



FCC Test Report

Report No: FCS202206197W01

Issued for

Applicant:	shenzhenshi gaoshidemaoyi youxiangongsi
Address:	20b Ji'ange, Jihao Garden, No.1036, Huali Road taibailu, dongxiaojiedao, luohuqu, Shenzhen, Guangdong, 518000, CN
Product Name:	endoscope
Brand Name:	Pancellent
Model Name:	INSKAM-Y110A
Series Model:	N/A
FCC ID:	2A7QW-Y110A
Test Standard:	FCC Part 15.247
Issued By: Flux Compliance Service Laboratory Add: Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan Tel: 769-27280901 Fax:769-27280901 http://www.FCS-lab.com	

TEST RESULT CERTIFICATION

Applicant's Name: shenzhen shi gaoshidemaozi youxiangongsi
Address.....: 20b Ji'ange, Jihao Garden, No.1036, Huali Road
taibailu, dongxiaojiedao, luohuqu, Shenzhen, Guangdong,
518000, CN

Manufacture's Name: Dongguan Youheng Technology Co., Ltd
Address.....: 4th floor, building 5, No. 80, Hongshi Road, Fenggang town,
Dongguan City, Guangdong, China

Product Description

Product Name: endoscope
Brand Name: Pancellent
Model Name.....: INSKAM-Y110A
Series Model: N/A
Test Standards: FCC Part15.247
Test Procedure.....: ANSI C63.10-2013

This device described above has been tested by Flux Compliance Service Laboratory, 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.

This report shall not be reproduced except in full, without the written approval of Flux Compliance Service Laboratory, this document may be altered or revised by Flux Compliance Service Laboratory, personal only, and shall be noted in the revision of the document..

Date of Test:

Date (s) of performance of tests : 27 June. 2022 ~ 04 July. 2022

Date of Issue: 04 July. 2022

Test Result.....: Pass

Tested by : Chris Chen

(Chris Chen)

Reviewed by : Jack Chen

(Jack Chen)

Approved by : Andy yue

(Andy yue)

Table of Contents

	Page
1. SUMMARY OF TEST RESULTS	6
1.1 TEST FACTORY	7
1.2 MEASUREMENT UNCERTAINTY	7
2. GENERAL INFORMATION	8
2.1 GENERAL DESCRIPTION OF THE EUT	8
2.2 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	10
2.3 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS	11
2.4 EQUIPMENTS LIST	12
3. EMC EMISSION TEST	13
3.1 CONDUCTED EMISSION MEASUREMENT	13
3.2 RADIATED EMISSION MEASUREMENT	17
4. CONDUCTED SPURIOUS & BAND EDGE EMISSION	31
4.1 LIMIT	31
4.2 TEST PROCEDURE	31
4.3 DEVIATION FROM STANDARD	31
4.4 TEST SETUP	31
4.5 EUT OPERATION CONDITIONS	31
4.6 TEST RESULTS	32
5. POWER SPECTRAL DENSITY TEST	44
5.1 LIMIT	44
5.2 TEST PROCEDURE	44
5.3 DEVIATION FROM STANDARD	44
5.4 TEST SETUP	44
5.5 EUT OPERATION CONDITIONS	44
5.6 TEST RESULTS	45
6. BANDWIDTH TEST	51
6.1 LIMIT	51
6.2 TEST PROCEDURE	51
6.3 DEVIATION FROM STANDARD	51
6.4 TEST SETUP	51
6.5 EUT OPERATION CONDITIONS	51
6.6 TEST RESULTS	52

Table of Contents

	Page
7. PEAK OUTPUT POWER TEST	58
7.1 LIMIT	58
7.2 TEST PROCEDURE	58
7.3 DEVIATION FROM STANDARD	58
7.4 TEST SETUP	58
7.5 EUT OPERATION CONDITIONS	58
7.6 TEST RESULTS	59
8. ANTENNA REQUIREMENT	60
8.1 STANDARD REQUIREMENT	60
8.2 EUT ANTENNA	60

Revision History

Rev.	Issue Date	Effect Page	Contents
00	04 July. 2022	ALL	Initial Issue

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:
KDB 558074 D01 15.247 Meas Guidance v05r02

FCC Part 15.247,Subpart C			
Standard Section	Test Item	Judgment	Remark
FCC 15.247 (a) (2)	6dB Bandwidth	PASS	--
FCC 15.247 (b) (3)	Conducted Output Power	PASS	--
FCC 15.247 (e)	Power Spectral Density	PASS	--
FCC 15.247 (d)	Band-edge and Spurious Emissions (Conducted)	PASS	--
FCC 15.247 (d) FCC 15.209 FCC 15.205	Radiated Spurious Emissions	PASS	--
FCC 15.247 (d) FCC 15.209 FCC 15.205	Radiated Band Edge Compliance	PASS	--
FCC 15.207	Power Line Conducted Emission	PASS	--
FCC 15.203	Antenna requirement	PASS	--
15.205	Restricted Band Edge Emission	PASS	--

NOTE:

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

(2) All tests are according to ANSI C63.10-2013

1.1 TEST FACTORY

Company Name:	Flux Compliance Service Laboratory
Address:	Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan
Telephone:	+86-769-27280901
Fax:	+86-769-27280901
FCC Test Firm Registration Number: 514908 Designation number: CN0127 A2LA accreditation number: 5545.01	

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, 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	RF output power, conducted	± 0.71 dB
2	Unwanted Emissions, conducted	± 2.988 dB
3	Conducted Emission (9KHz-150KHz)	± 4.13 dB
4	Conducted Emission (150KHz-30MHz)	± 4.74 dB
5	All emissions, radiated(<1G) 30MHz-1000MHz	± 5.2 dB
6	All emissions, radiated 1GHz -18GHz	± 3.66 dB
7	All emissions, radiated 18GHz -40GHz	± 4.31 dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	endoscope
Trade Name	Pancellent
Model Name	INSKAM-Y110A
Series Model	N/A
Model Difference	N/A
Channel List	Please refer to the Note 2.2.
Operation frequency	IEEE 802.11b: 2412MHz-2462MHz IEEE 802.11g: 2412MHz-2462MHz IEEE 802.11n HT20: 2412MHz-2462MHz
Modulation:	IEEE 802.11b: DSSS IEEE 802.11g: OFDM IEEE 802.11n HT20: OFDM
Transmitter rate:	IEEE 802.11b: 1, 2, 5.5, 11 Mbps IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps IEEE 802.11n HT20: up to 65 Mbps
Power Supply	DC 5V
Hardware version number	N/A
Software version number	N/A
Connecting I/O Port(s)	Please refer to the User's Manual

Note:

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

2.

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

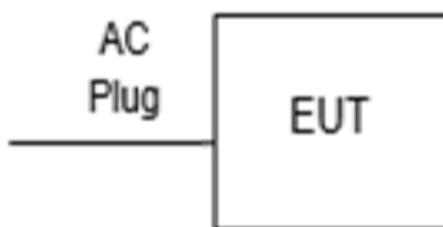
3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	INSKAM-Y11 0A	PIFA antenna	N/A	0dBi	Antenna

2.2 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Block diagram of EUT configuration for test



Test software: AT Command

The test software was used to control EUT work in continuous TX mode, and select test channel, Wireless mode as below table

RF Function	Type	Mode Or Modulation type	Ant Gain(dBi)	Power Class	Software For Testing
WIFI(2.4G)	2.4G WIFI	802.11b	0	10	AT Command
		802.11g		10	
		802.11n(HT20)		10	

Note:

- (1) According to exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test,
- (2) During the test, the dutycycle>98%, the test voltage was tuned from 85% to 115% of the Nominal rate supply voltage, and found that the worst case was the nominal rated supply condition, So the report just shows that condition's data

2.3 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

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.

Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note

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.
- (3) "YES" is means "shielded" "with core"; "NO" is means "unshielded" "without core".

2.4 EQUIPMENTS LIST

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Company No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESRP 3	FCS-E001	2021.10.11	2022.10.10
Signal Analyzer	R&S	FSV40-N	FCS-E012	2021.10.11	2022.10.10
Active loop Antenna	ZHINAN	ZN30900C	FCS-E013	2021.10.11	2022.10.10
Bilog Antenna	SCHWARZBECK	VULB 9168	FCS-E002	2021.10.11	2022.10.10
Horn Antenna	SCHWARZBECK	BBHA 9120D	FCS-E003	2021.10.11	2022.10.10
SHF-EHF Horn Antenna (18G-40GHz)	A-INFO	LB-180400-KF	FCS-E018	2021.10.11	2022.10.10
Pre-Amplifier(0.1M-3G Hz)	EMCI	EM330N	FCS-E004	2021.10.11	2022.10.10
Pre-Amplifier (1G-18GHz)	N/A	TSAMP-0518SE	FCS-E014	2021.10.11	2022.10.10
Pre-Amplifier (18G-40GHz)	TERA-MW	TRLA-0400	FCS-E019	2021.10.11	2022.10.10
Temperature & Humidity	HTC-1	victor	FCS-E005	2021.10.11	2022.10.10

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Company No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESPI	FCS-E020	2021.10.11	2022.10.10
LISN	R&S	ENV216	FCS-E007	2021.10.11	2022.10.10
LISN	ETS	3810/2NM	FCS-E009	2021.10.11	2022.10.10
Temperature & Humidity	HTC-1	victor	FCS-E008	2021.10.11	2022.10.10

RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Company No.	Last calibration	Calibrated until
Spectrum Analyzer	Keysight	N9020A	FCS-E015	2021.10.11	2022.10.10
Spectrum Analyzer	Agilent	E4447A	MY50180039	2021.10.11	2022.10.10
Spectrum Analyzer	R&S	FSV-40	101499	2021.10.11	2022.10.10

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 15. 207(a) limit in the table below has to be followed.

FREQUENCY (MHz)	Conducted Emissionlimit (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

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.

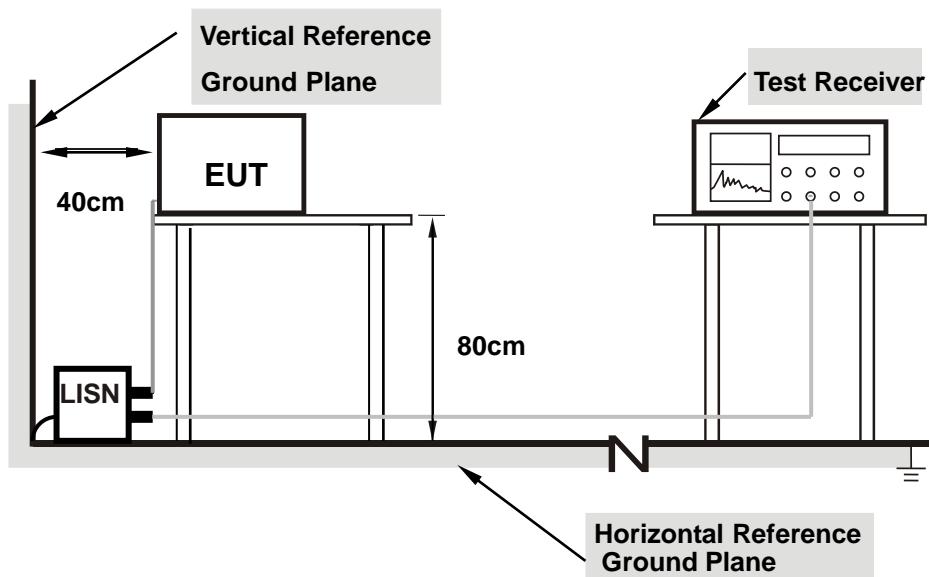
The following table is the setting of the receiver

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 0.8 meters from the horizontal ground plane and 0.4 meters from the vertical 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 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 cm from other units and other metal planes

3.1.4 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.

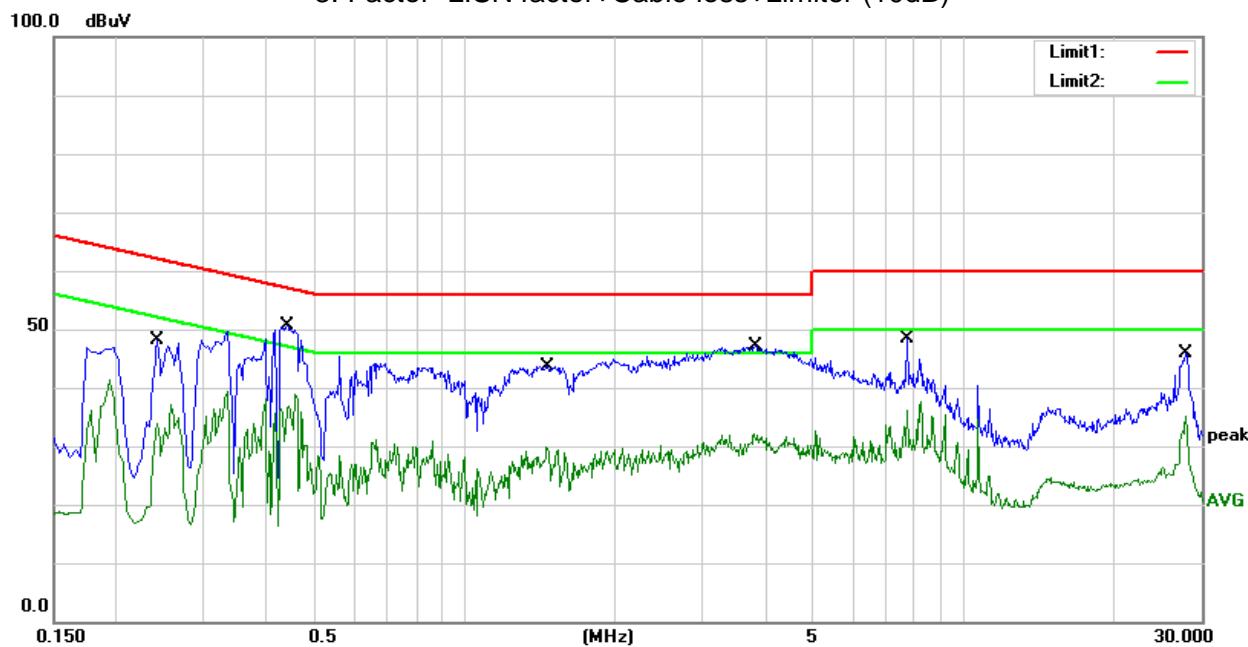
3.1.5 TEST RESULT

Temperature:	27.2(C)	Relative Humidity:	66%RH
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	WIFI		

No.	Frequency (MHz)	Reading (dBuV)	Correct	Result	Limit	Margin	Remark
			Factor(dB)	(dBuV)	(dBuV)	(dB)	
1	0.2420	27.55	20.57	48.12	62.03	-13.91	QP
2	0.2420	20.84	20.57	41.41	52.03	-10.62	AVG
3	0.4420	30.12	20.54	50.66	57.02	-6.36	QP
4	0.4420	18.32	20.54	38.86	47.02	-8.16	AVG
5	1.4700	23.39	20.34	43.73	56.00	-12.27	QP
6	1.4700	9.50	20.34	29.84	46.00	-16.16	AVG
7	3.8300	26.57	20.49	47.06	56.00	-8.94	QP
8	3.8300	11.58	20.49	32.07	46.00	-13.93	AVG
9	7.6940	27.61	20.66	48.27	60.00	-11.73	QP
10	7.6940	16.96	20.66	37.62	50.00	-12.38	AVG
11	27.8860	22.97	22.98	45.95	60.00	-14.05	QP
12	27.8860	12.07	22.98	35.05	50.00	-14.95	AVG

Remark:

1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result =Reading + Factor)–Limit
3. Factor=LISN factor+Cable loss+Limiter (10dB)

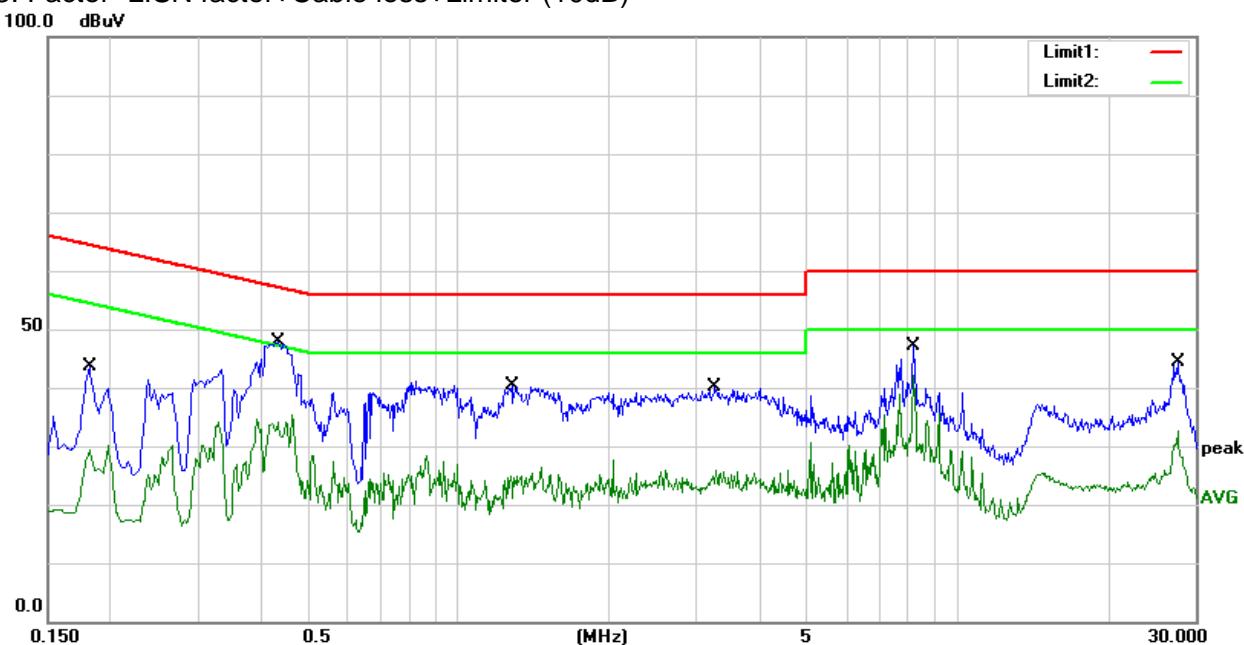


Temperature:	27.2(C)	Relative Humidity:	66%RH
Test Voltage:	AC 120V/60Hz	Phase:	N
Test Mode:	WIFI		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1820	23.19	20.36	43.55	64.39	-20.84	QP
2	0.1820	9.70	20.36	30.06	54.39	-24.33	AVG
3	0.4340	27.23	20.54	47.77	57.18	-9.41	QP
4	0.4340	14.83	20.54	35.37	47.18	-11.81	AVG
5	1.2780	20.04	20.33	40.37	56.00	-15.63	QP
6	1.2780	4.53	20.33	24.86	46.00	-21.14	AVG
7	3.2660	19.73	20.47	40.20	56.00	-15.80	QP
8	3.2660	5.31	20.47	25.78	46.00	-20.22	AVG
9	8.1620	26.49	20.71	47.20	60.00	-12.80	QP
10	8.1620	21.38	20.71	42.09	50.00	-7.91	AVG
11	27.6500	21.52	22.96	44.48	60.00	-15.52	QP
12	27.6500	9.78	22.96	32.74	50.00	-17.26	AVG

Remark:

1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result =Reading + Factor)–Limit
3. Factor=LISN factor+Cable loss+Limiter (10dB)



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the Restricted band specified on Part15.205(a)&209(a) limit in the table and according to ANSI C63.10-2013 below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT (0.009MHz - 1000MHz)

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

LIMITS OF RADIATED EMISSION MEASUREMENT (1000MHz-25GHz)

FREQUENCY (MHz)	(dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

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).

LIMITS OF RESTRICTED FREQUENCY BANDS

FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (GHz)
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

For Radiated Emission

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/QP/AV
Start Frequency	9 KHz/150KHz(Peak/QP/AV)
Stop Frequency	150KHz/30MHz(Peak/QP/AV)
RB / VB (emission in restricted band)	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz); 200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/QP
Start Frequency	30 MHz(Peak/QP)
Stop Frequency	1000 MHz (Peak/QP)
RB / VB (emission in restricted band)	120 KHz / 300 KHz

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/AV
Start Frequency	1000 MHz(Peak/AV)
Stop Frequency	10th carrier harmonic(Peak/AV)
RB / VB (emission in restricted band)	1 MHz / 3 MHz(Peak) 1 MHz/1/T MHz(AVG)

For Restricted band

Spectrum Parameter	Setting
Detector	Peak/AV
Start/Stop Frequency	Lower Band Edge: 2310 to 2430 MHz Upper Band Edge: 2445 to 2500 MHz
RB / VB	1 MHz / 3 MHz(Peak) 1 MHz/1/T MHz(AVG)

Receiver Parameter	Setting
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

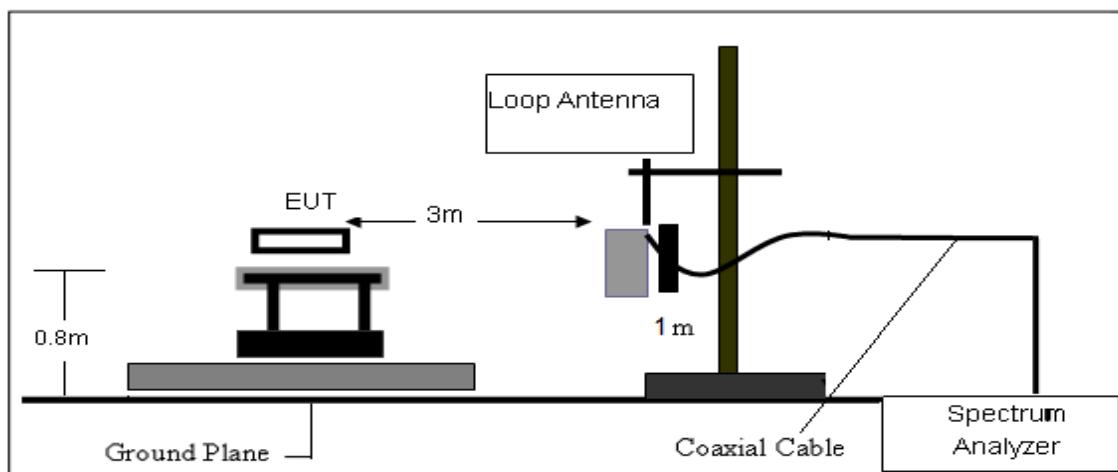
- The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
- The EUT was placed on the top of a rotating table 0.8 meters (above 1GHz is 1.5 m) above the ground at a 3 meter anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment shall be 0.8 m (above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. Horizontal and vertical polarizations of the antenna are set to make the measurement.
- 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.
- 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.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

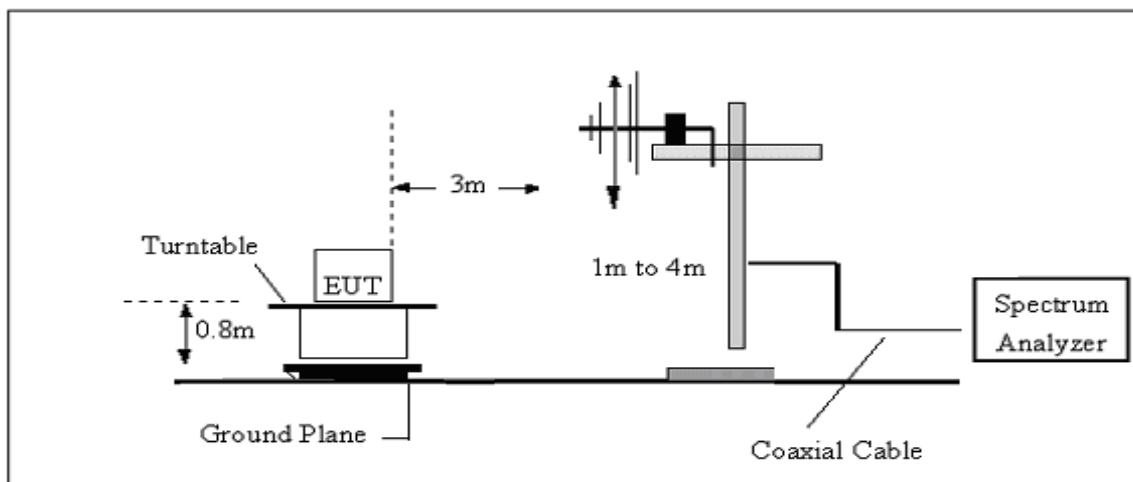
Both horizontal and vertical antenna polarities were tested and performed test to three orthogonal axis. The worst case emissions were reported.

3.2.3 TEST SETUP

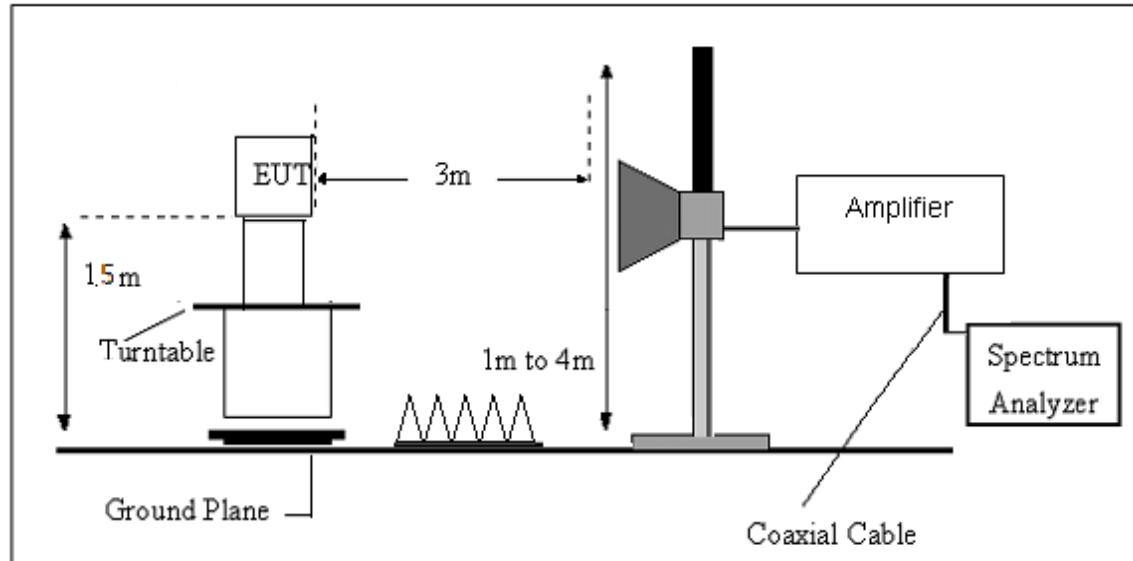
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



3.2.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.5 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where

FS = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

For example

Frequency (MHz)	FS (dB μ V/m)	RA (dB μ V/m)	AF (dB)	CL (dB)	AG (dB)	Factor (dB)
300	40	58.1	12.2	1.6	31.9	-18.1

$$\text{Factor} = AF + CL - AG$$

3.2.6 TEST RESULT

9KHz-30MHz

Temperature:	23.2(C)	Relative Humidity:	59%RH
Test Voltage:	DC 5V	Polarization:	--
Test Mode:	TX Mode		

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

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 = $40 \log \left(\frac{\text{specific distance}}{\text{test distance}} \right) \text{dB}$;

Limit line = specific limits(dBuv) + distance extrapolation factor.

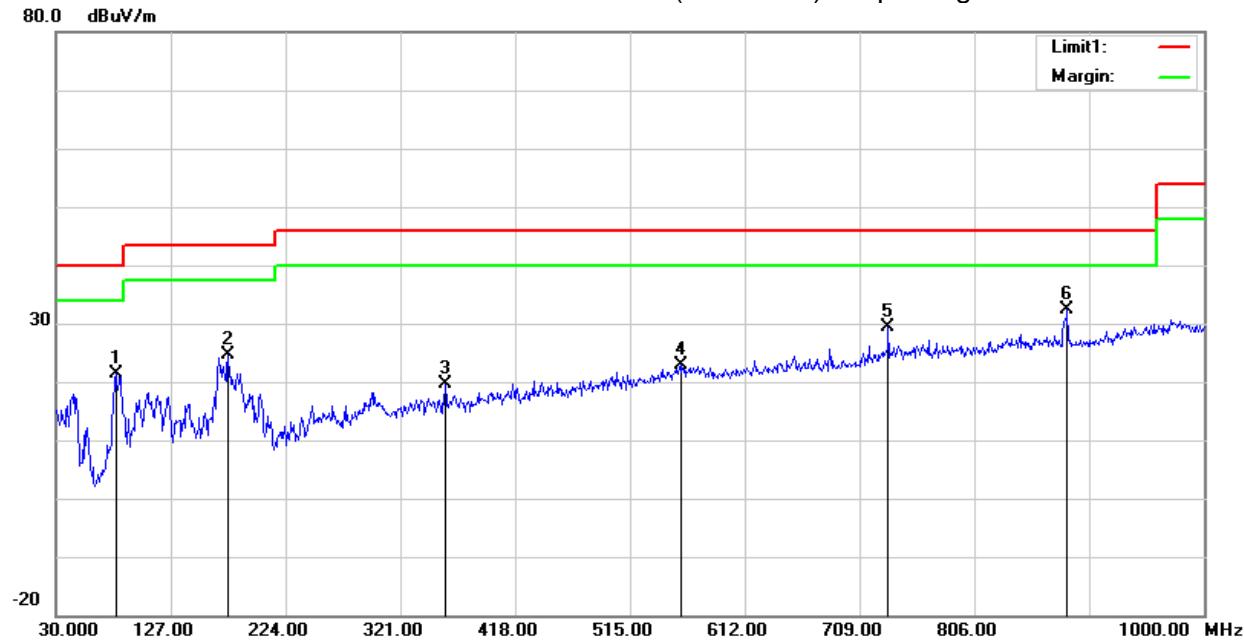
(30MHz - 1000MHz)

Temperature:	23.2(C)	Relative Humidtity:	59%RH
Test Voltage:	DC 5V	Phase:	Horizontal
Test Mode:	WIFI		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/ m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	80.4400	44.36	-22.93	21.43	40.00	-18.57	peak
2	175.5000	44.61	-20.04	24.57	43.50	-18.93	peak
3	358.8300	32.59	-12.90	19.69	46.00	-26.31	peak
4	558.6500	28.51	-5.52	22.99	46.00	-23.01	peak
5	733.2500	31.82	-2.35	29.47	46.00	-16.53	peak
6	884.5700	33.01	-0.67	32.34	46.00	-13.66	peak

Remark:

1. Margin = Result (Result =Reading + Factor)-Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain

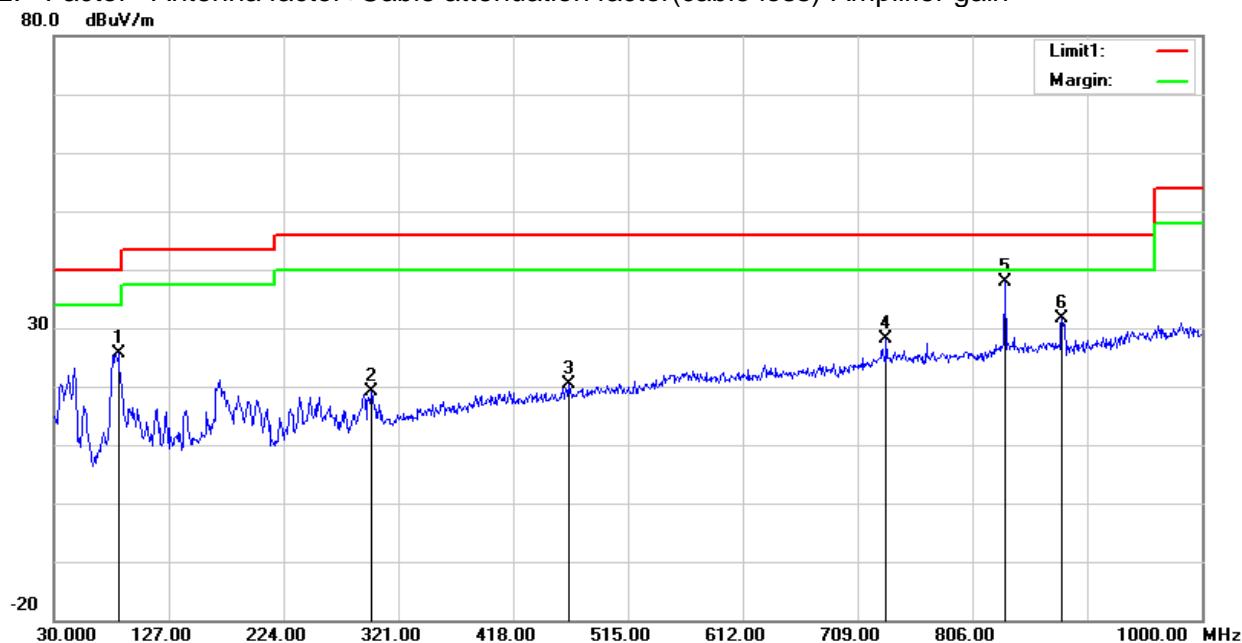


Temperature:	23.2(C)	Relative Humidtity:	59%RH
Test Voltage:	DC 5V	Phase:	Vertical
Test Mode:	Wifi		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/ m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	84.3200	48.01	-22.35	25.66	40.00	-14.34	peak
2	298.6900	34.10	-14.86	19.24	46.00	-26.76	peak
3	464.5600	29.72	-9.25	20.47	46.00	-25.53	peak
4	733.2500	30.49	-2.35	28.14	46.00	-17.86	peak
5	833.1600	38.39	-0.62	37.77	46.00	-8.23	peak
6	881.6600	32.26	-0.66	31.60	46.00	-14.40	peak

Remark:.

1. Margin = Result (Result =Reading + Factor)-Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain



(1000MHz-25GHz) Restricted band and Spurious emission Requirements

802.11 g

Frequency (MHz)	Meter Reading (dB μ V)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type	Comment
Low Channel (802.11g/2412 MHz)										
3264.66	61.73	44.70	6.70	28.20	-9.80	51.93	74.00	-22.07	PK	Vertical
3264.66	51.57	44.70	6.70	28.20	-9.80	41.77	54.00	-12.23	AV	Vertical
3264.63	62.17	44.70	6.70	28.20	-9.80	52.37	74.00	-21.63	PK	Horizontal
3264.63	50.53	44.70	6.70	28.20	-9.80	40.73	54.00	-13.27	AV	Horizontal
4824.31	58.24	44.20	9.04	31.60	-3.56	54.68	74.00	-19.32	PK	Vertical
4824.31	50.39	44.20	9.04	31.60	-3.56	46.83	54.00	-7.17	AV	Vertical
4824.35	59.03	44.20	9.04	31.60	-3.56	55.47	74.00	-18.53	PK	Horizontal
4824.35	49.88	44.20	9.04	31.60	-3.56	46.32	54.00	-7.68	AV	Horizontal
5359.67	49.06	44.20	9.86	32.00	-2.34	46.71	74.00	-27.29	PK	Vertical
5359.67	39.55	44.20	9.86	32.00	-2.34	37.21	54.00	-16.79	AV	Vertical
5359.74	47.39	44.20	9.86	32.00	-2.34	45.05	74.00	-28.95	PK	Horizontal
5359.74	38.22	44.20	9.86	32.00	-2.34	35.88	54.00	-18.12	AV	Horizontal
7235.77	54.89	43.50	11.40	35.50	3.40	58.29	74.00	-15.71	PK	Vertical
7235.77	44.92	43.50	11.40	35.50	3.40	48.32	54.00	-5.68	AV	Vertical
7235.93	53.73	43.50	11.40	35.50	3.40	57.13	74.00	-16.87	PK	Horizontal
7235.93	44.16	43.50	11.40	35.50	3.40	47.56	54.00	-6.44	AV	Horizontal
Middle Channel (802.11g/2437 MHz)										
3264.79	62.17	44.70	6.70	28.20	-9.80	52.37	74.00	-21.63	PK	Vertical
3264.79	51.75	44.70	6.70	28.20	-9.80	41.95	54.00	-12.05	AV	Vertical
3264.84	61.74	44.70	6.70	28.20	-9.80	51.94	74.00	-22.06	PK	Horizontal
3264.84	50.74	44.70	6.70	28.20	-9.80	40.94	54.00	-13.06	AV	Horizontal
4874.47	58.27	44.20	9.04	31.60	-3.56	54.71	74.00	-19.29	PK	Vertical
4874.47	49.78	44.20	9.04	31.60	-3.56	46.22	54.00	-7.78	AV	Vertical
4874.38	59.22	44.20	9.04	31.60	-3.56	55.66	74.00	-18.34	PK	Horizontal
4874.38	50.17	44.20	9.04	31.60	-3.56	46.61	54.00	-7.39	AV	Horizontal
5359.62	49.42	44.20	9.86	32.00	-2.34	47.08	74.00	-26.92	PK	Vertical
5359.62	39.98	44.20	9.86	32.00	-2.34	37.64	54.00	-16.36	AV	Vertical
5359.64	47.89	44.20	9.86	32.00	-2.34	45.55	74.00	-28.45	PK	Horizontal
5359.64	38.54	44.20	9.86	32.00	-2.34	36.20	54.00	-17.80	AV	Horizontal
7310.86	53.68	43.50	11.40	35.50	3.40	57.08	74.00	-16.92	PK	Vertical
7310.86	44.63	43.50	11.40	35.50	3.40	48.03	54.00	-5.97	AV	Vertical
7310.89	54.57	43.50	11.40	35.50	3.40	57.97	74.00	-16.03	PK	Horizontal
7310.89	44.47	43.50	11.40	35.50	3.40	47.87	54.00	-6.13	AV	Horizontal

High Channel (802.11g/2462 MHz)										
3264.77	61.24	44.70	6.70	28.20	-9.80	51.44	74.00	-22.56	PK	Vertical
3264.77	51.18	44.70	6.70	28.20	-9.80	41.38	54.00	-12.62	AV	Vertical
3264.58	61.57	44.70	6.70	28.20	-9.80	51.77	74.00	-22.23	PK	Horizontal
3264.58	49.98	44.70	6.70	28.20	-9.80	40.18	54.00	-13.82	AV	Horizontal
4924.41	59.38	44.20	9.04	31.60	-3.56	55.82	74.00	-18.18	PK	Vertical
4924.41	49.97	44.20	9.04	31.60	-3.56	46.41	54.00	-7.59	AV	Vertical
4924.49	58.65	44.20	9.04	31.60	-3.56	55.09	74.00	-18.91	PK	Horizontal
4924.49	49.27	44.20	9.04	31.60	-3.56	45.71	54.00	-8.29	AV	Horizontal
5359.84	48.56	44.20	9.86	32.00	-2.34	46.21	74.00	-27.79	PK	Vertical
5359.84	39.26	44.20	9.86	32.00	-2.34	36.91	54.00	-17.09	AV	Vertical
5359.63	48.46	44.20	9.86	32.00	-2.34	46.12	74.00	-27.88	PK	Horizontal
5359.63	38.93	44.20	9.86	32.00	-2.34	36.58	54.00	-17.42	AV	Horizontal
7385.72	53.64	43.50	11.40	35.50	3.40	57.04	74.00	-16.96	PK	Vertical
7385.72	44.87	43.50	11.40	35.50	3.40	48.27	54.00	-5.73	AV	Vertical
7385.87	53.82	43.50	11.40	35.50	3.40	57.22	74.00	-16.78	PK	Horizontal
7385.87	44.68	43.50	11.40	35.50	3.40	48.08	54.00	-5.92	AV	Horizontal

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Scan with 802.11b, 802.11g, 802.11n (HT-20), the worst case is 802.11 g.

Emission Level = Reading + Factor

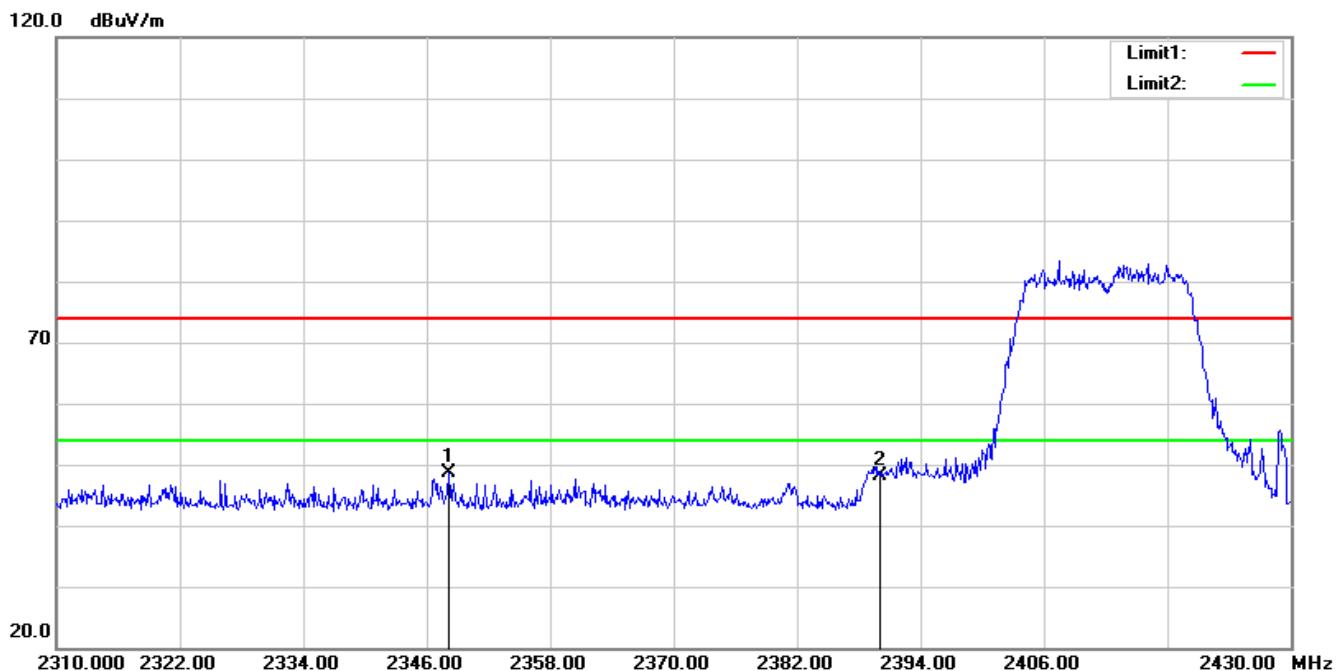
Margin = Limit - Emission Level

3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.

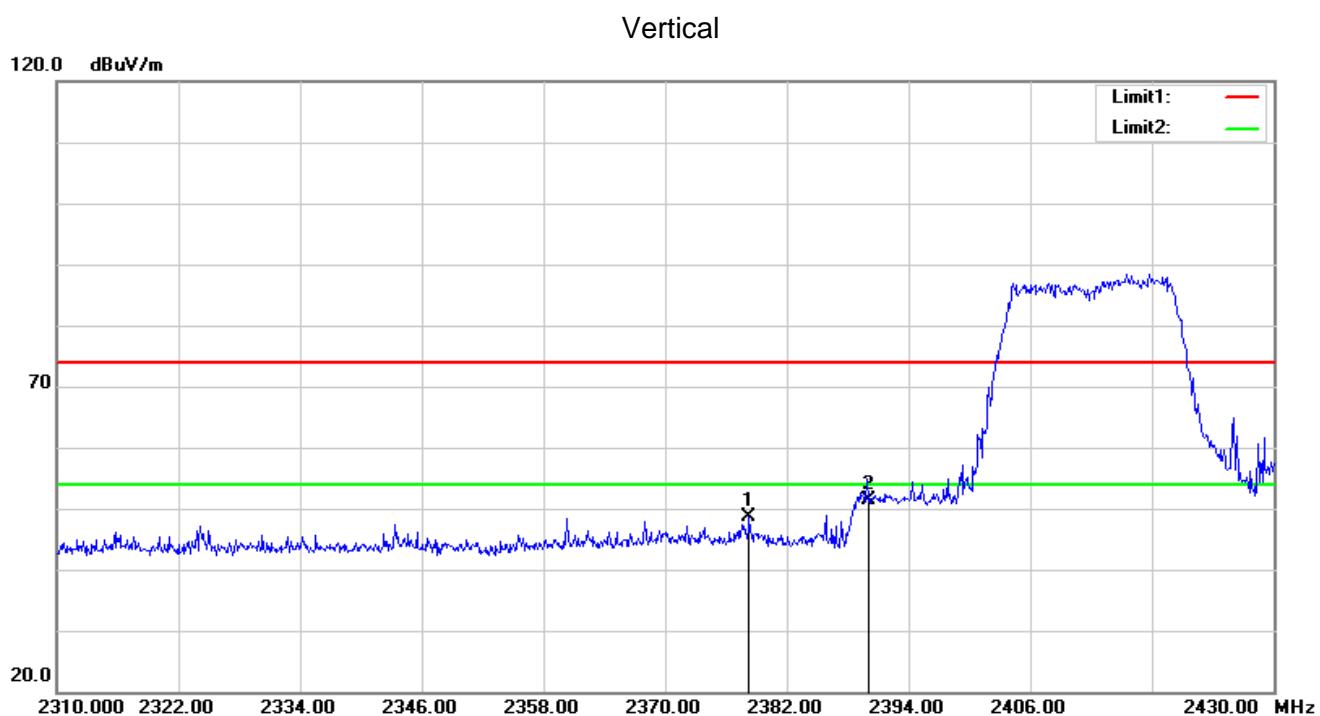
3.2.6 TEST RESULTS(Band edge Requirements)

802.11 g-Low

Horizontal



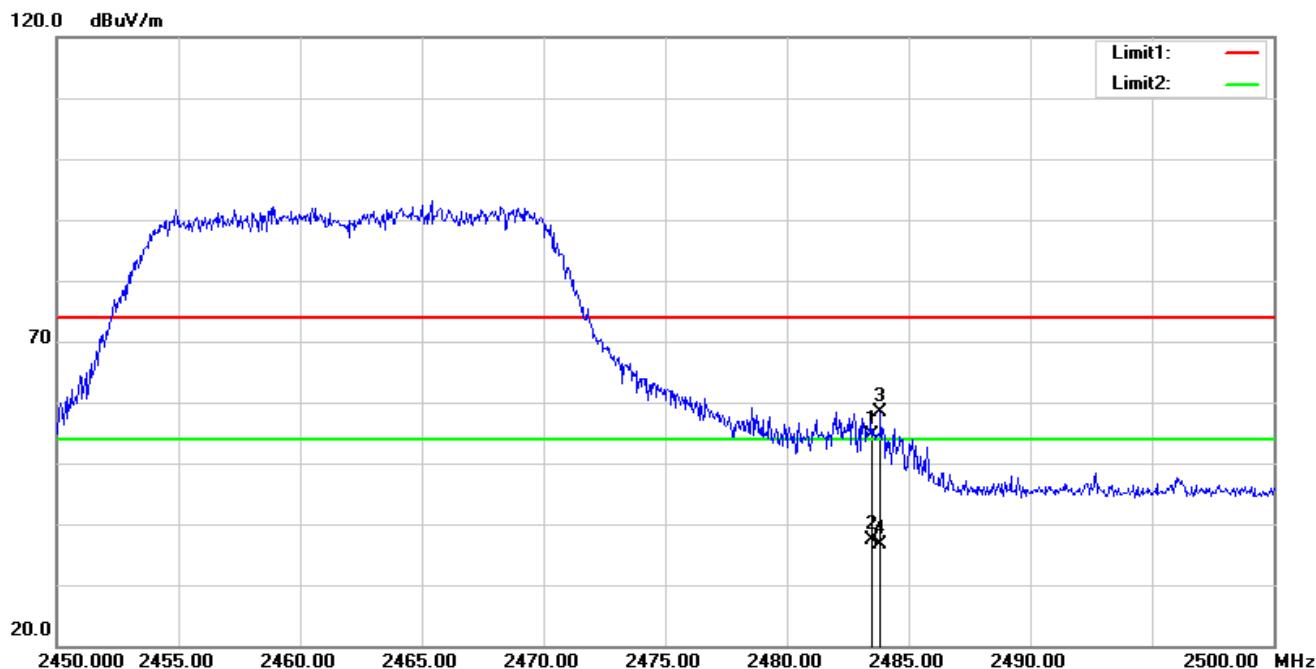
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2348.160	44.99	3.73	48.72	74.00	-25.28	peak
2	2390.000	43.83	4.34	48.17	74.00	-25.83	peak



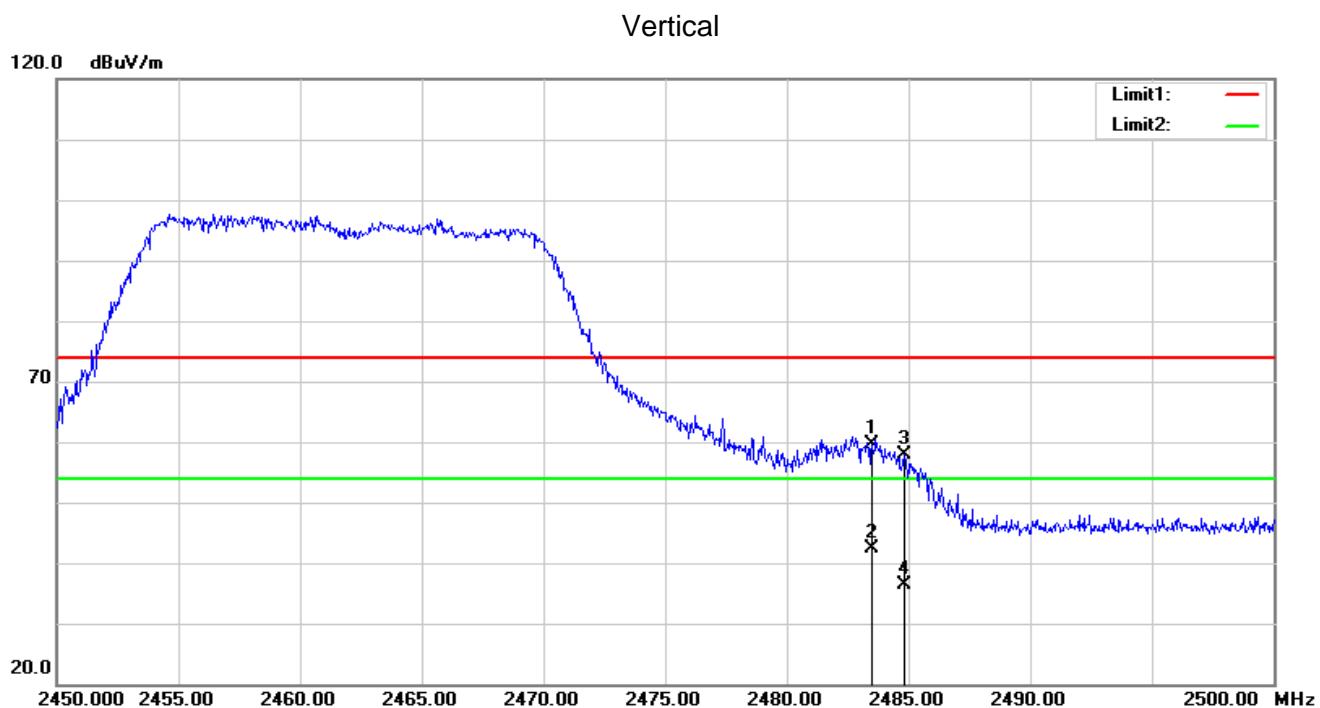
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2378.280	44.56	4.17	48.73	74.00	-25.27	peak
2	2390.000	47.06	4.34	51.40	74.00	-22.60	peak

802.11 g-High

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	50.04	4.60	54.64	74.00	-19.36	peak
2	2483.500	32.89	4.60	37.49	54.00	-16.51	AVG
3	2483.850	53.83	4.61	58.44	74.00	-15.56	peak
4	2483.850	32.13	4.61	36.74	54.00	-17.26	AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	54.91	4.60	59.51	74.00	-14.49	peak
2	2483.500	37.76	4.60	42.36	54.00	-11.64	AVG
3	2484.800	53.37	4.61	57.98	74.00	-16.02	peak
4	2484.800	31.67	4.61	36.28	54.00	-17.72	AVG

Note: 802.11b, 802.11g, 802.11n (HT-20) mode all have been tested, the worst case is 802.11 g, only show the worst case.

4. CONDUCTED SPURIOUS & BAND EDGE EMISSION

4.1 LIMIT

According to FCC section 15.247(d), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

4.2 TEST PROCEDURE

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	30 MHz to 10th carrier harmonic
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

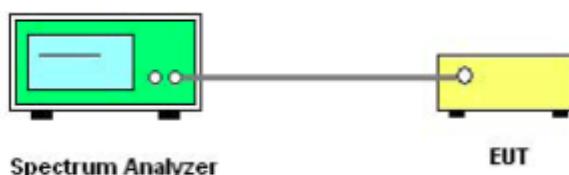
For Band edge

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	Lower Band Edge: 2300 to 2432 MHz Upper Band Edge: 2442 to 2500 MHz
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

4.3 DEVIATION FROM STANDARD

No deviation.

4.4 TEST SETUP



The EUT which is powered by the Battery, is connected to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

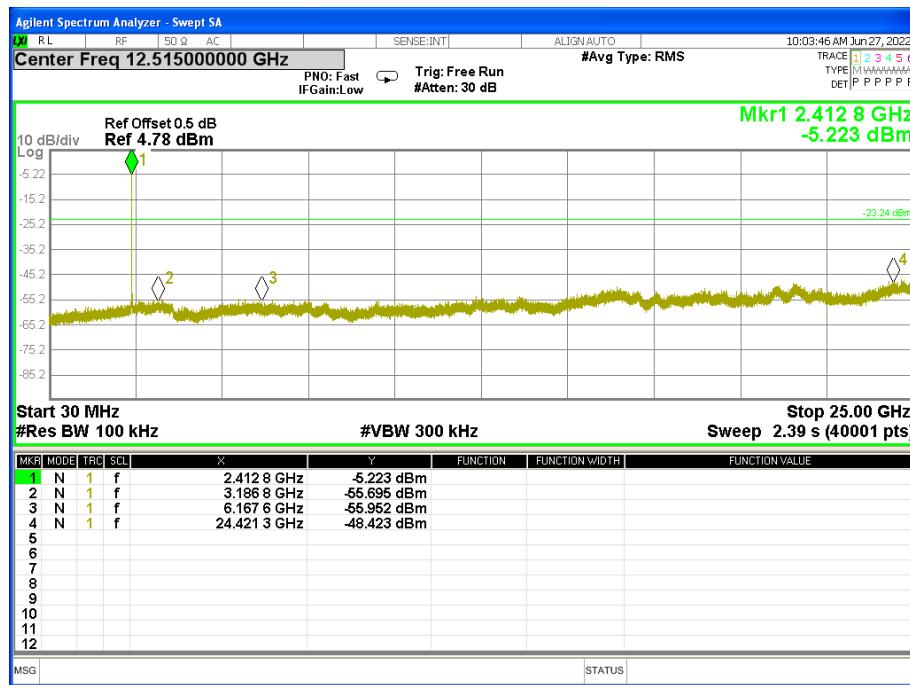
4.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

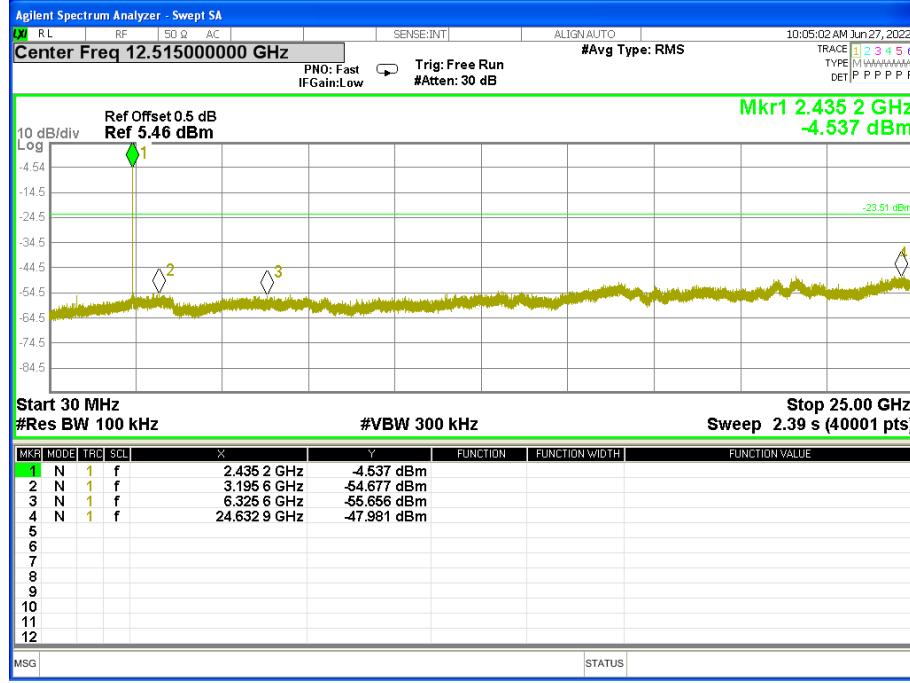
4.6 TEST RESULTS

Temperature:	25°C	Relative Humidity:	60%
Test Voltage:	DC 5V	Test Mode:	TX b Mode /CH01, CH06, CH11

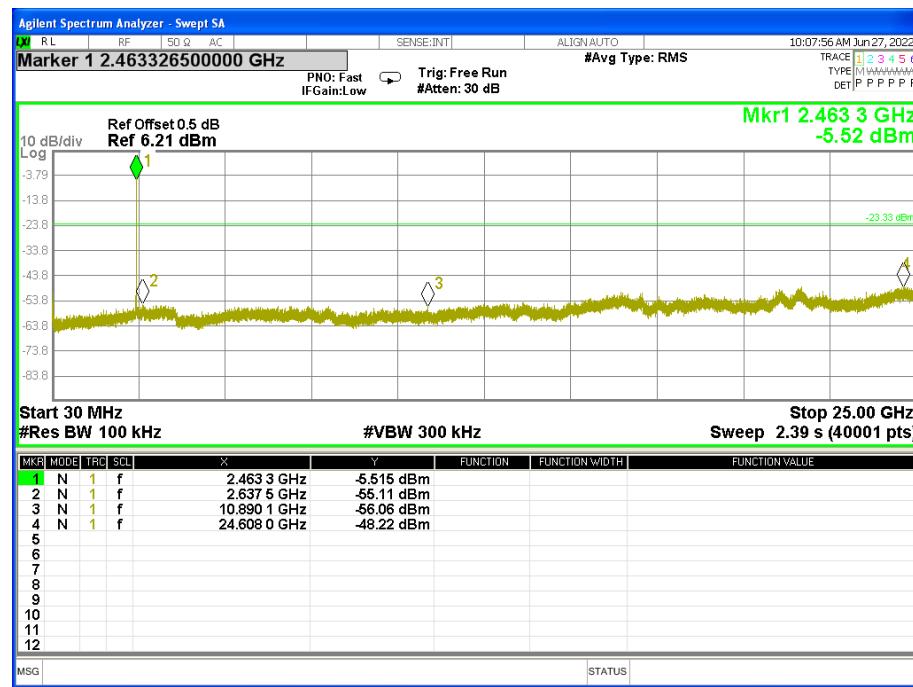
CH 01



CH 06

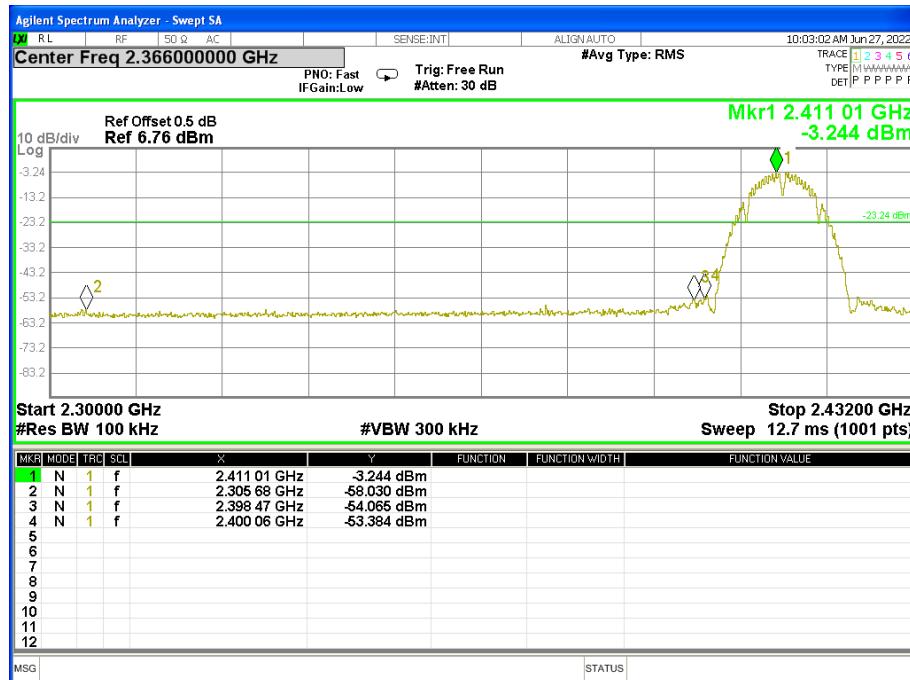


CH 11



Band edge(it's also the reference level for conducted spurious emission)

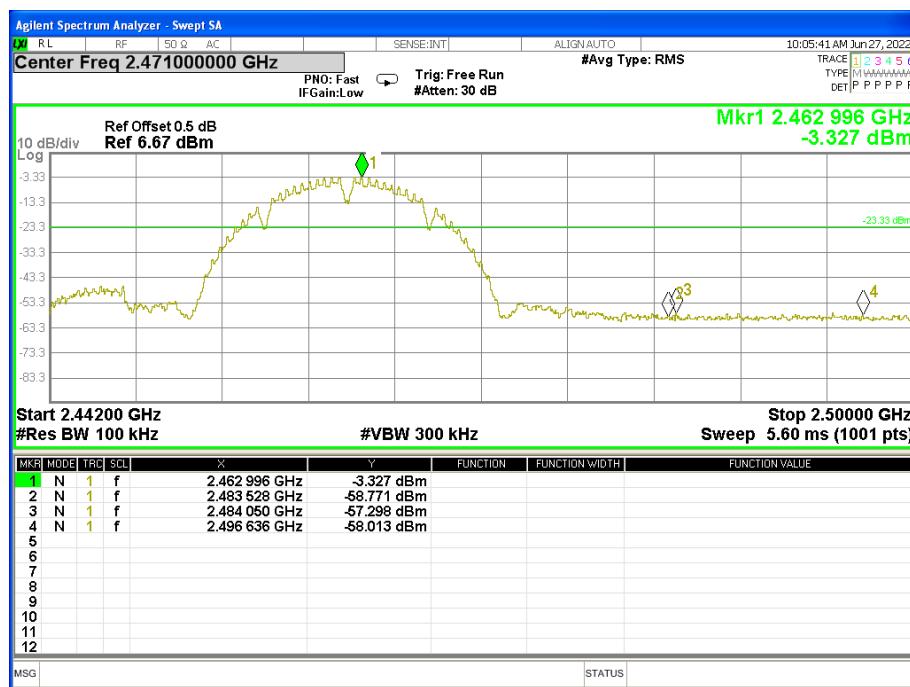
CH 01



CH 06

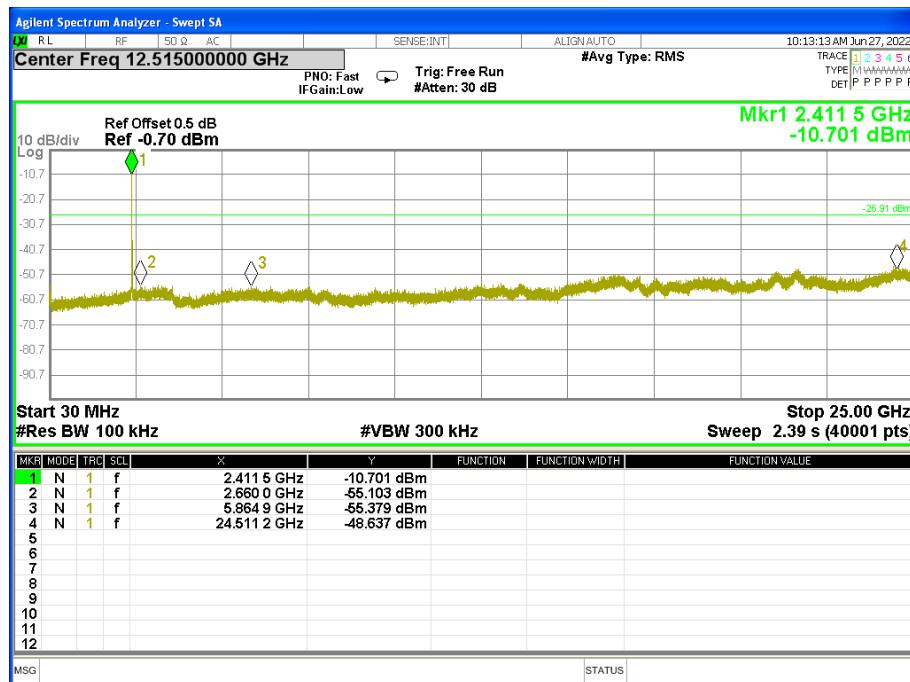


CH 11

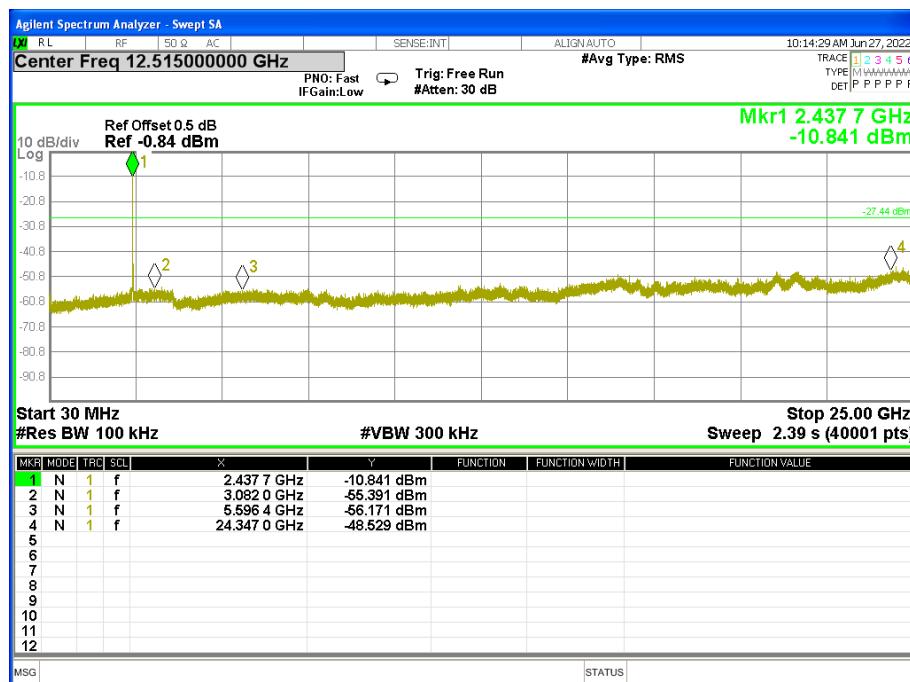


Temperature:	25°C	Relative Humidity:	60%
Test Voltage:	DC 5V	Test Mode:	TX g Mode /CH01, CH06, CH11

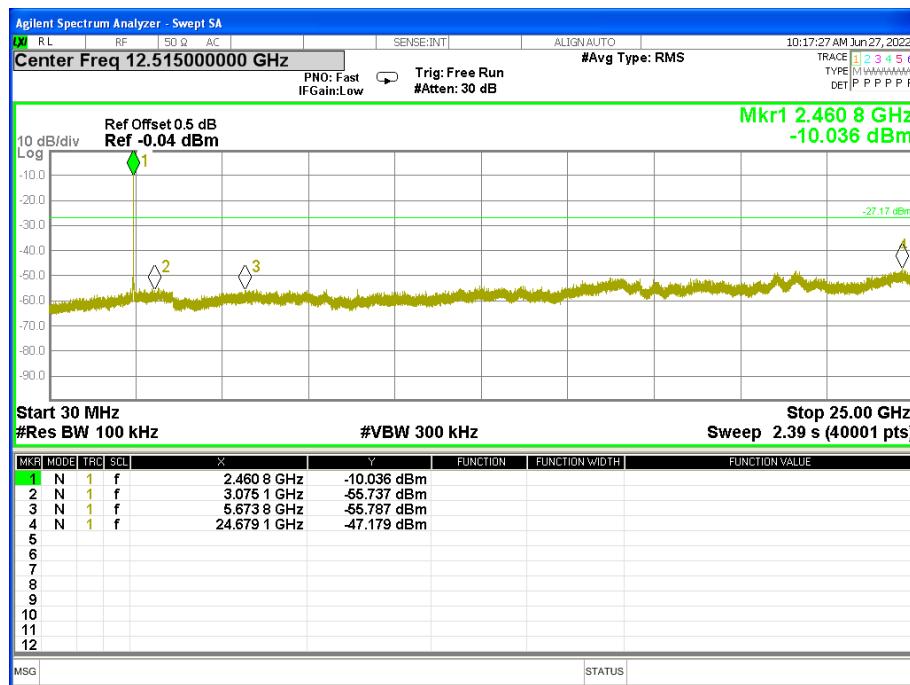
CH 01



CH06

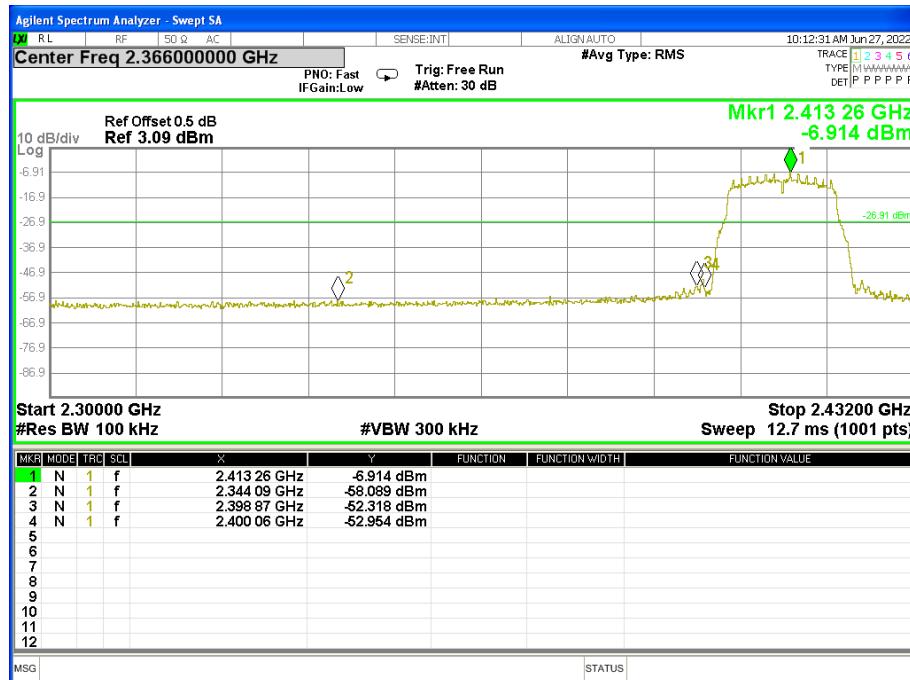


CH 11



Band edge(it's also the reference level for conducted spurious emission)

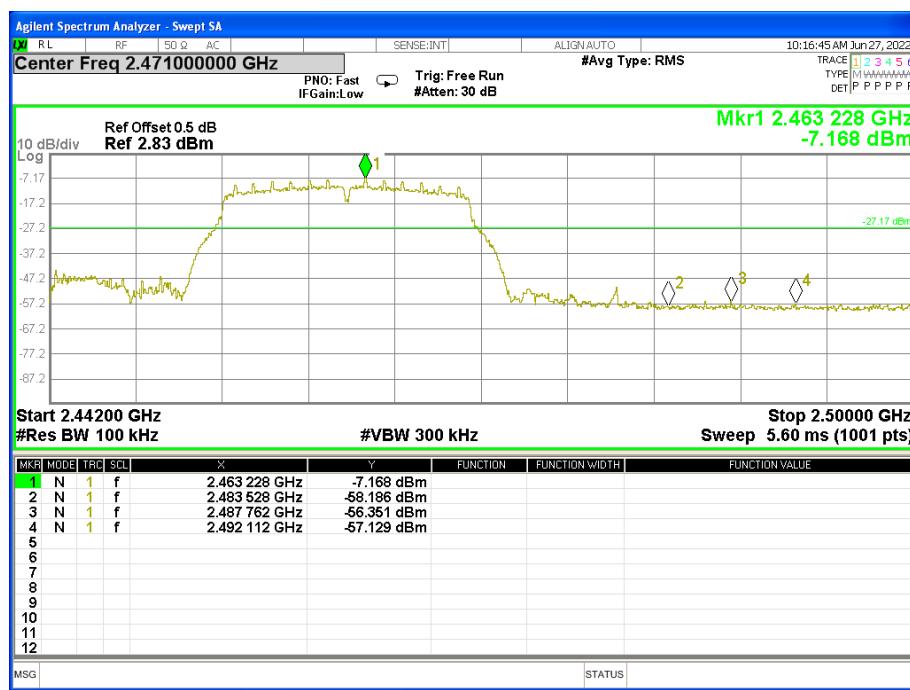
CH 01



CH06

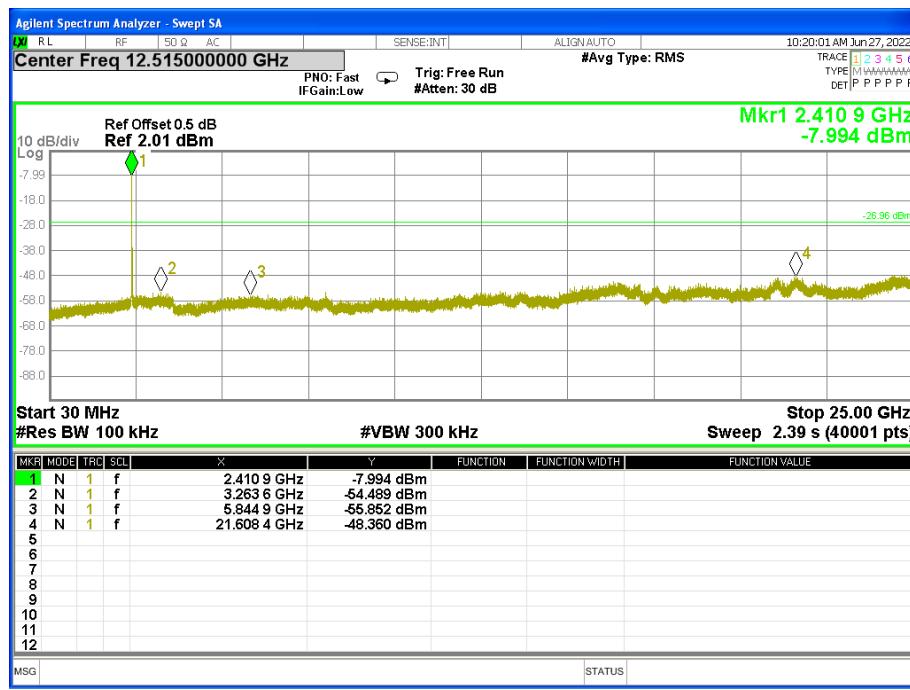


CH11

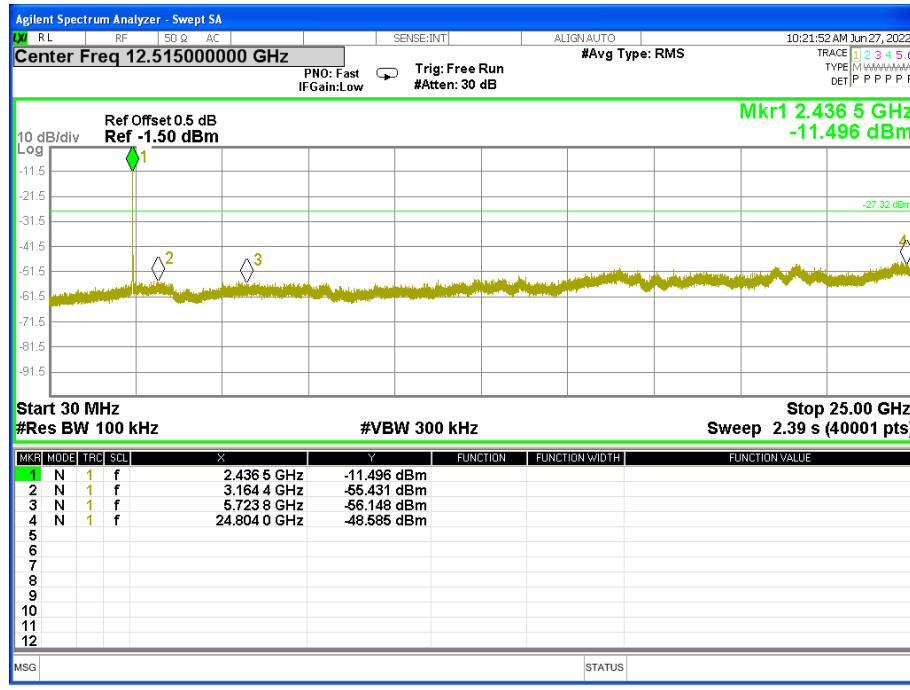


Temperature:	25°C	Relative Humidity:	60%
Test Voltage:	DC 5V	Test Mode:	TX n Mode(20M) /CH01, CH06, CH11

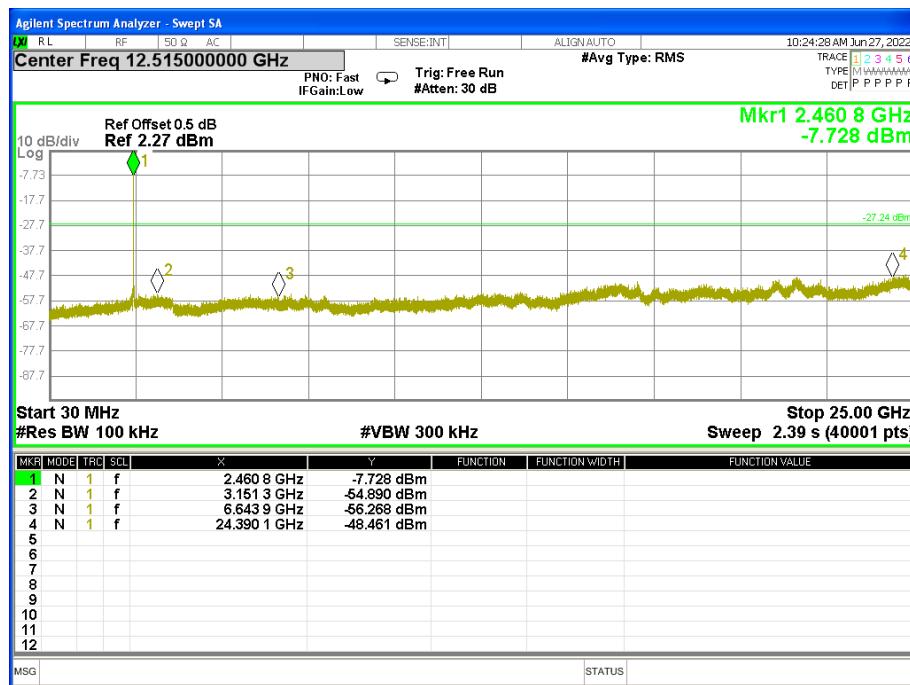
CH 01



CH 06

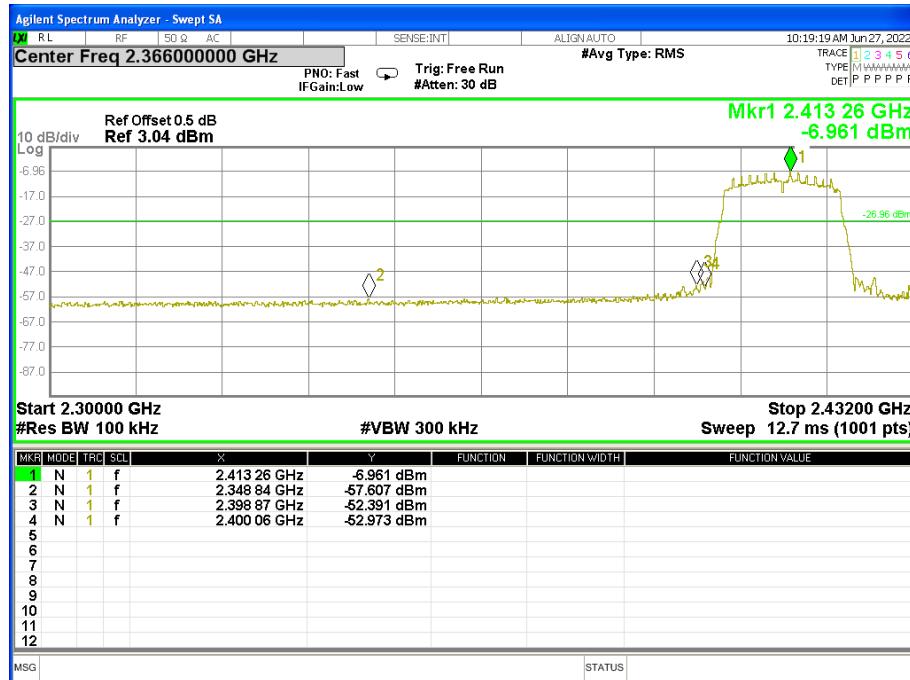


CH 11



Band edge(it's also the reference level for conducted spurious emission)

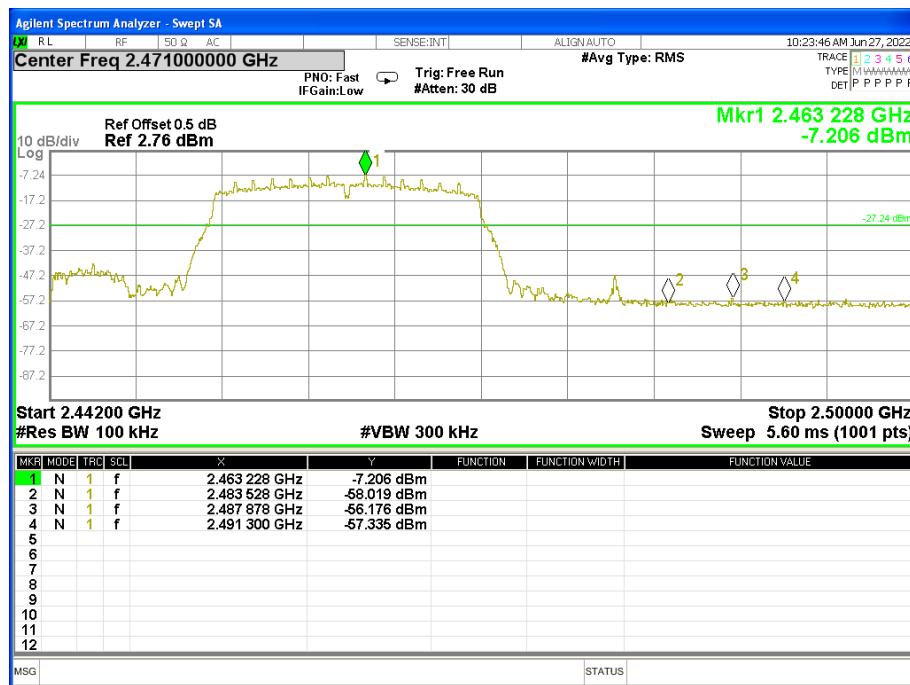
CH 01



CH 06



CH 11



5. POWER SPECTRAL DENSITY TEST

5.1 LIMIT

FCC Part15.247 , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(e)	Power Spectral Density	$\leq 8 \text{ dBm}$ (RBW $\geq 3\text{KHz}$)	2400-2483.5	PASS

5.2 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 $100 \text{ kHz} \geq \text{RBW} \geq 3 \text{ kHz}$.
4. Set the $\text{VBW} \geq 3 \times \text{RBW}$.
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.

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

5.6 TEST RESULTS

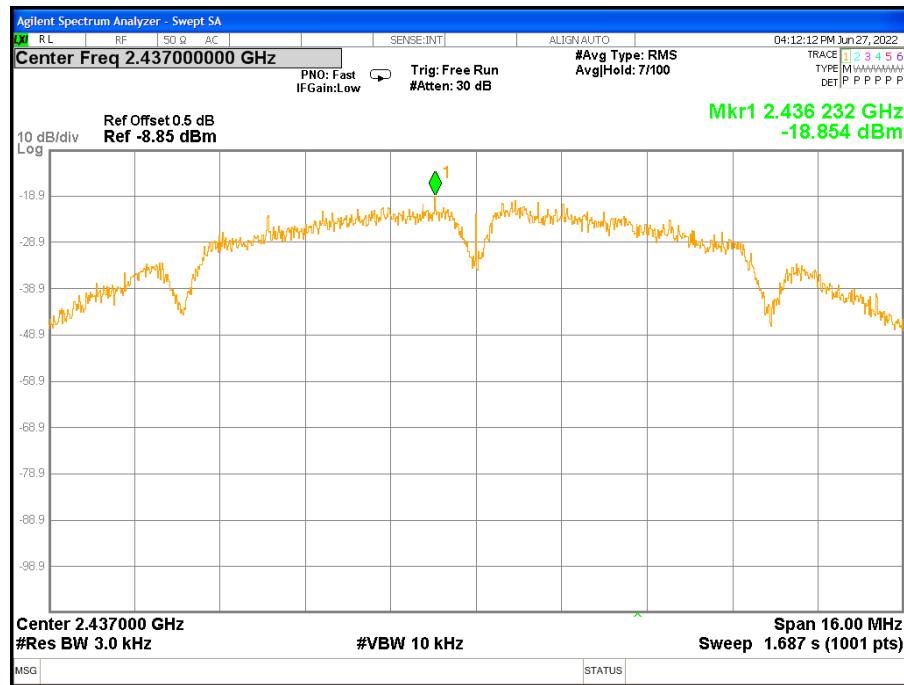
Temperature:	25°C	Relative Humidity:	60%
Test Voltage:	DC 5V	Test Mode:	TX b Mode /CH01, CH06, CH11

Frequency	Power Density	Limit (dBm/3KHz)	Result
	(dBm/3kHz)		
2412 MHz	-18.967	≤8	PASS
2437 MHz	-18.854	≤8	PASS
2462 MHz	-20.413	≤8	PASS

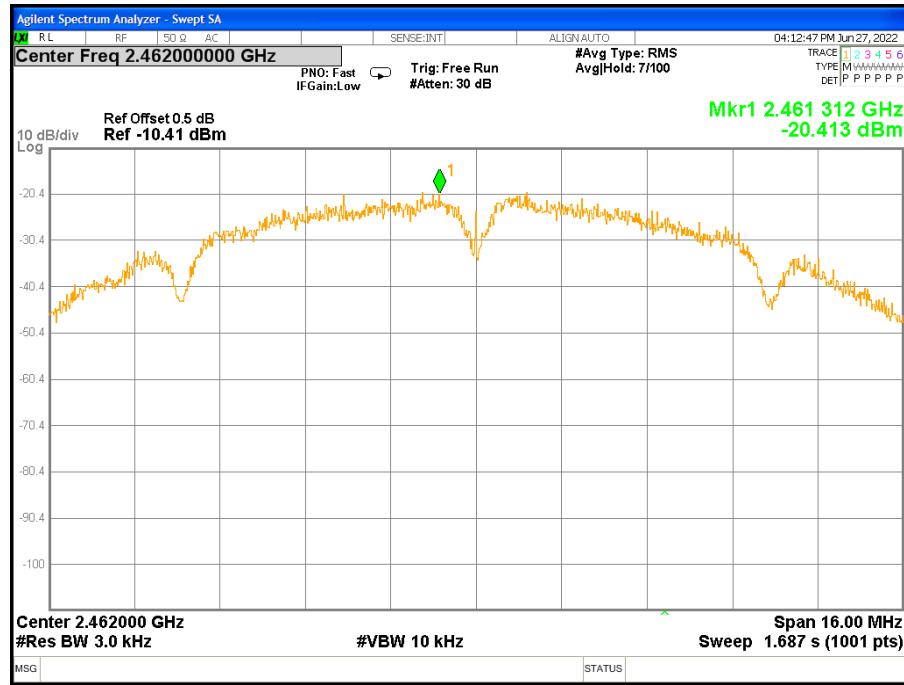
TX CH01



TX CH06



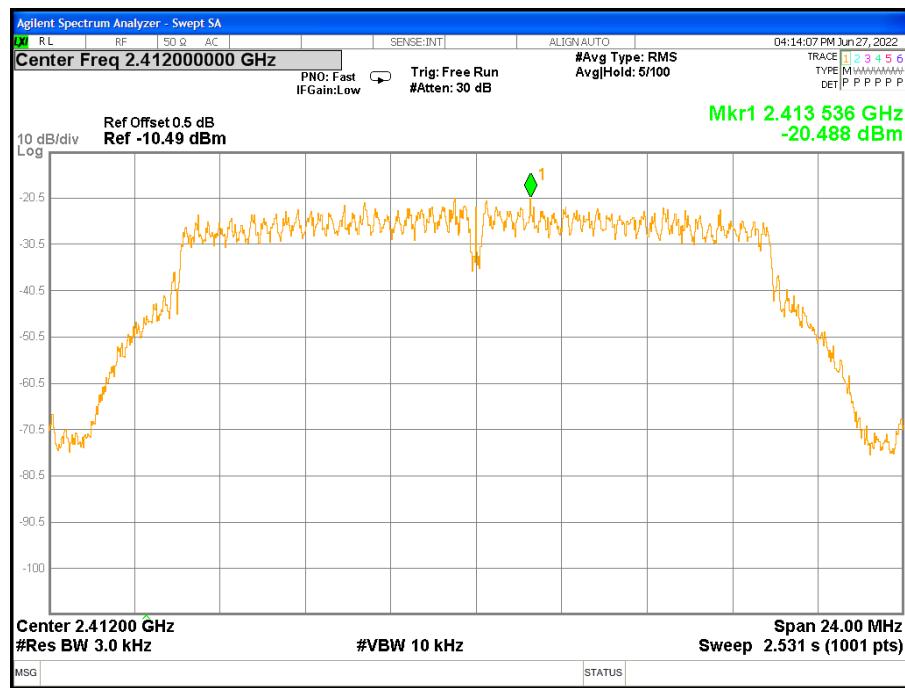
TX CH11



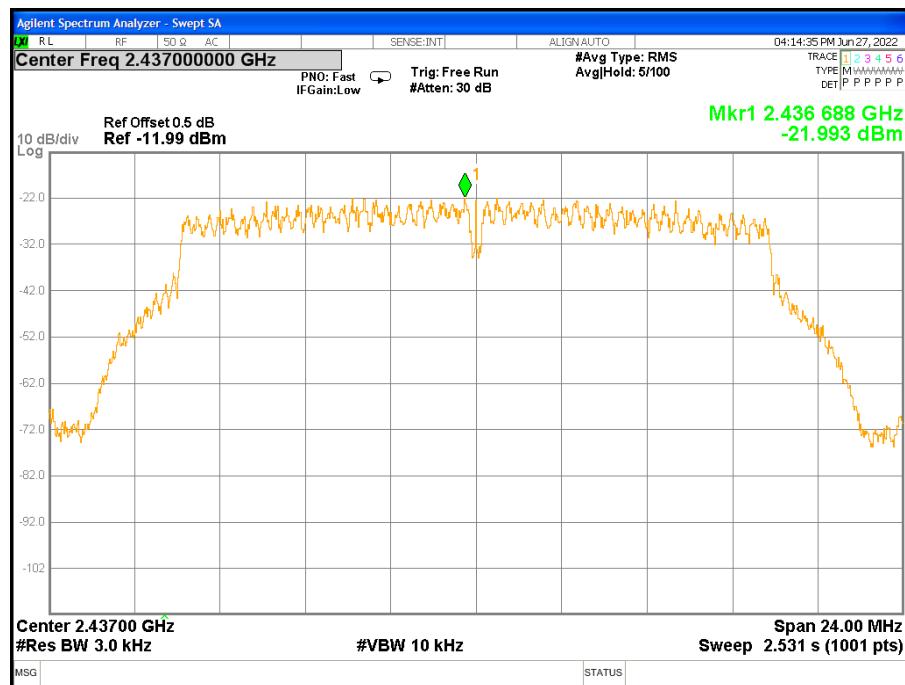
Temperature:	25°C	Relative Humidity:	60%
Test Voltage:	DC 5V	Test Mode:	TX g Mode /CH01, CH06, CH11

Frequency	Power Density	Limit (dBm/3KHz)	Result
	(dBm/3kHz)		
2412 MHz	-20.488	≤8	PASS
2437 MHz	-21.993	≤8	PASS
2462 MHz	-21.342	≤8	PASS

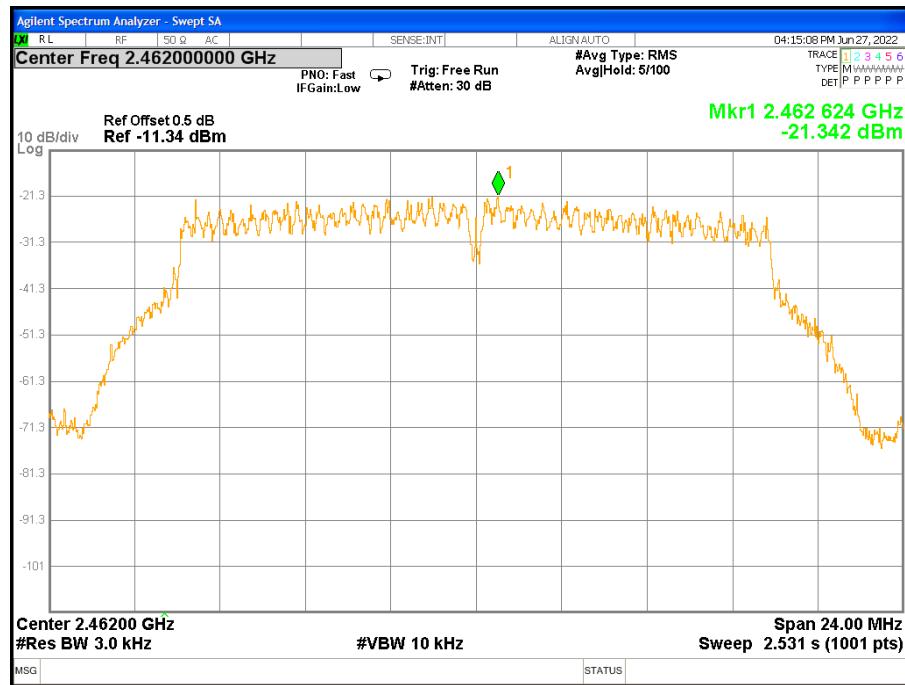
TX CH01



TX CH06



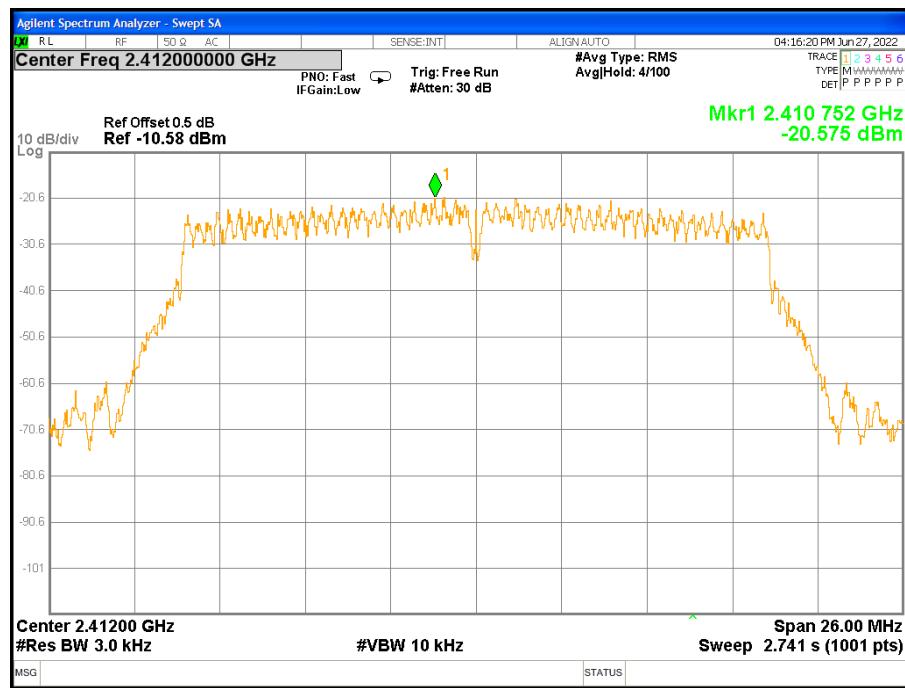
TX CH11



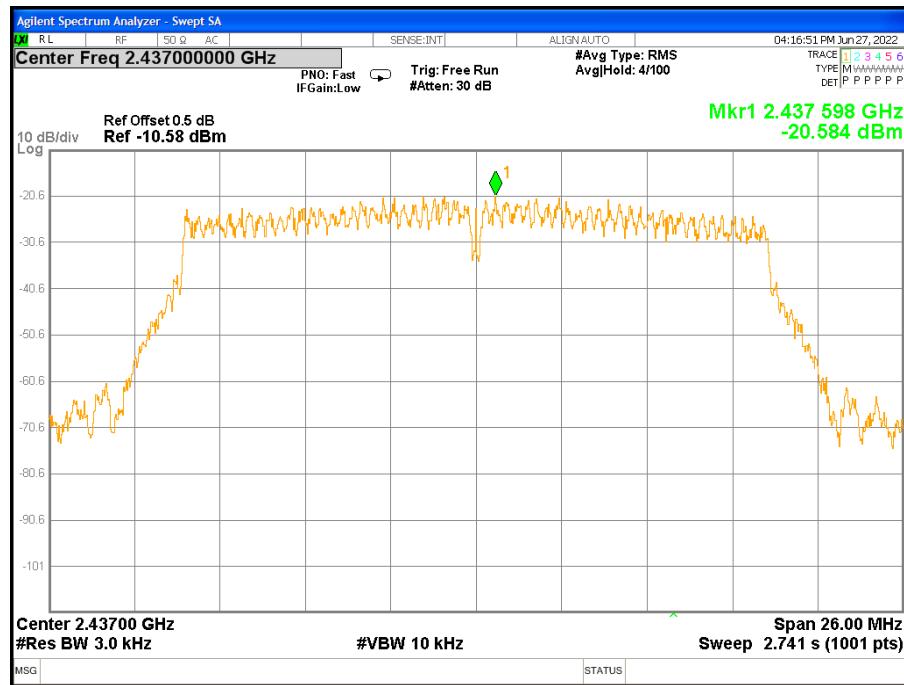
Temperature:	25°C	Relative Humidity:	60%
Test Voltage:	DC 5V	Test Mode:	TX n Mode(20M) /CH01, CH06, CH11

Frequency	Power Density	Limit (dBm/3KHz)	Result
	(dBm/3kHz)		
2412 MHz	-20.575	≤8	PASS
2437 MHz	-20.584	≤8	PASS
2462 MHz	-20.785	≤8	PASS

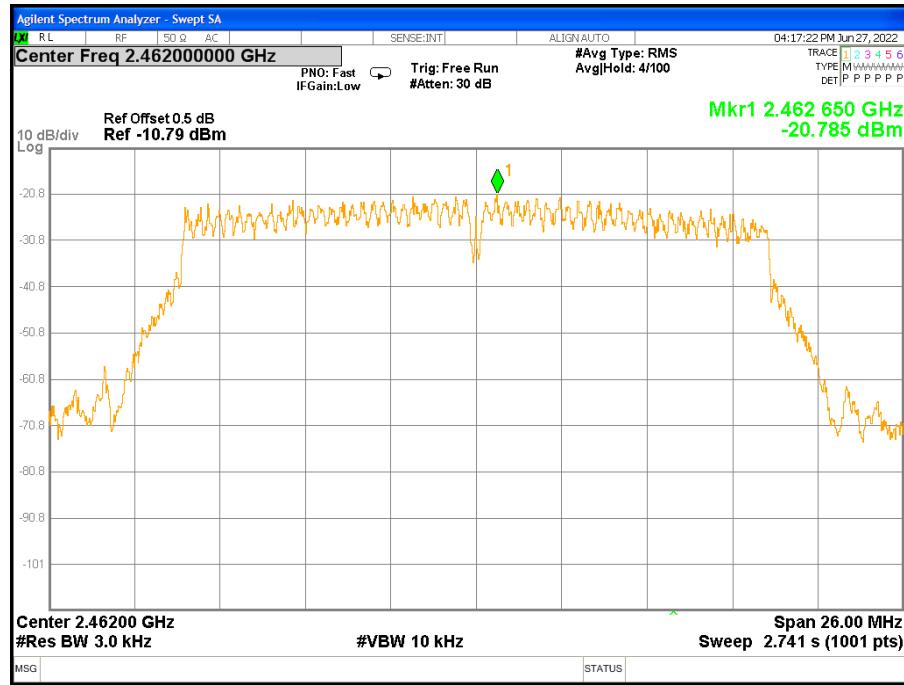
TX CH01



TX CH06



TX CH11



6. BANDWIDTH TEST

6.1 LIMIT

FCC Part15.247,Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

6.2 TEST PROCEDURE

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described above (i.e., RBW = 100 kHz, $\text{VBW} \geq 3\text{RBW}$, peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 dB.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

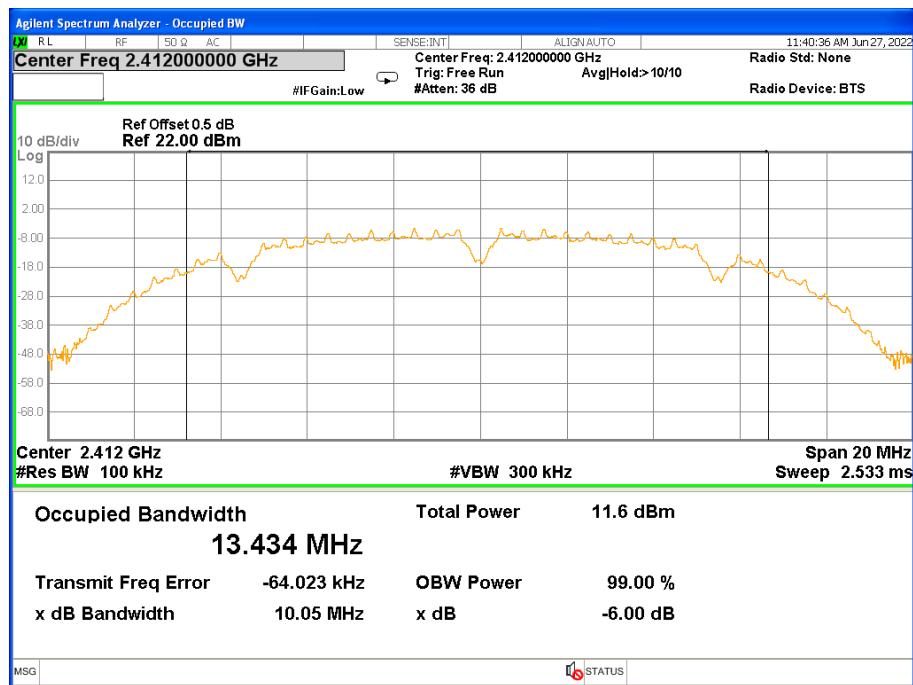
6.6 TEST RESULTS

Temperature:	25°C	Relative Humidity:	60%
Test Voltage:	DC 5V	Test Mode:	TX b Mode /CH01, CH06, CH11

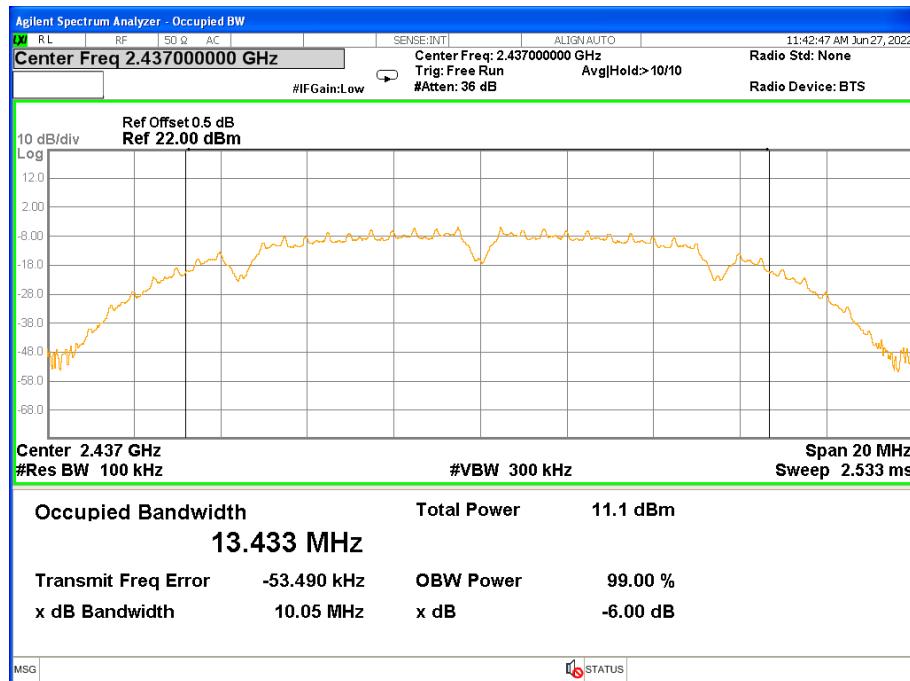
Remark: PEAK DETECTOR IS USED

Frequency	6dB Bandwidth	Limit	Result
	(MHz)	(KHz)	
2412 MHz	10.050	≥500KHz	PASS
2437 MHz	10.050	≥500KHz	PASS
2462 MHz	10.050	≥500KHz	PASS

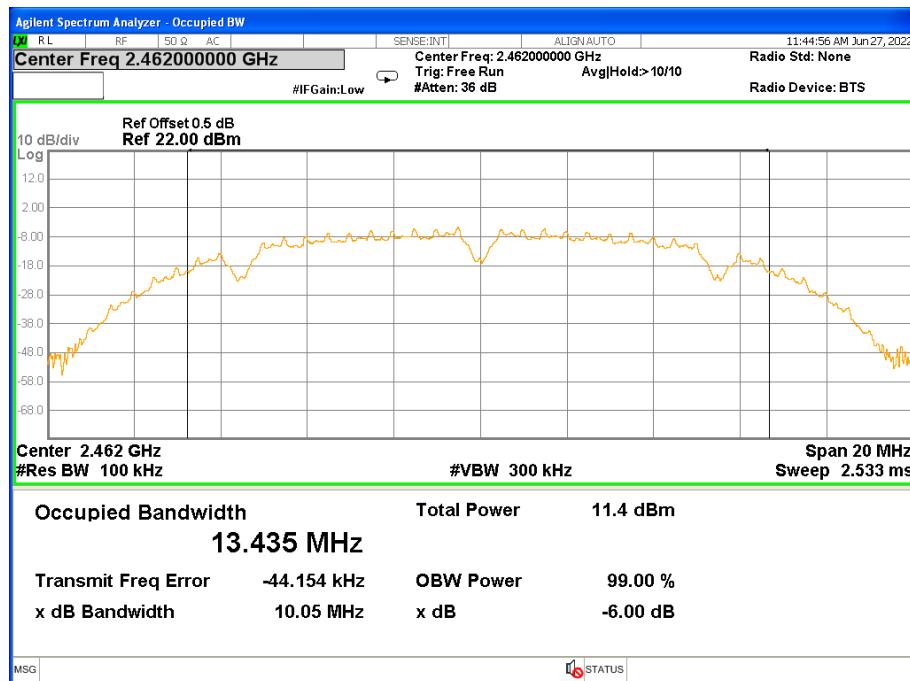
TX CH 01



TX CH 06



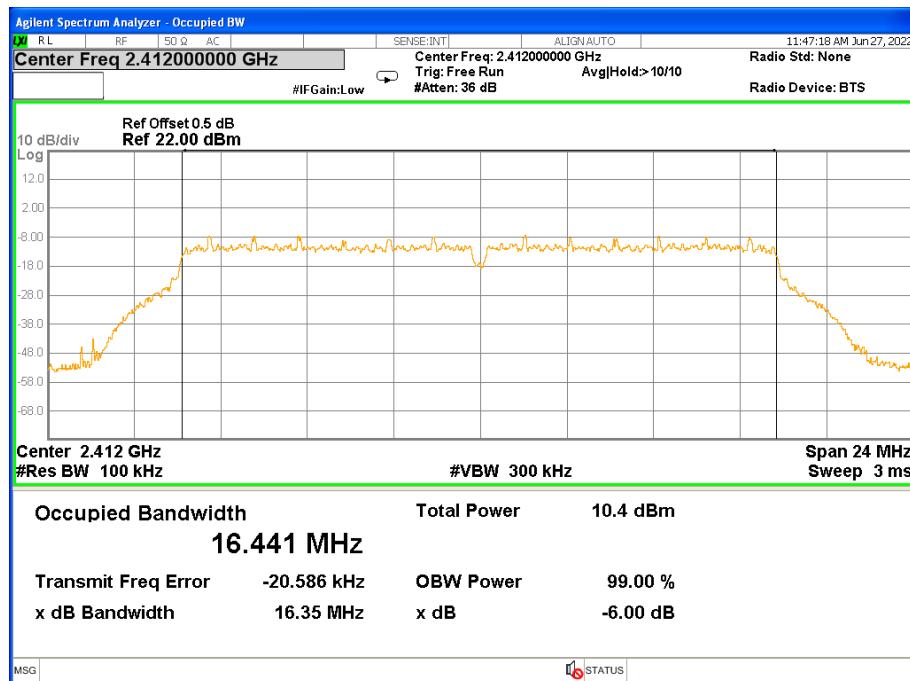
TX CH 11



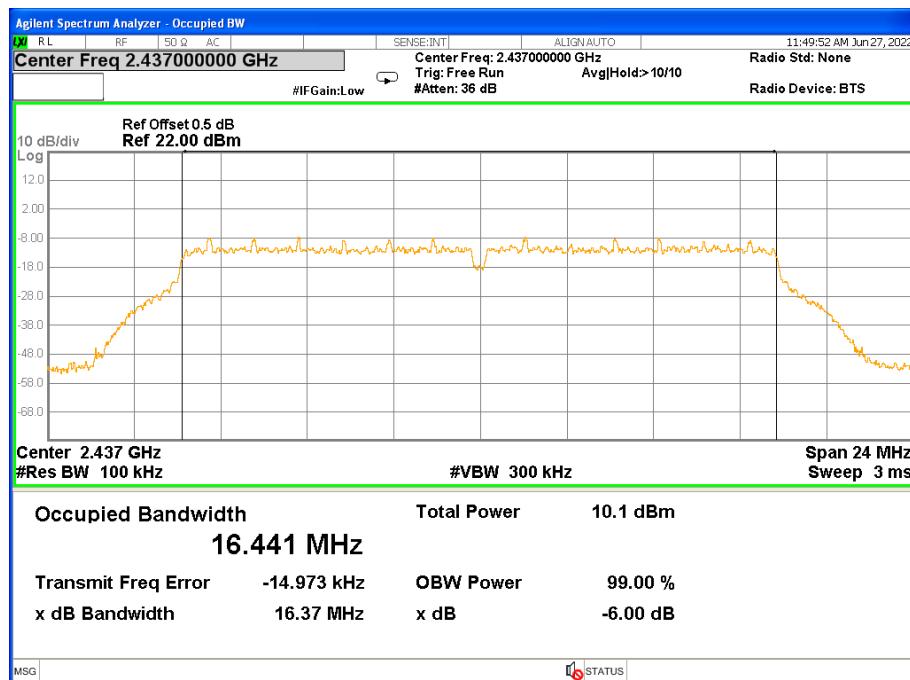
Temperature:	25°C	Relative Humidity:	60%
Test Voltage:	DC 5V	Test Mode:	TX g Mode /CH01, CH06, CH11

Frequency	6dB Bandwidth	Limit	Result
	(MHz)	(KHz)	
2412 MHz	16.35	≥500KHz	PASS
2437 MHz	16.37	≥500KHz	PASS
2462 MHz	16.37	≥500KHz	PASS

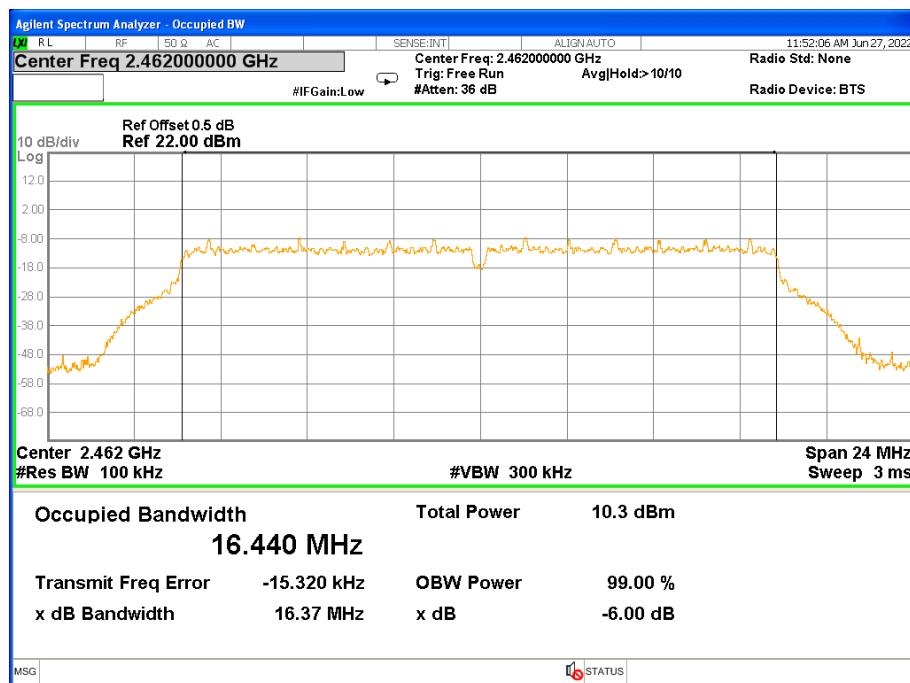
TX CH 01



TX CH 06



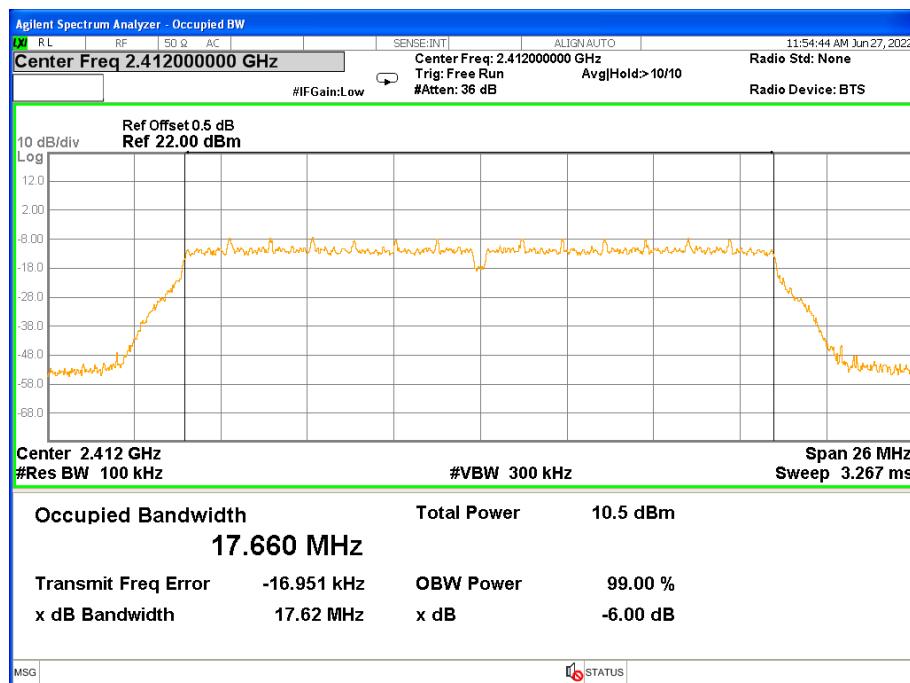
TX CH 11



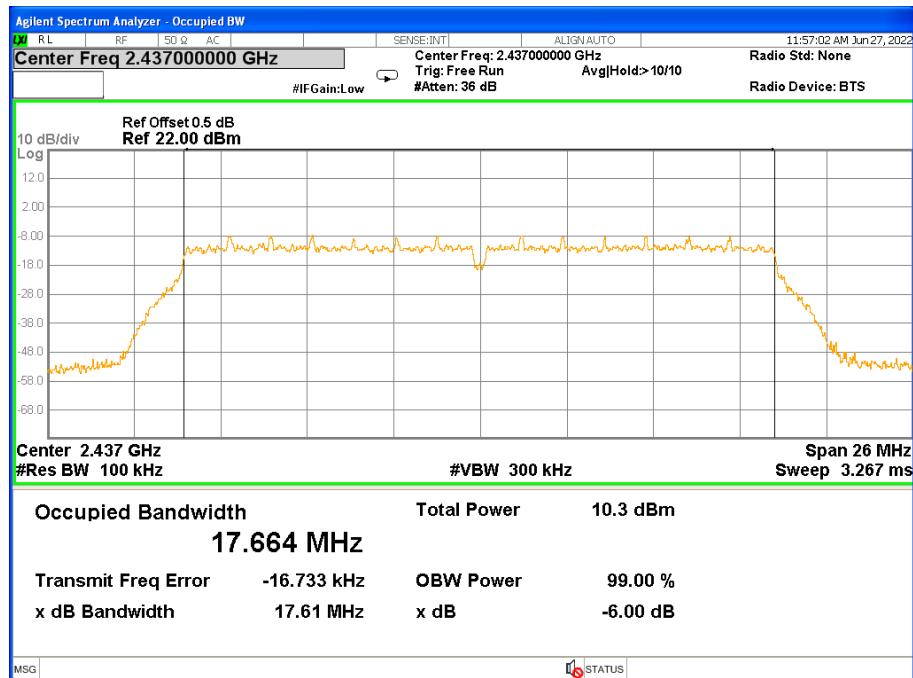
Temperature:	25°C	Relative Humidity:	60%
Test Voltage:	DC 5V	Test Mode:	TX n Mode(20M) /CH01, CH06, CH11

Frequency	6dB Bandwidth	Limit	Result
	(MHz)	(KHz)	
2412 MHz	17.62	≥500KHz	PASS
2437 MHz	17.67	≥500KHz	PASS
2462 MHz	17.69	≥500KHz	PASS

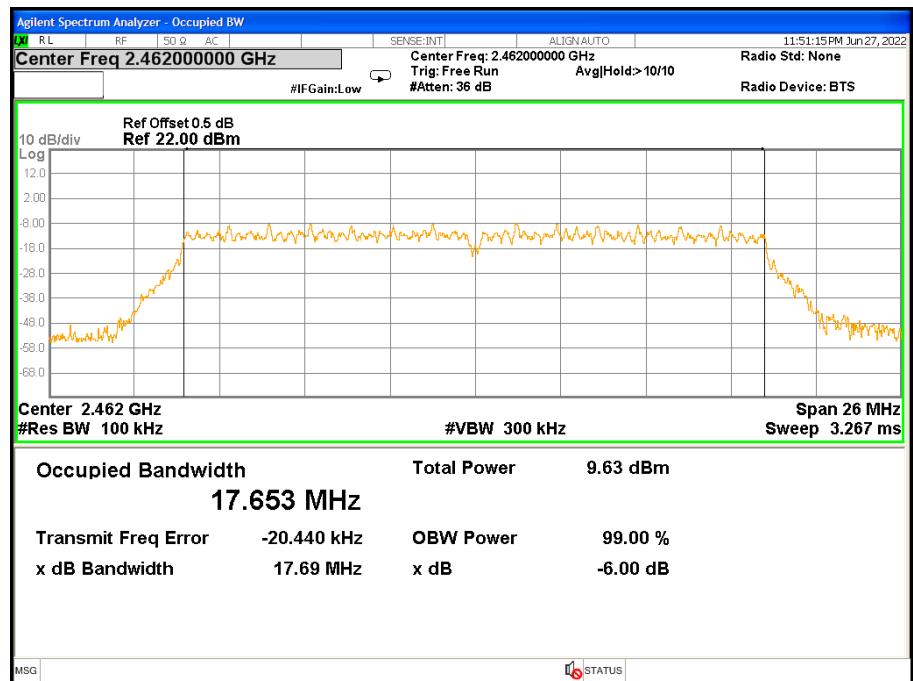
TX CH 01



TX CH 06



TX CH 11



7. PEAK OUTPUT POWER TEST

7.1 LIMIT

FCC Part15.247,Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Output Power	1 watt or 30dBm	2400-2483.5	PASS

7.2 TEST PROCEDURE

One of the following procedures may be used to determine the maximum peak conducted output power of a DTS EUT.

$RBW \geq DTS$ bandwidth

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

- a) Set the $RBW \geq DTS$ bandwidth.
- b) Set $VBW \geq [3 \times RBW]$.
- c) Set span $\geq [3 \times RBW]$.
- d) Sweep time = auto couple.
- e) Detector = peak.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use peak marker function to determine the peak amplitude level.

Integrated band power method:

The following procedure can be used when the maximum available RBW of the instrument is less than the

DTS bandwidth:

- a) Set the $RBW = 1$ MHz.
- b) Set the $VBW \geq [3 \times RBW]$.
- c) Set the span $\geq [1.5 \times DTS$ bandwidth].
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select the peak detector). If the instrument does not have a band power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS channel bandwidth.

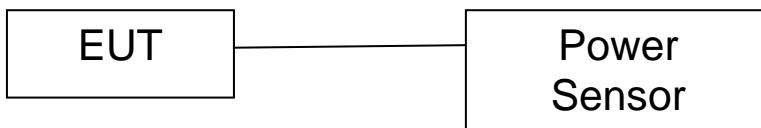
PKPM1 Peak power meter method:

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

7.6 TEST RESULTS

Temperature:	25°C	Relative Humidity:	60%
Test Voltage:	DC 5V		

Mode	Test Channel	Frequency	Peak Conducted Output Power	LIMIT
		(MHz)	(dBm)	(dBm)
TX 802.11b	CH01	2412	8.11	30
	CH06	2437	7.84	30
	CH11	2462	7.83	30
TX 802.11g	CH01	2412	7.37	30
	CH06	2437	7.14	30
	CH11	2462	7.39	30
TX 802.11n20	CH01	2412	7.12	30
	CH06	2437	6.69	30
	CH11	2462	6.81	30

8. ANTENNA REQUIREMENT

8.1 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.

8.2 EUT ANTENNA

The EUT antenna is PIFA Antenna. It comply with the standard requirement.

*****END OF THE REPORT*****