floor 4, Building D, liyue industrial park, the fourth industiral zone of Phoenix, Fuyong, BaoAn, Shenzhen,China
Manufacturer	SUNGALE ELECTRONICS (SHENZHEN) CO., LTD.
Address	Floor 4, Building D, liyue industrial park, the fourth industiral zone of Phoenix, Fuyong, BaoAn, Shenzhen,China
Product Designation	Cloud Digital Photo Frame
Brand Name	SUNGALE
Test Model	CD1900WV
Series Model	AD702,AD702W,AD1021W,AD1500W,AD1500W+,AD3200WV,CD1900WV,CD2200WV, CPF708,CPF716,CPF791,CPF802,CPF826,CPF892,CPF1032,CPF1051,CPF1068, CPF1208,CPF1510,CPF1518,CPF1536,CPF1503,CPF1702,CPF1706,CPF1903, CPF1907,CPF1908,CPF1909,CPF2200,CPF2208,CPF2905,CPF2907,CPF3201, CPF3208,CPF3209,CPF3210,CPF4200,CPF4207,CPF4208,CPF4800,CPF5030, CPF5500,KS401,KS502,KS701,KS705,KS708,KS782,KS785,KS786,KS787,KS788, KS789,KS790,KS802,KS806,KS813,KS856,KS890,KS892,KS893,KS894,KS895, KS896,KS897,KS1012,KS1016,KS1028,KS1029,KS1030,KS1031,KS1500,KWS430, KWS433,KWS436,KWS630,KWS752,KWS759,KWS808
Difference description	All the same except for the model name.
Date of test	Dec.06, 2014 to Dec.12, 2014
Deviation	None
Condition of Test Sample	Normal
Report Template	AGCRT-US-BGN/RF

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with requirement of FCC Part 15 Rules requirement.

Prepared By	Max Zhang	Dec.15, 2014
Checked By	Kidd Yang	Dec.15, 2014
Authorized By	Solger Zhang	Dec.15, 2014

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as “Cloud Digital Photo Frame”. It is designed by way of utilizing the DSSS and OFDM technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.412 GHz～2.462GHz
Output Power	IEEE 802.11b:9.73dBm; IEEE 802.11g:7.75dBm; IEEE 802.11n(20):6.63dBm; IEEE 802.11n(40):3.86dBm
Modulation	DSSS(DBPSK/DQPSK/CCK);OFDM(BPSK/QPSK/16-QAM/64-QAM)
Number of channels	11
Hardware Version	YF-A23-004RM V2.2
Software Version	Android 4.4
Antenna Designation	Integral Antenna
Antenna Gain	0.5dBi
Power Supply	DC12V by Adapter

2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
2400~2483.5MHZ	1	2412 MHZ
	2	2417 MHZ
	3	2422 MHZ
	4	2427 MHZ
	5	2432 MHZ
	6	2437 MHZ
	7	2442 MHZ
	8	2447 MHZ
	9	2452 MHZ
	10	2457 MHZ
	11	2462 MHZ

Note: For 20MHZ bandwidth system use Channel 1 to Channel 11
For 40MHZ bandwidth system use Channel 3 to Channel 9

2.3. IEEE 802.11N MODULATION SCHEME

MCS Index	Nss	Modulation	R	NBPSC	NCBPS		NDBPS		Data rate(Mbps) 800nsGI	
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0
6	1	64-QAM	3/4	6	312	648	234	489	58.5	121.5
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	Guard interval

2.4. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: XBI19003200** filing to comply with the FCC Part 15 requirements.

2.5. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4 (2003).
Radiated testing was performed at an antenna to EUT distance 3 meters.
Others testing (listed at item 5.3) was performed according to the procedures in FCC Part 15.247 rules KDB 558074 D01 DTS Meas Guidance v03r02.

2.6. SPECIAL ACCESSORIES

Refer to section 5.2.

2.7. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. MEASUREMENT UNCERTAINTY

Conducted measurement: +/- 2.75dB
Radiated measurement: +/- 3.2dB

4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Low channel TX
2	Middle channel TX
3	High channel TX
4	Normal operating
Note: Transmit by 802.11b with Date rate (1/2/5.5/11) Transmit by 802.11g with Date rate (6/9/12/18/24/36/48/54) Transmit by 802.11n (20MHz) with Date rate (6.5/13/19.5/26/39/52/58.5/65) Transmit by 802.11n (40MHz) with Date rate (13.5/27/40.5/54/81/108/121.5/135)	

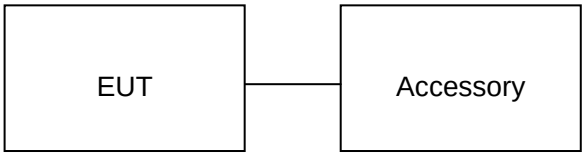
Note:

1. The EUT has been set to operate continuously on the lowest, middle and highest operation frequency Individually, and the eut is operating at its maximum duty cycle>or equal 98%
2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.
3. For Radiated Emission, 3axis were chosen for testing for each applicable mode.

5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure:



5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Mfr/Brand	Model/Type No.	Remark
1	Cloud Digital Photo Frame	SUNGALE	CD1900WV	EUT
2	Adapter	N/A	SOY024A-1200200US	Accessory

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.247	Output Power	Compliant
§15.247	6 dB Bandwidth	Compliant
§15.247	Conducted Spurious Emission	Compliant
§15.247	Maximum Conducted Output Power SPECTRAL Density	Compliant
§15.209	Radiated Emission	Compliant
§15.247	Band Edges	Compliant
§15.207	Line Conduction Emission	Compliant

Note: The EUT received power from an adapter.

6. TEST FACILITY

Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	B112-B113,Building 12, Baoan Building Materials Center, No.1 of Xixiang Inner Ring Road, Baoan District, Shenzhen, Guangdong, P.R.China
Description	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2003.

ALL TEST EQUIPMENT LIST

Description	Manufacturer	Model	Cal. Date	Cal. Due
Power Sensor	R&S	NRP-Z23	07/25/2014	07/24/2015
RF attenuator	WEINSCHEL CORP	58-30-33	07/25/2014	07/24/2015
Spectrum Analyzer	Agilent	E4440A	07/16/2014	07/15/2015
Amplifier	EM	BBV 9718	07/30/2014	07/29/2015
HORN ANTENNA	Schwarzbeck	3117	08/17/2014	08/16/2015
HORN ANTENNA	A.H. SYSTEMS INC.	SAS-574	07/16/2014	07/15/2015
EMI Test Receiver	Rohde & Schwarz	ESCI	07/25/2014	07/24/2015
WIDEBAND REQUENCY ANTENNA	SCHWARZBECK	VULB9168	08/16/2014	08/15/2015
Loop Antenna	LAPLACE	RF300	07/30/2014	07/29/2015
LISN	R&S	ESH3-Z5	09/05/2014	09/04/2015
RF CABLE	SUIRONG	9KHZ-30MHZ	07/15/2014	07/14/2015
RF CABLE	SUIRONG	30MHZ-18GHZ	07/15/2014	07/14/2015
RF CABLE	SUIRONG	18GHZ-25GHZ	07/15/2014	07/14/2015
Conduction Cable	Sat	CE1	07/15/2014	07/14/2015

7. OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

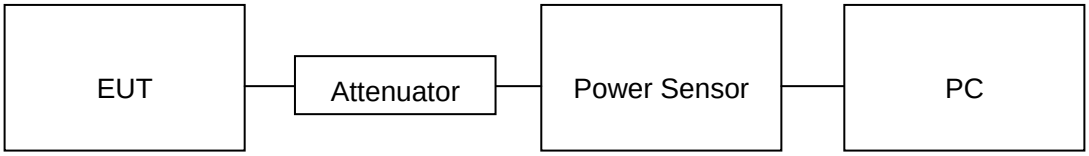
For average power test:

1. Connect EUT RF output port to power probe through an RF attenuator.
2. Connect the power probe to the PC.
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Record the maximum power from the software.

Note：The EUT was tested according to KDB 558074v03r02 for compliance to FCC 47CFR 15.247 requirements.

7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

AVERAGE POWER SETUP



7.3. LIMITS AND MEASUREMENT RESULT

TEST ITEM	OUTPUT POWER
TEST MODE	802.11b with data rate 1

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	9.73	30	Pass
2.437	9.51	30	Pass
2.462	9.42	30	Pass

TEST ITEM	OUTPUT POWER
TEST MODE	802.11g with data rate 6

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	7.75	30	Pass
2.437	7.36	30	Pass
2.462	7.19	30	Pass

TEST ITEM	OUTPUT POWER
TEST MODE	802.11n 20 with data rate 6.5

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	6.63	30	Pass
2.437	6.61	30	Pass
2.462	6.46	30	Pass

TEST ITEM	OUTPUT POWER
TEST MODE	802.11n 40 with data rate 13.5

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.422	3.86	30	Pass
2.437	3.61	30	Pass
2.452	3.53	30	Pass

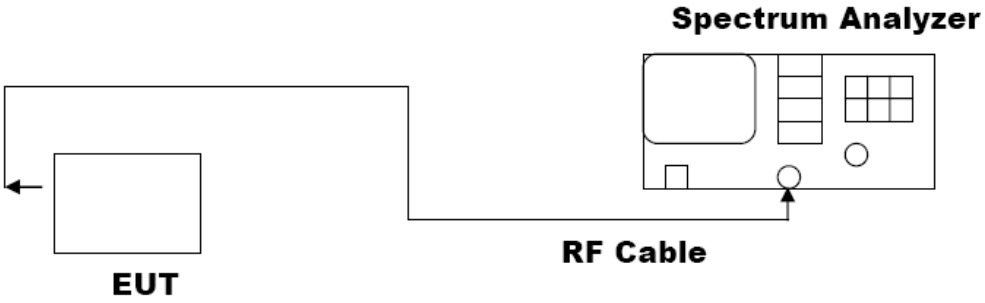
8. 6DB BANDWIDTH

8.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW⩾3×RBW.
4. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



8.3. LIMITS AND MEASUREMENT RESULTS

TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11b with data rate 11

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	**Applicable Limits**		
	Test Data (MHz)		**Criteria**
>500KHZ	Low Channel	10.07	PASS
	Middle Channel	10.07	PASS
	High Channel	10.07	PASS

TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11g with data rate 54

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	**Applicable Limits**		
	Test Data (MHz)		**Criteria**
>500KHZ	Low Channel	15.15	PASS
	Middle Channel	15.14	PASS
	High Channel	15.15	PASS

TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11n 20 with data rate 65

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	**Applicable Limits**		
	Test Data (MHz)		**Criteria**
>500KHZ	Low Channel	15.15	PASS
	Middle Channel	15.34	PASS
	High Channel	15.47	PASS

TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11n 40 with data rate 135

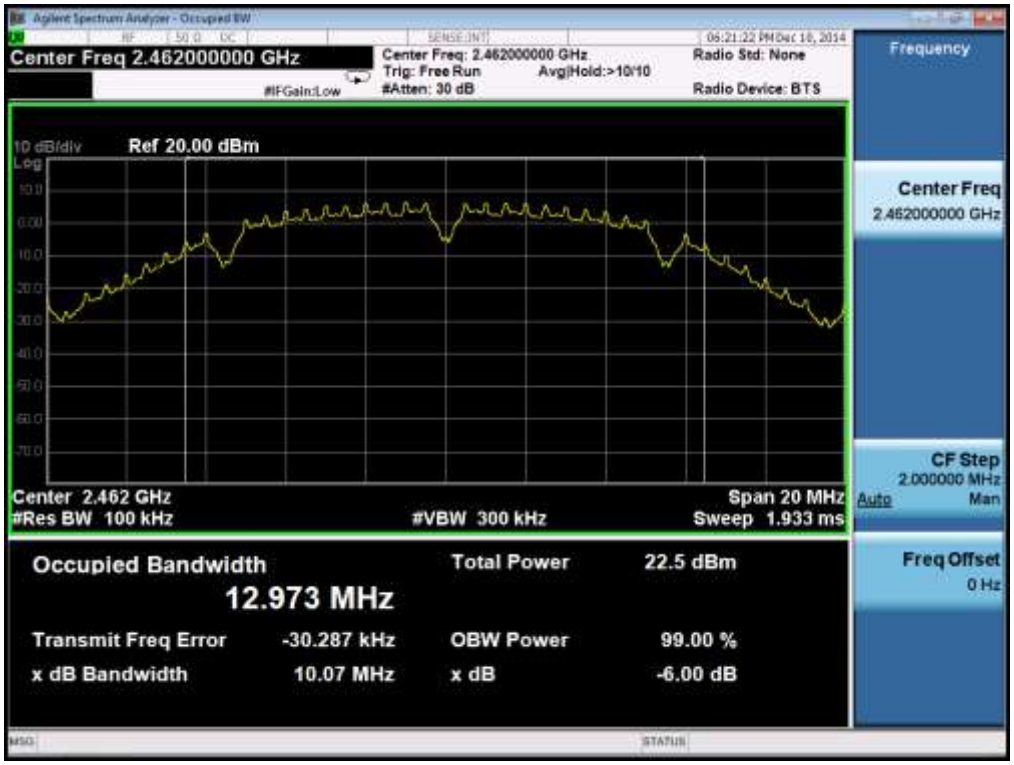
LIMITS AND MEASUREMENT RESULT			
Applicable Limits	**Applicable Limits**		
	Test Data (MHz)		**Criteria**
>500KHZ	Low Channel	35.20	PASS
	Middle Channel	35.19	PASS
	High Channel	35.20	PASS

802.11b TEST RESULT

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

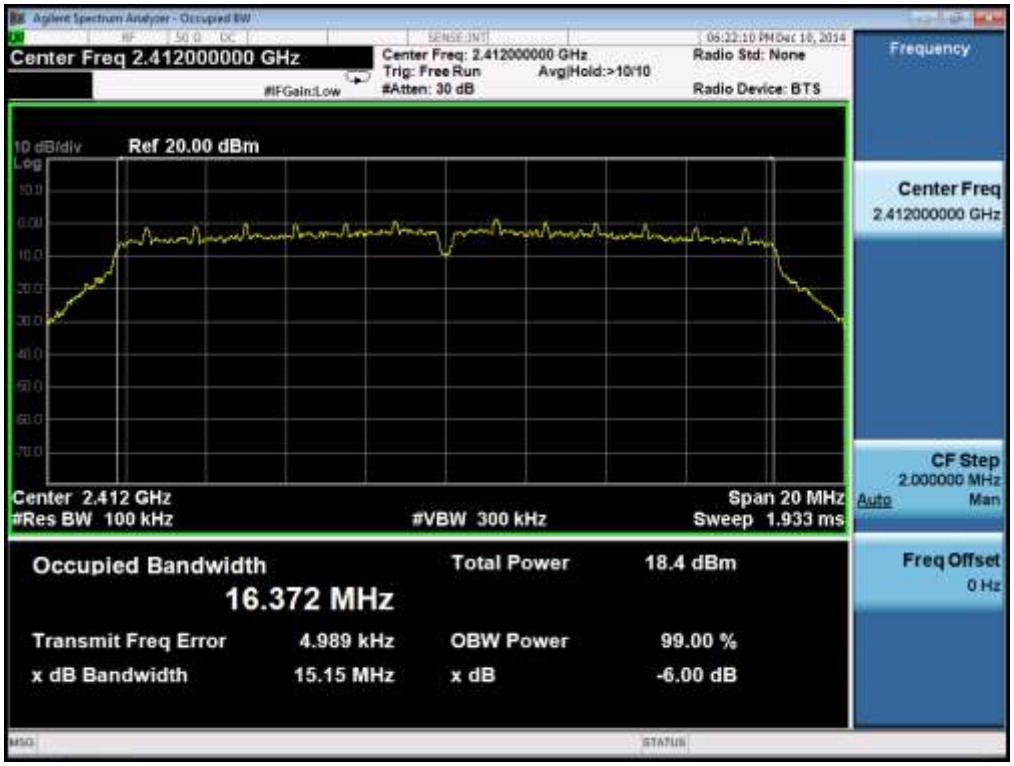
TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

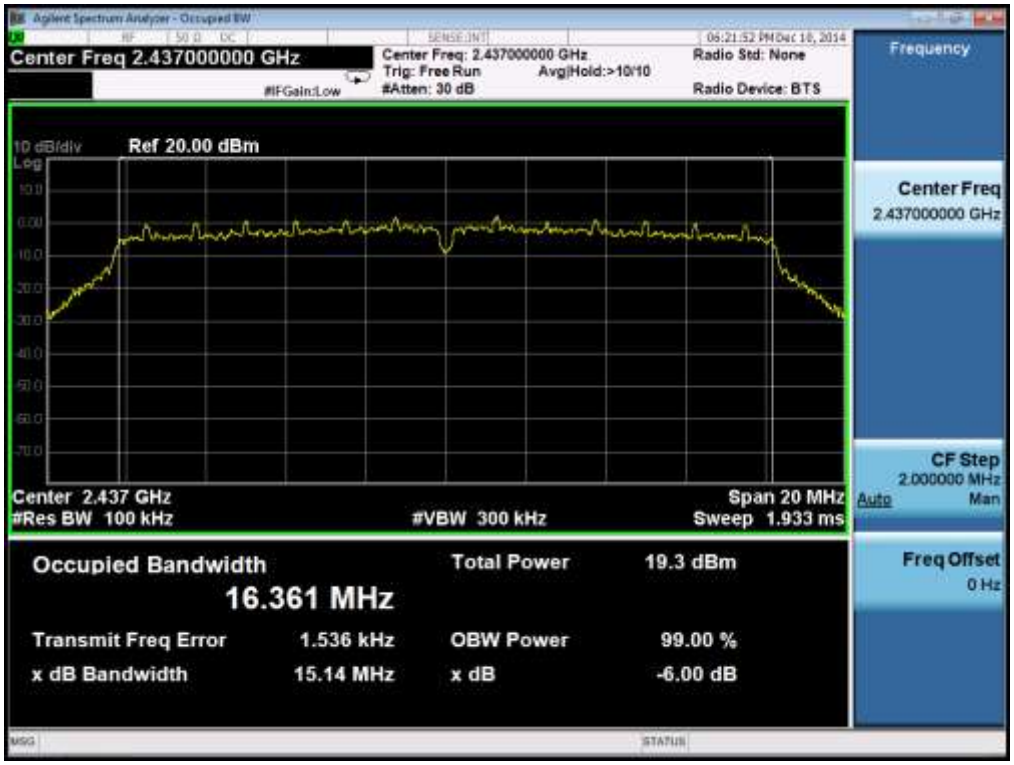


802.11g TEST RESULT

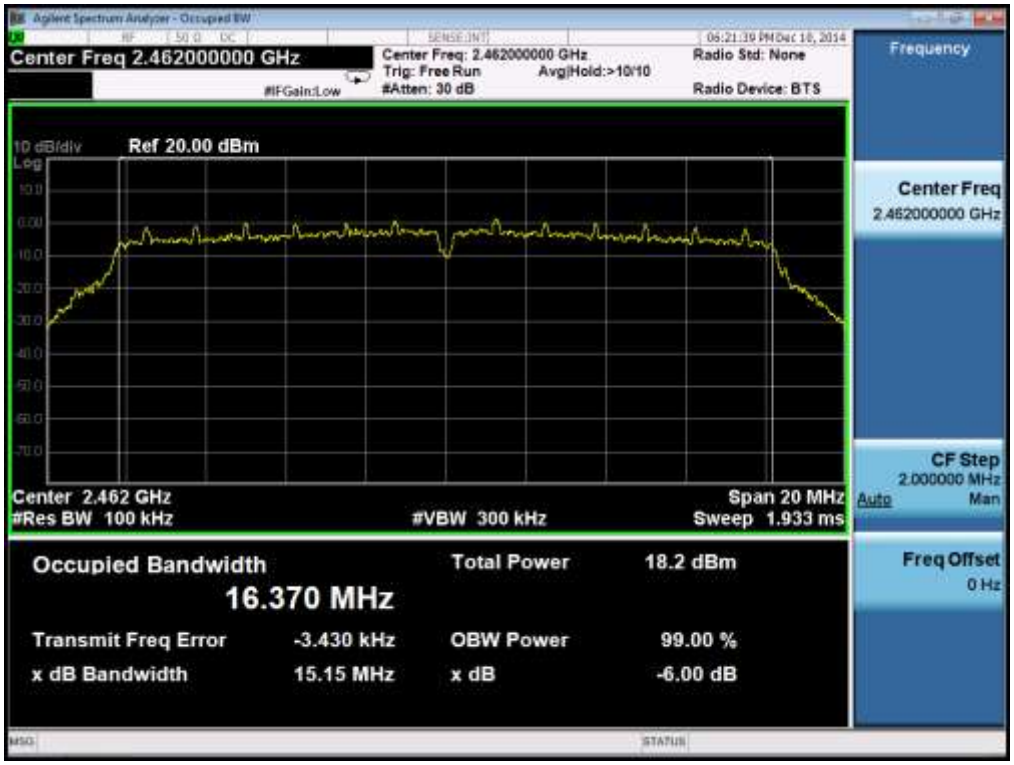
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

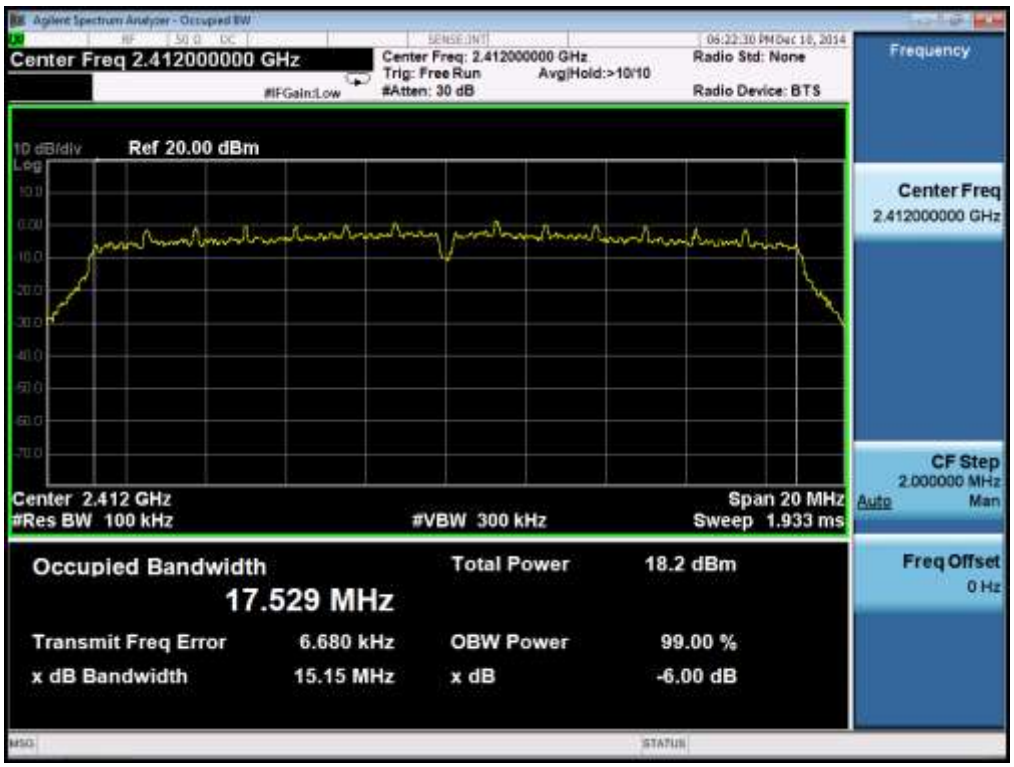


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

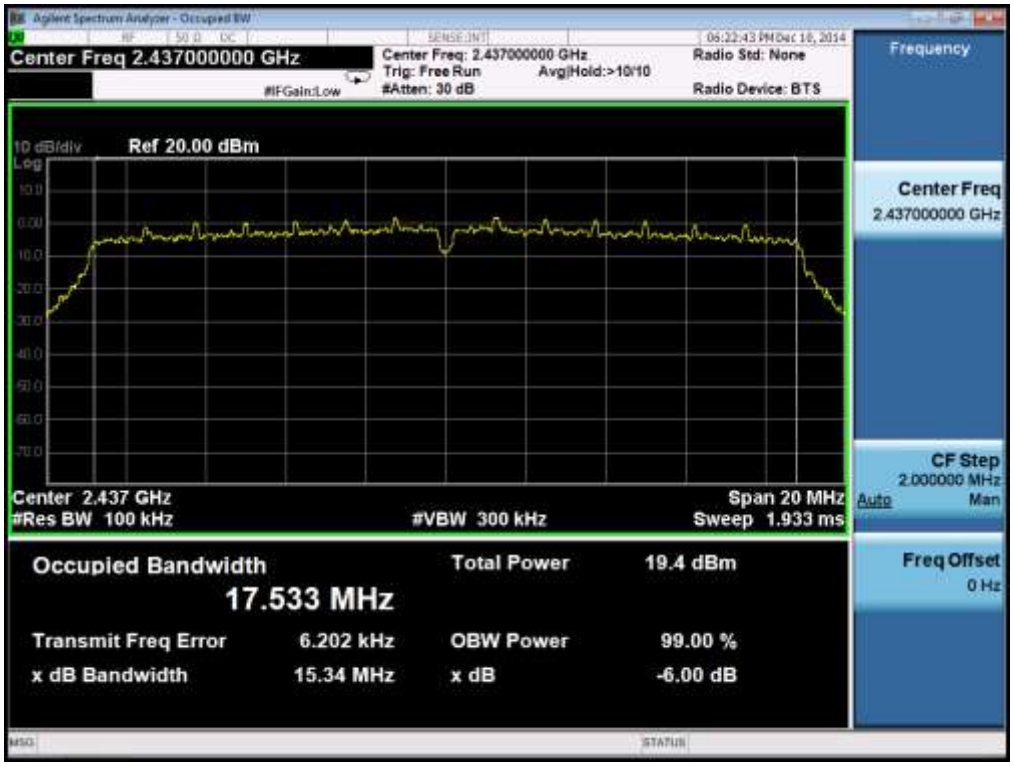


802.11n (20) TEST RESULT

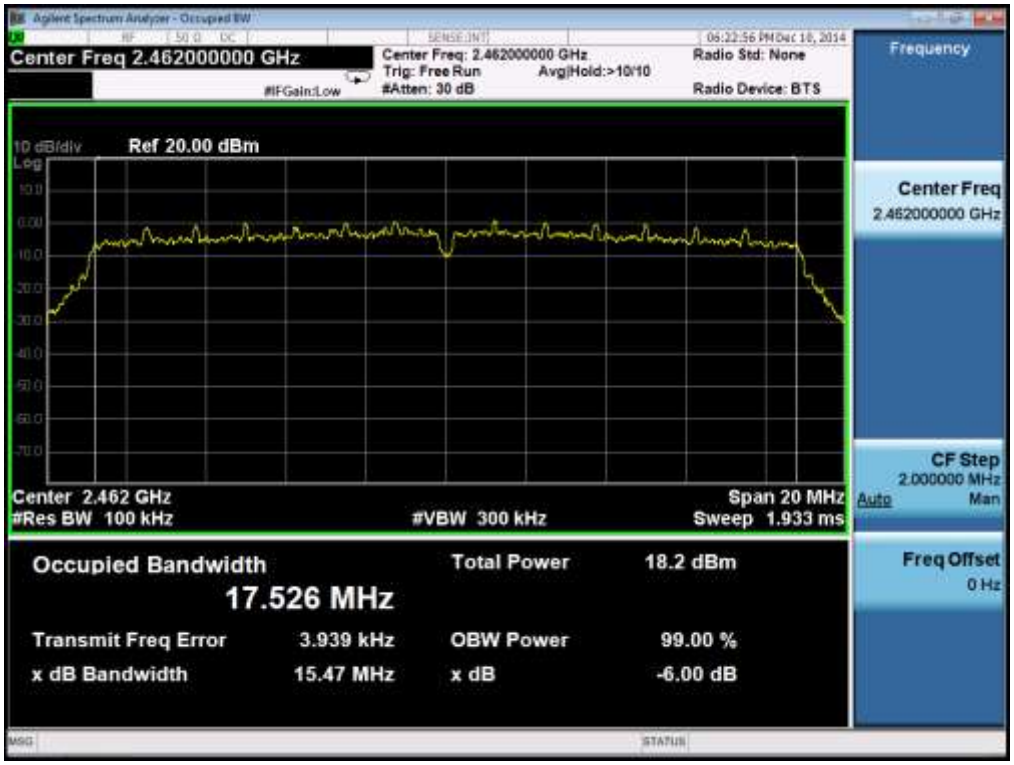
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

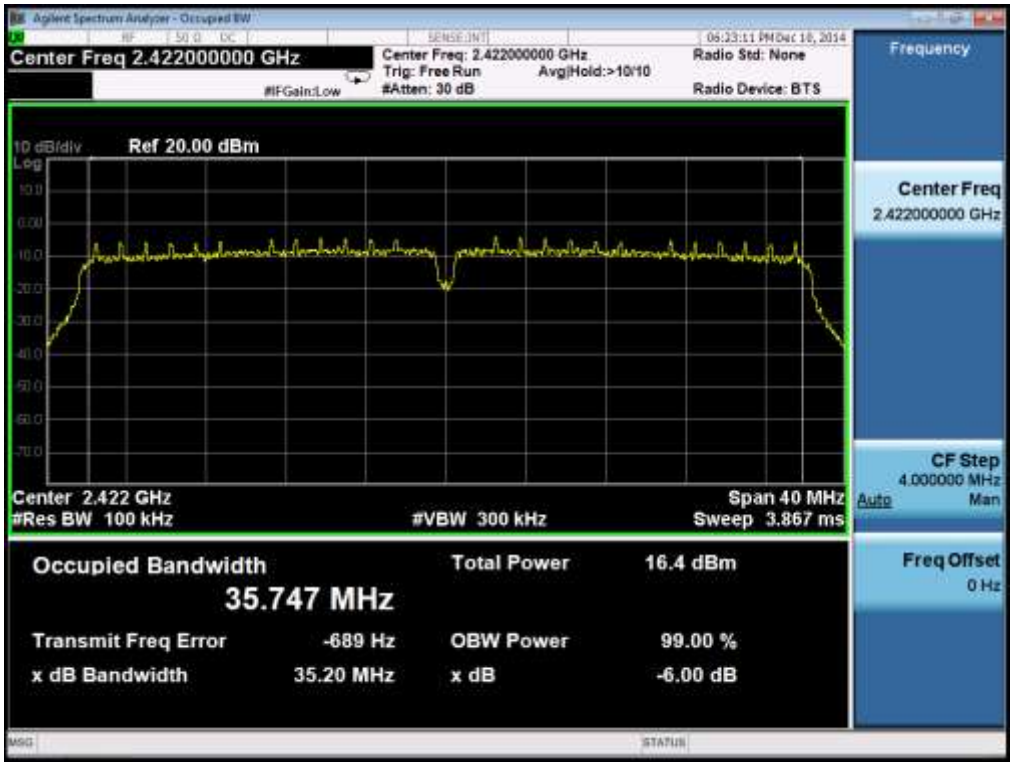


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

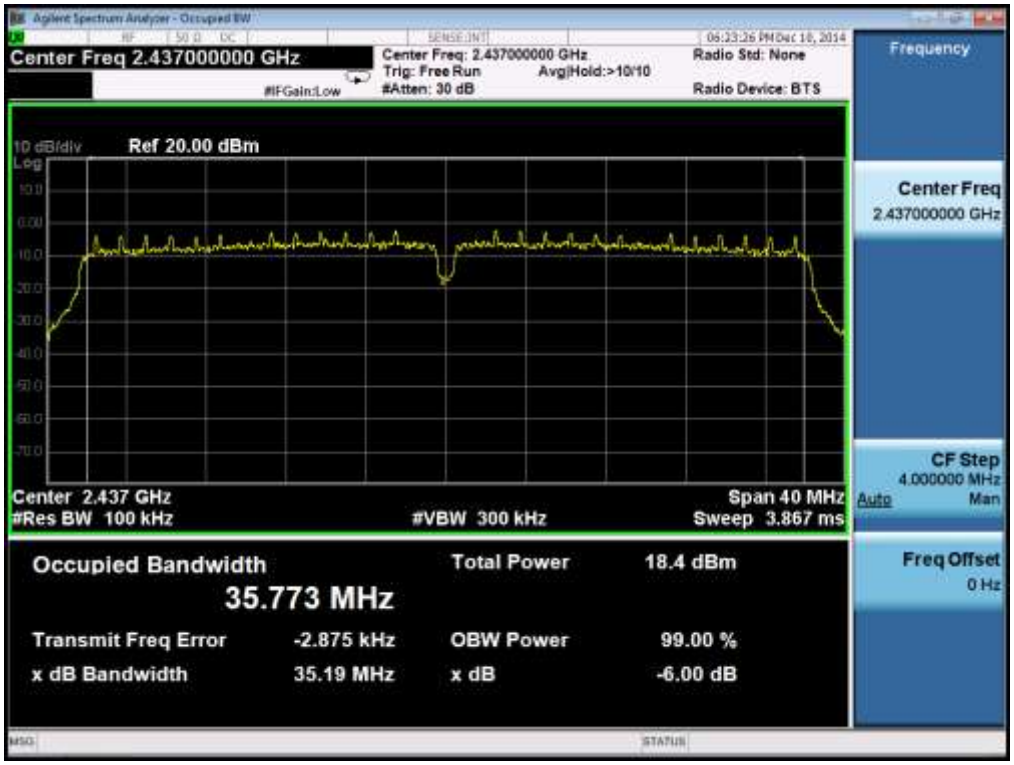


802.11n(40) TEST RESULT

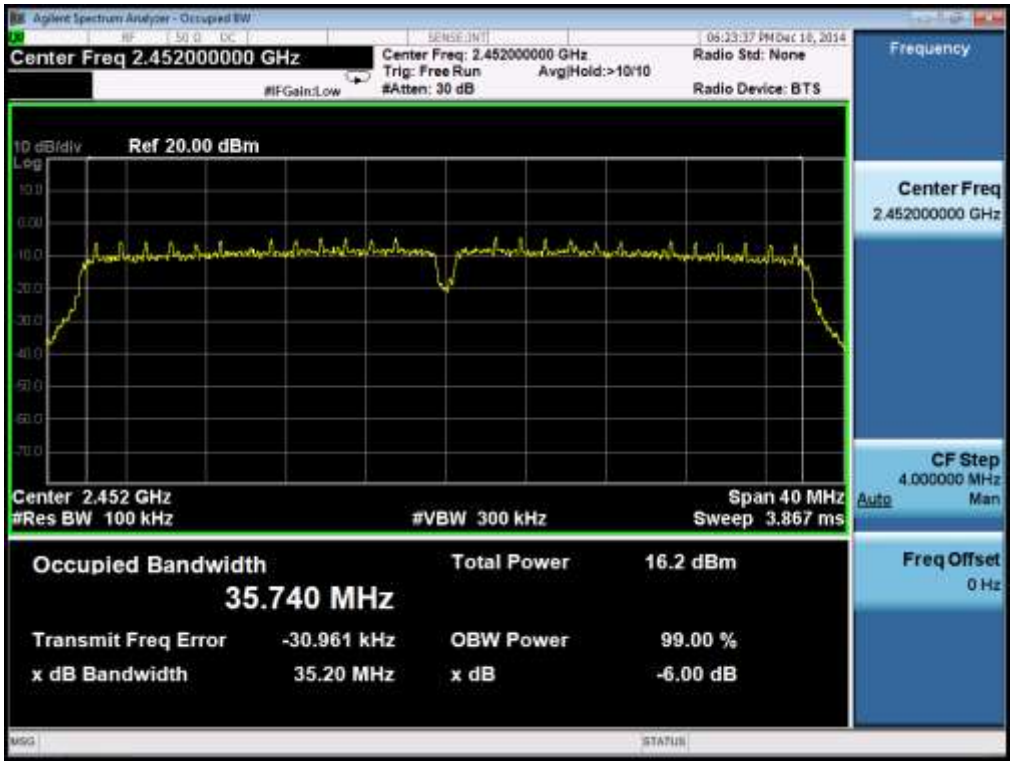
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



9. CONDUCTED SPURIOUS EMISSION

9.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements. Owing to satisfy the requirements of the number of measurement points, we set the RBW=1MHz, VBW＞RBW, scan up through 10th harmonic, and consider the tested results as the worst case, if the tested results conform to the requirement, we can deem that the real tested results(set the RBW=100KHz, VBW＞RBW) are conform to the requirement.

9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 8.2.

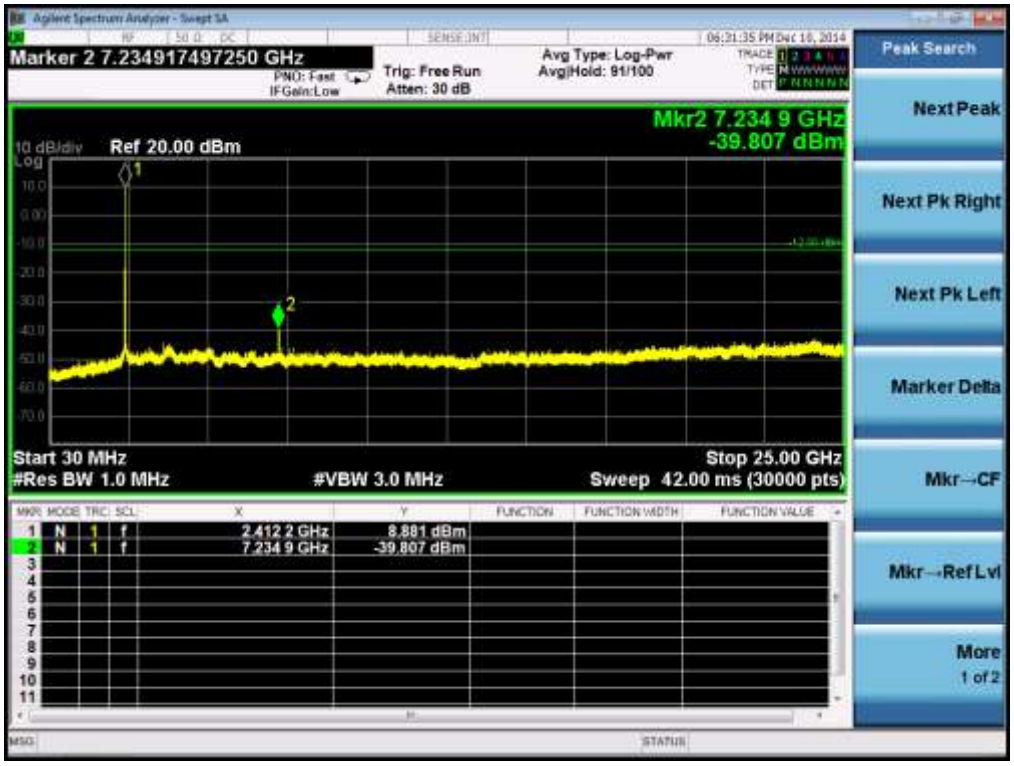
9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

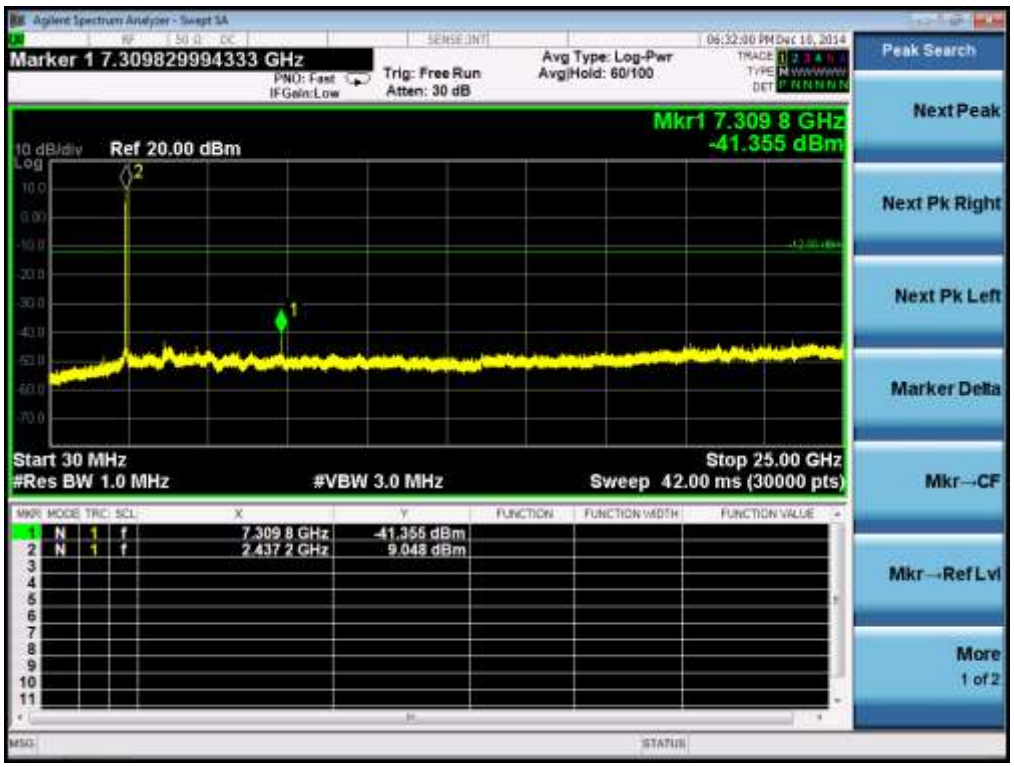
9.4. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT		
Applicable Limits	**Measurement Result**	
	Test Data	**Criteria**
In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power. In addition, radiation emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in§15.209(a))	At least -20dBc than the limit Specified on the BOTTOM Channel	PASS
	At least -20dBc than the limit Specified on the TOP Channel	PASS

TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE
OF 802.11b FOR MODULATION IN LOW CHANNEL

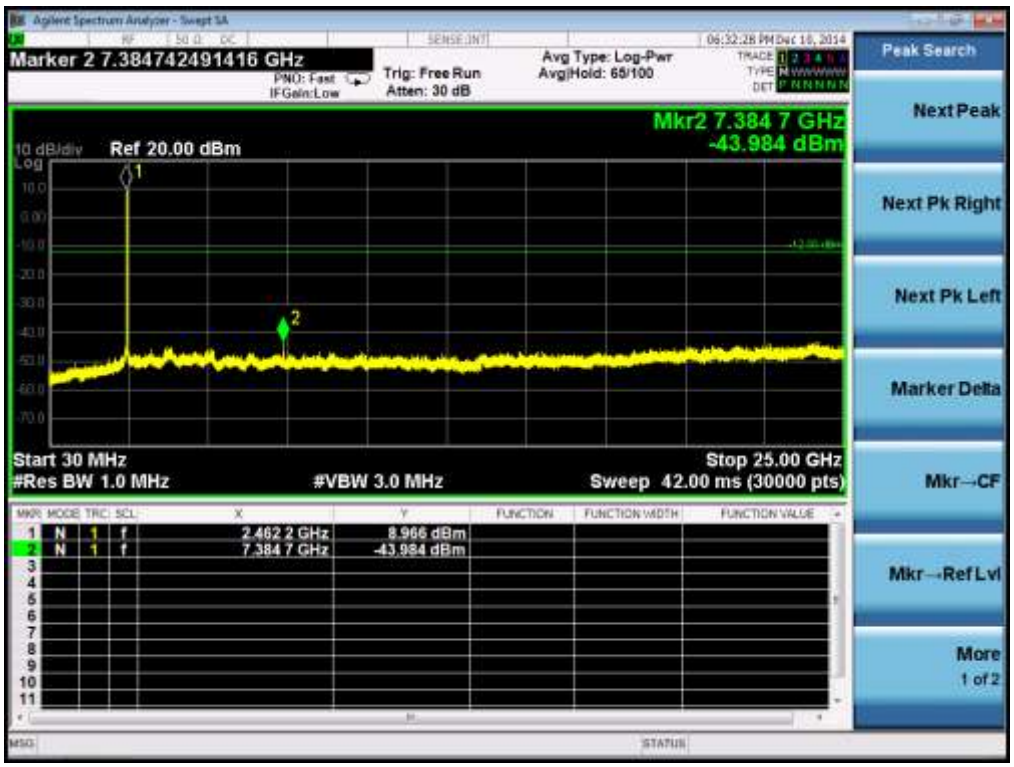


TEST PLOT OF OUT OF BAND EMISSIONS
OF 802.11b FOR MODULATION IN MIDDLE CHANNEL



TEST PLOT OF OUT OF BAND EMISSIONS

OF 802.11b FOR MODULATION IN HIGH CHANNEL



10. MAXIMUM CONDUCTED OUTPUT AVERAGE POWER SPECTRAL DENSITY

10.1 MEASUREMENT PROCEDURE

(1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
(2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
(3). Set SPA Trace 1 Max hold, then View.
Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer To Section 8.2.

10.3 MEASUREMENT EQUIPMENT USED

Refer To Section 6.

10.4 LIMITS AND MEASUREMENT RESULT

TEST ITEM	POWER PECTRAL DENSITY
TEST MODE	802.11b with data rate 1

Channel No.	**PSD (dBm/20kHz)**	**Limit (dBm/3kHz)**	**Result**
Low Channel	2.062	8	Pass
Middle Channel	1.166	8	Pass
High Channel	0.901	8	Pass

TEST ITEM	POWER PECTRAL DENSITY
TEST MODE	802.11g with data rate 6

Channel No.	**PSD (dBm/20kHz)**	**Limit (dBm/3kHz)**	**Result**
Low Channel	-3.194	8	Pass
Middle Channel	-4.116	8	Pass
High Channel	-3.673	8	Pass

TEST ITEM	POWER PECTRAL DENSITY
TEST MODE	802.11n 20 with data rate 6.5

Channel No.	**PSD (dBm/20kHz)**	**Limit (dBm/3kHz)**	**Result**
Low Channel	-3.630	8	Pass
Middle Channel	-3.955	8	Pass
High Channel	-4.082	8	Pass

TEST ITEM	POWER PECTRAL DENSITY
TEST MODE	802.11n 40 with data rate 13.5

Channel No.	**PSD (dBm/20kHz)**	**Limit (dBm/3kHz)**	**Result**
Low Channel	-6.211	8	Pass
Middle Channel	-6.234	8	Pass
High Channel	-5.734	8	Pass

802.11b TEST RESULT

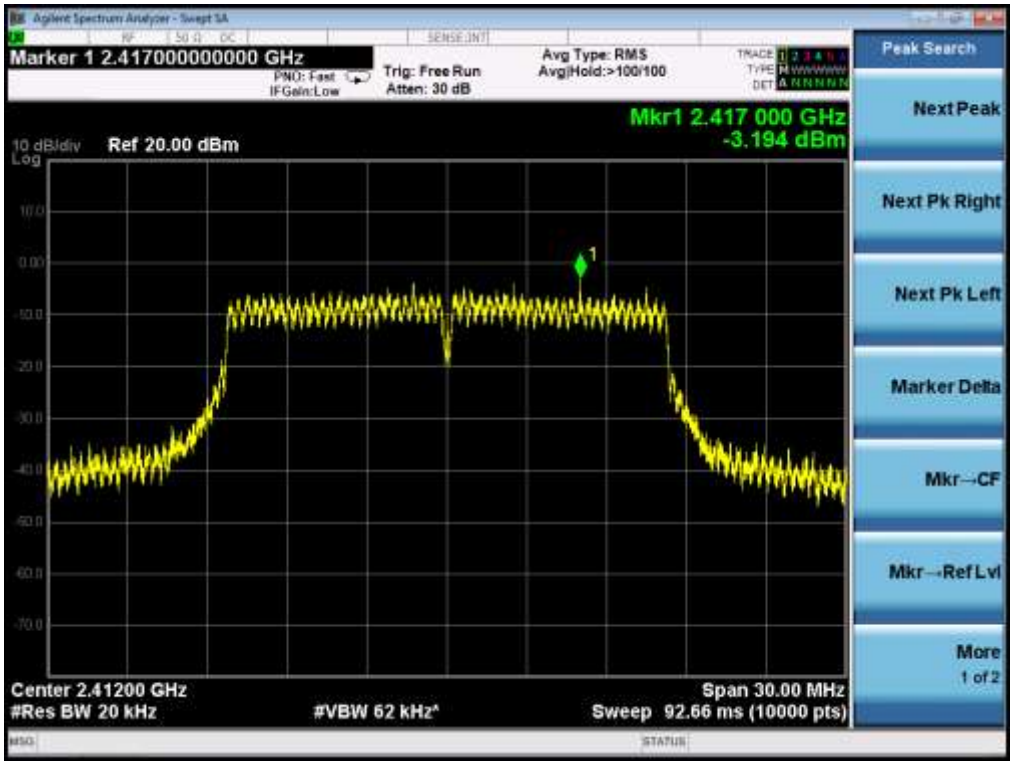
TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

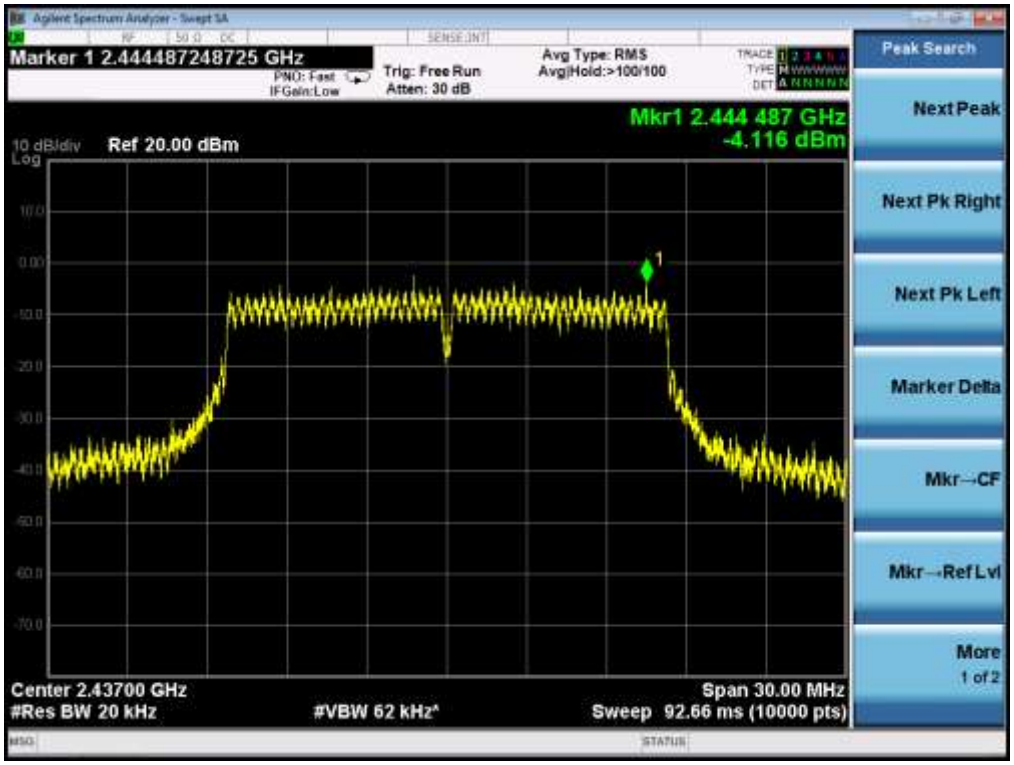
TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

802.11g TEST RESULT

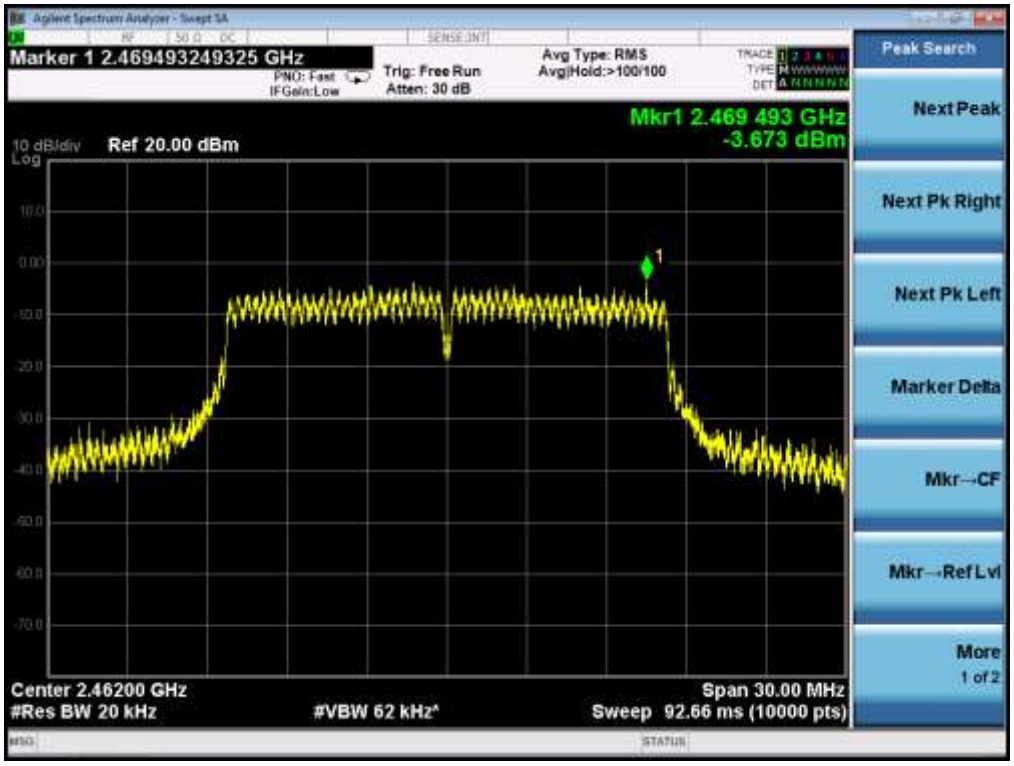
TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

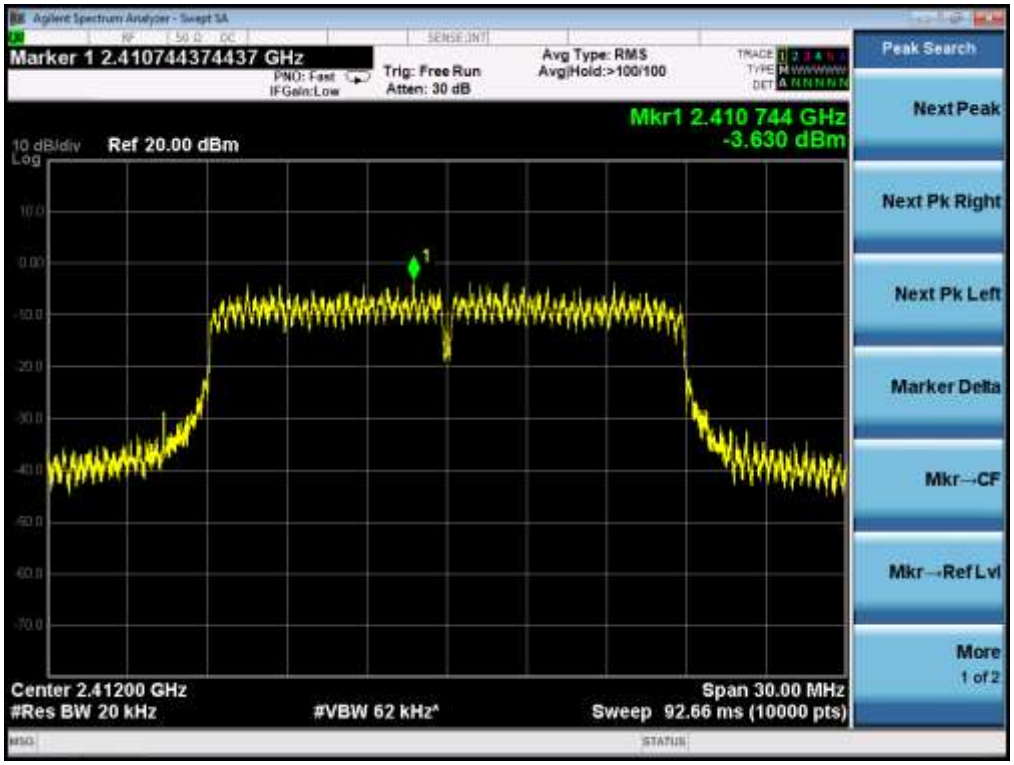


TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

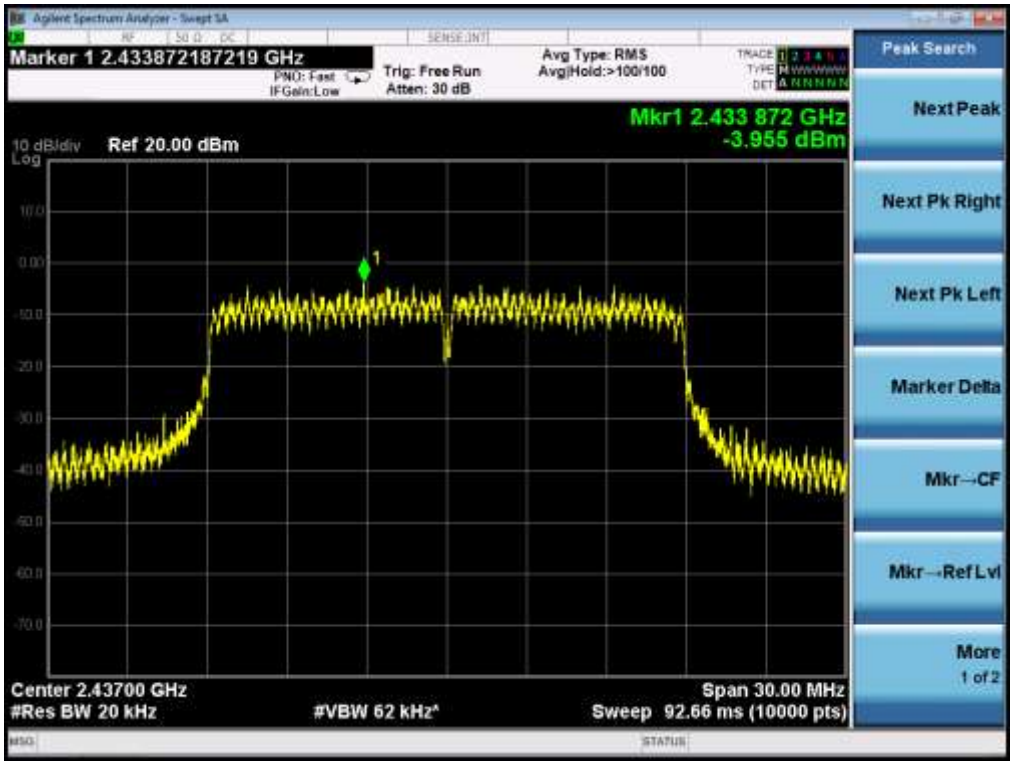


802.11n 20 TEST RESULT

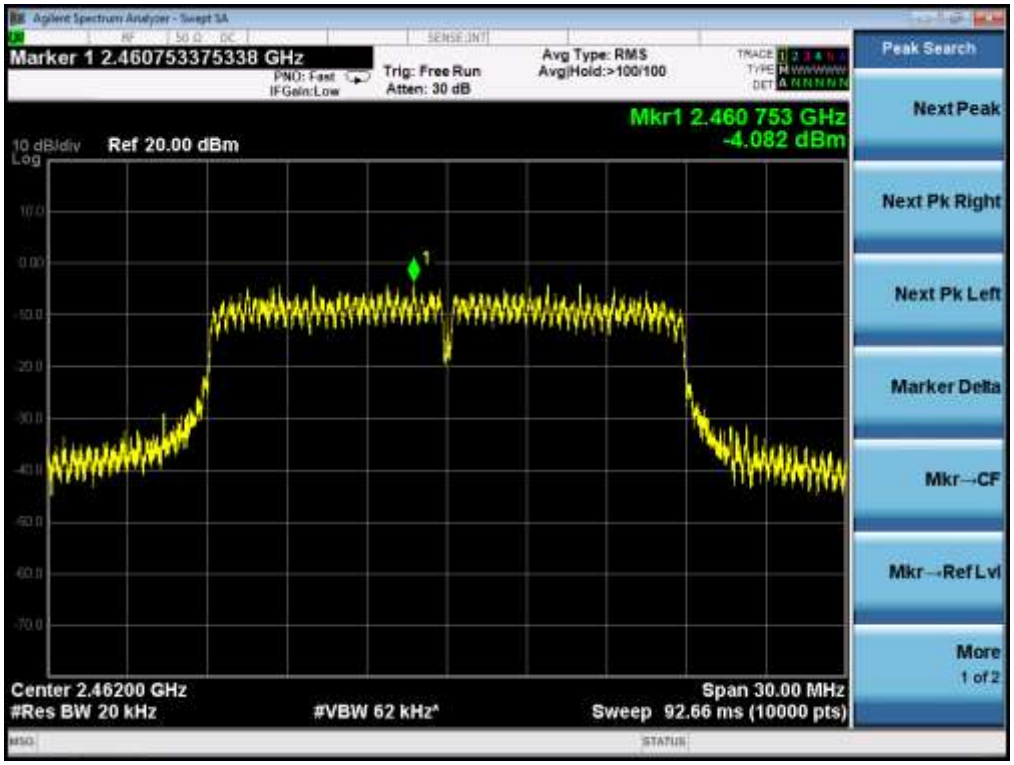
TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

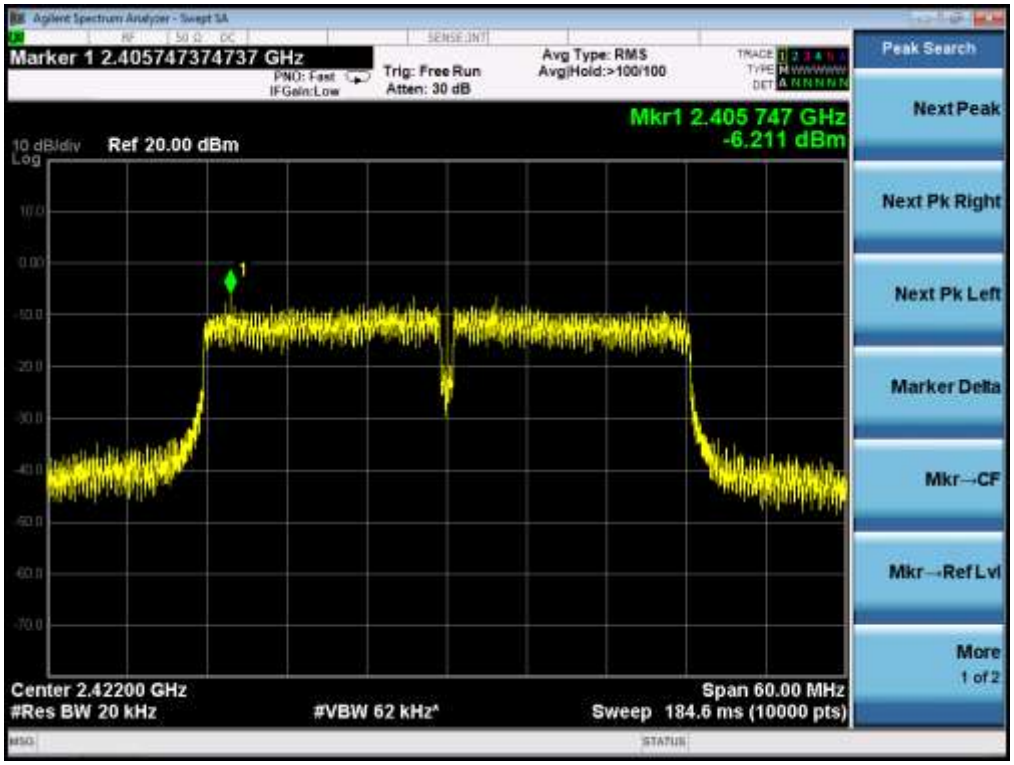


TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

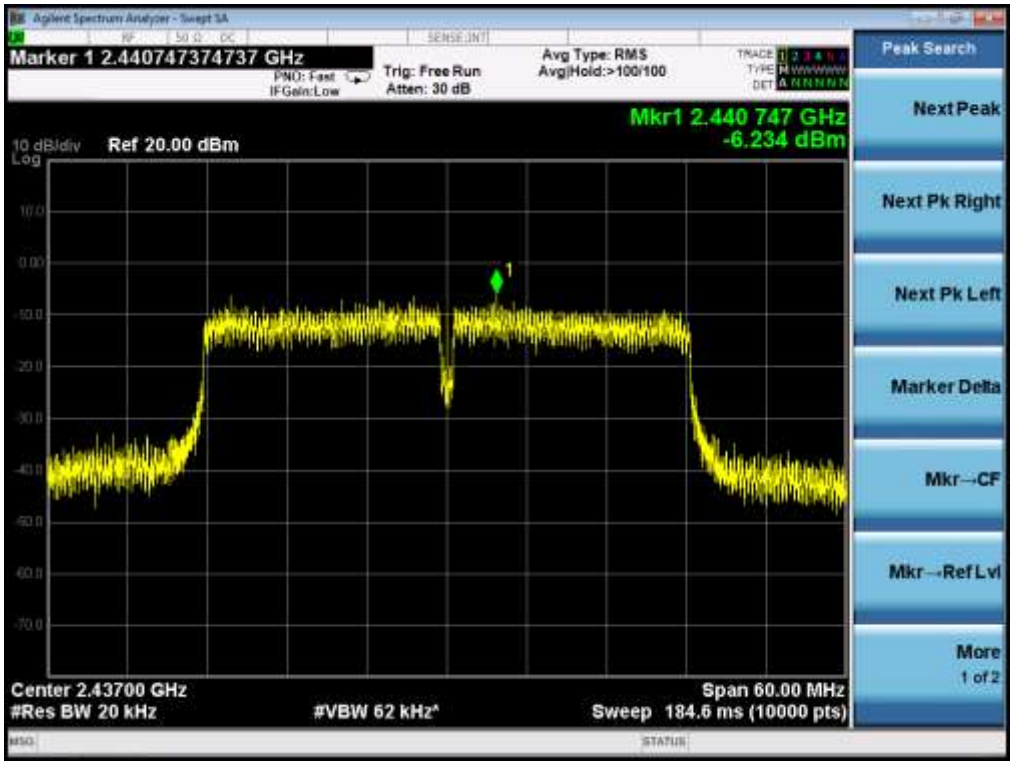


802.11n 40 TEST RESULT

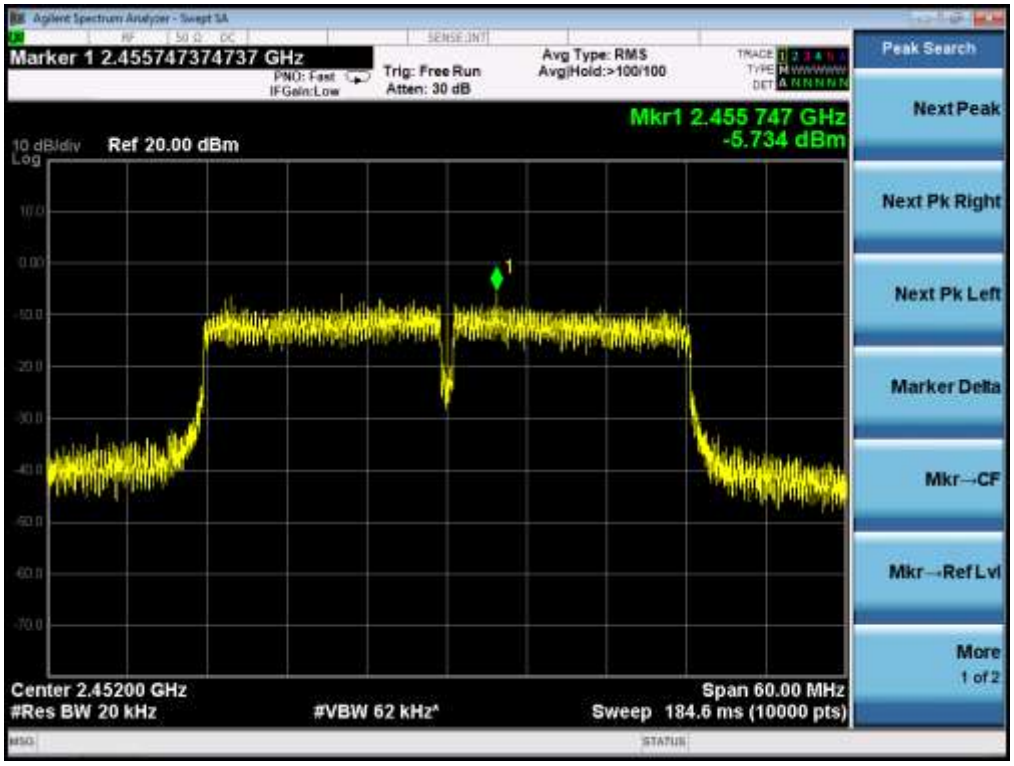
TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



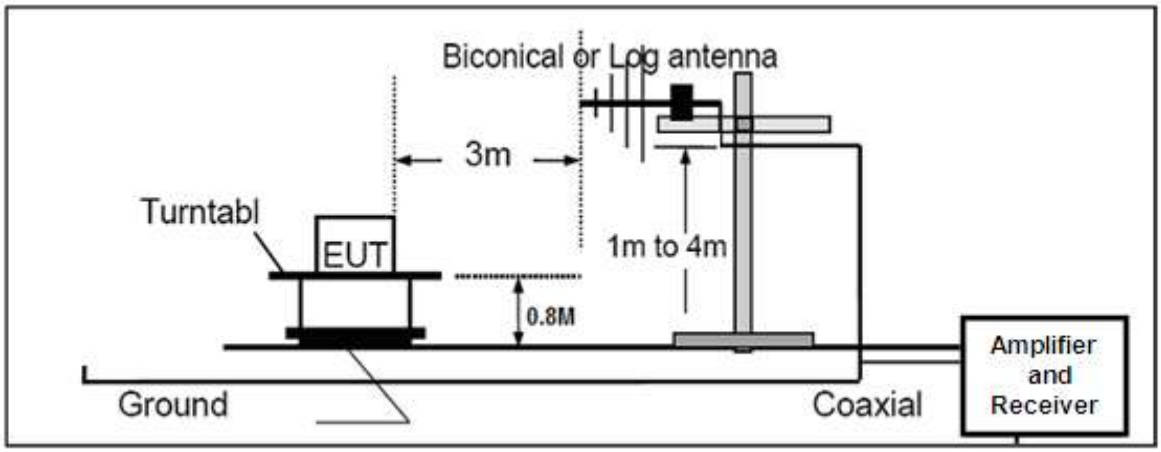
11. RADIATED EMISSION

11.1. MEASUREMENT PROCEDURE

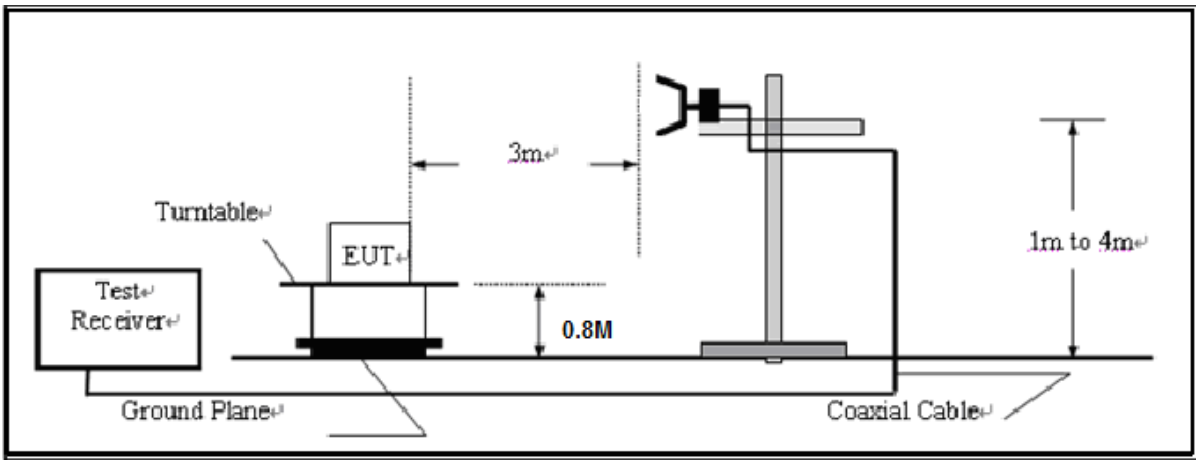
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

11.2. TEST SETUP

RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



11.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: All modes were tested For restricted band radiated emission,
the test records reported below are the worst result compared to other modes.

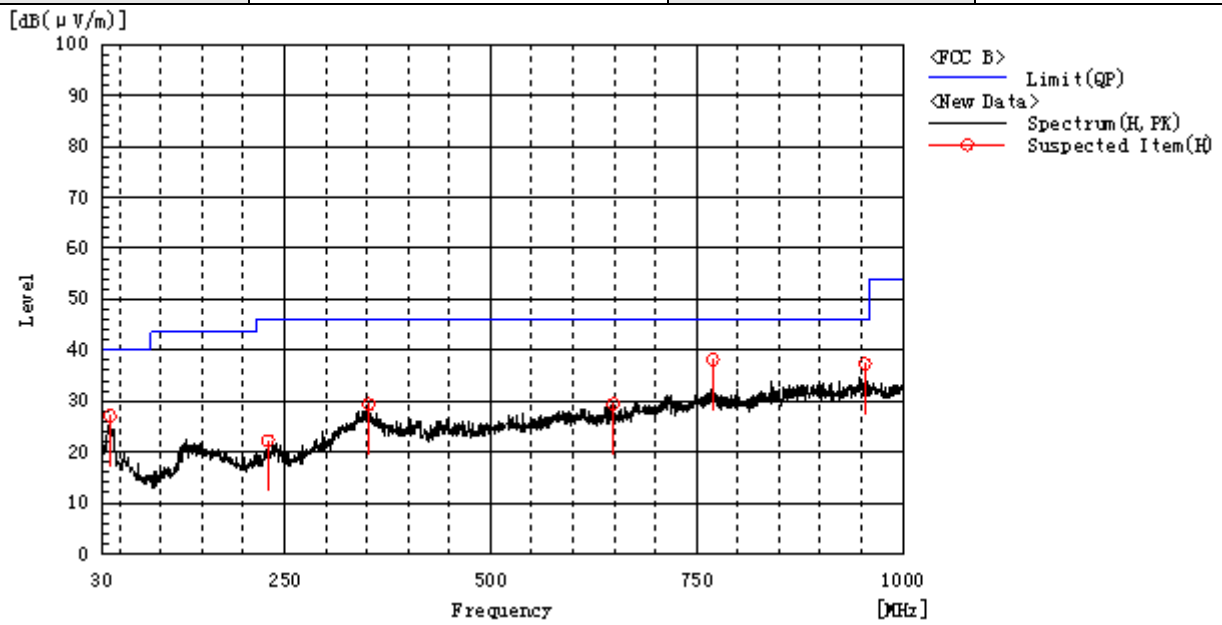
11.4. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.

RADIATED EMISSION BELOW 1GHZ

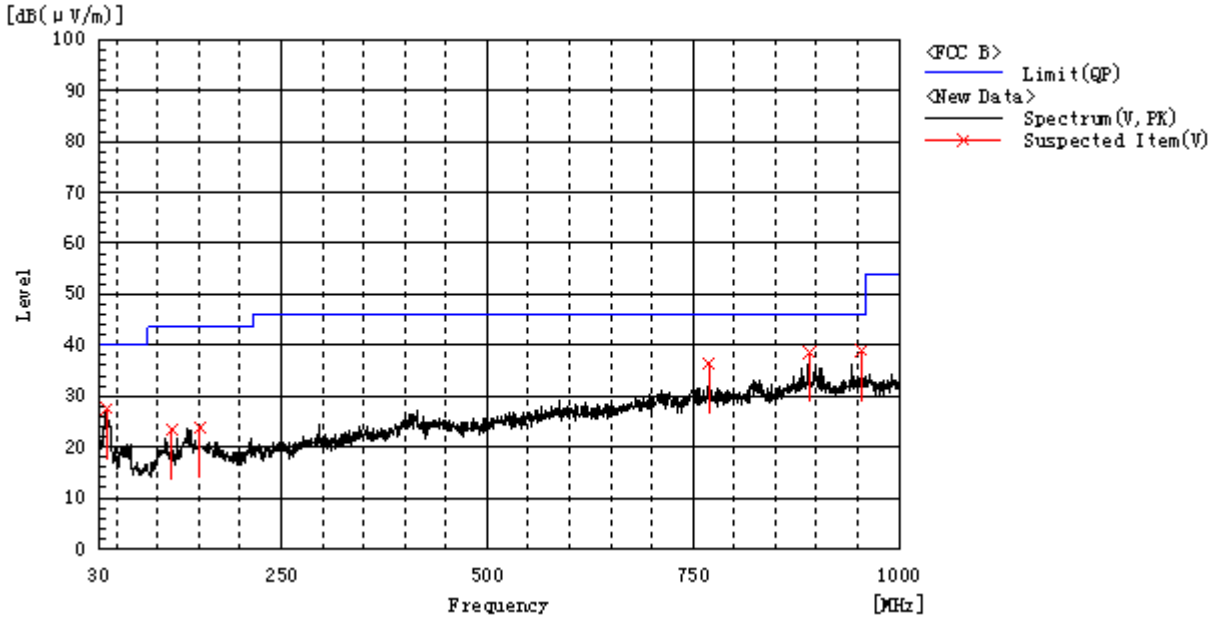
EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	**Antenna**	Horizontal



Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
38.730	H	6.1	21.0	27.1	40.0	12.9	Pass	200.0	69.0
352.525	H	11.1	18.3	29.4	46.0	16.6	Pass	100.0	144.1
769.625	H	13.1	25.1	38.2	46.0	7.8	Pass	200.0	320.3
954.410	H	8.6	28.7	37.3	46.0	8.7	Pass	100.0	181.0
648.860	H	6.4	23.1	29.5	46.0	16.5	Pass	150.0	215.7
229.820	H	9.3	13.0	22.3	46.0	23.7	Pass	100.0	71.9

RESULT: PASS

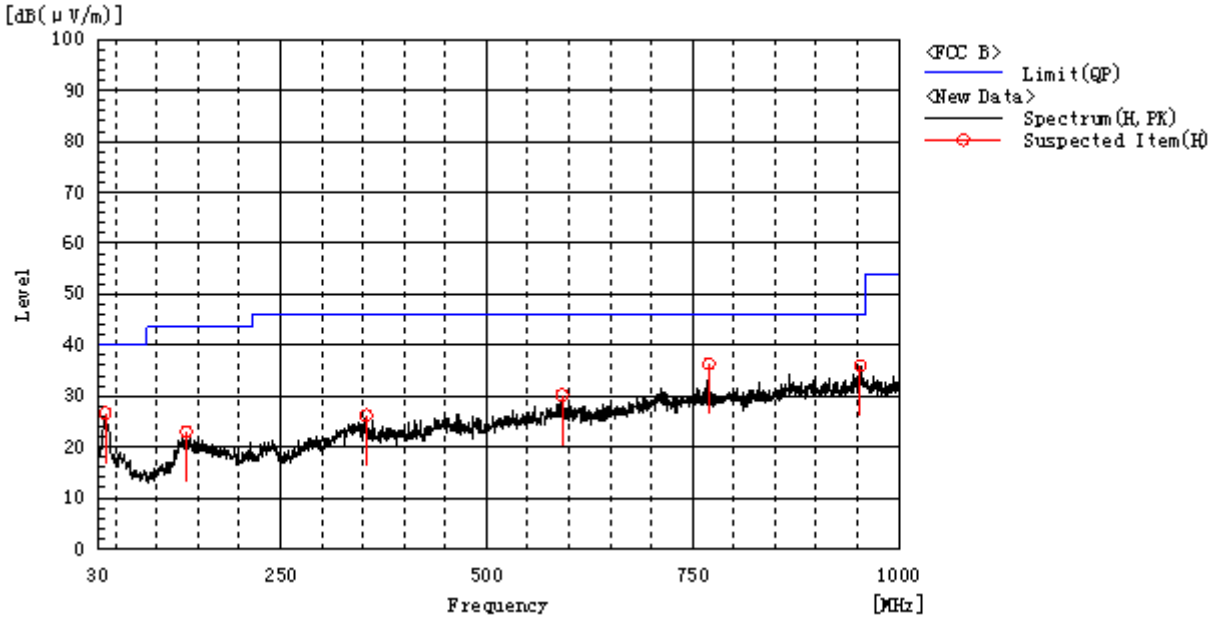
EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	**Antenna**	Vertical



Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
38.730	V	6.5	21.0	27.5	40.0	12.5	Pass	150.0	325.9
117.300	V	11.4	12.1	23.5	43.5	20.0	Pass	200.0	143.7
151.250	V	8.9	14.9	23.8	43.5	19.7	Pass	150.0	71.5
769.625	V	11.3	25.1	36.4	46.0	9.6	Pass	100.0	143.7
891.360	V	11.0	27.7	38.7	46.0	7.3	Pass	200.0	72.8
954.410	V	10.1	28.7	38.8	46.0	7.2	Pass	200.0	323.6

RESULT: PASS

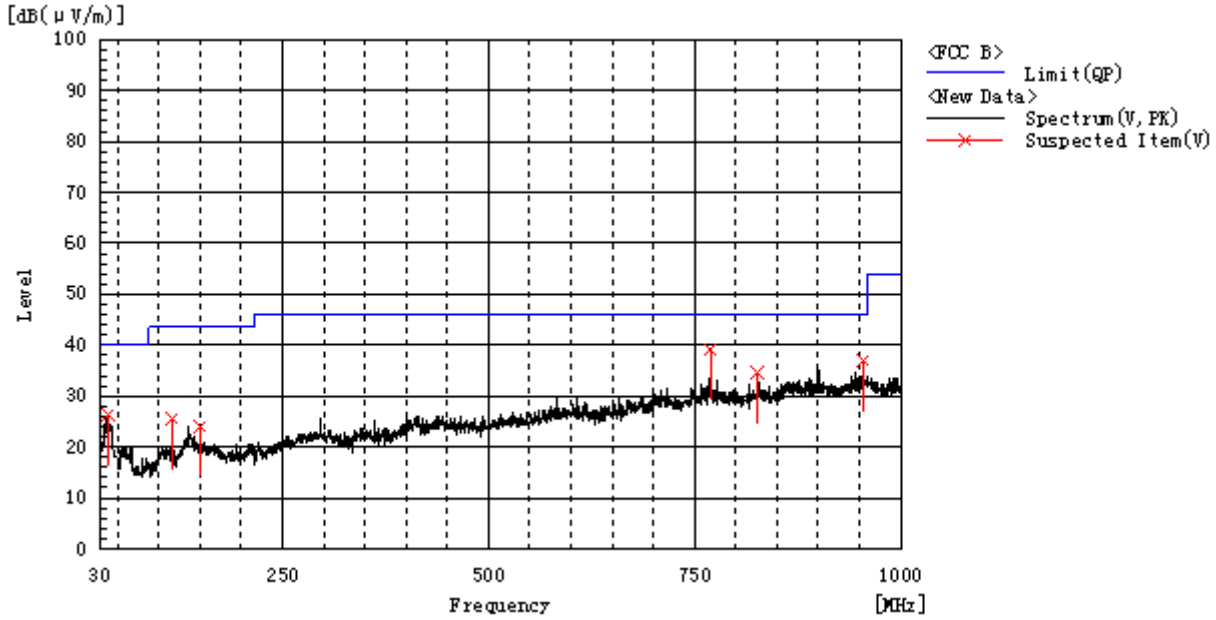
EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	**Antenna**	Horizontal



Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
37.760	H	5.4	21.2	26.6	40.0	13.4	Pass	200.0	184.2
769.625	H	11.2	25.1	36.3	46.0	9.7	Pass	100.0	179.0
953.440	H	7.4	28.7	36.1	46.0	9.9	Pass	200.0	220.8
353.980	H	8.1	18.1	26.2	46.0	19.8	Pass	100.0	179.0
591.630	H	7.2	23.0	30.2	46.0	15.8	Pass	150.0	285.3
136.215	H	8.3	14.7	23.0	43.5	20.5	Pass	150.0	248.9

RESULT: PASS

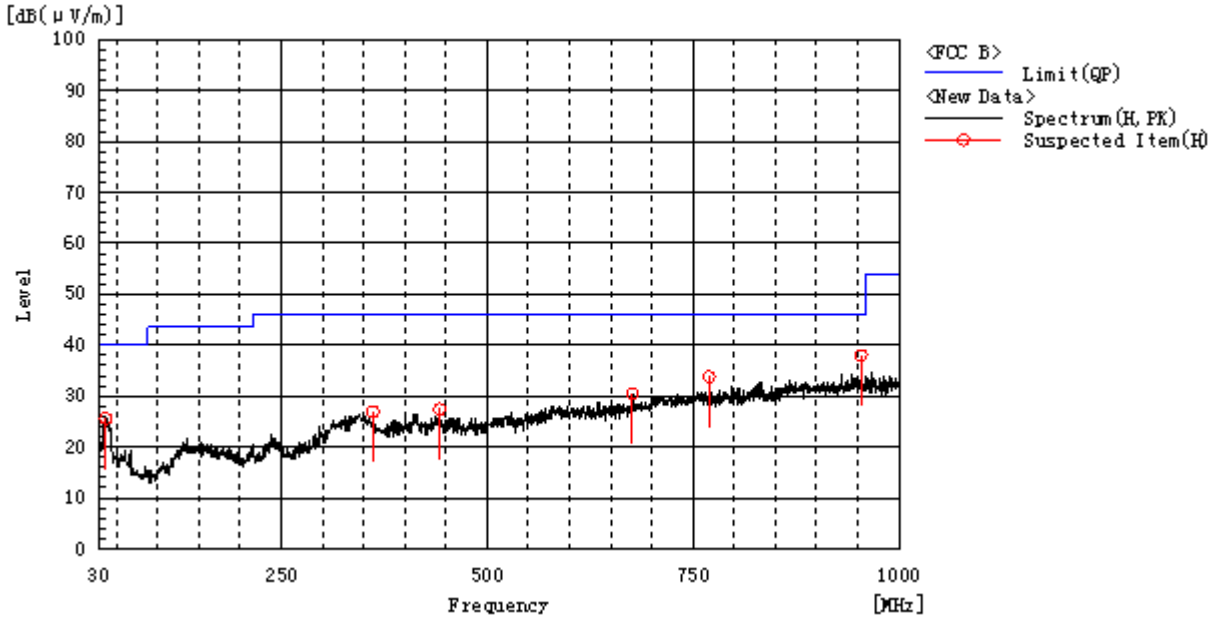
EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25˚C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	**Antenna**	Vertical



Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
38.730	V	5.2	21.0	26.2	40.0	13.8	Pass	150.0	73.5
116.815	V	13.5	12.0	25.5	43.5	18.0	Pass	100.0	288.8
149.795	V	9.2	14.9	24.1	43.5	19.4	Pass	150.0	289.3
769.625	V	14.0	25.1	39.1	46.0	6.9	Pass	150.0	180.7
826.855	V	8.1	26.5	34.6	46.0	11.4	Pass	200.0	214.3
954.410	V	8.1	28.7	36.8	46.0	9.2	Pass	100.0	109.7

RESULT: PASS

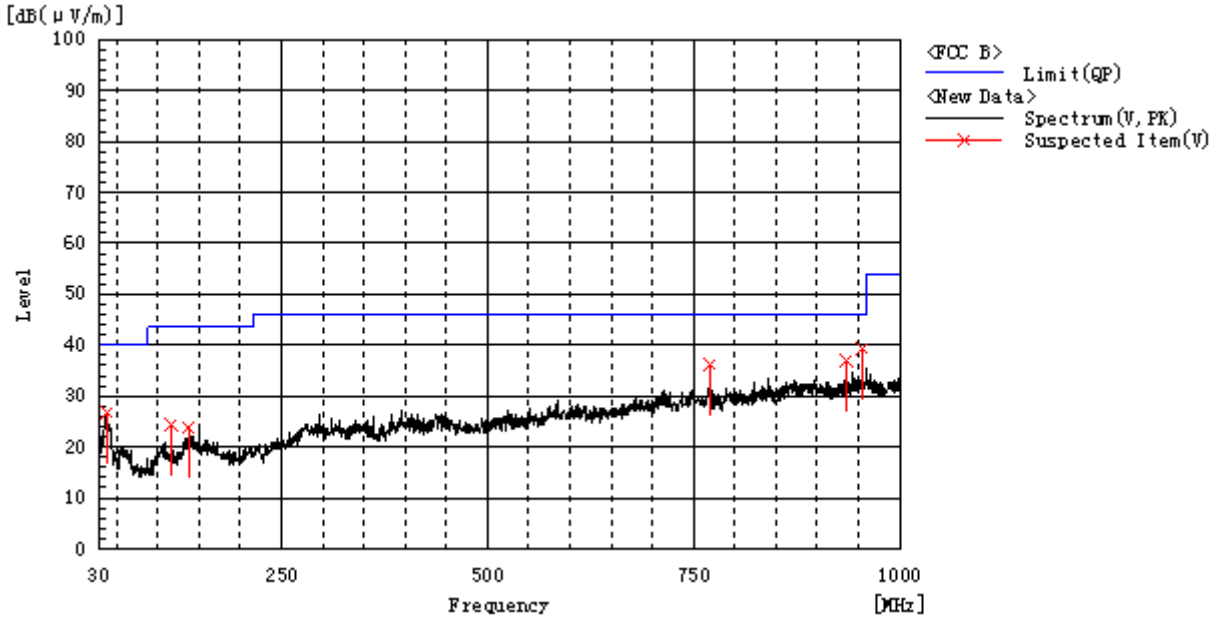
EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	**Antenna**	Horizontal



Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
37.275	H	4.8	20.8	25.6	40.0	14.4	Pass	200.0	182.2
769.625	H	8.7	25.1	33.8	46.0	12.2	Pass	200.0	74.4
953.925	H	9.3	28.7	38.0	46.0	8.0	Pass	150.0	73.2
676.505	H	6.3	24.2	30.5	46.0	15.5	Pass	150.0	288.1
361.740	H	9.5	17.4	26.9	46.0	19.1	Pass	100.0	358.0
442.250	H	7.3	20.1	27.4	46.0	18.6	Pass	100.0	73.2

RESULT: PASS

EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	**Antenna**	Vertical



Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
37.760	V	5.6	21.2	26.8	40.0	13.2	Pass	100.0	179.8
116.815	V	12.3	12.0	24.3	43.5	19.2	Pass	100.0	3.1
137.670	V	8.9	14.8	23.7	43.5	19.8	Pass	200.0	145.7
769.625	V	11.0	25.1	36.1	46.0	9.9	Pass	150.0	109.0
935.980	V	9.0	27.9	36.9	46.0	9.1	Pass	150.0	323.6
954.410	V	10.6	28.7	39.3	46.0	6.7	Pass	100.0	179.8

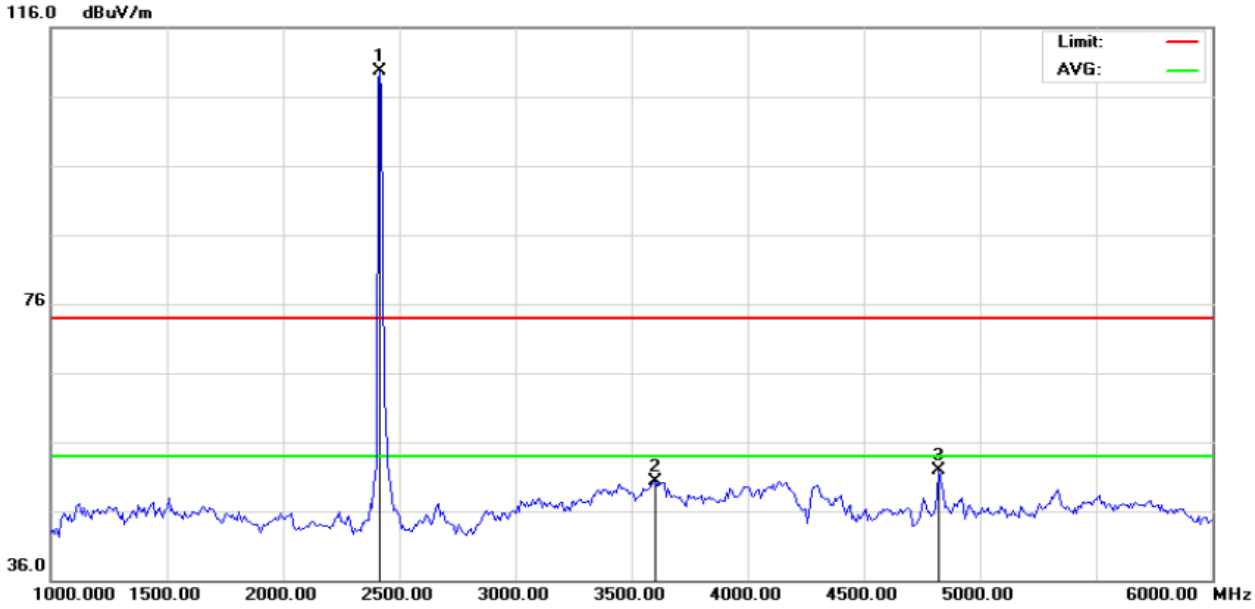
RESULT: PASS

Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

2. The “Factor” value can be calculated automatically by software of measurement system.

RADIATED EMISSION ABOVE 1GHZ

EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	**Antenna**	Horizontal



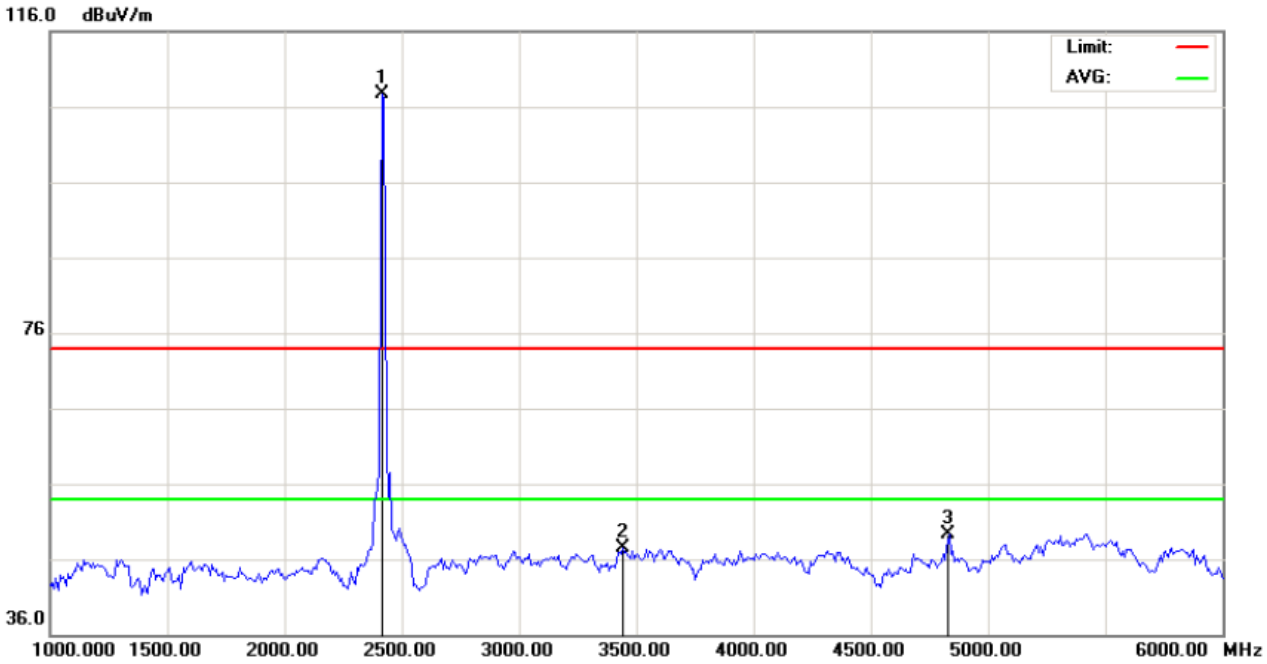
Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Cloud Digital Photo Frame
M/N: CD1900WV
Mode: 802.11g Low Channel TX
Note:

Polarization: ***Horizontal***
Power: AC 120V/60Hz
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2412.667	119.27	-9.66	109.61	74.00	35.61	peak			
2		3600.000	57.52	-7.27	50.25	74.00	-23.75	peak			
3		4825.000	54.24	-2.26	51.98	74.00	-22.02	peak			

EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	**Antenna**	Vertical



Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Cloud Digital Photo Frame
M/N: CD1900WV
Mode: 802.11g Low Channel TX
Note:

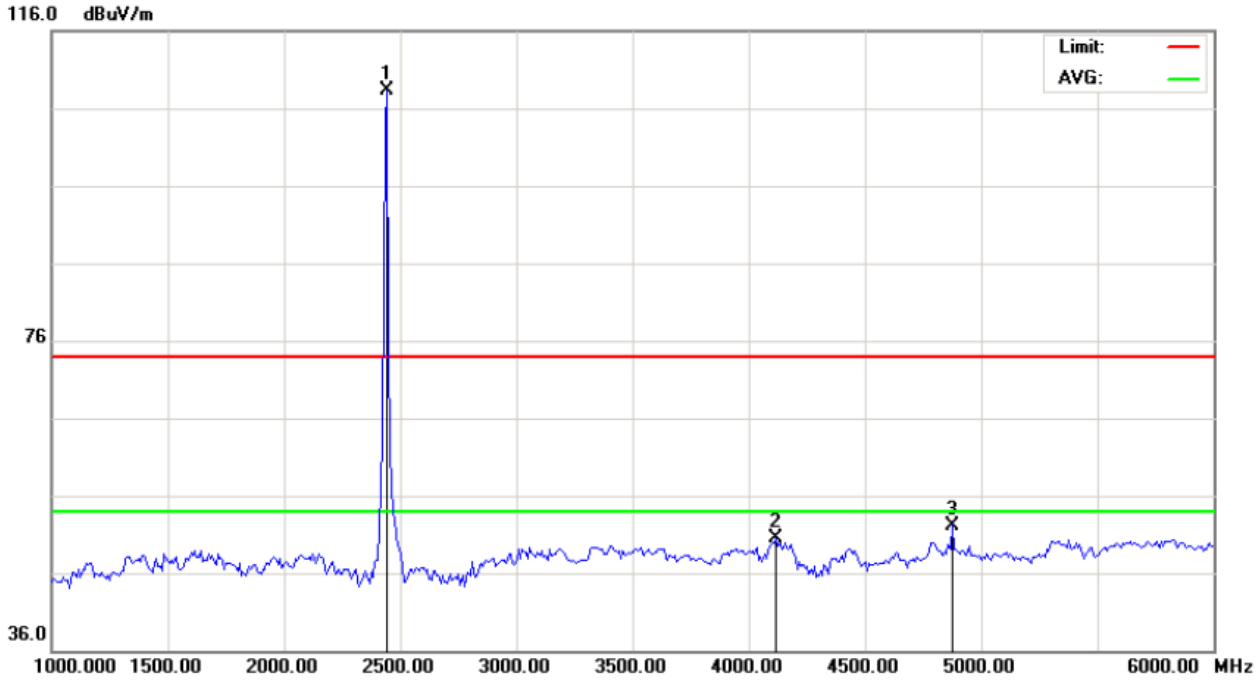
Polarization: ***Vertical***
Power: AC 120V/60Hz
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2412.667	117.27	-9.66	107.61	74.00	33.61	peak			
2		3441.667	55.44	-7.94	47.50	74.00	-26.50	peak			
3		4833.333	51.45	-2.24	49.21	74.00	-24.79	peak			

RESULT: PASS

EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	**Antenna**	Horizontal



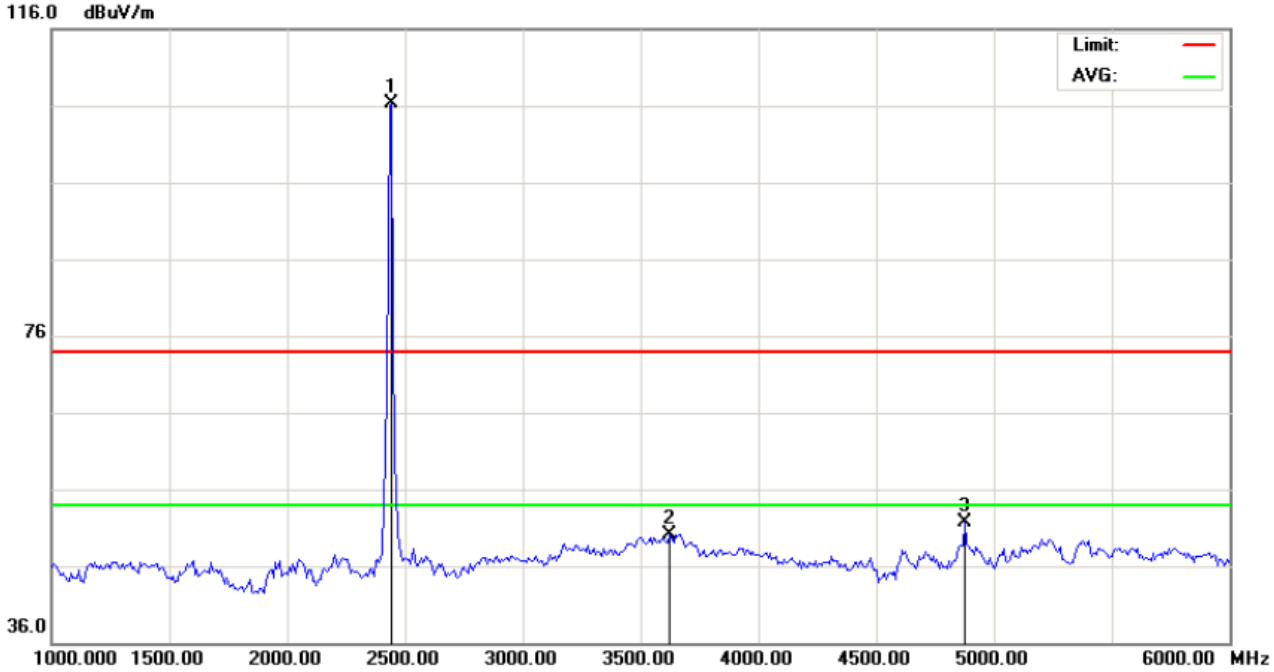
Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Cloud Digital Photo Frame
M/N: CD1900WV
Mode: 802.11g Middle Channel TX
Note:

Polarization: ***Horizontal***
Power: AC 120V/60Hz
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2441.667	117.84	-9.63	108.21	74.00	34.21	peak			
2		4116.667	54.91	-4.41	50.50	74.00	-23.50	peak			
3		4875.000	54.33	-2.13	52.20	74.00	-21.80	peak			

EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	**Antenna**	Vertical

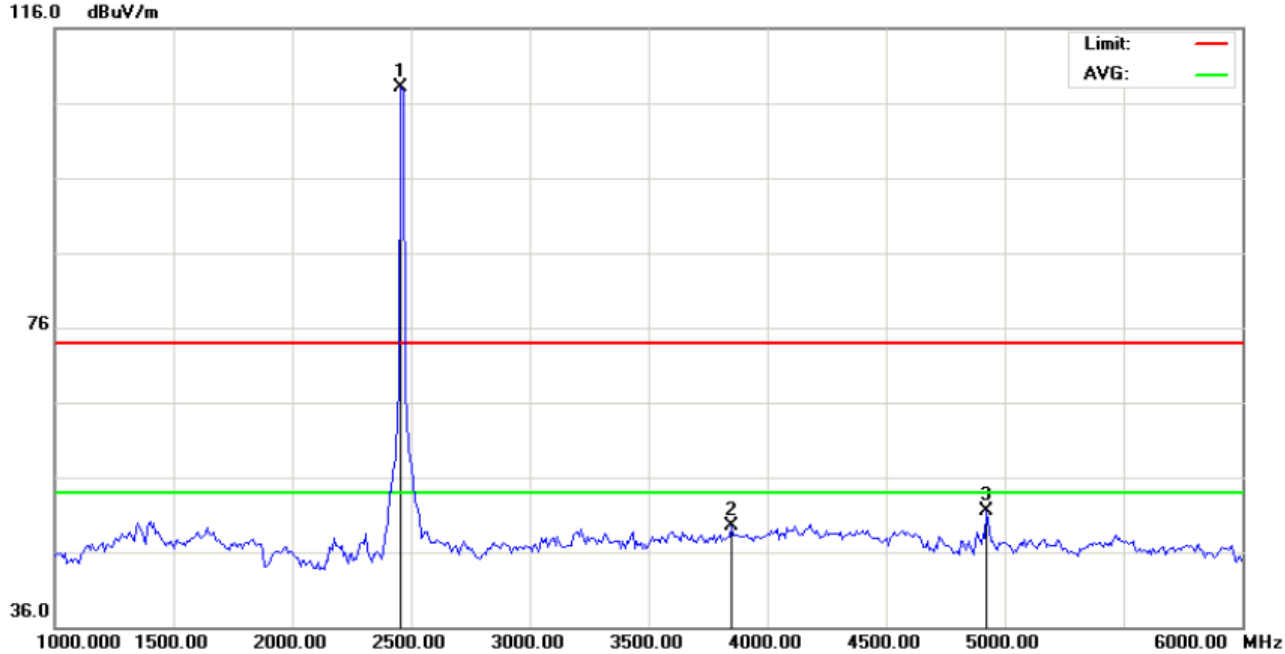


Site: site #1 Polarization: ***Vertical*** Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: AC 120V/60Hz Humidity: 60 %
EUT: Cloud Digital Photo Frame Distance: 3m
M/N: CD1900WV
Mode: 802.11g Middle Channel TX
Note:

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2441.667	115.84	-9.63	106.21	74.00	32.21	peak			
2		3625.000	57.30	-7.12	50.18	74.00	-23.82	peak			
3		4875.000	53.83	-2.13	51.70	74.00	-22.30	peak			

RESULT: PASS

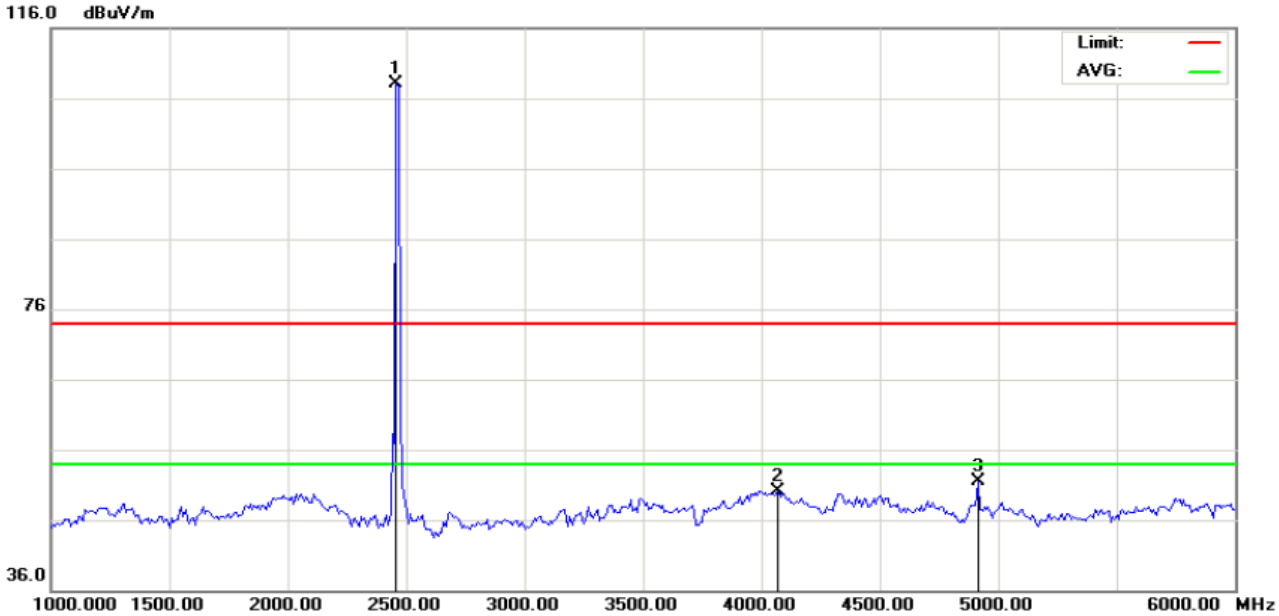
EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	**Antenna**	Horizontal



Site: site #1 Polarization: ***Horizontal*** Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: AC 120V/60Hz Humidity: 60 %
EUT: Cloud Digital Photo Frame Distance: 3m
M/N: CD1900WV
Mode: 802.11b High Channel TX
Note:

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2462.333	117.71	-9.62	108.09	74.00	34.09	peak			
2		3850.000	55.15	-5.73	49.42	74.00	-24.58	peak			
3		4925.000	53.50	-2.00	51.50	74.00	-22.50	peak			

EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	**Antenna**	Vertical



Site: site #1 Polarization: ***Vertical*** Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: AC 120V/60Hz Humidity: 60 %
EUT: Cloud Digital Photo Frame Distance: 3m
M/N: CD1900WV
Mode: 802.11b High Channel TX
Note:

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2462.333	117.71	-9.62	108.09	74.00	34.09	peak			
2		4066.667	54.67	-4.58	50.09	74.00	-23.91	peak			
3		4916.667	53.45	-2.02	51.43	74.00	-22.57	peak			

RESULT: PASS

Note: The other modes radiation emissions have more than 20dB margin.
All modes radiation emission from 6GHz to 25GHz at least have 20dB margin.
Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.
The “Factor” value can be calculated automatically by software of measurement system.

12. BAND EDGE EMISSION

12.1. MEASUREMENT PROCEDURE

1)Radiated restricted band edge measurements

The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting

2)Conducted Emissions at the bang edge

a)The transmitter output was connected to the spectrum analyzer

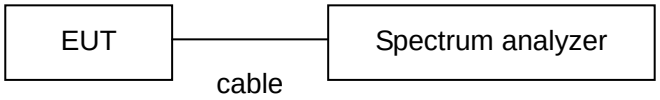
b)Set RBW=100kHz,VBW=300kHz

c)Suitable frequency span including 100kHz bandwidth from band edge

12.2. TEST SET-UP

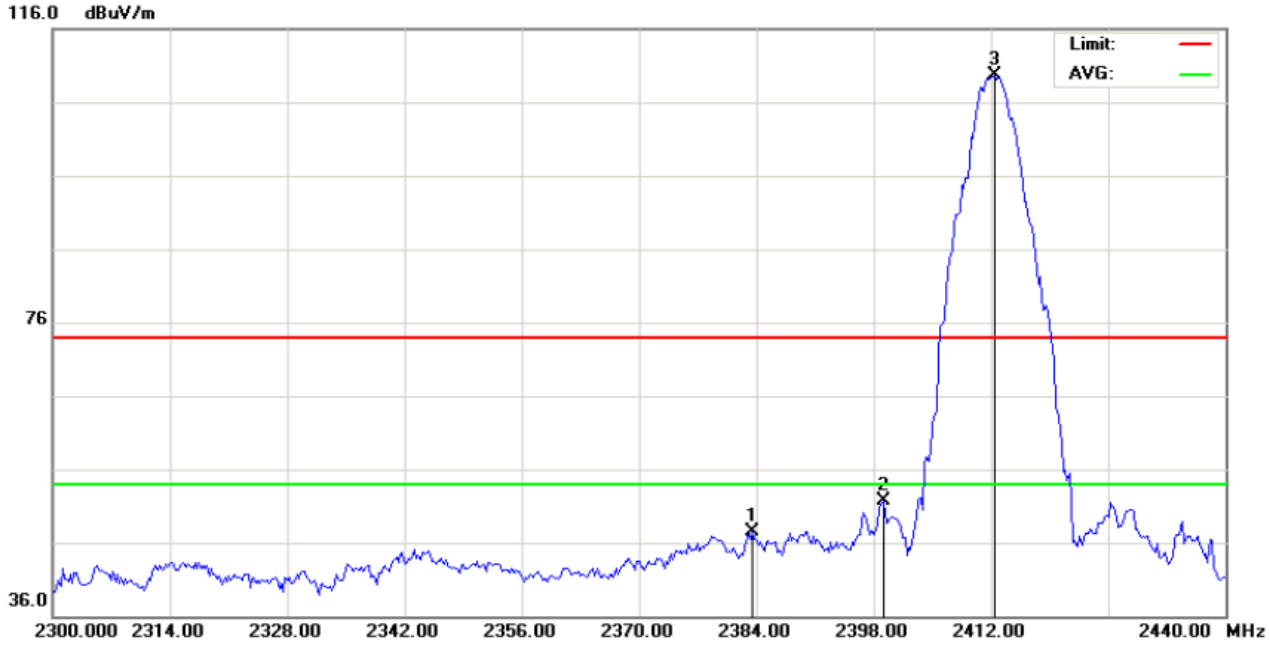
Radiated same as 11.2

Conducted set up



12.3. Radiated Test Result

EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25˚C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	**Antenna**	Horizontal

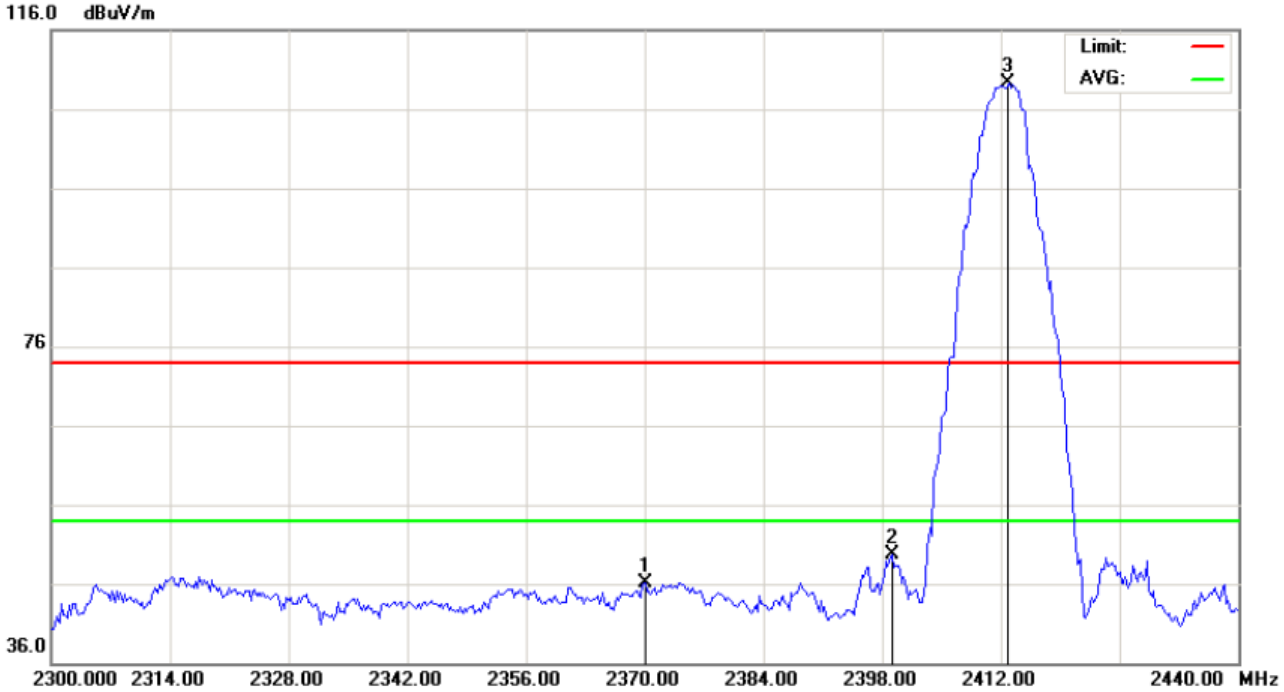


Site: site #1 Polarization: ***Horizontal*** Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
EUT: Cloud Digital Photo Frame Distance: 3m
M/N: CD1900WV
Mode: 802.11b Low Channel TX
Note:

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2383.533	57.16	-9.70	47.46	74.00	-26.54	peak			
2		2399.167	61.43	-9.68	51.75	74.00	-22.25	peak			
3	*	2412.467	119.34	-9.67	109.67	74.00	35.67	peak			

RESULT: PASS

EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	**Antenna**	Vertical



Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Cloud Digital Photo Frame
M/N: CD1900WV
Mode: 802.11b Low Channel TX
Note:

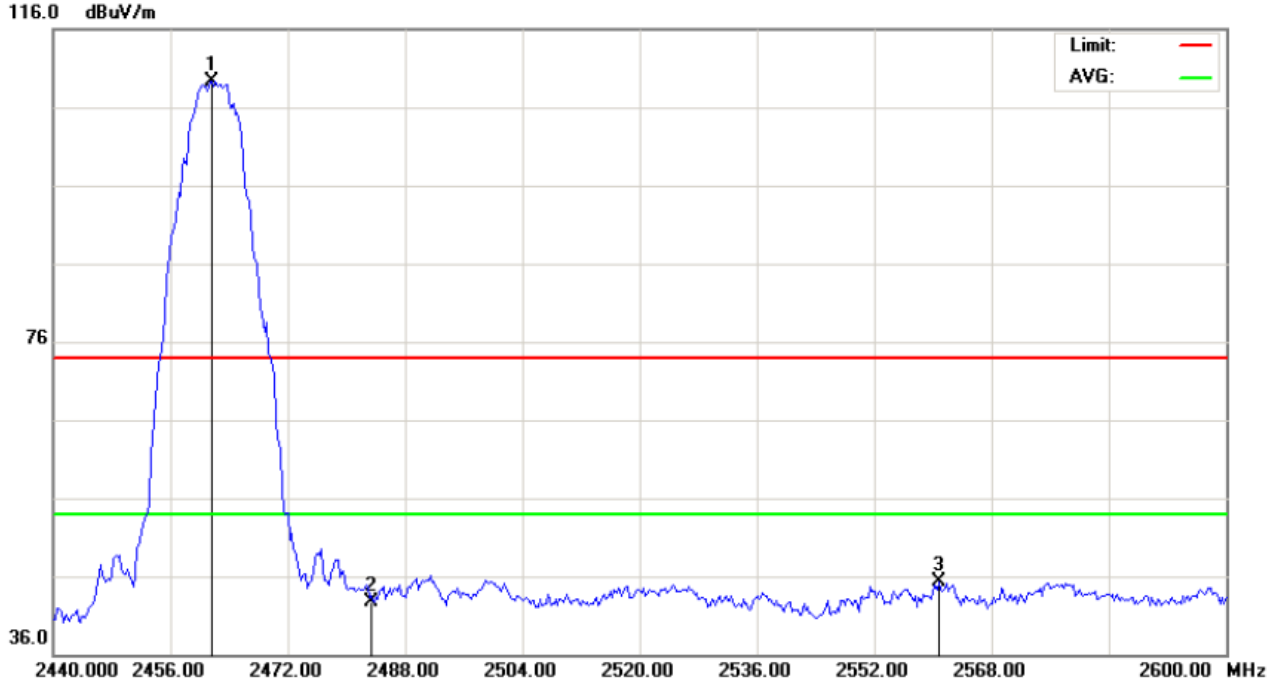
Polarization: ***Vertical***
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2370.000	55.74	-9.71	46.03	74.00	-27.97	peak			
2		2399.167	59.43	-9.68	49.75	74.00	-24.25	peak			
3	*	2412.933	118.96	-9.67	109.29	74.00	35.29	peak			

RESULT: PASS

EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25˚C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	**Antenna**	Horizontal



Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Cloud Digital Photo Frame
M/N: CD1900WV
Mode: 802.11b High Channel TX
Note:

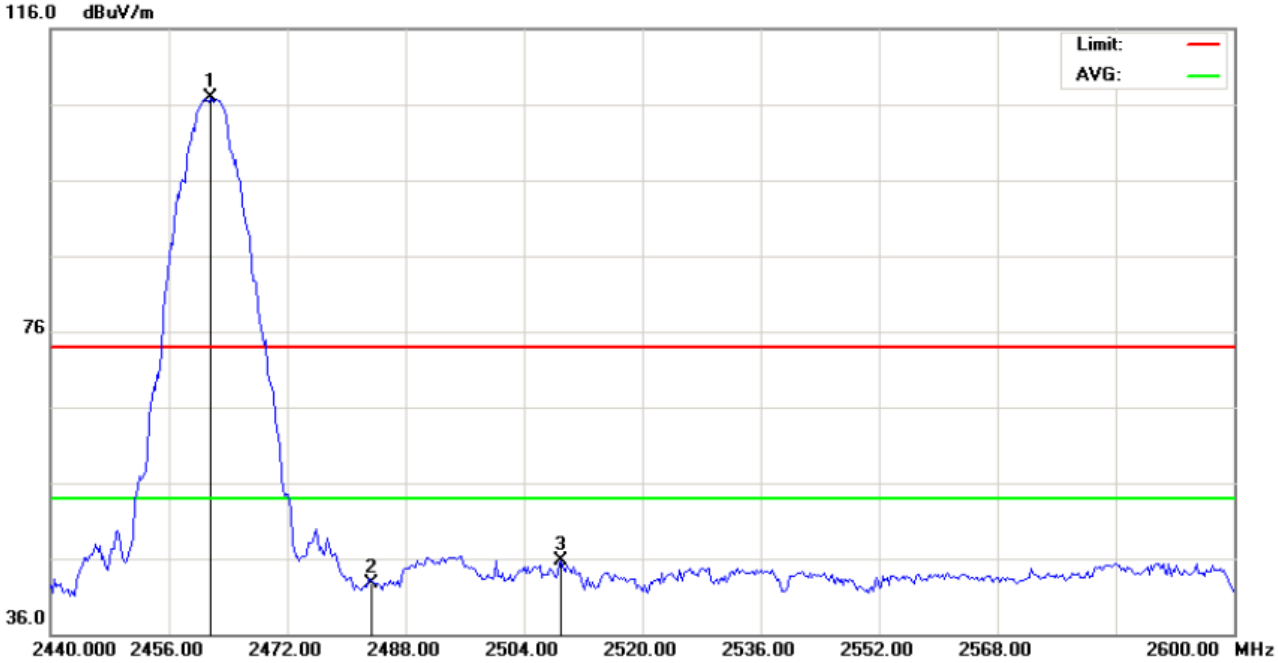
Polarization: ***Horizontal***
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2461.600	118.92	-9.61	109.31	74.00	35.31	peak			
2		2483.500	52.22	-9.59	42.63	74.00	-31.37	peak			
3		2560.800	54.65	-9.42	45.23	74.00	-28.77	peak			

RESULT: PASS

EUT	Cloud Digital Photo Frame	**Model Name**	CD1900WV
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	**Antenna**	Vertical



Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Cloud Digital Photo Frame
M/N: CD1900WV
Mode: 802.11b High Channel TX
Note:

Polarization: ***Vertical***
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2461.600	116.42	-9.61	106.81	74.00	32.81	peak			
2		2483.500	52.22	-9.59	42.63	74.00	-31.37	peak			
3		2509.067	55.24	-9.55	45.69	74.00	-28.31	peak			

RESULT: PASS

Note: The other modes radiation emission have enough 20dB margin.

Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

The “Factor” value can be calculated automatically by software of measurement system.

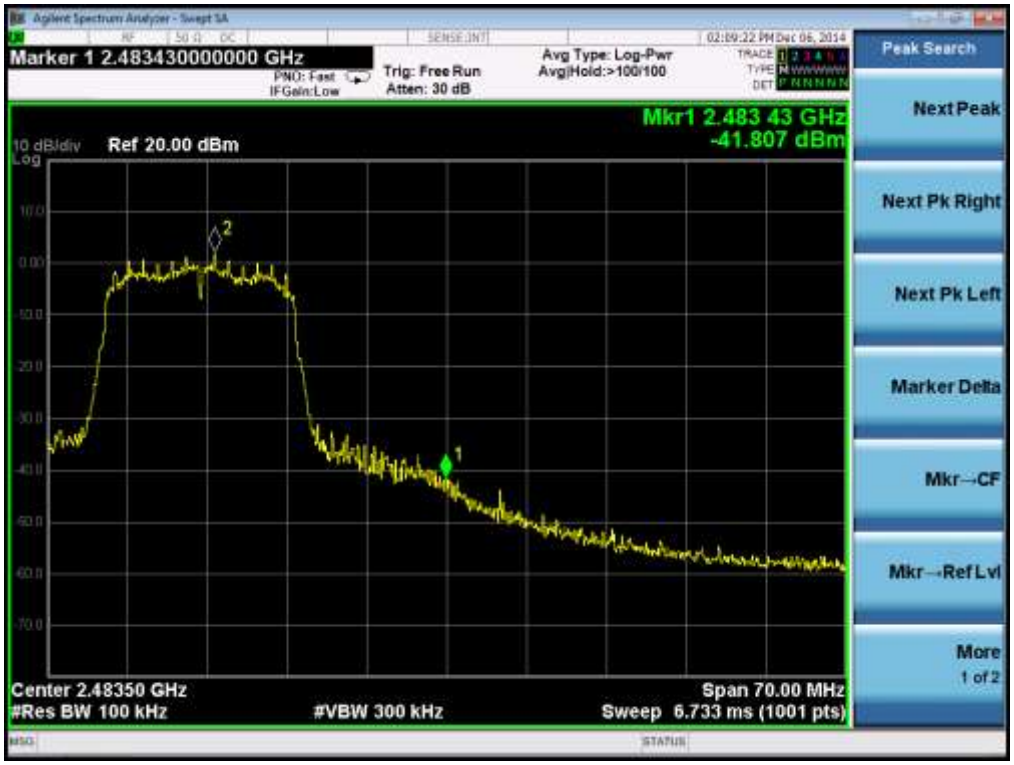
12.4. Conducted Test Result

802.11b-CH1

802.11b-CH11

802.11g- CH1

802.11g- CH11



802.11n-CH1

802.11n-CH11

13. FCC LINE CONDUCTED EMISSION TEST

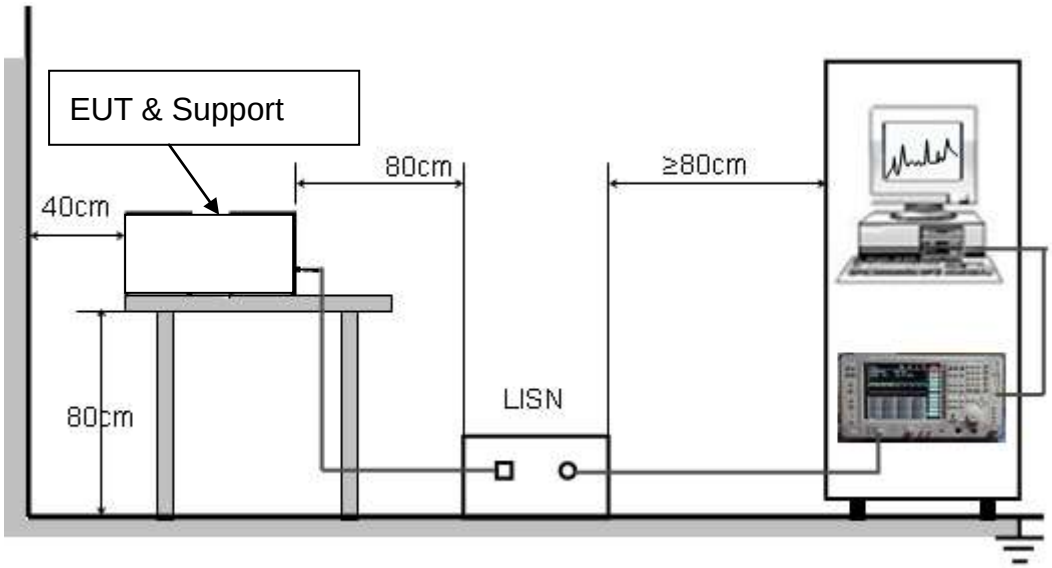
13.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

13.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



13.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.4.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
4. All support equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received charging voltage by adapter which received 120V/60Hzpower by a LISN..
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

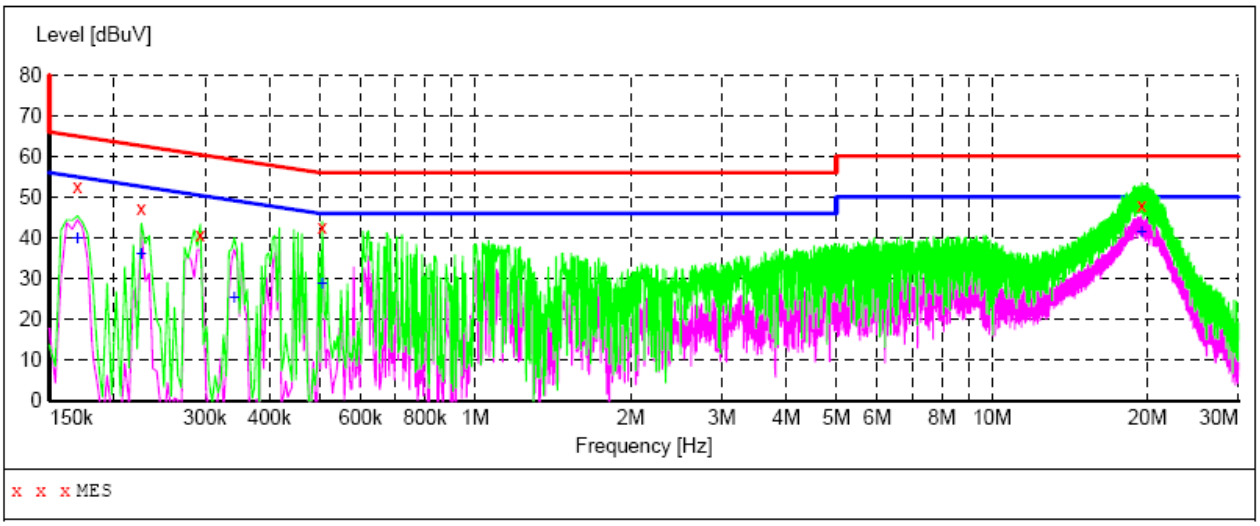
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

13.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

13.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

LINE CONDUCTED EMISSION TEST LINE 1-L



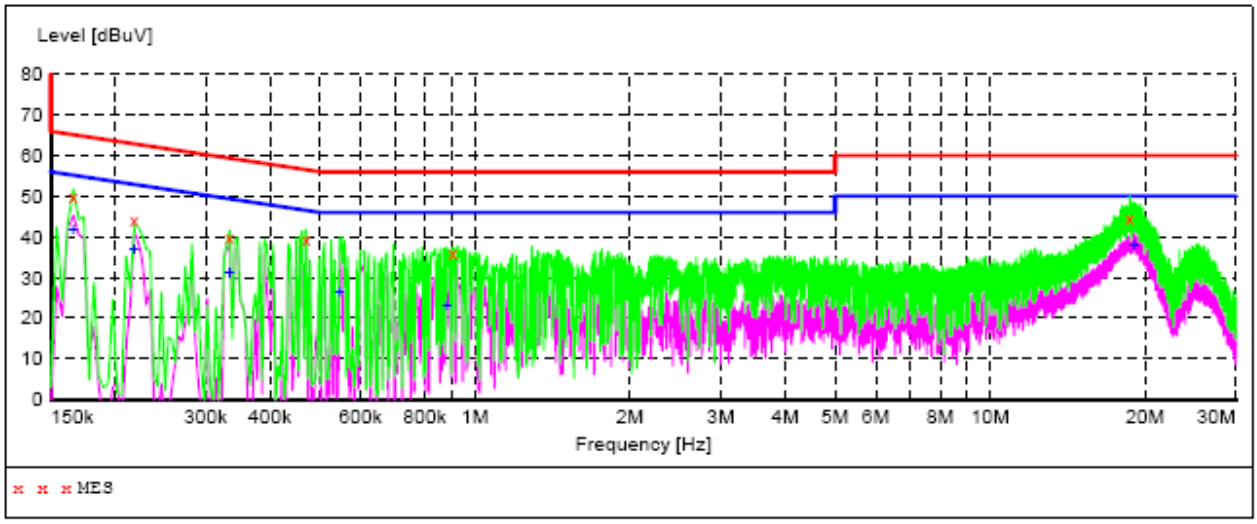
MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE	AUX STATE
0.170000	52.50	0.2	65	12.5	QP	L1	GND	ON
0.226000	47.20	0.2	63	15.4	QP	L1	GND	ON
0.294000	40.90	0.2	60	19.5	QP	L1	GND	ON
0.506000	42.60	0.2	56	13.4	QP	L1	GND	ON
19.486000	48.20	0.8	60	11.8	QP	L1	GND	ON

MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE	AUX STATE
0.170000	40.20	0.2	55	14.8	AV	L1	GND	ON
0.226000	36.20	0.2	53	16.4	AV	L1	GND	ON
0.342000	25.50	0.2	49	23.7	AV	L1	GND	ON
0.506000	28.90	0.2	46	17.1	AV	L1	GND	ON
19.470000	41.70	0.8	50	8.3	AV	L1	GND	ON

Line Conducted Emission Test Line 2-N



MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE	AUX STATE
0.166000	50.10	0.2	65	15.1	QP	L1	GND	ON
0.218000	44.00	0.2	63	18.9	QP	L1	GND	ON
0.334000	39.80	0.2	59	19.6	QP	L1	GND	ON
0.470000	39.50	0.2	57	17.0	QP	L1	GND	ON
0.906000	36.10	0.2	56	19.9	QP	L1	GND	ON
18.654000	44.70	0.7	60	15.3	QP	L1	GND	ON

MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE	AUX STATE
0.166000	41.70	0.2	55	13.5	AV	L1	GND	ON
0.218000	37.20	0.2	53	15.7	AV	L1	GND	ON
0.334000	31.10	0.2	49	18.3	AV	L1	GND	ON
0.546000	26.40	0.2	46	19.6	AV	L1	GND	ON
0.882000	23.20	0.2	46	22.8	AV	L1	GND	ON
19.046000	38.20	0.8	50	11.8	AV	L1	GND	ON

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

FCC LINE CONDUCTED EMISSION TEST SETUP

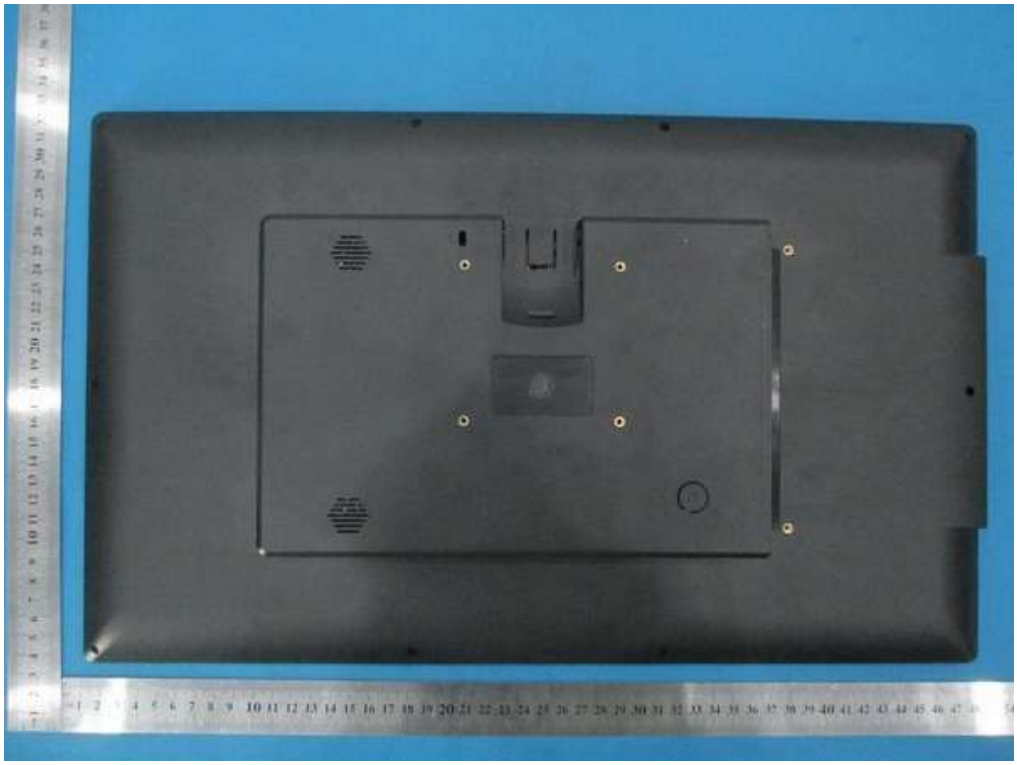
FCC RADIATED EMISSION TEST SETUP

APPENDIX B: PHOTOGRAPHS OF EUT

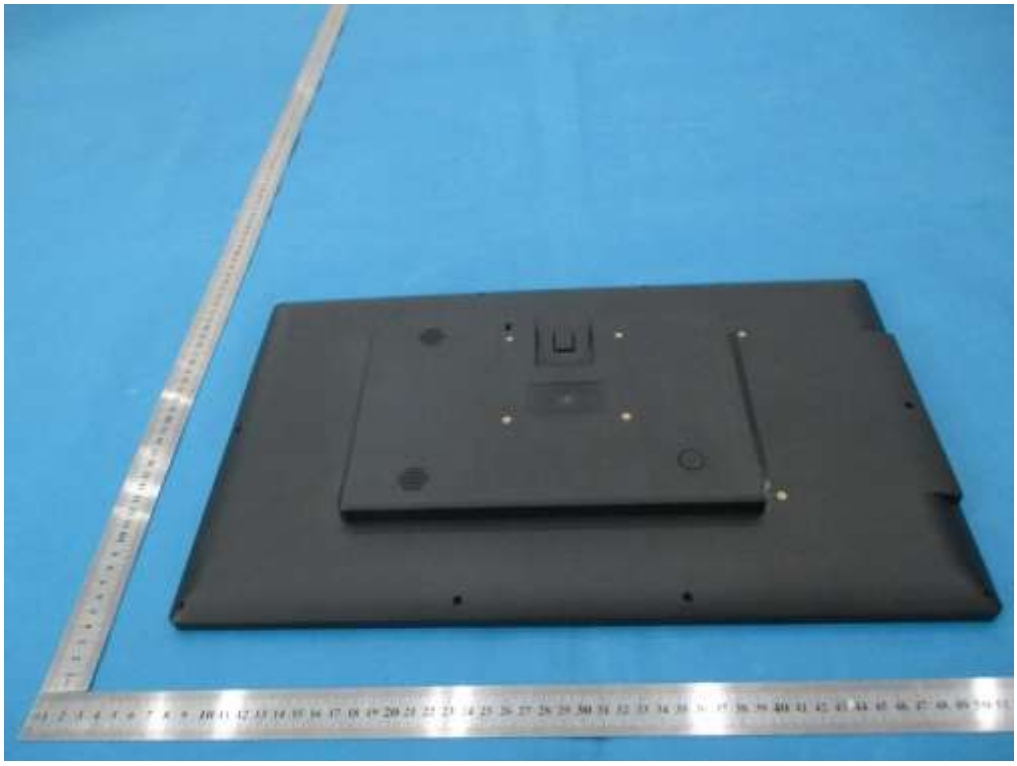
ALL VIEW OF EUT

TOP VIEW OF EUT

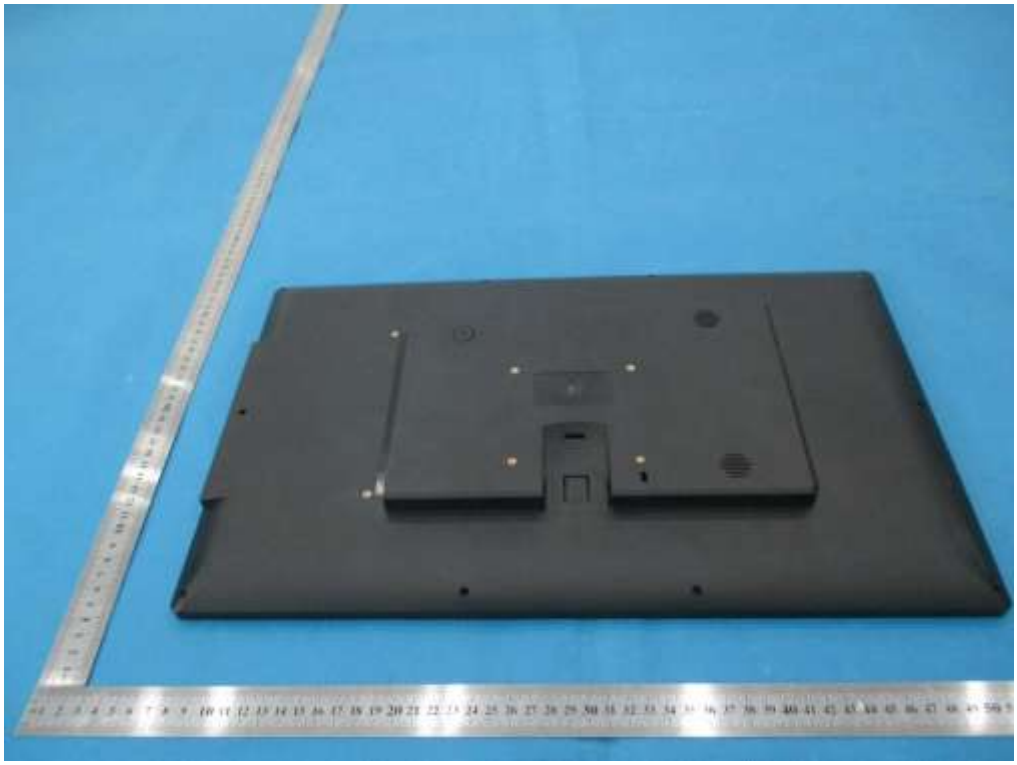
BOTTOM VIEW OF EUT



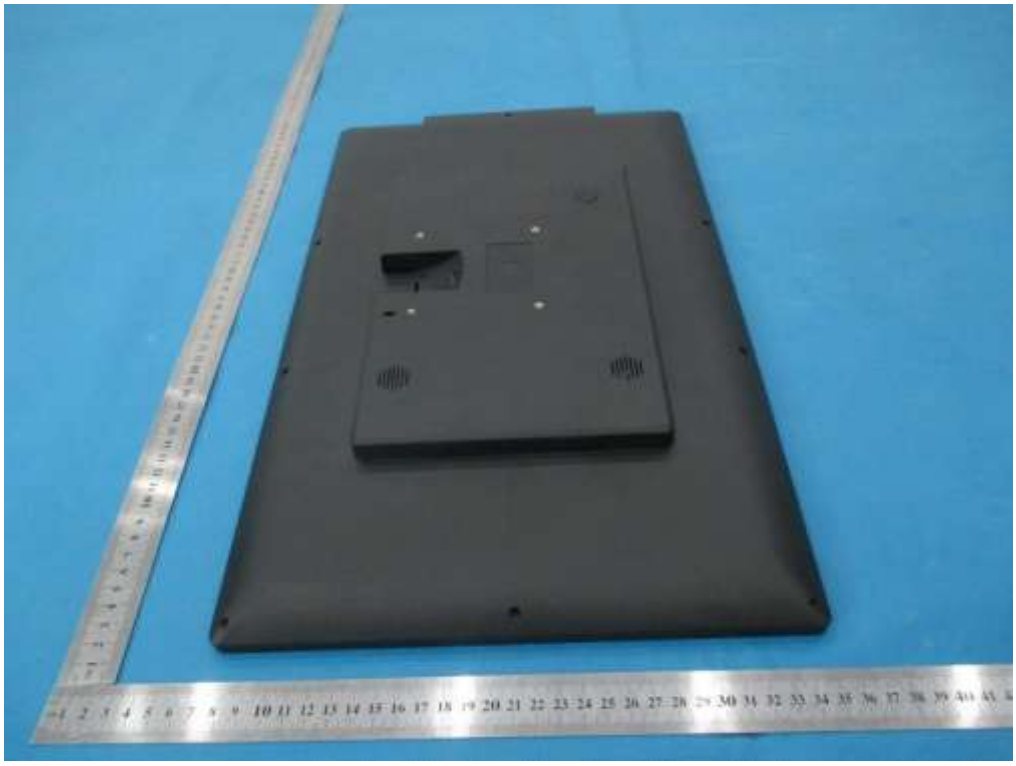
FRONT VIEW OF EUT



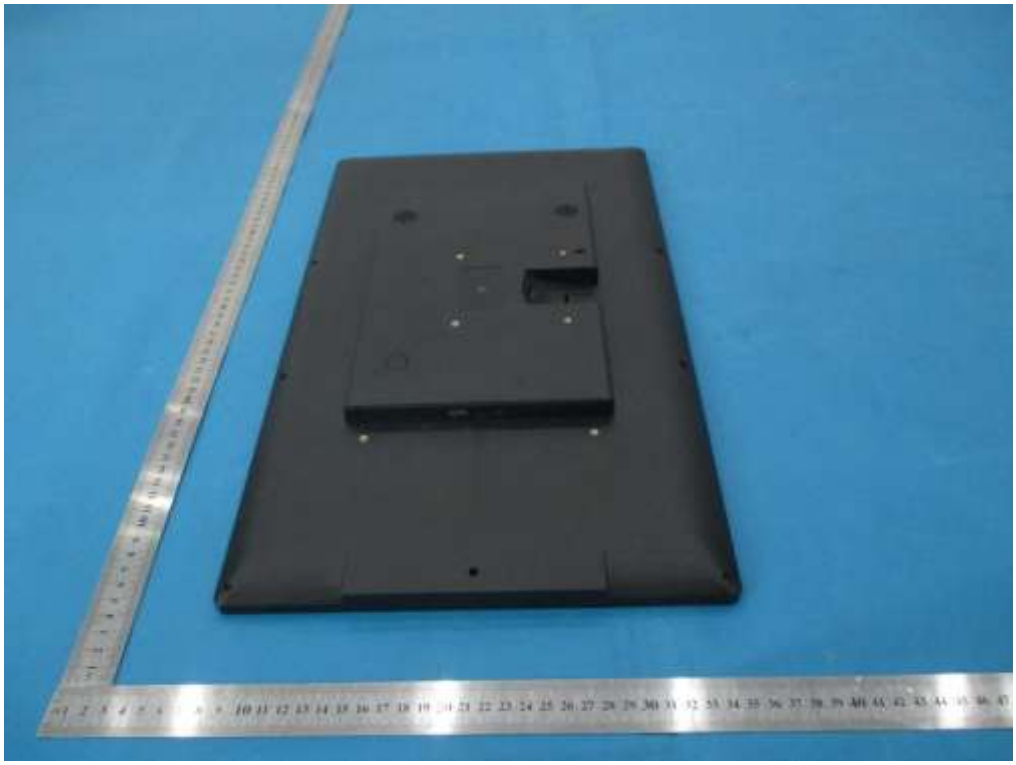
BACK VIEW OF EUT



LEFT VIEW OF EUT

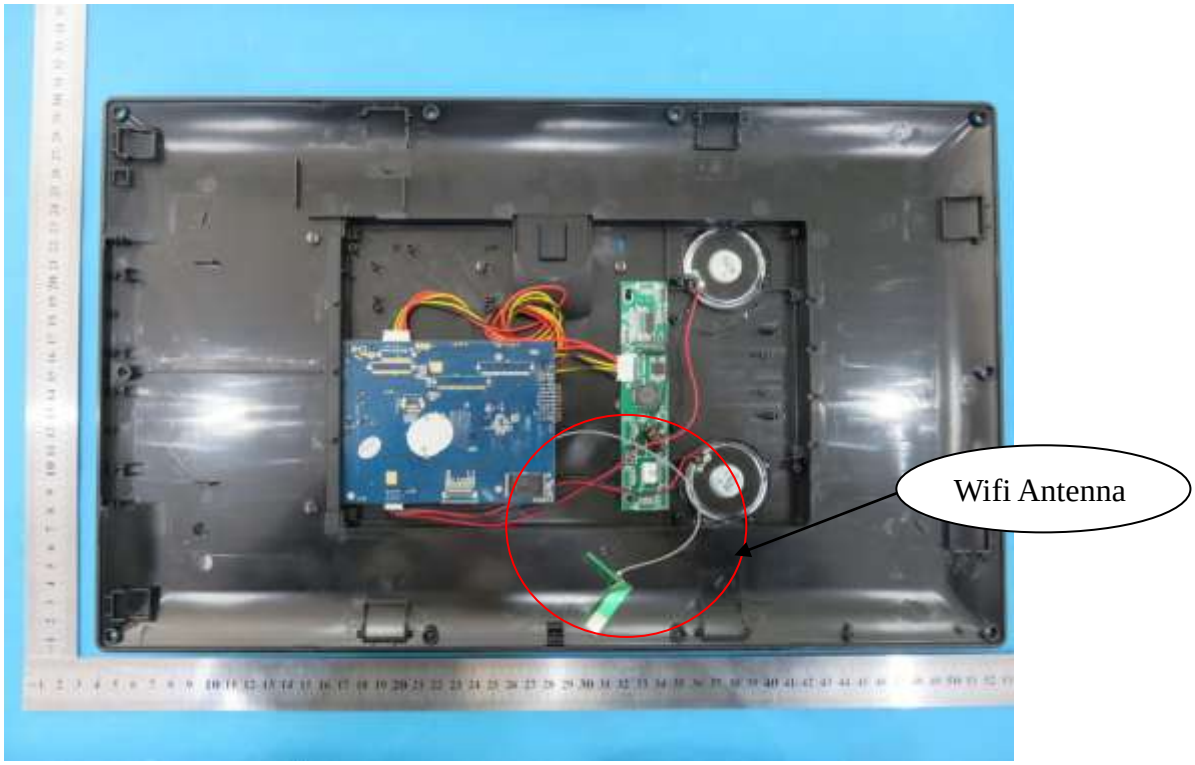


RIGHT VIEW OF EUT



OPEN VIEW OF EUT-1

INTERNAL VIEW OF EUT-1



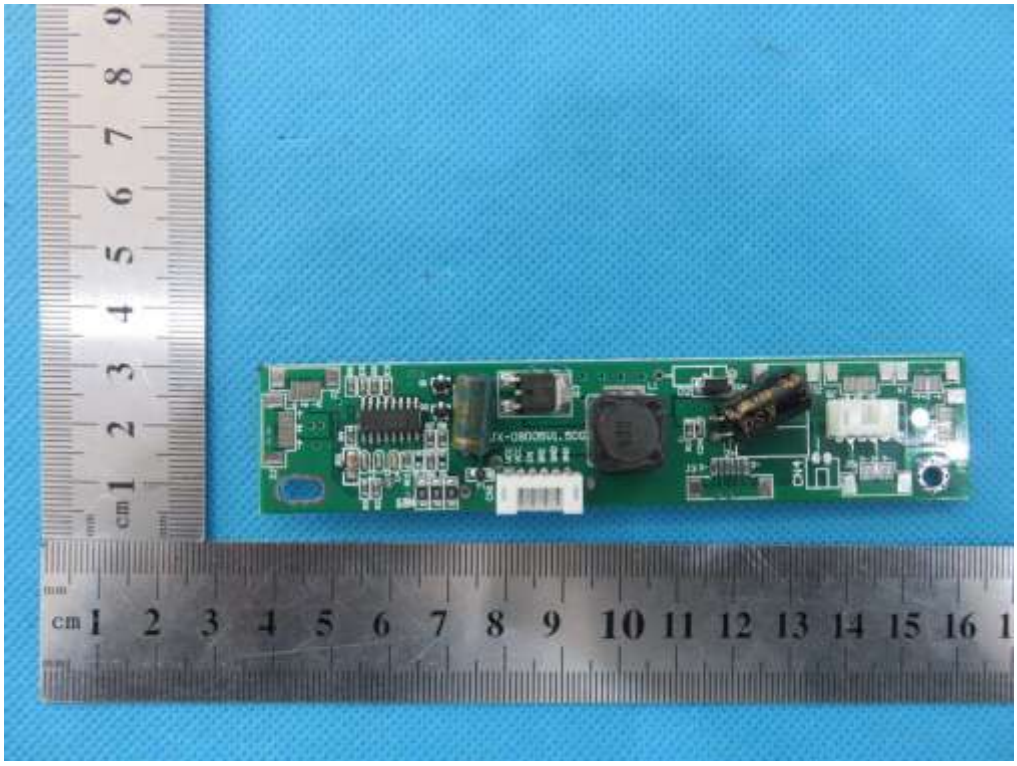
INTERNAL VIEW OF EUT-2

INTERNAL VIEW OF EUT-3

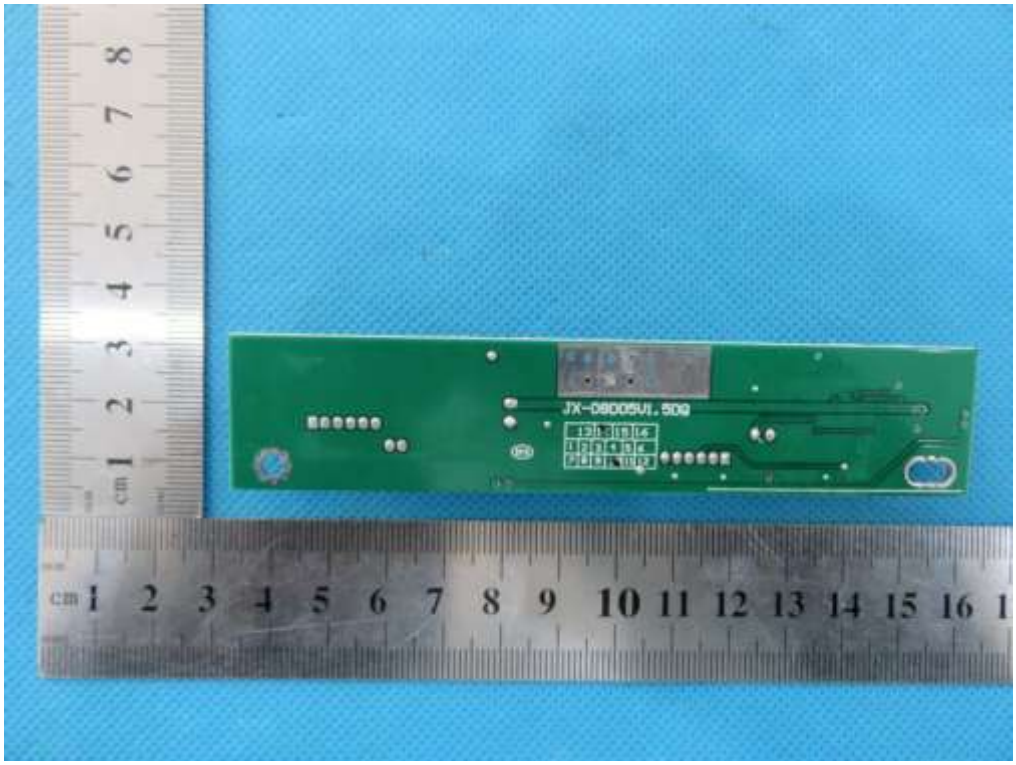
INTERNAL VIEW OF EUT-4

INTERNAL VIEW OF EUT-4

INTERNAL VIEW OF EUT-5



INTERNAL VIEW OF EUT-6



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