FCC RADIO TEST REPORT
FCC ID: 2AGSWMEU020DC27

Product:	WiFi connected digital frame for streaming art
Trade Name:	MEURAL
Model Name:	MEU020DC27
Serial Model:	MEU2LEOB27,MEU2WINS27,MEU2WHTCRD8FT

Prepared for

Meural Inc.
902 Broadway 6th Floor, New York NY, USA, 10010

Prepared by

Shenzhen ZCT Technology Co.,Ltd.
3/F., Building 5, Hongsheng Industrial Zone, Bao'an Road, Xixiang Street, Bao'an
Tel: +(86)-0755-23719050 Fax: +(86)-0755-23702323 Http: www.renzhengjiance.com.cn

TEST RESULT CERTIFICATION

Manufacture's Name...	Heng Gang Glover Optical Manufacturing
Address	No.23,Hong Mian Fourth Road Heng Gang,Long Gang District ShenZhen City,China
Product description	
Product name	WiFi connected digital frame for streaming art
Model and/or type reference	MEU020DC27
Additional Model	MEU2LEOB27,MEU2WINS27,MEU2WHTCRD8FT
Standards	FCC Part15.247
Test procedure.....	ANSI C63.10-2013

This device described above has been tested by ZCT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test.....	
Date (s) of performance of tests.....	June. 12 2017 ~June. 28 2017
Date of Issue.....	June. 29 2015
Test Result.....	**Pass**

Testing Engineer	:	Anna Lv
		(Anna LV)
Authorized Signatory	:	Tomy Wu
		(Tomy WU)

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (d)	Power Spectral Density	PASS	
15.205	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

1.1 TEST FACILITY

DongGuan Yaxu(AiT) Technology Limited
No. 22,JinQianLing Street 3, JiTiGang Village, Huang-Jiang Town, DongGuan, Guangdong, 523757 China

FCC Registration No.: 248337

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**, where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**, providing a level of confidence of approximately **95** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. GENERAL INFORMATION

GENERAL DESCRIPTION OF EUT

Equipment	WiFi connected digital frame for streaming art
Model Name	MEU020DC27
Serial Model	MEU2LEOB27,MEU2WINS27,MEU2WHTCRD8FT
Model Difference	All models are identical except model name.
Product Description	The EUT is a WiFi connected digital frame for streaming art Operation Frequency: 802.11b/g: 2412~2462MHz Modulation Type: BPSK/QPSK16-QAM Bit Rate of Transmitter: 802.11b: DBPSK, DQPSK(11, 5.5, 2, 1 Mbps) 802.11g: BPSK,QPSK,16QAM, 64QAM (54,48,36,24,18,12,9,6 Mbps) Number Of Channel: 802.11b/g:11CH Antenna Designation: Please see Note 3. Output Power(Conducted): 802.11b: 8.74 dBm (Max. AV) 802.11g: 8.16dBm (Max. AV) Antenna Gain (dBi): 0dbi Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Channel List	Please refer to the Note 2.
Ratings	12Vdc from adapter,AC 120V/60Hz for adapter
Adapter	Model: FJ-SW1204000U Input: 100-240V~50/60Hz 1.5A Output: 12Vdc 4000mA
Battery	N/A
Connecting I/O Port(s)	Please refer to the User's Manual
hardware version	DPF21_20151013_V1.0
Software version	V1.1

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel List for 802.11b/g							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

3.

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
A	N/A	N/A	PCB Antenna	ipex	0	Wifi Antenna

DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	Link Mode

For Conducted Emission	
Final Test Mode	Description
Mode 3	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

(2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

(3) measurements are performed according to the KDB 558074 D01 DTS Meas Guidance v03r03

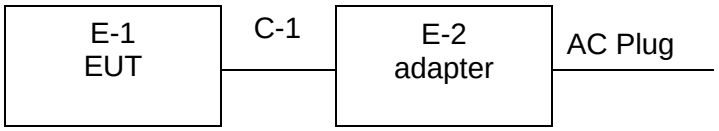
Test Items	Mode	Data Rate	Channel
Maximum Peak Conducted Output Power Power Spectral Density 6dB Bandwidth Spurious RF conducted emission Radiated Emission 9kHz~1GHz& Radiated Emission 1GHz~10th Harmonic	11b/DSSS	1 Mbps	1/6/11
	11g/OFDM	6 Mbps	1/6/11
Band Edge	11b/DSSS	1 Mbps	1/11
	11g/OFDM	6 Mbps	1/11

NOTE: Typical working modes for each IEEE 802.11mode are selected to perform tests. The manufacturer provide special test software(rftesttool_v47) to control TX duty cycle >98% for TX test. Set the output power to 13.5dbm(PK)

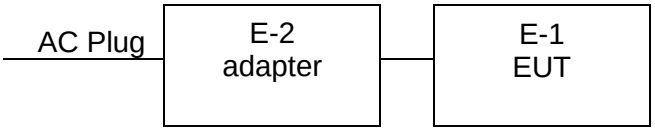
Test Mode	Test Modes Description
11b	IEEE 802.11b with data rate of 1 Mbps using SISO mode.
11g	IEEE 802.11g with data rate of 6 Mbps using SISO mode.

BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

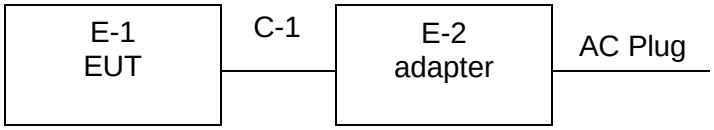
RE



RF conducted measurement



CE



DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	WiFi connected digital frame for streaming art	MEURAL	MEU020DC27	N/A	EUT
E-2	adapter	N/A	FJ-SW1204000U	N/A	N/A

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.5m	Adapter DC Cable

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

Equipments List for All Test Items

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	L.I.S.N.#1	Kyoritsu	KNW-242	8-837-4	2017.06.29	2018.06.29
2	L.I.S.N.#2	Kyoritsu	KNW-407	8-1789-4	2017.06.29	2018.06.29
3	EMI Receiver	R&S	ESCI	100124	2017.06.29	2018.06.29
4	Coaxial Switch	Anritsu	MP59B	6200264417	2017.06.29	2018.06.29
5	Cable 0.09-30MHz	N/A	AIT005	C001	2017.06.29	2018.06.29
6	SIGNAL ANALYZER	R&S	FSV40	101470	2017.06.29	2018.06.29
7	EMI Measuring Receiver	R&S	ESR	101660	2017.06.29	2018.06.29
8	Low Noise Pre Amplifier	Tsj	MLA-10K01-B01-27	1205323	2017.06.29	2018.06.29
9	Low Noise Pre Amplifier	Tsj	MLA-0120-A02-34	2648A04738	2017.06.29	2018.06.29
10	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2017.06.29	2018.06.29
11	Broadband Horn Antenna	SCHWARZBECK	BBHA9120D	452	2017.06.29	2018.06.29
12	SHF-EHF Horn	SCHWARZBECK	BBHA9170	BBHA9170367	2017.06.29	2018.06.29
13	Loop Antenna	ETS	6512	00165355	2017.06.29	2018.06.29
14	Radiated Cable 1#（30MHz-1GHz）	FUJIKURA	5D-2W	01	2017.06.29	2018.06.29
15	Radiated Cable 2# (1GHz -40GHz)	FUJIKURA	10D2W	02	2017.06.29	2018.06.29
16	Conducted Cable 1#(9KHz-30MHz)	FUJIKURA	1D-2W	01	2017.06.29	2018.06.29
17	Power Meter	Anritsu	ML2495A	N/A	2017.06.29	2018.06.29
18	Power sensor	Anritsu	MA2411B	N/A	2017.06.29	2018.06.29
Note: N/A						

3. EMC EMISSION TEST

CONDUCTED EMISSION MEASUREMENT

POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

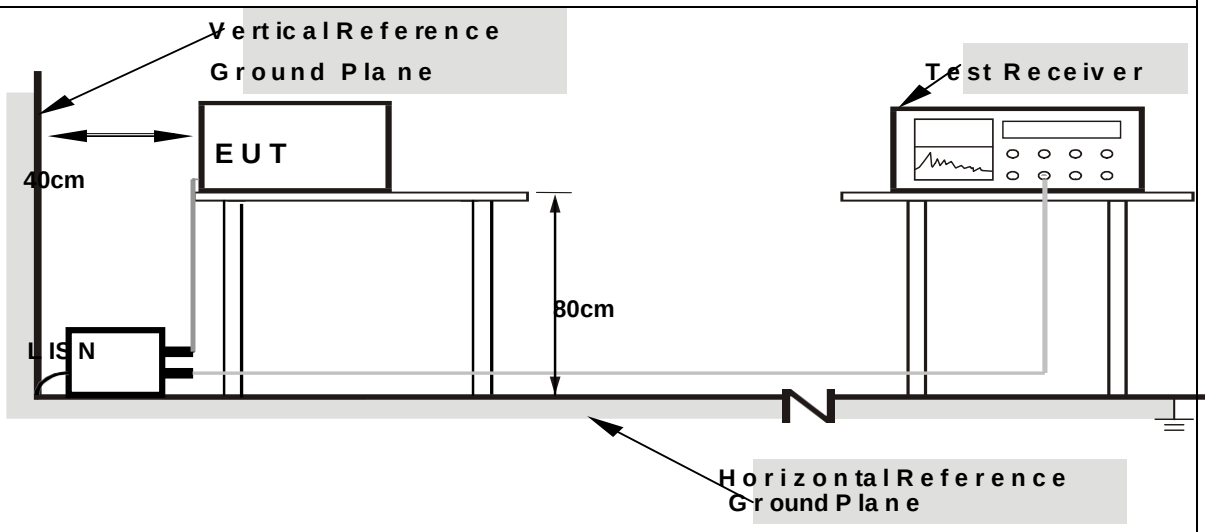
d. LISN at least 80 cm from nearest part of EUT chassis.

e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

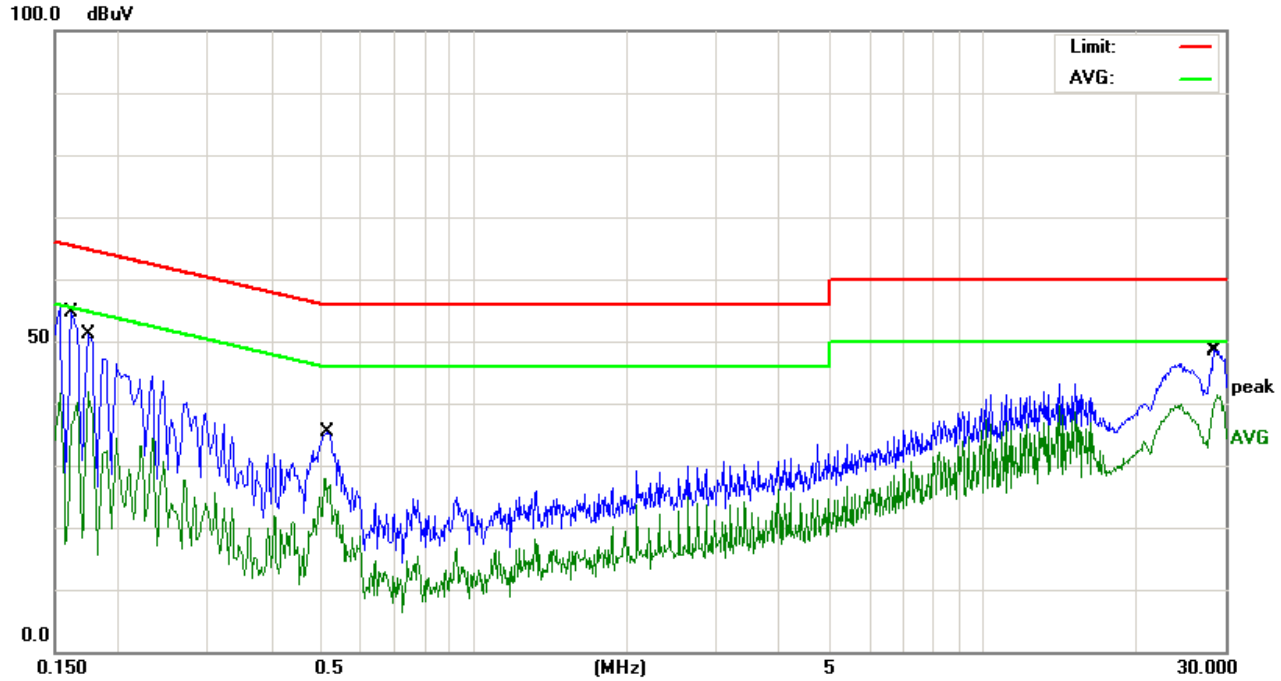
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.6 TEST RESULTS

EUT：	WiFi connected digital frame for streaming art	Model Name. ：	MEU020DC27
Temperature：	26 ℃	Relative Humidity：	56%
Pressure：	1010hPa	Phase :	L
Test Voltage ：	DC 12V from adapter, AC 120V/60Hz for adapter	Test Mode：	Mode 3

Frequency (MHz)	Meter Reading (dBμV)	Factor(dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector
0.1620	43.02	11.68	54.70	65.36	-10.66	QP
0.1740	30.33	11.48	41.81	54.76	-12.95	Average
0.5100	17.97	10.01	27.98	46.00	-18.02	QP
0.5140	25.48	10.01	35.49	56.00	-20.51	Average
28.4860	37.34	11.37	48.71	60.00	-11.29	QP
28.9220	29.89	11.41	41.30	50.00	-8.70	Average

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit

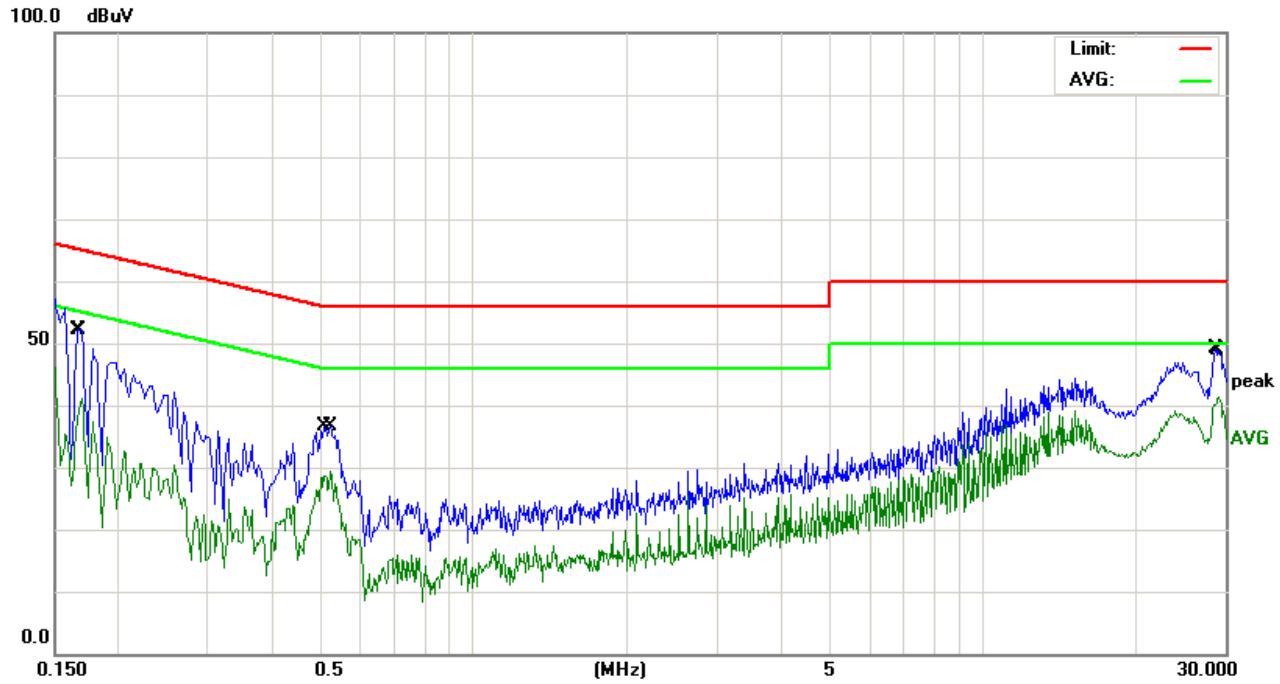


EUT：	WiFi connected digital frame for streaming art	Model Name. ：	MEU020DC27
Temperature：	26 ℃	Relative Humidity：	56%
Pressure：	1010hPa	Phase :	N
Test Voltage ：	DC 12V from adapter, AC 120V/60Hz for adapter	Test Mode：	Mode 3

Frequency (MHz)	Meter Reading (dBμV)	Factor(dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector
0.1660	40.52	11.61	52.13	65.15	-13.02	QP
0.1700	29.49	11.55	41.04	54.96	-13.92	Average
0.5100	26.69	10.01	36.70	56.00	-19.30	QP
0.5220	19.45	10.01	29.46	46.00	-16.54	Average
28.7100	37.82	11.39	49.21	60.00	-10.79	QP
29.1580	30.06	11.42	41.48	50.00	-8.52	Average

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit



RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below 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

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / *10Hz* for Average
Receiver Parameter	**Setting**
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.

b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

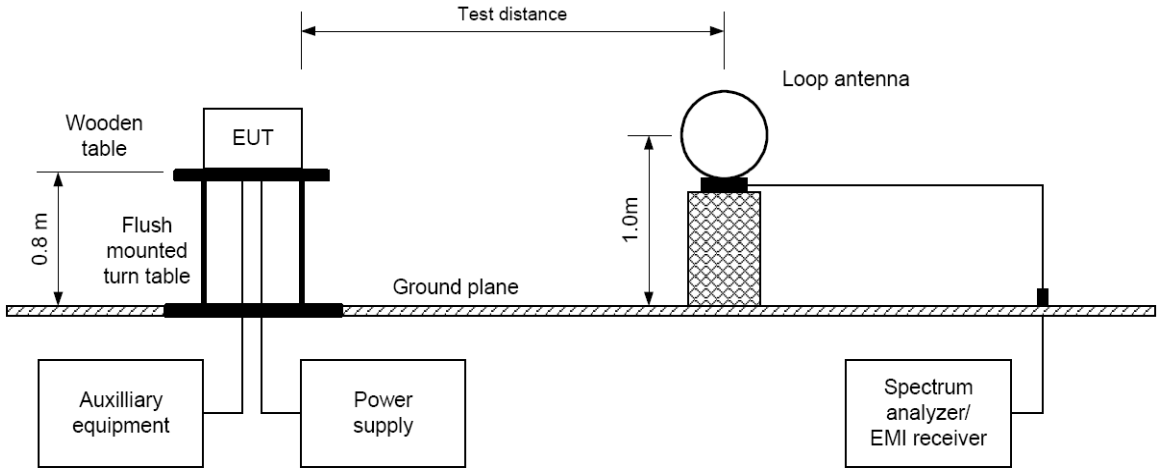
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.
g. For the radiated emission test above 1GHz:
Place the measurement antenna away from each area of the EUT determined to be a source of emissionsat the specified measurement distance, while keeping the measurement antenna aimed at the source ofemissions at each frequency of significant emissions, with polarization oriented for maximum response.The measurement antenna may have to be higher or lower than the EUT, depending on the radiationpattern of the emission and staying aimed at the emission source for receiving the maximum signal. Thefinal measurement antenna elevation shall be that which maximizes the emissions. The measurementantenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 mabove the ground or reference ground plane.
Note:
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

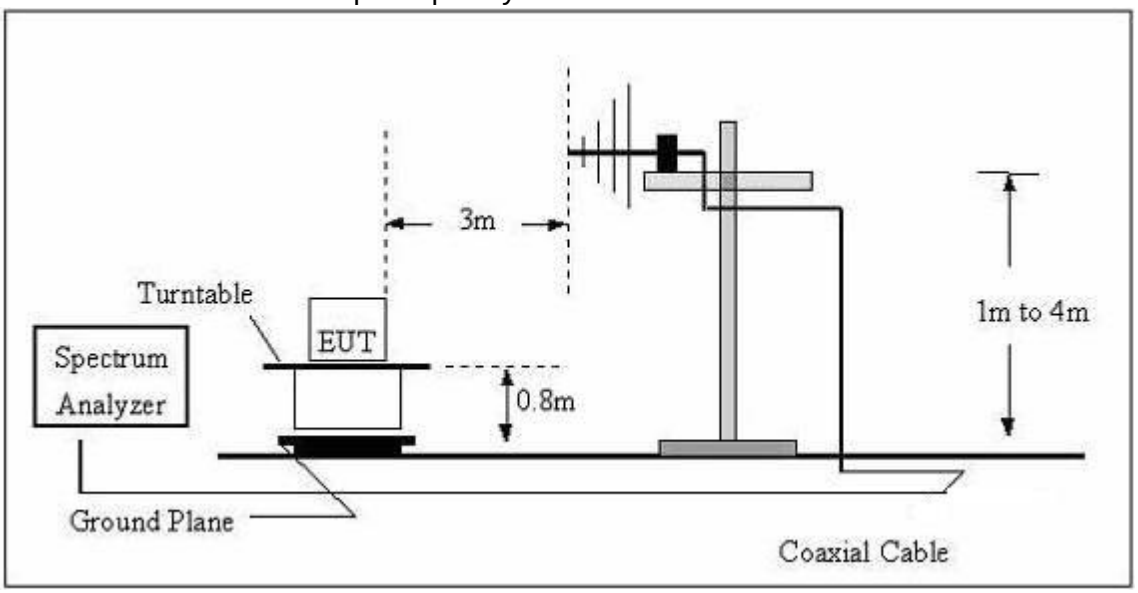
No deviation

3.2.4 TEST SETUP

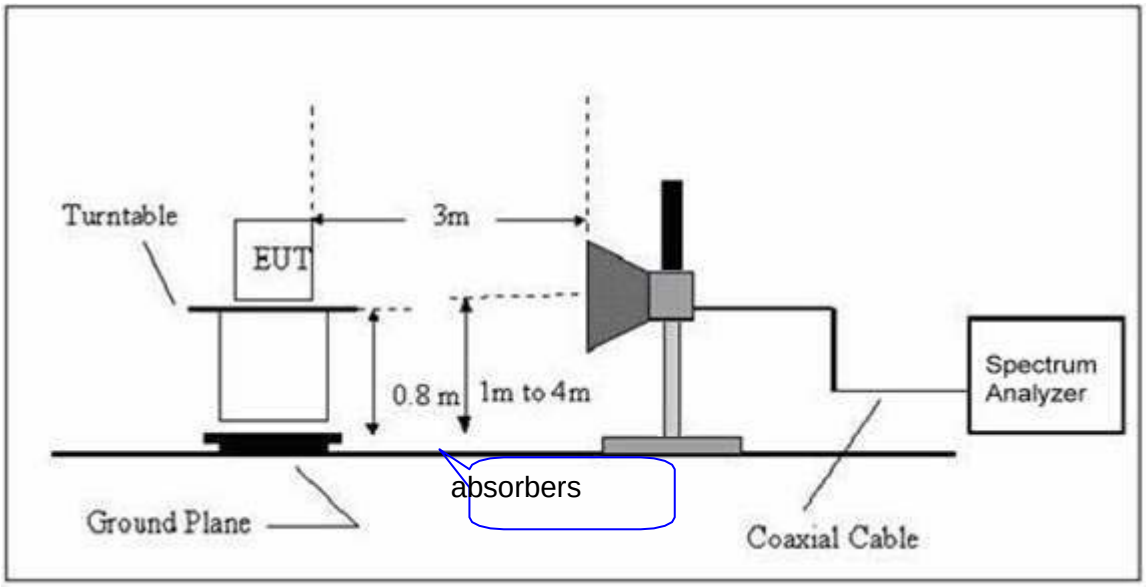
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

EUT：	WiFi connected digital frame for streaming art	Model Name. ：	MEU020DC27
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 12V from adapter, AC 120V/60Hz for adapter
Test Mode ：	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	P
--	--	--	--	P

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

EUT：	WiFi connected digital frame for streaming art	Model Name ：	MEU020DC27
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 12V from adapter, AC 120V/60Hz for adapter
Test Mode ：	802.11B TX 2412		

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
V	60.0690	55.45	-19.40	36.05	40.00	-3.95	QP
V	92.1388	56.42	-18.02	38.40	43.50	-5.10	QP
V	124.1329	55.51	-15.11	40.40	43.50	-3.10	QP
V	239.9874	54.94	-14.07	40.87	46.00	-5.13	QP
V	541.3721	45.16	-4.14	41.02	46.00	-4.98	QP
V	721.7259	38.88	-0.41	38.47	46.00	-7.53	QP
H	139.3610	54.78	-14.88	39.90	43.50	-3.60	QP
H	175.0365	53.63	-13.23	40.40	43.50	-3.10	QP
H	273.2341	50.88	-12.16	38.72	46.00	-7.28	QP
H	396.2412	45.51	-7.06	38.45	46.00	-7.55	QP
H	541.3721	44.14	-4.14	40.00	46.00	-6.00	QP
H	661.1503	40.18	-1.26	38.92	46.00	-7.08	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

Note:test perform on 802.11b/g mode,"802.11b TX2412" mode is the worst mode and has been reported.

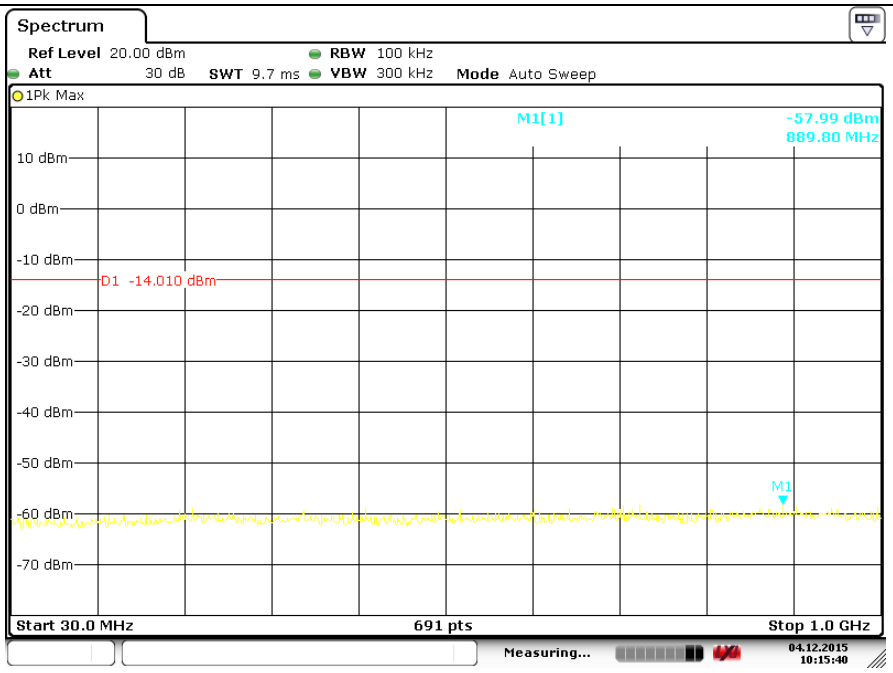
3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

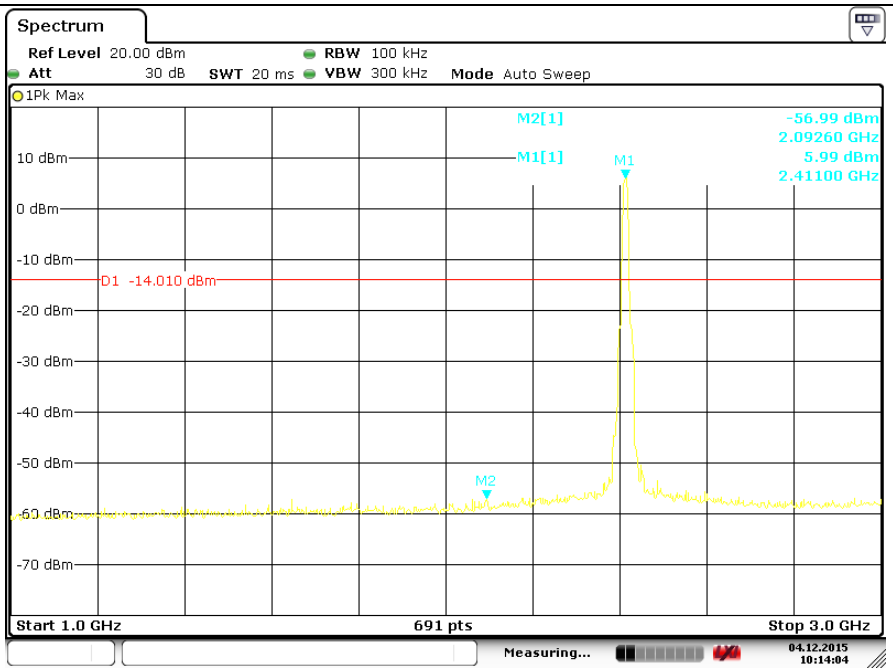
Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
Low Channel (2412 MHz)-Above 1G							
4824.000	43.41	5.08	48.49	74.00	-25.51	Pk	Vertical
4824.000	32.12	5.08	37.20	54.00	-16.80	Av	Vertical
7236.000	43.22	7.16	50.38	74.00	-23.62	Pk	Vertical
7236.000	30.24	7.16	37.40	54.00	-16.60	Av	Vertical
4824.000	43.76	5.08	48.84	74.00	-25.16	Pk	Horizontal
4824.000	28.52	5.08	33.60	54.00	-20.40	Av	Horizontal
7236.000	41.29	7.16	48.45	74.00	-25.55	Pk	Horizontal
7236.000	31.09	7.16	38.25	54.00	-15.75	Av	Horizontal
Mid Channel (2437 MHz)-Above 1G							
4874.000	43.34	5.13	48.47	74.00	-25.53	Pk	Vertical
4874.000	31.56	5.13	36.69	54.00	-17.31	Av	Vertical
7311.000	40.10	7.49	47.59	74.00	-26.41	Pk	Vertical
7311.000	29.05	7.49	36.54	54.00	-17.46	Av	Vertical
4874.000	43.94	5.13	49.07	74.00	-24.93	Pk	Horizontal
4874.000	30.87	5.13	36.00	54.00	-18.00	Av	Horizontal
7311.000	39.84	7.49	47.33	74.00	-26.67	Pk	Horizontal
7311.000	31.05	7.49	38.54	54.00	-15.46	Av	Horizontal
High Channel (2462 MHz)- Above 1G							
4924.000	46.54	5.18	51.72	74.00	-22.28	Pk	Vertical
4924.000	33.67	5.18	38.85	54.00	-15.15	Av	Vertical
7386.000	38.62	7.82	46.44	74.00	-27.56	Pk	Vertical
7386.000	28.25	7.82	36.07	54.00	-17.93	Av	Vertical
4924.000	44.08	5.18	49.26	74.00	-24.74	Pk	Horizontal
4924.000	30.95	5.18	36.13	54.00	-17.87	Av	Horizontal
7386.000	40.15	7.82	47.97	74.00	-26.03	Pk	Horizontal
7386.000	29.04	7.82	36.86	54.00	-17.14	Av	Horizontal

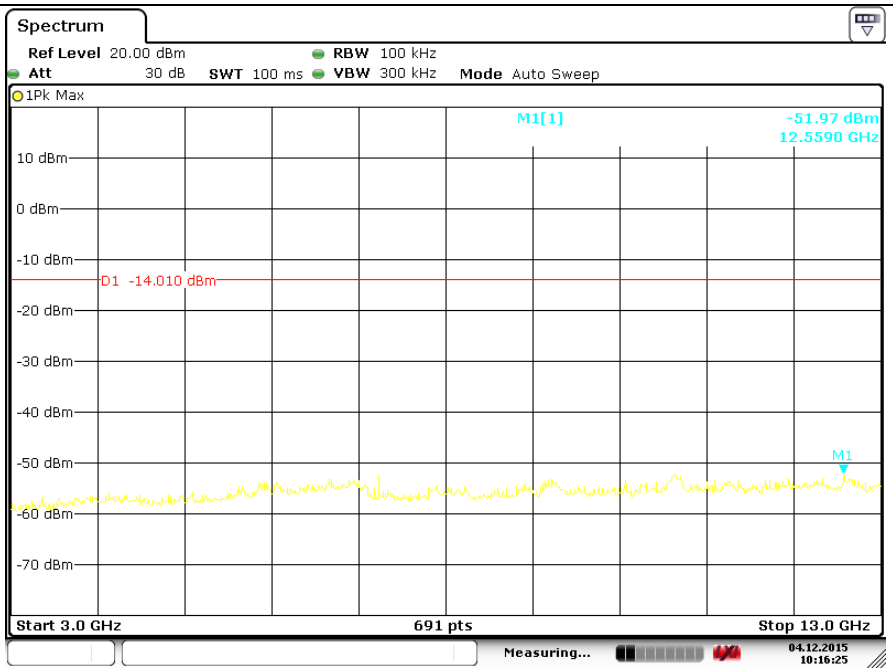
Note:test perform on 802.11b/g mode,"802.11b" mode is the worst mode and has been reported.

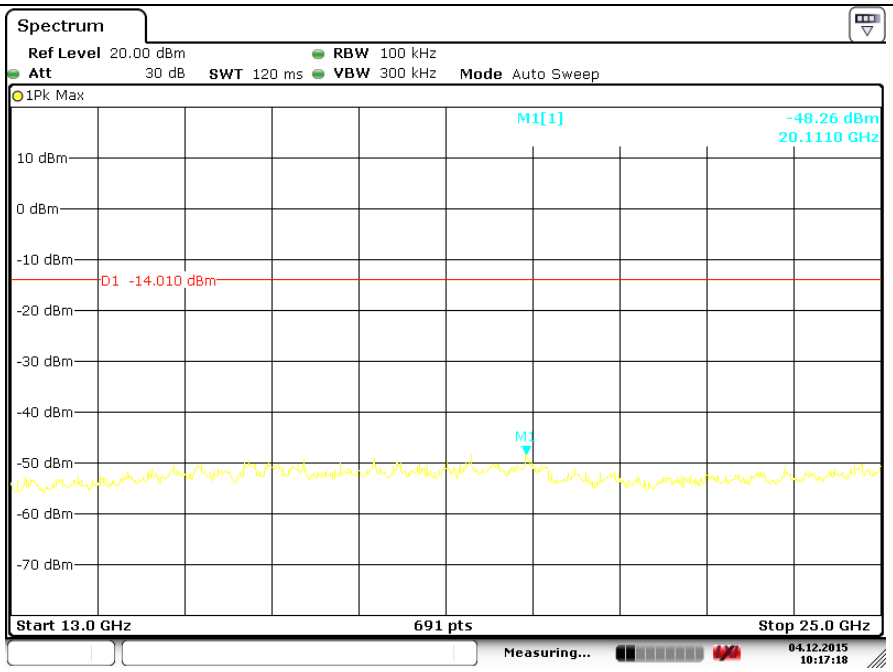
Conducted Spurious Emissions at Antenna Port:

802.11b Low Channel

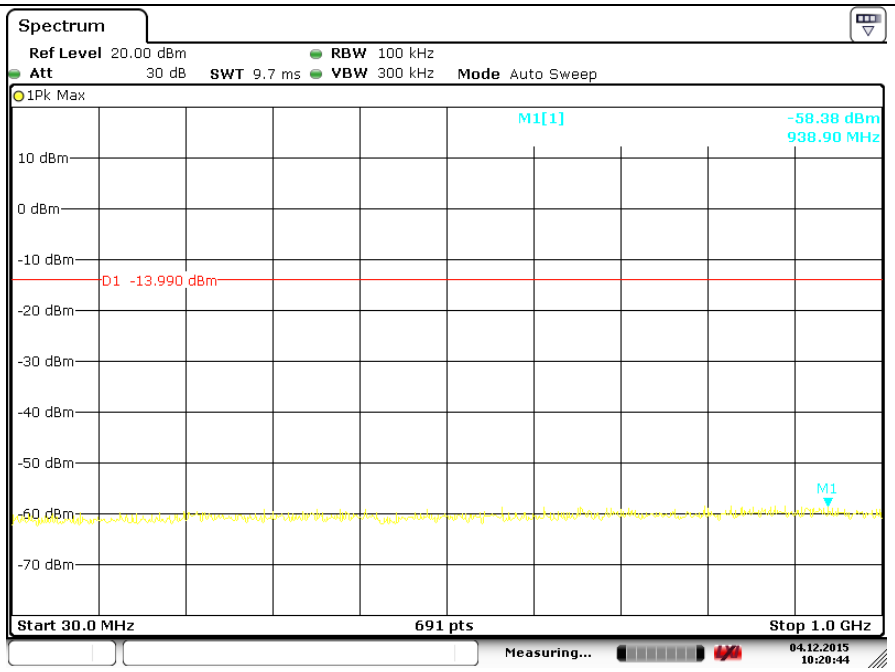


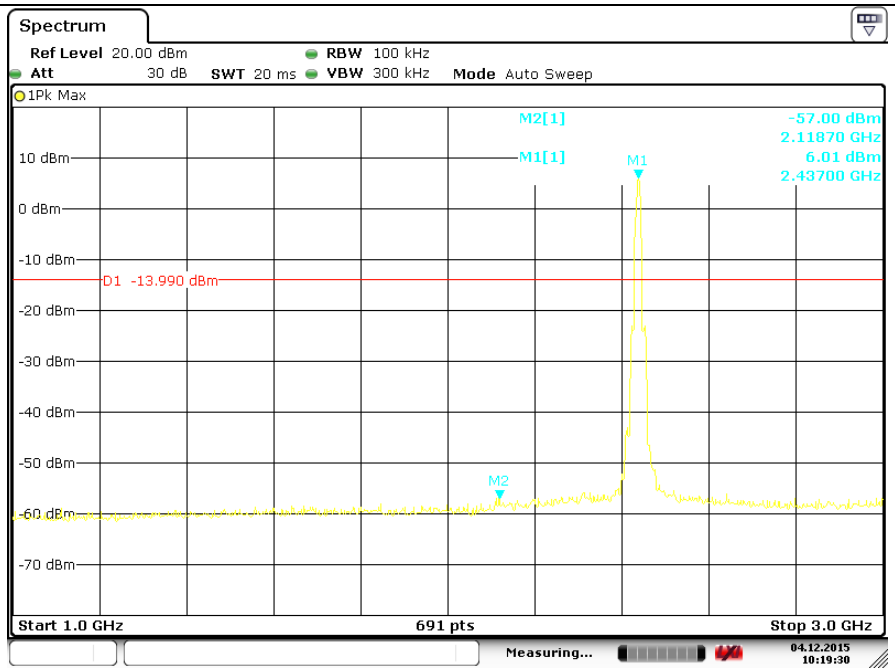


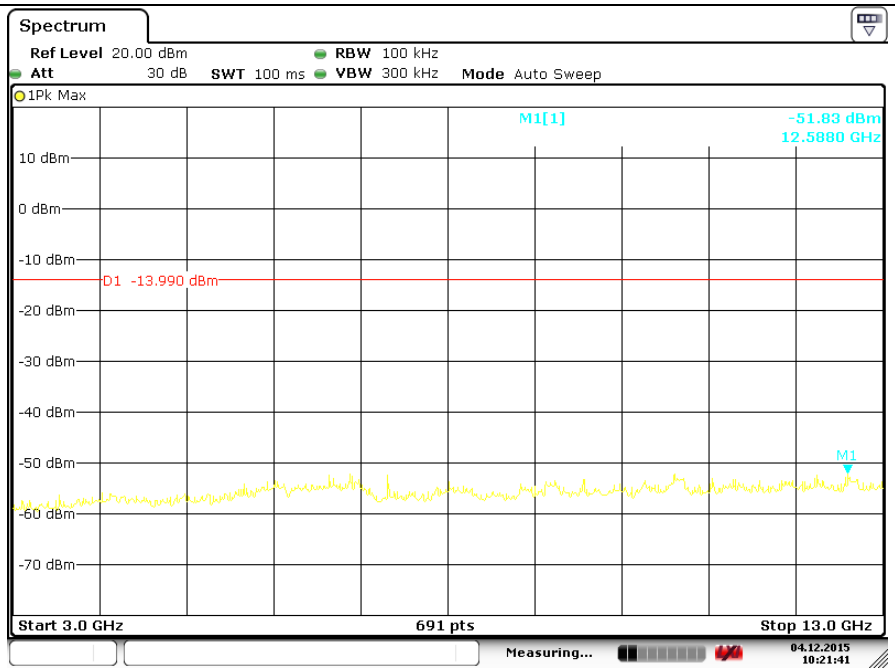


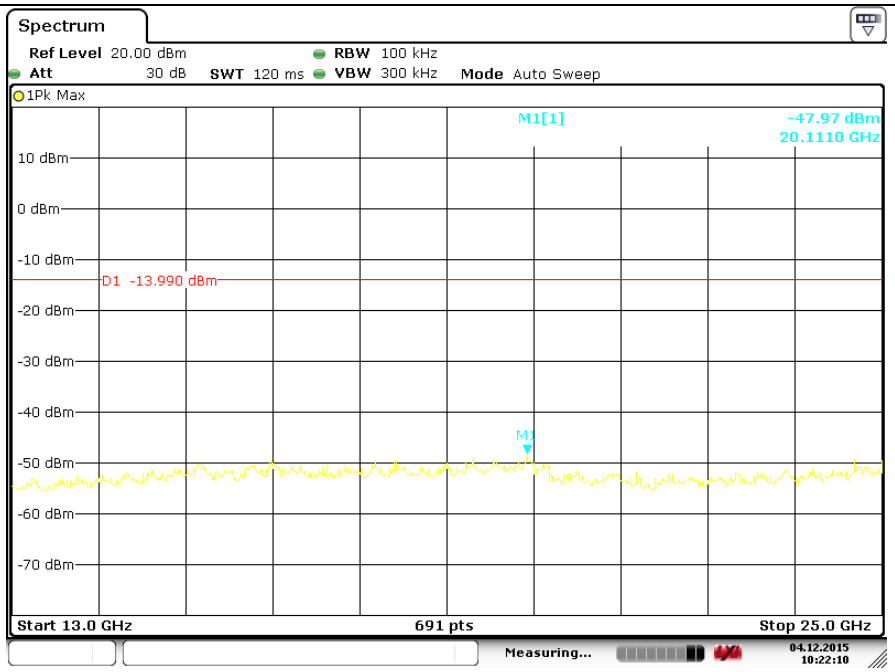


802.11b Middle Channel

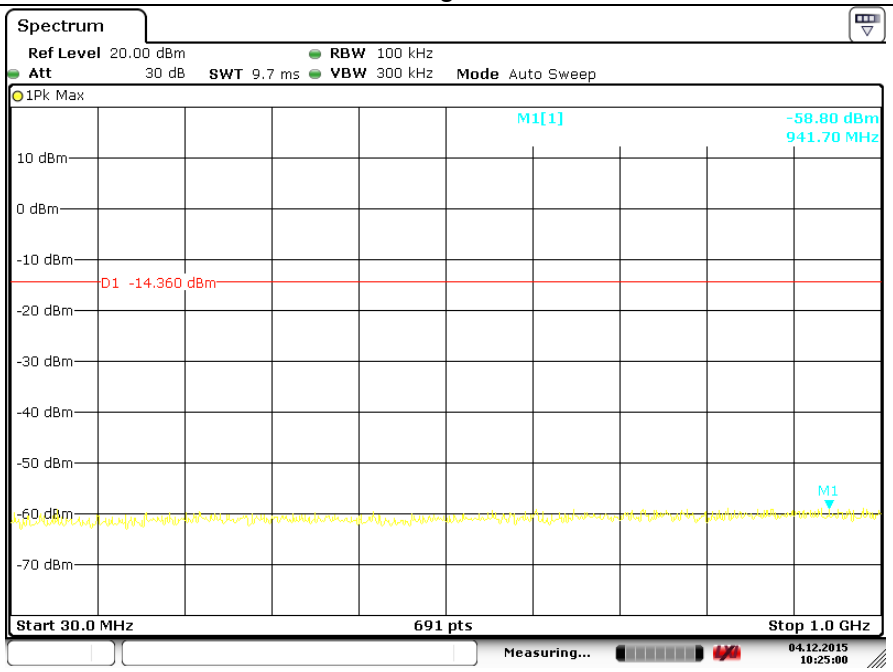

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 9.7 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-58.38 dBm
938.90 MHz
10 dBm
0 dBm
-10 dBm
D1 -13.990 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
Start 30.0 MHz
691 pts
Stop 1.0 GHz
Measuring...
04.12.2015
10:20:44

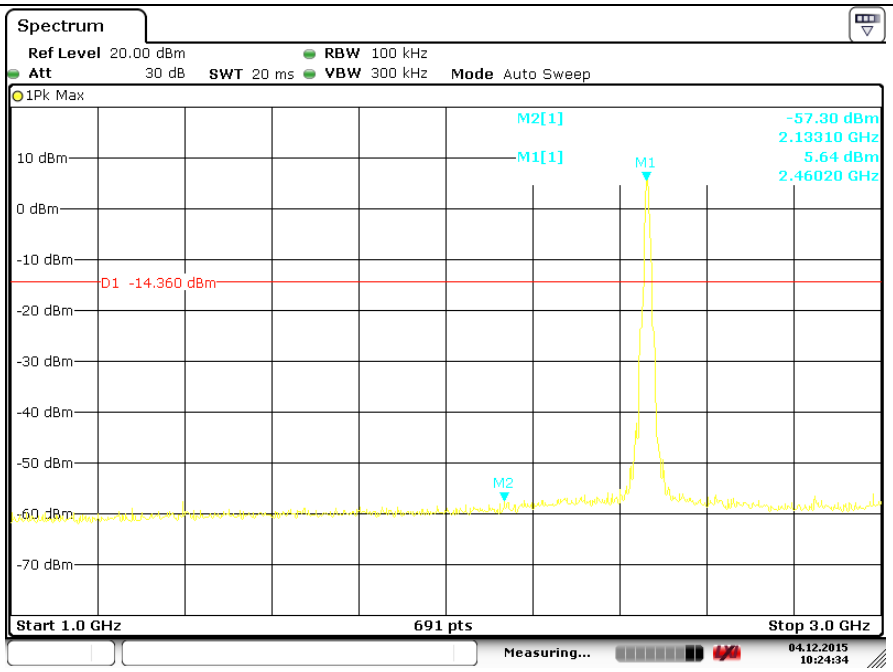

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 20 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M2[1]
-57.00 dBm
2.11870 GHz
M1[1]
6.01 dBm
2.43700 GHz
M1
10 dBm
0 dBm
-10 dBm
D1 -13.990 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
M2
-60 dBm
-70 dBm
Start 1.0 GHz
691 pts
Stop 3.0 GHz
Measuring...
04.12.2015
10:19:30

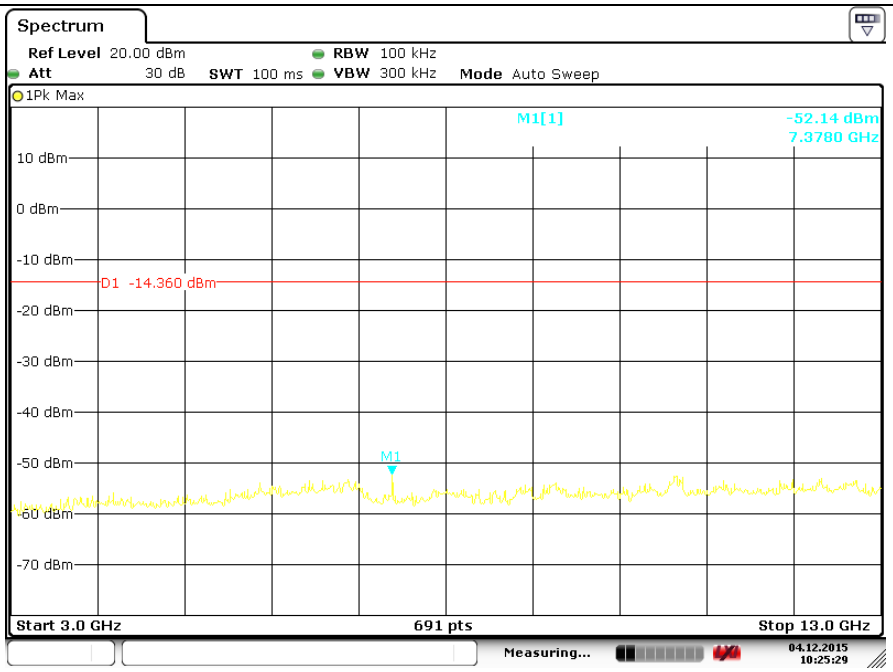

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 100 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-51.83 dBm
12.5880 GHz
10 dBm
0 dBm
-10 dBm
D1 -13.990 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
M1
-60 dBm
-70 dBm
Start 3.0 GHz
691 pts
Stop 13.0 GHz
Measuring...
04.12.2015
10:21:41

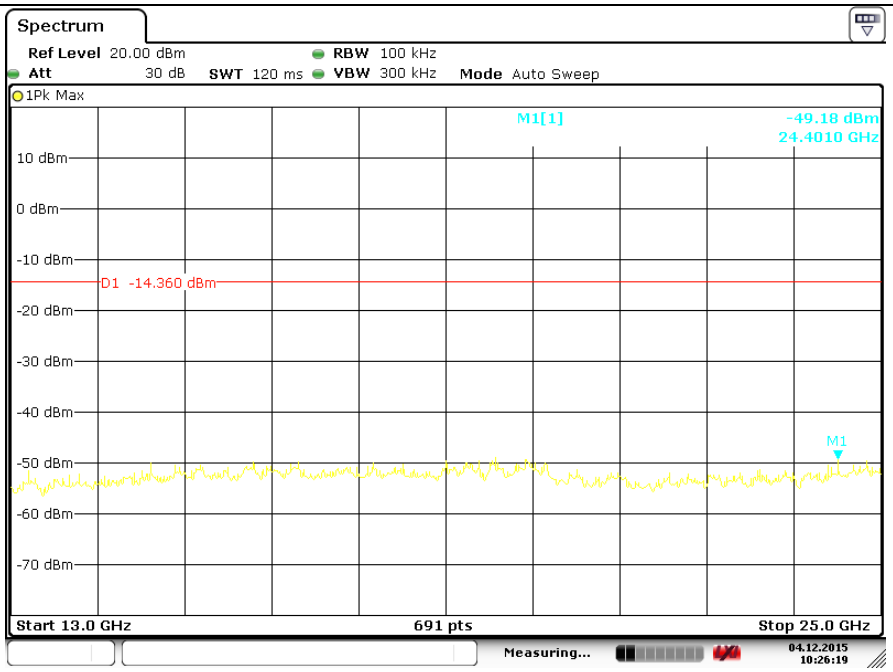

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 120 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-47.97 dBm
20.1110 GHz
10 dBm
0 dBm
-10 dBm
D1 -13.990 dBm
-20 dBm
-30 dBm
-40 dBm
M1
-50 dBm
-60 dBm
-70 dBm
Start 13.0 GHz
691 pts
Stop 25.0 GHz
Measuring...
04.12.2015
10:22:10

802.11b High Channel

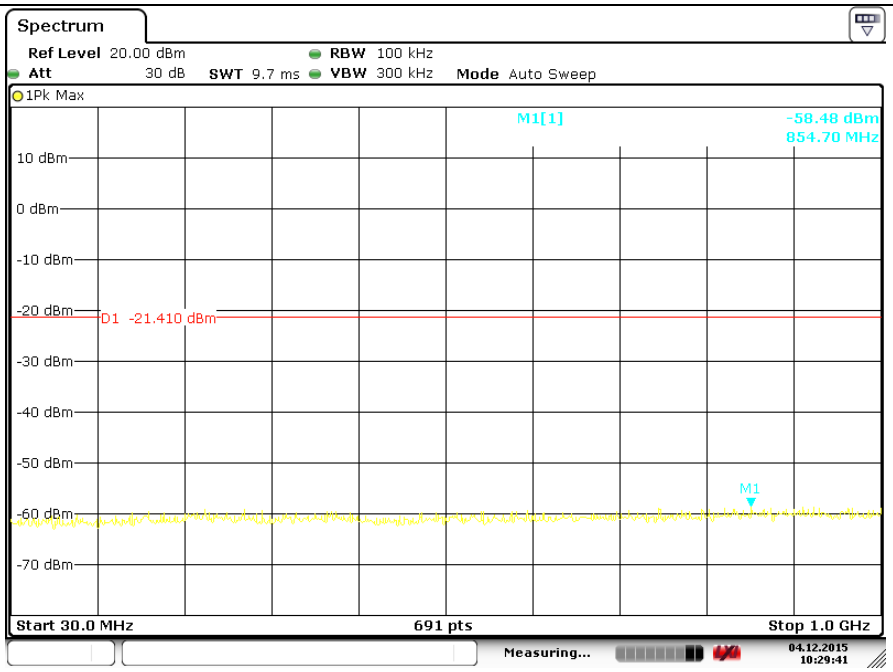


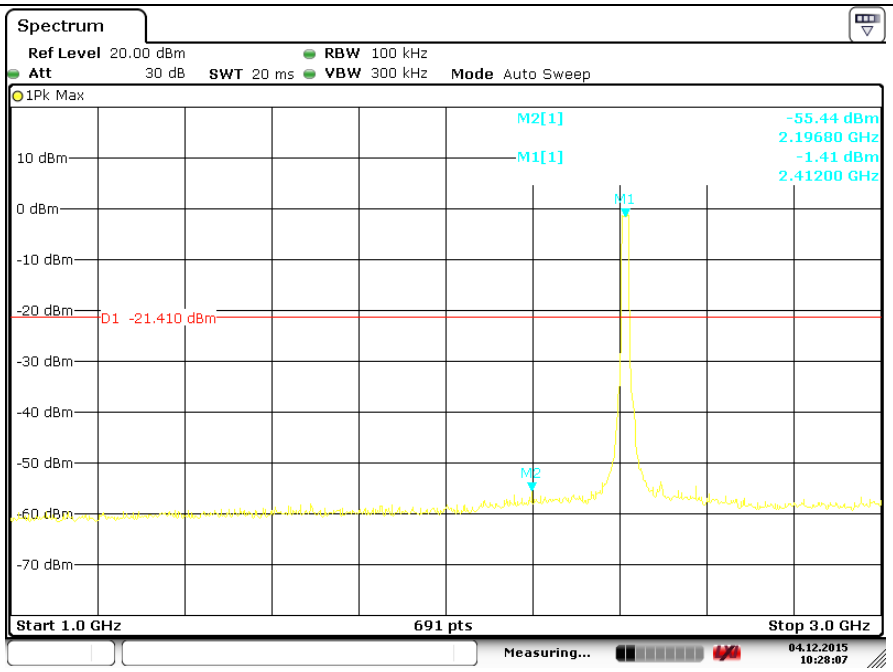


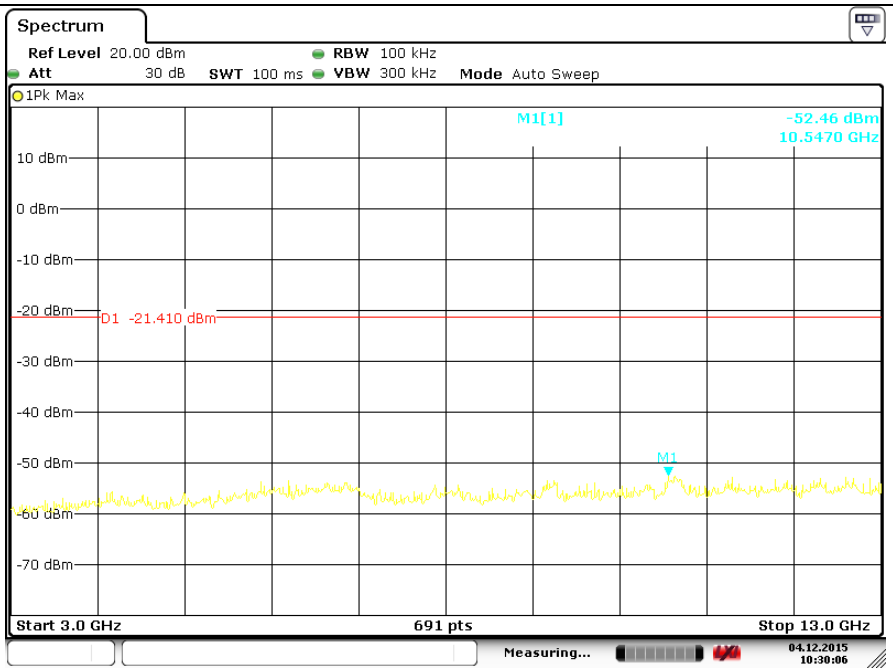


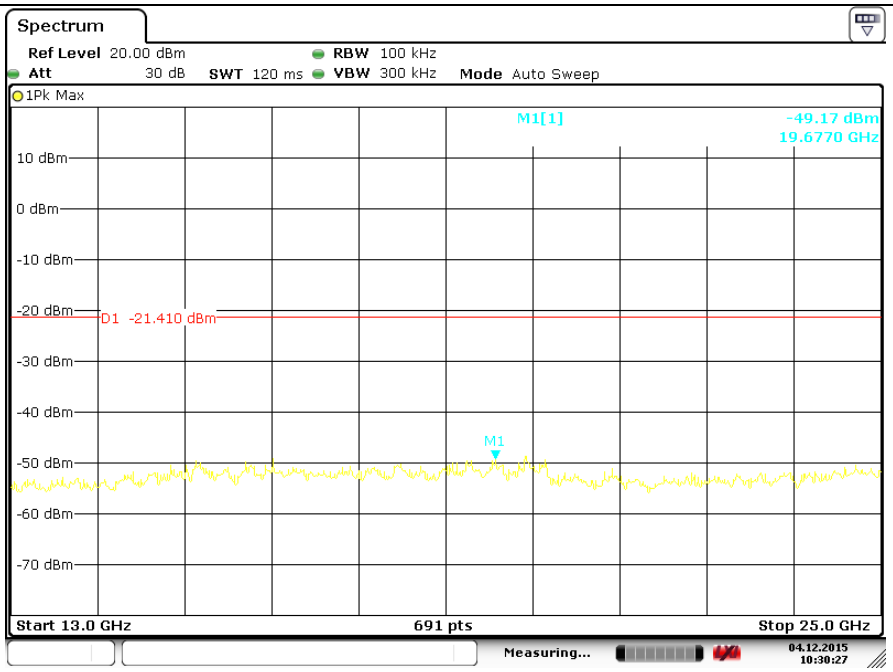


802.11g Low Channel

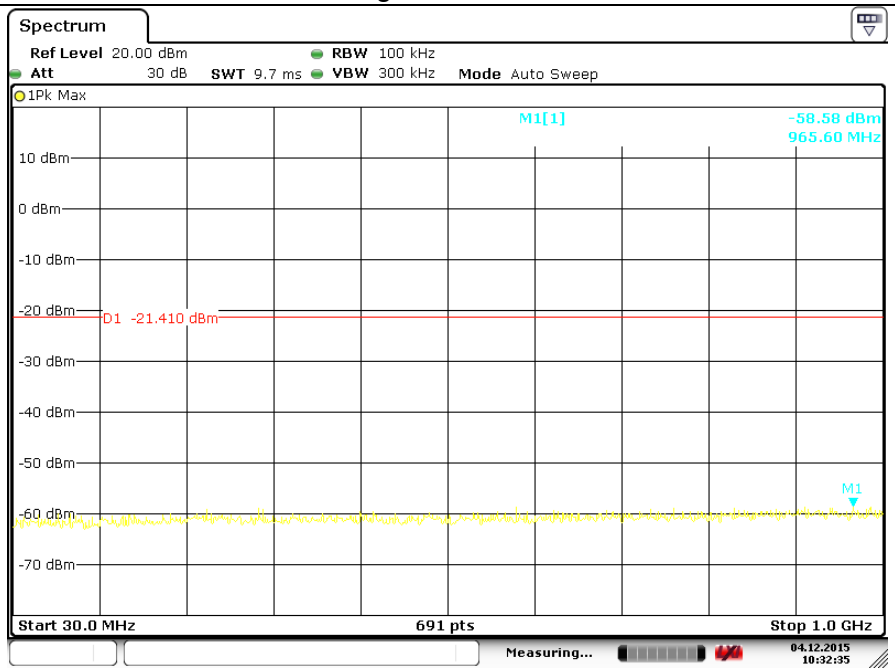

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 9.7 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-58.48 dBm
854.70 MHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1 -21.410 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
Start 30.0 MHz
691 pts
Stop 1.0 GHz
Measuring...
04.12.2015
10:29:41

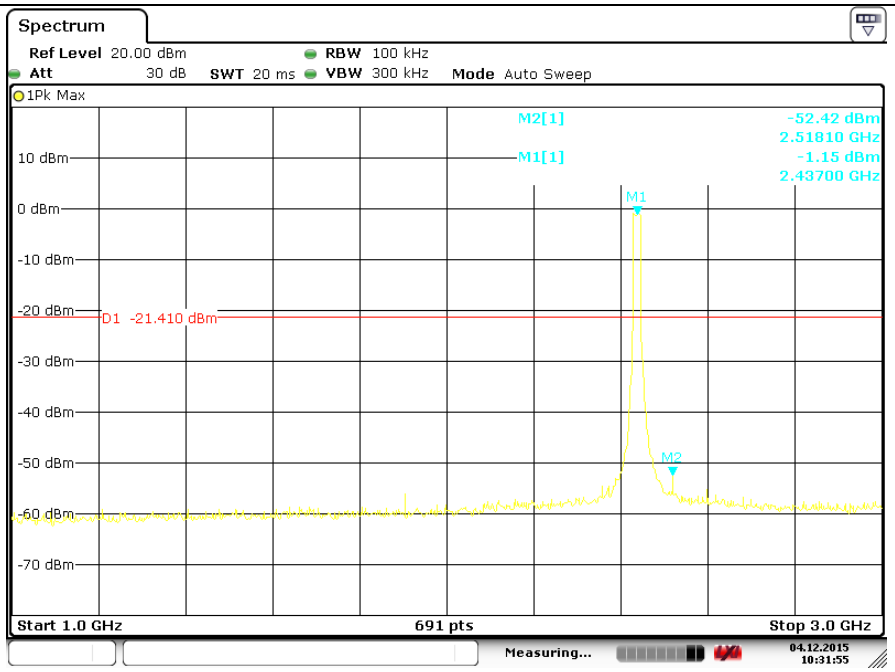

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 20 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M2[1]
-55.44 dBm
2.19680 GHz
M1[1]
-1.41 dBm
2.41200 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1 -21.410 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
M2
Start 1.0 GHz
691 pts
Stop 3.0 GHz
Measuring...
04.12.2015
10:28:07

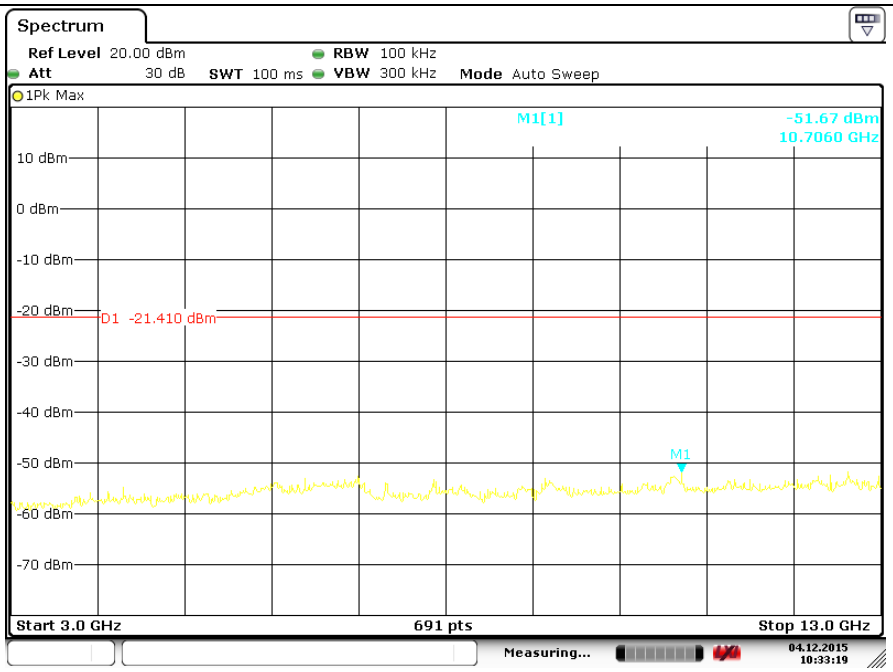

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 100 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-52.46 dBm
10.5470 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1 -21.410 dBm
-30 dBm
-40 dBm
-50 dBm
M1
-60 dBm
-70 dBm
Start 3.0 GHz
691 pts
Stop 13.0 GHz
Measuring...
04.12.2015
10:30:06

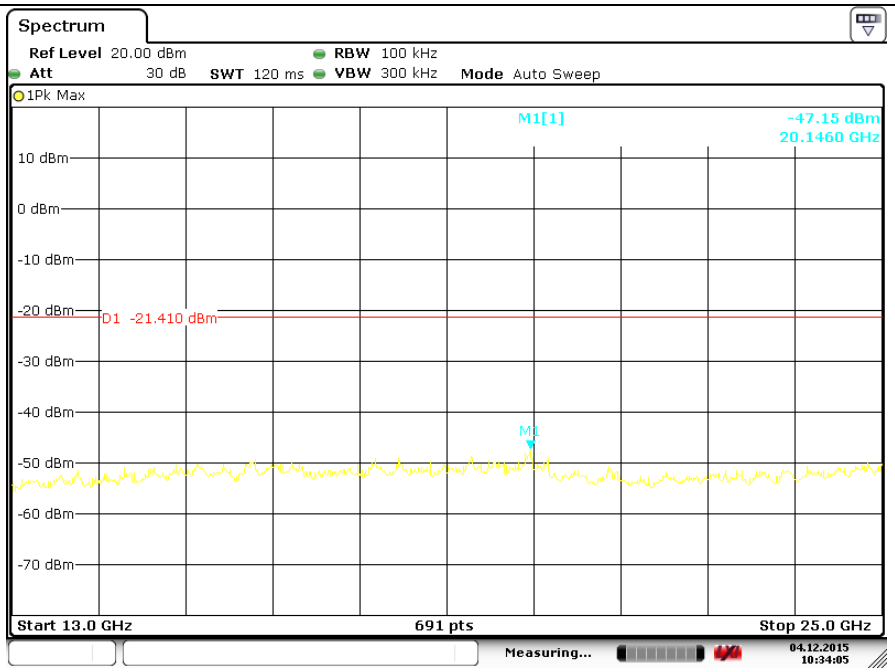

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 120 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-49.17 dBm
19.6770 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1 -21.410 dBm
-30 dBm
-40 dBm
M1
-50 dBm
-60 dBm
-70 dBm
Start 13.0 GHz
691 pts
Stop 25.0 GHz
Measuring...
04.12.2015
10:30:27

802.11g Middle Channel

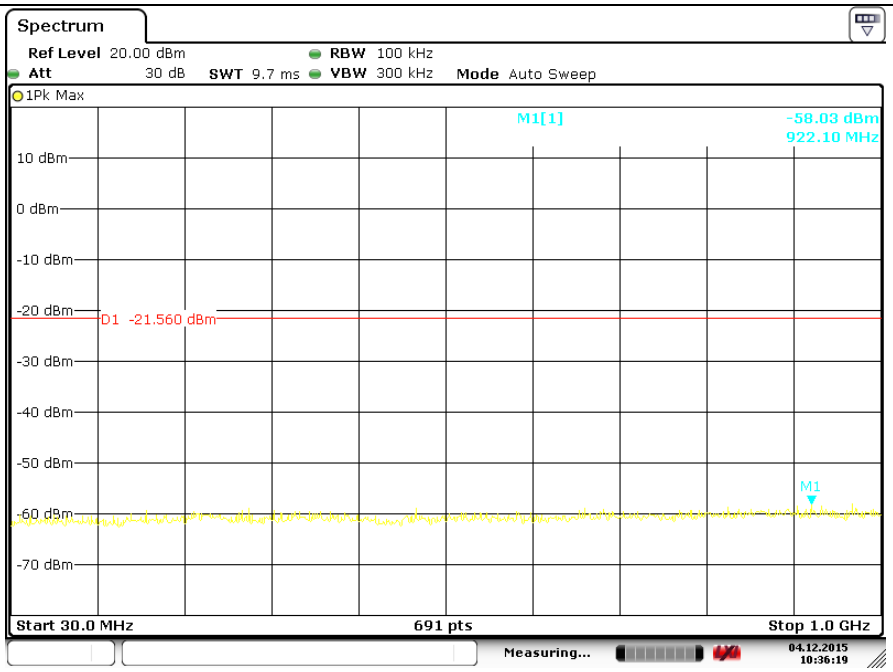


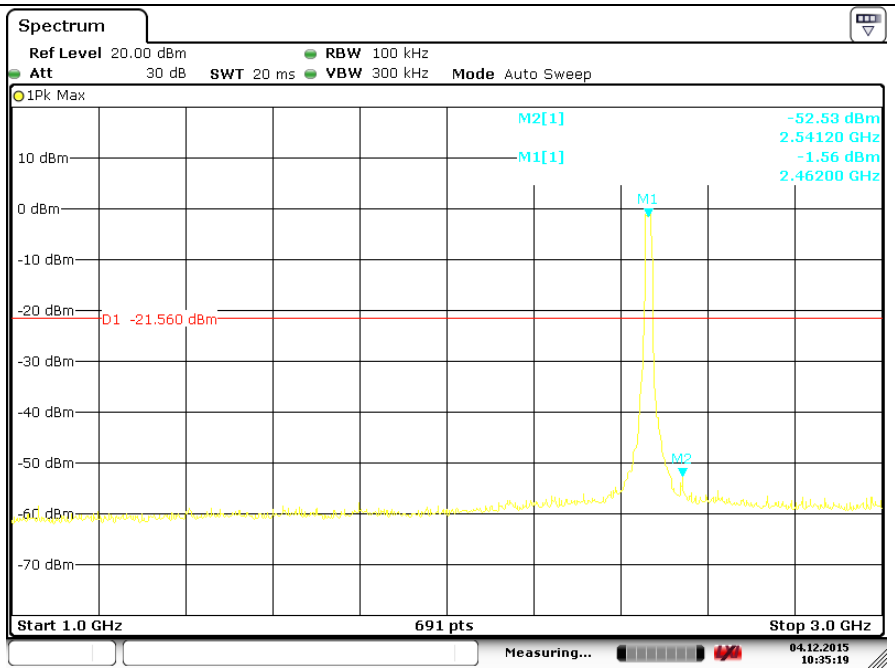


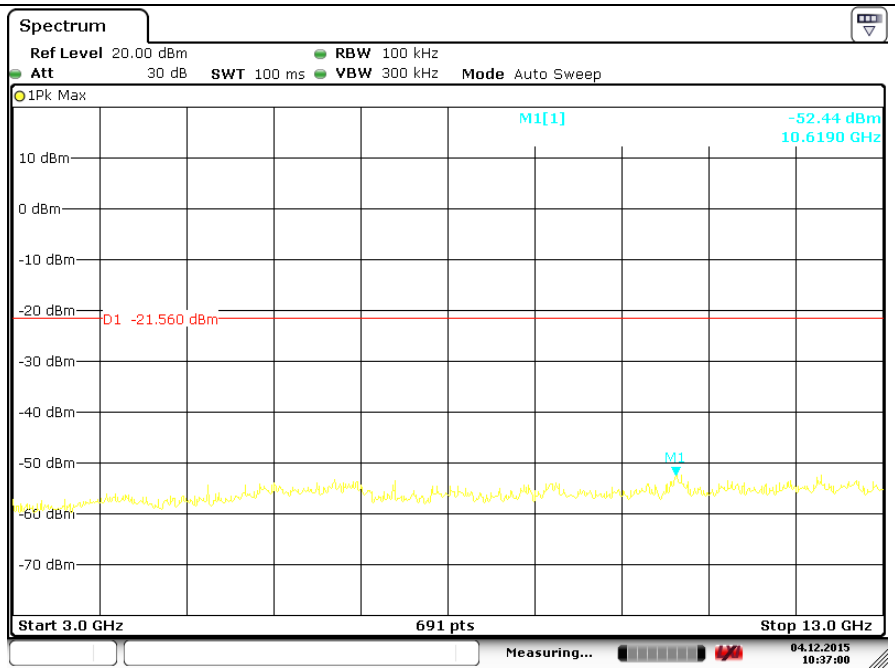


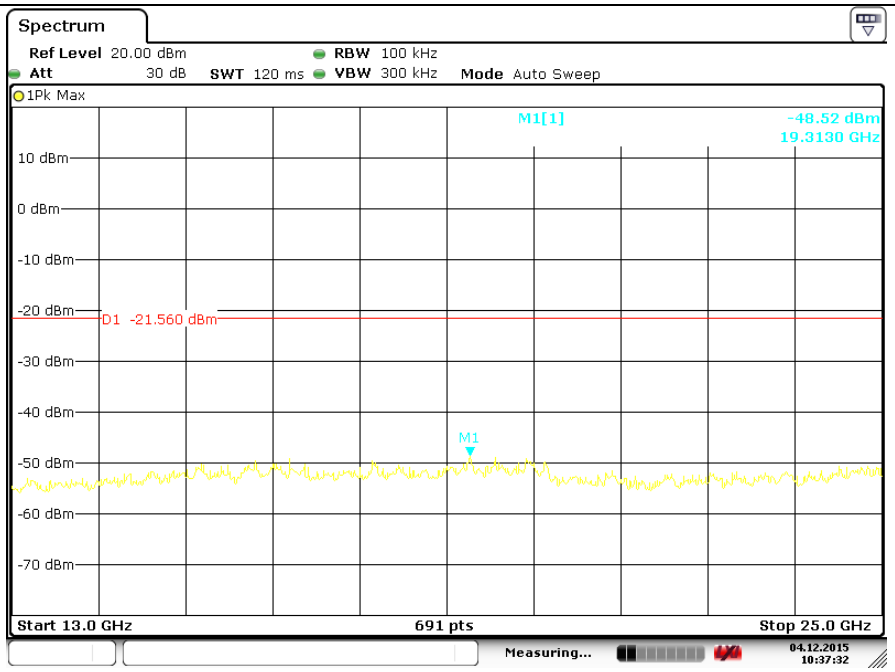


802.11g High Channel


Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 9.7 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-58.03 dBm
922.10 MHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1 -21.560 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
Start 30.0 MHz
691 pts
Stop 1.0 GHz
Measuring...
04.12.2015
10:36:19


Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 20 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M2[1]
-52.53 dBm
2.54120 GHz
M1[1]
-1.56 dBm
2.46200 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1 -21.560 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
M2
Start 1.0 GHz
691 pts
Stop 3.0 GHz
Measuring...
04.12.2015
10:35:19


Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 100 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-52.44 dBm
10.6190 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1 -21.560 dBm
-30 dBm
-40 dBm
-50 dBm
M1
-60 dBm
-70 dBm
Start 3.0 GHz
691 pts
Stop 13.0 GHz
Measuring...
04.12.2015
10:37:00


Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 120 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-48.52 dBm
19.3130 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1 -21.560 dBm
-30 dBm
-40 dBm
M1
-50 dBm
-60 dBm
-70 dBm
Start 13.0 GHz
691 pts
Stop 25.0 GHz
Measuring...
04.12.2015
10:37:32

4. POWER SPECTRAL DENSITY TEST

APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

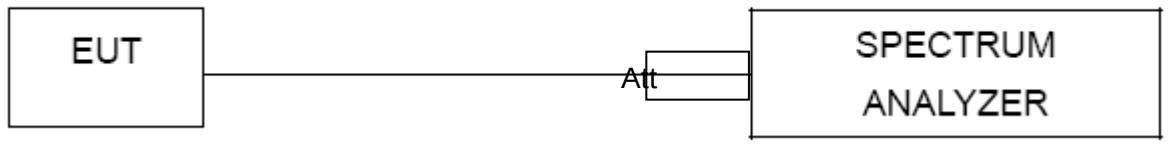
4.1.1 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW ≥ 3 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



4.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

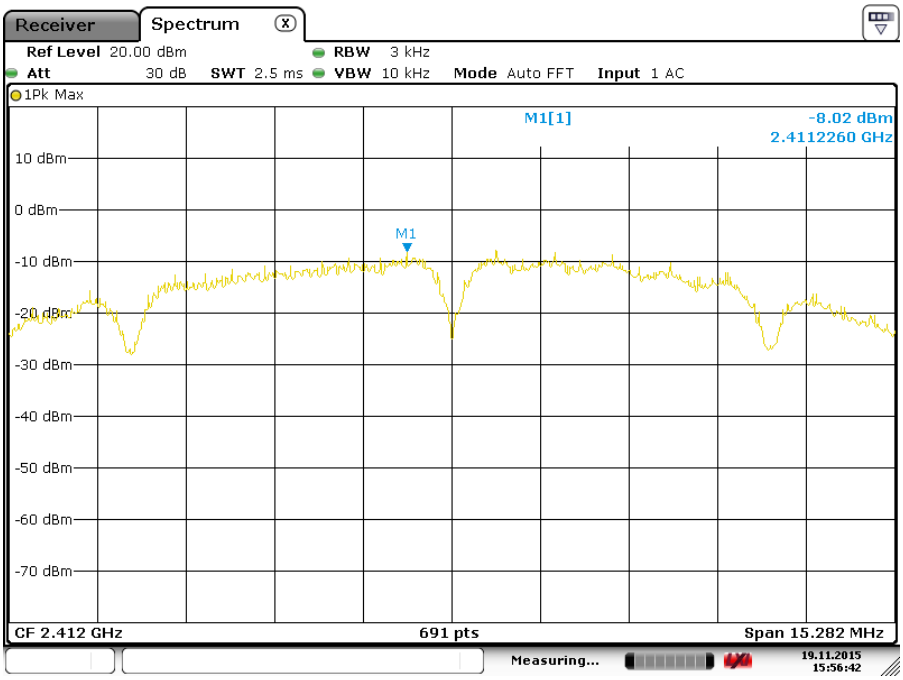
4.1.5 TEST RESULTS

EUT：	WiFi connected digital frame for streaming art	Model Name ：	MEU020DC27
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1015 hPa	Test Voltage ：	DC 12V from adapter, AC 120V/60Hz for adapter
Test Mode ：	TX b Mode /CH01, CH06, CH11		

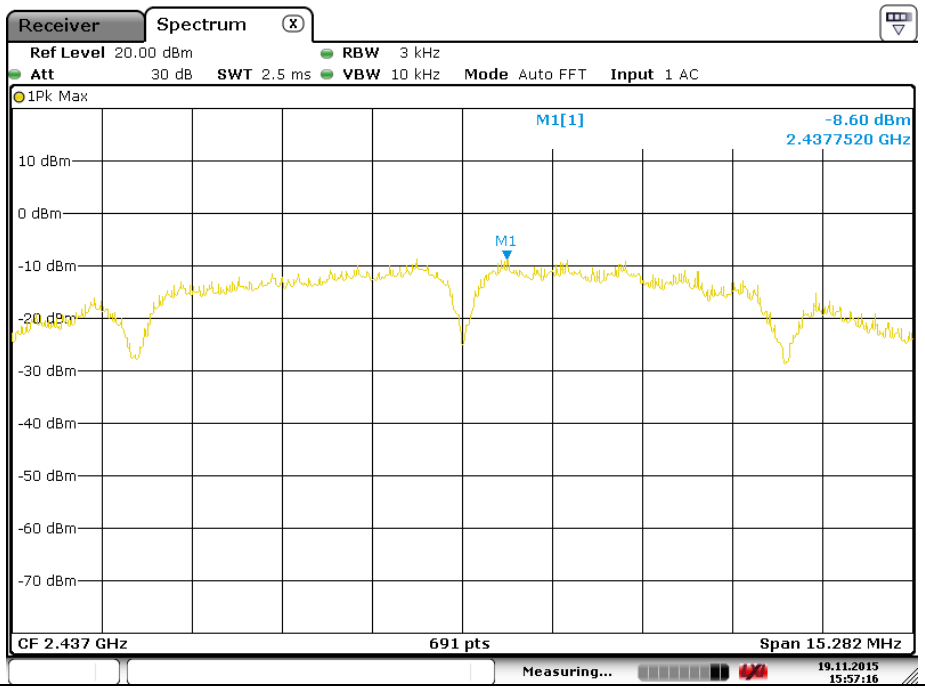
Note: The relevant measured result has the offset with cable loss already.

Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-8.02	8	PASS
2437 MHz	-8.60	8	PASS
2462 MHz	-7.85	8	PASS

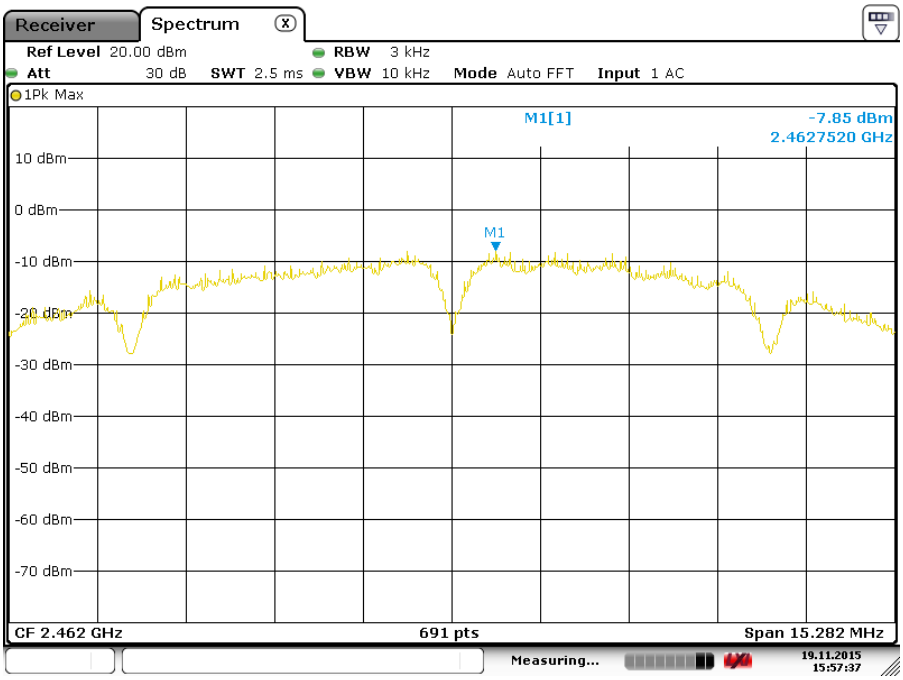
TX CH01



TX CH06



TX CH11

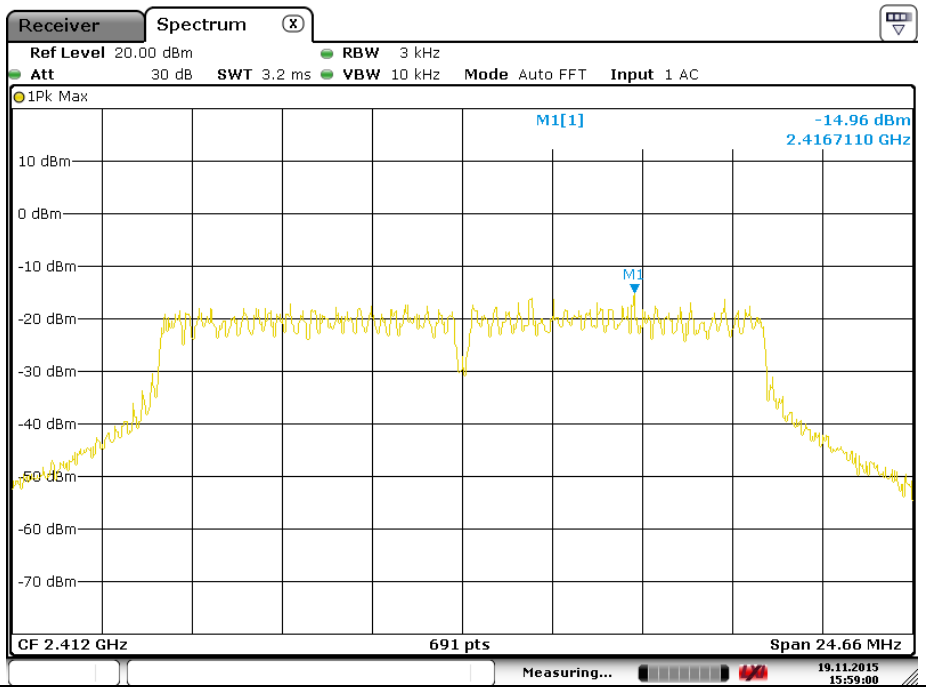


EUT：	WiFi connected digital frame for streaming art	Model Name ：	MEU020DC27
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1015 hPa	Test Voltage ：	DC 12V from adapter, AC 120V/60Hz for adapter
Test Mode ：	TX g Mode /CH01, CH06, CH11		

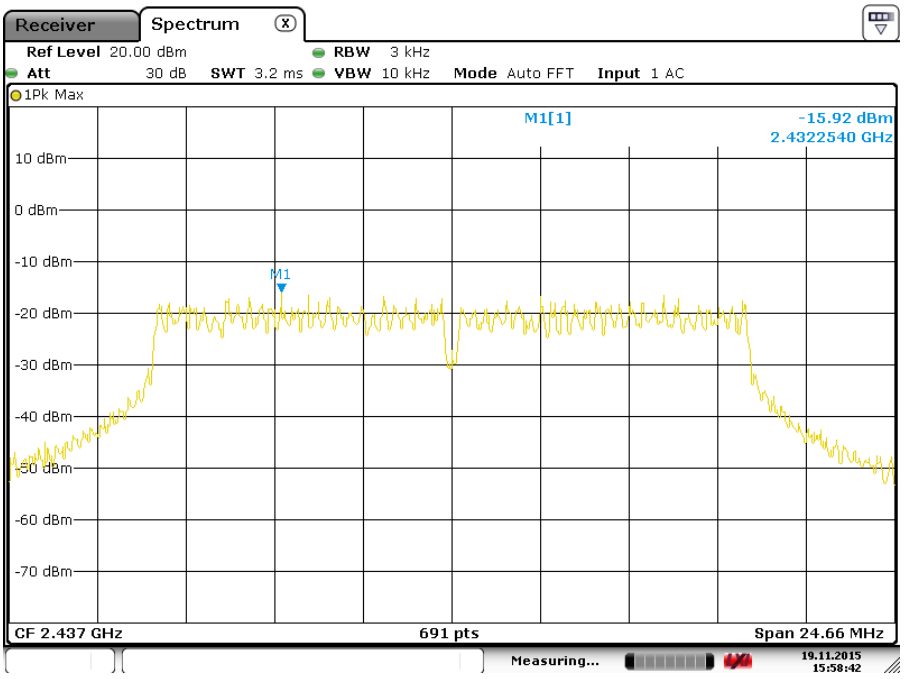
Note: The relevant measured result has the offset with cable loss already.

Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-14.96	8	PASS
2437 MHz	-15.92	8	PASS
2462 MHz	-15.58	8	PASS

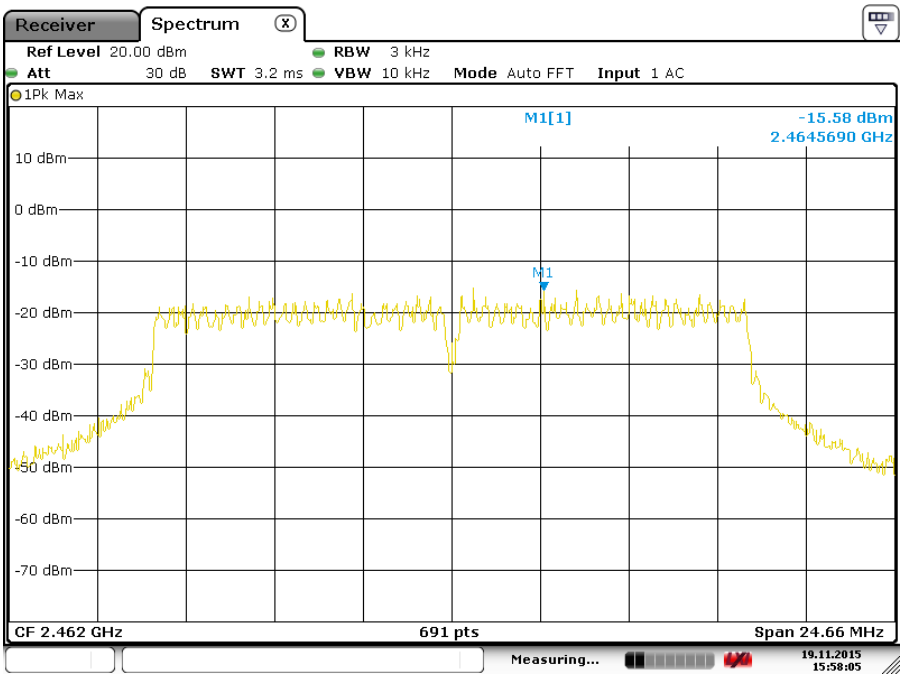
TX CH01



TX CH06



TX CH11



5. BANDWIDTH TEST

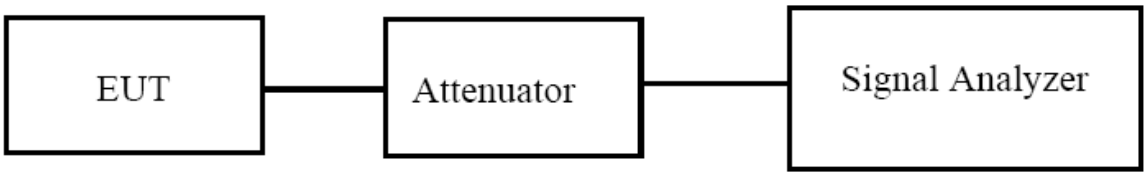
APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS

5.1.1 TEST PROCEDURE

According to KDB 558074 D01 DTS Meas Guidance v03r03

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.



5.1.2 EUT OPERATION CONDITIONS

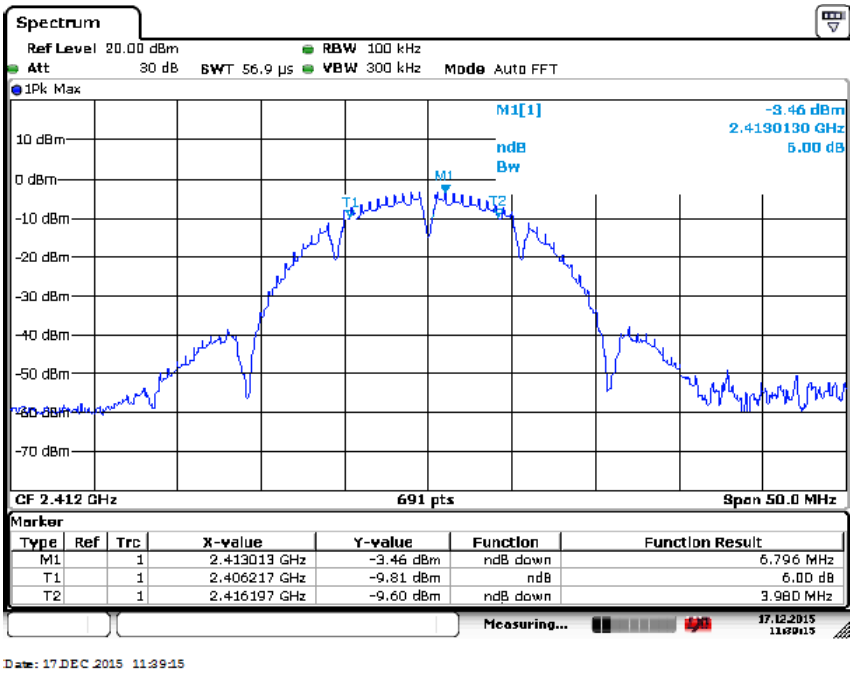
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.3 TEST RESULTS

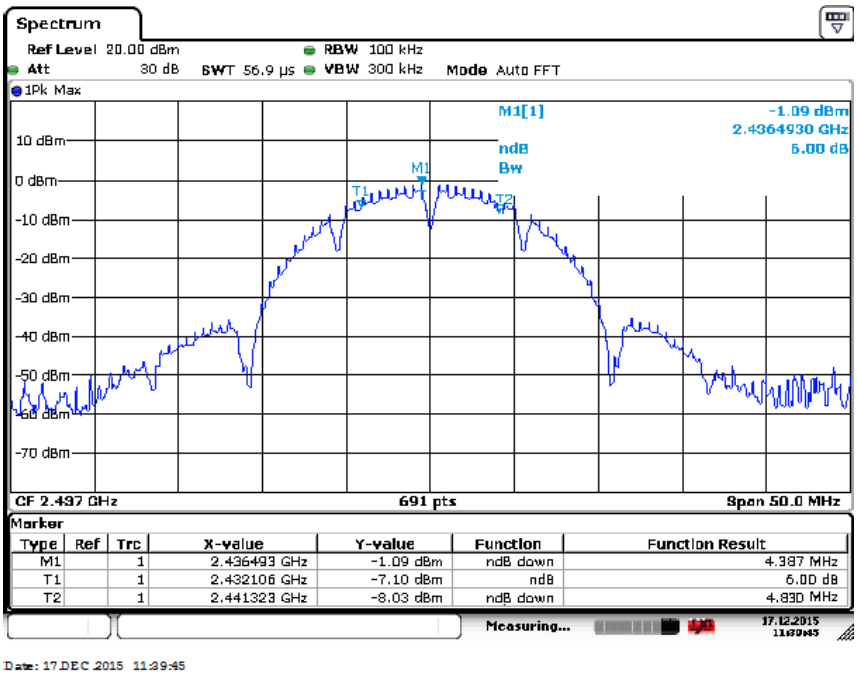
EUT：	WiFi connected digital frame for streaming art	Model Name ：	MEU020DC27
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1012 hPa	Test Voltage ：	DC 12V from adapter, AC 120V/60Hz for adapter
Test Mode ：	TX b Mode /CH01, CH06, CH11		

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	10.776	500	Pass
Middle	2437	9.217	500	Pass
High	2462	10.197	500	Pass

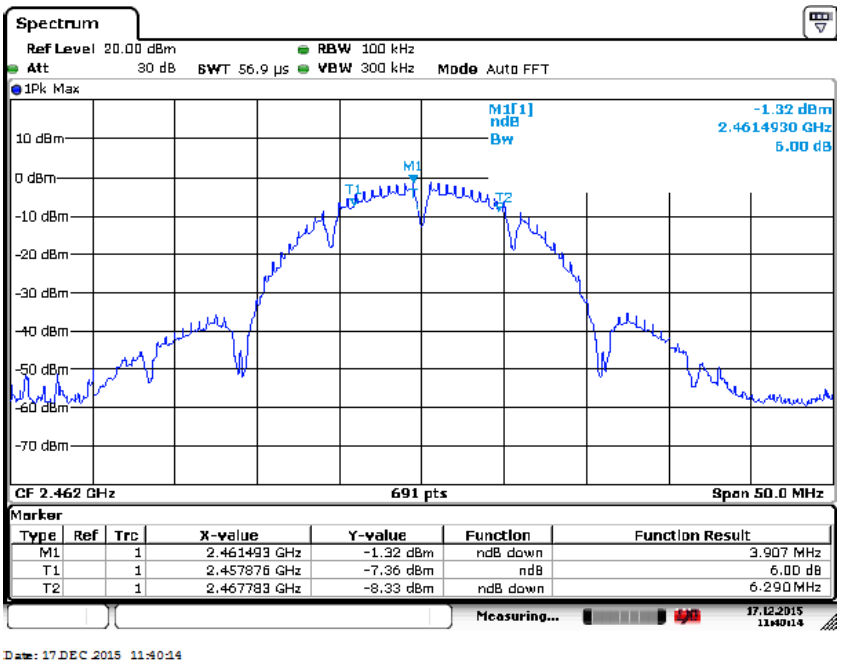
TX CH 01



TX CH 06



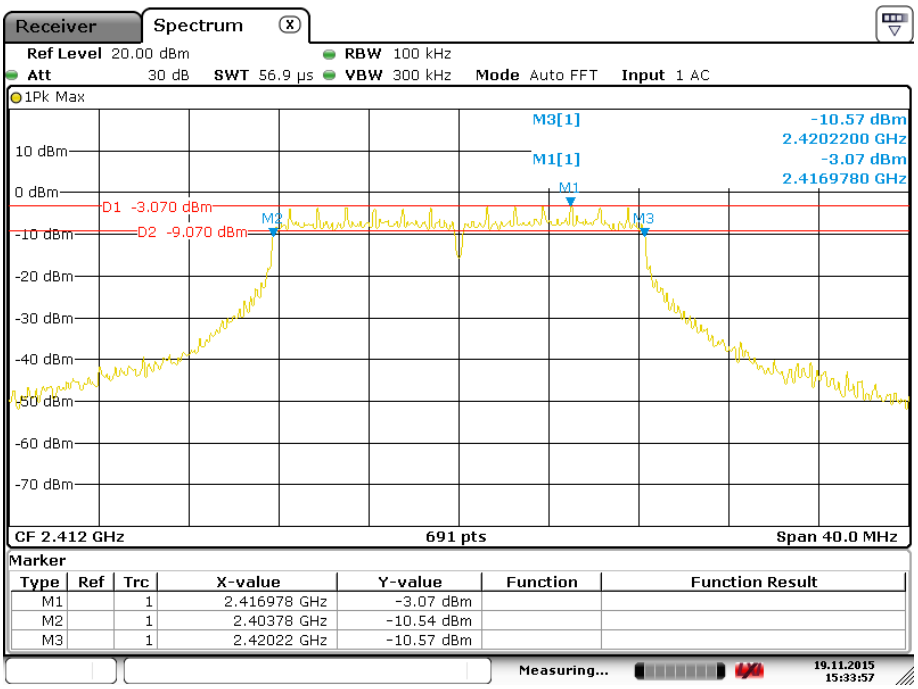
TX CH 11



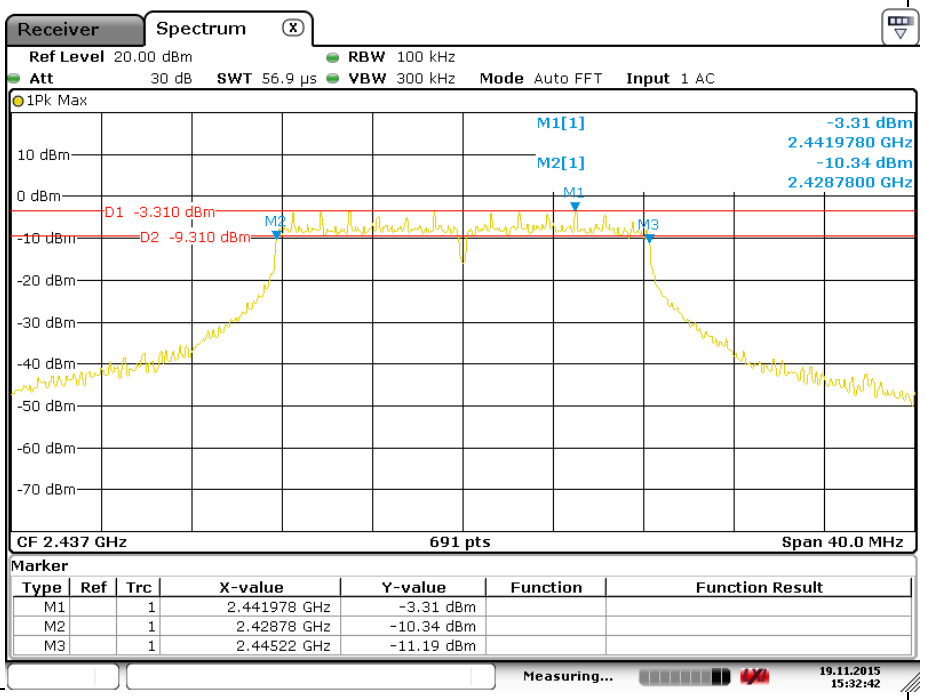
EUT：	WiFi connected digital frame for streaming art	Model Name ：	MEU020DC27
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 12V from adapter, AC 120V/60Hz for adapter
Test Mode ：	TX g Mode /CH01, CH06, CH11		

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.440	500	Pass
Middle	2437	16.440	500	Pass
High	2462	16.440	500	Pass

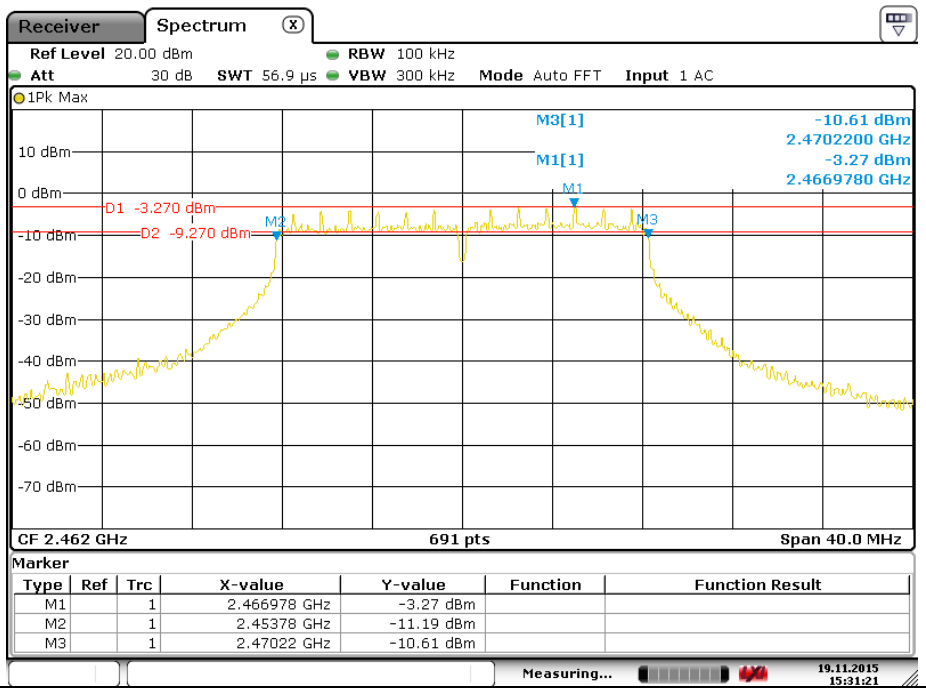
TX CH 01



TX CH 06



TX CH 11



6. PEAK OUTPUT POWER TEST

APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

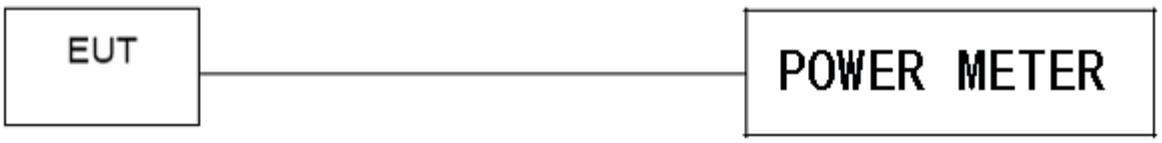
6.1.1 TEST PROCEDURE

a. The EUT was directly connected to the Power meter

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

EUT：	WiFi connected digital frame for streaming art	Model Name ：	MEU020DC27
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 12V from adapter, AC 120V/60Hz for adapter
Test Mode ：	TX b/g Mode		

Test Channe	Frequency	Maximum Conducted Output Power(PK)	Maximum Conducted Output Power(AV)	LIMIT
	(MHz)	(dBm)	(dBm)	(dBm)
802.11b				
CH01	2412	13.45	8.21	30
CH06	2437	13.26	8.74	30
CH11	2462	13.33	8.56	30
802.11g				
CH01	2412	12.94	8.14	30
CH06	2437	12.77	8.16	30
CH11	2462	12.93	8.12	30

Note： the highest AVG powers for：
802.11b：1Mbps
802.11g：6Mbps

7. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

APPLICABLE STANDARD

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated 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) (see §15.205(c)).

TEST PROCEDURE

a) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

b) Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.

c) Set RBW to 1 MHz and VBW of spectrum analyzer to 3 MHz with a convenient frequency span including 100 kHz bandwidth from band edge.

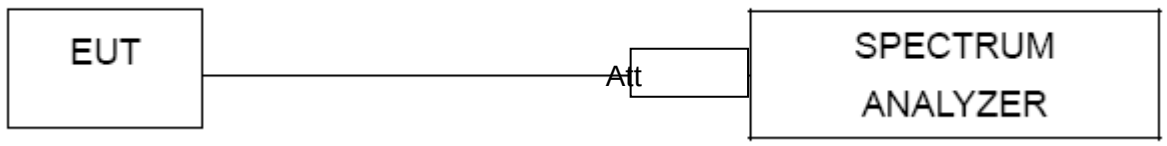
d) Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.

e) Repeat above procedures until all measured frequencies were complete.

7.1 DEVIATION FROM STANDARD

No deviation.

7.2 TEST SETUP



7.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

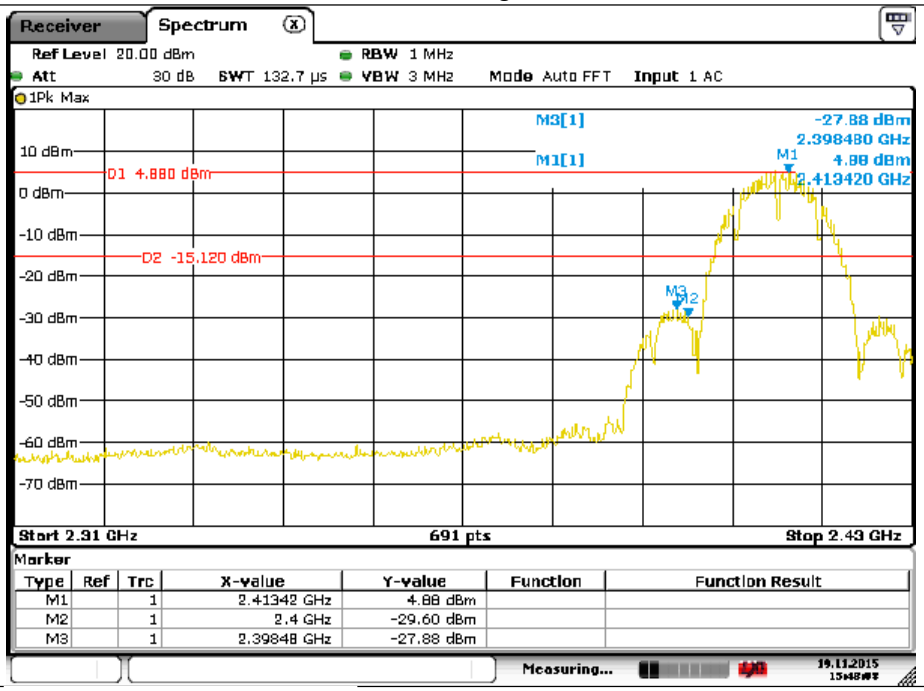
7.4 TEST RESULTS

EUT：	WiFi connected digital frame for streaming art	Model Name ：	MEU020DC27
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1012 hPa	Test Voltage ：	DC 12V from adapter, AC 120V/60Hz for adapter

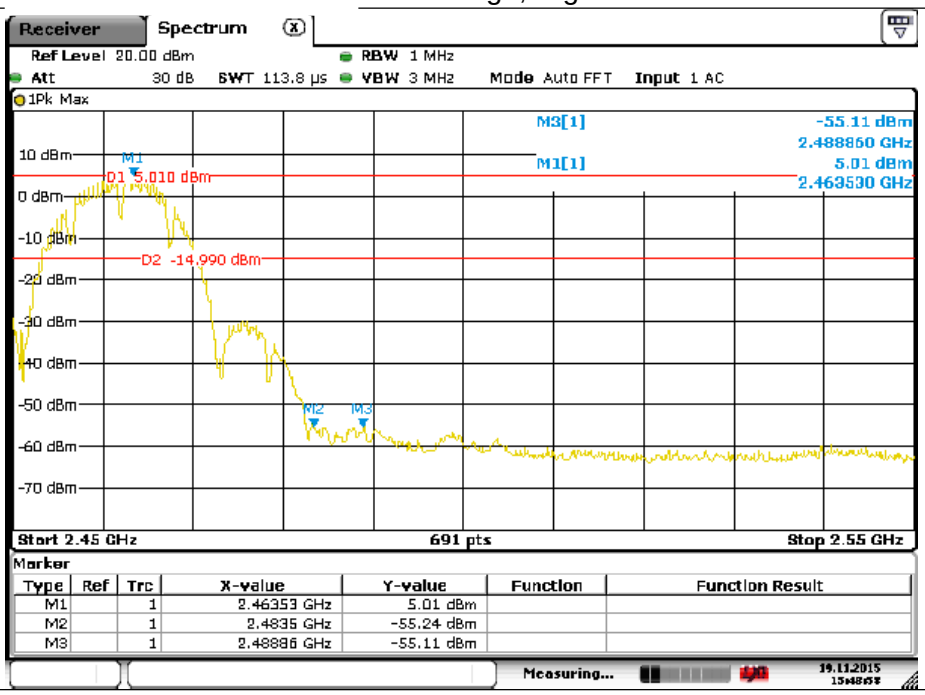
Frequency Band	Delta Peak to band emission (dBc)	> Limit (dBc)	Result
802.11b			
≤2400	34.48	20	Pass
≥2483.5	60.25	20	Pass
802.11g			
≤2400	27.42	20	Pass
≥2483.5	31.91	20	Pass

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
802.11b							
2390.0	44.83	9.86	54.69	74.00	-19.31	Pk	Vertical
2390.0	38.17	9.86	48.03	54.00	-5.97	Av	Vertical
2483.5	40.25	10.14	50.39	74.00	-23.61	Pk	Vertical
2483.5	32.31	10.14	42.45	54.00	-11.55	Av	Vertical
802.11g							
2390.0	41.36	9.86	51.22	74.00	-22.78	Pk	Vertical
2390.0	35.42	9.86	45.28	54.00	-8.72	Av	Vertical
2483.5	40.79	10.14	50.93	74.00	-23.07	Pk	Vertical
2483.5	34.11	10.14	44.25	54.00	-9.75	Av	Vertical

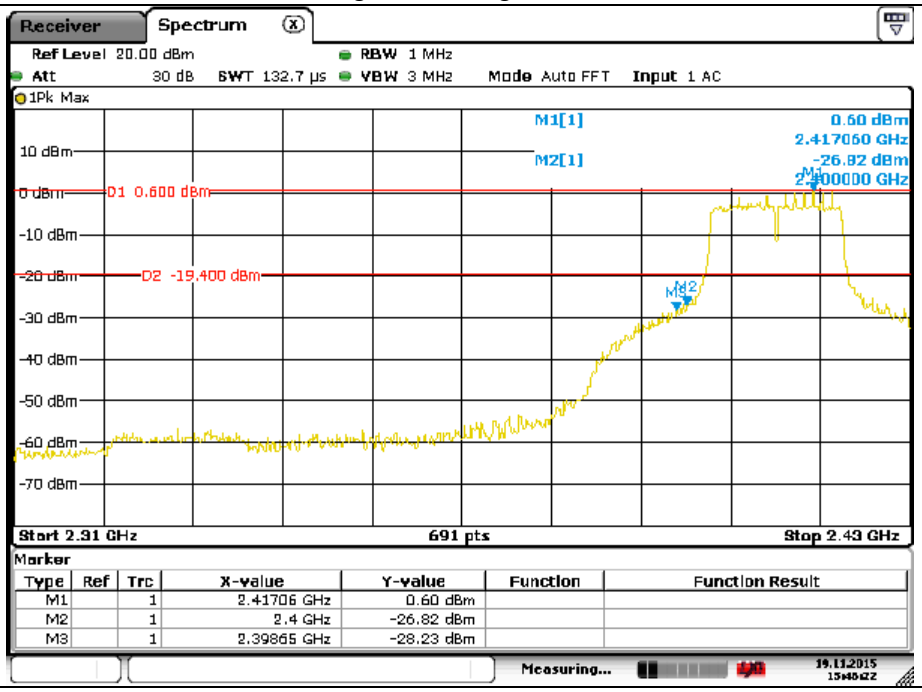
802.11b: Band Edge, Left Side



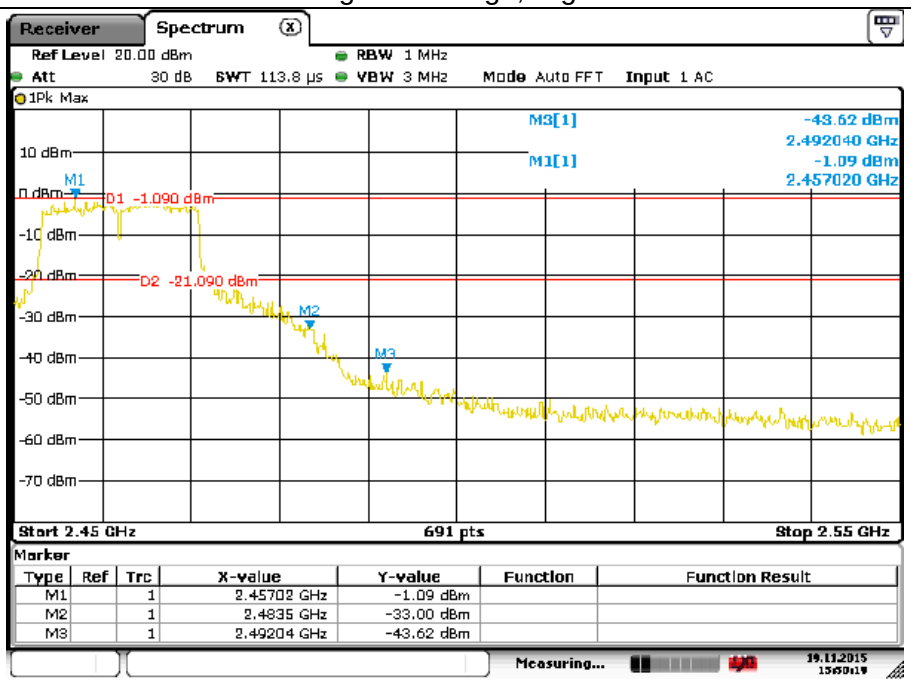
: Band Edge, Right Side



802.11g: Band Edge, Left Side



802.11g: Band Edge, Right Side



8. ANTENNA REQUIREMENT

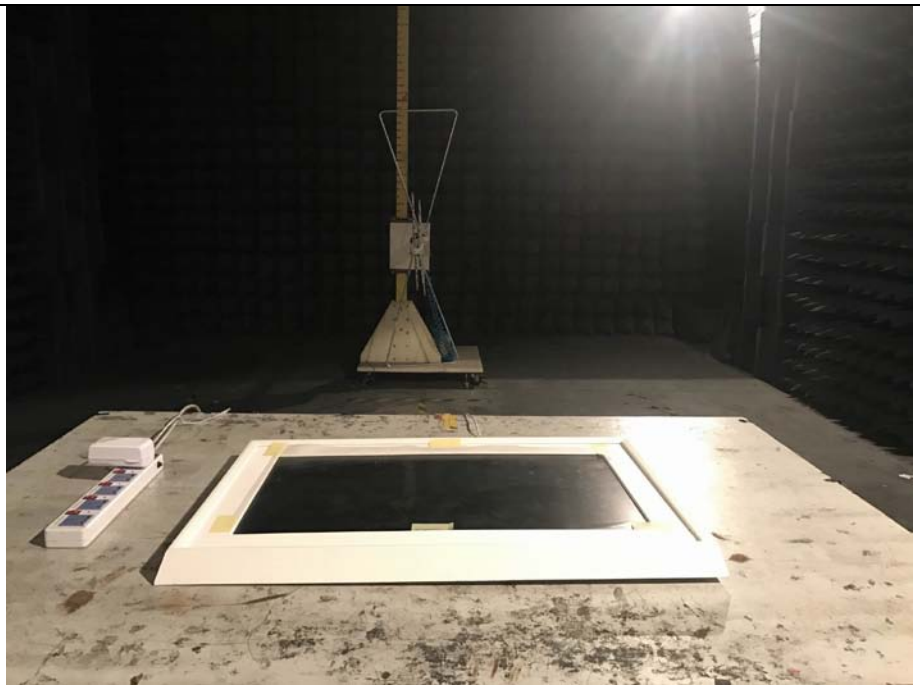
STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

EUT ANTENNA

The EUT antenna is PCB Antenna. Use ipex antenna connector. It comply with the standard requirement.

9. EUT TEST PHOTO

Radiated Measurement Photos


Conducted Measurement Photos