FCC TEST REPORT

Report No: STS2008023W02

Issued for

Godox Photo Equipment Co.,Ltd.

1st to 4th Floor,Building 2/1st to 4th Floor,Building 4 ,Yaochuan Industrial Zone,Tangwei Community,Fuhai Street,Baoan District,Shenzhen 518103,China

Product Name:	Wireless module/GX-SEKONIC-A
Brand Name:	Godox
Model Name:	GX
Series Model:	N/A
FCC ID:	2ABYN-GX
IC	20034-GX
Test Standard:	FCC Part 15.249
	RSS 210 Issue 10

Shenzhen STS Test Services Co., Ltd.
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TEST RESULT CERTIFICATION

Applicant's Name ..... :	Godox Photo Equipment Co.,Ltd.
Address ..... :	1st to 4th Floor,Building 2/1st to 4th Floor,Building 4 ,Yaochuan Industrial Zone,Tangwei Community,Fuhai Street,Baoan District,Shenzhen 518103,China
Manufacture's Name ..... :	Godox Photo Equipment Co.,Ltd.
Address ..... :	1st to 4th Floor,Building 2/1st to 4th Floor,Building 4 ,Yaochuan Industrial Zone,Tangwei Community,Fuhai Street,Baoan District,Shenzhen 518103,China

Product Description

Product Name ..... :	Wireless module/GX-SEKONIC-A
Brand Name ..... :	Godox
Model Name ..... :	GX
Series Model ..... :	N/A
Test Standards..... :	FCC Part15.249
	RSS 210 Issue 10
Test Procedure ..... :	ANSI C63.10-2013

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC/IC requirements. And it is applicable only to the tested sample identified in the report.
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Date of Test ..... :	
Date of receipt of test item ..... :	07 Aug. 2020
Date of performance of tests .. :	07 Aug. 2020 ~ 01 Sep. 2020
Date of Issue ..... :	01 Sep. 2020
Test Result..... :	**Pass**

Testing Engineer : Chris chen
(Chris Chen)

Technical Manager : Sean She
(Sean she)

Authorized Signatory : Vita Li
(Vita Li)

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	01 Sep. 2020	STS2008023W02	ALL	Initial Issue

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part 15.249 , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207 RSS-Gen Issue 5	Conducted Emission	N/A	
15.203 RSS-Gen Issue 5	Antenna Requirement	Pass	
15.249 RSS 210 Issue 10 (B.10)	Radiated Spurious Emission	Pass	
15.205 RSS-Gen Issue 5	Radiated Band Edge Emission	Pass	
15.215(c) RSS-Gen	20dB&99% Bandwidth	Pass	
RSS-Gen Issue 5	Frequency Stability	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

SHENZHEN STS TEST SERVICES CO., LTD
Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China
FCC test Firm Registration Number: 625569
IC test Firm Registration Number: 12108A
A2LA Certificate No.: 4338.01

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	RF output power, conducted	±0.68dB
2	Unwanted Emissions, conducted	±2.988dB
3	All emissions, radiated 30-1GHz	±6.7dB
4	All emissions, radiated 1G-6GHz	±5.5dB
5	All emissions, radiated>6G	±5.8dB
6	Conducted Emission (9KHz-150KHz)	±3.37dB
7	Conducted Emission (150KHz-30MHz)	±3.83dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Wireless module/GX-SEKONIC-A
Trade Name	Godox
Model Name	GX
Series Model	N/A
Model Difference	N/A
Product Description	The EUT is a Wireless module/GX-SEKONIC-A Operation Frequency: 2412.999634 ~ 2464.499756MHz Modulation Type: MSK Antenna Designation: PCB Antenna Gain(Peak): 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.
Power Rating	Rated Voltage: 3.3V Limit voltage range: 3.3V±5% (3.135V~3.465V)
Hardware version number	20200210C01
Software version number	V0.78

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)
1	2412.999634	13	2432.999908	25	2452.999786
2	2414.499664	14	2434.499939	26	2454.499817
3	2415.999695	15	2435.999969	27	2455.999847
4	2418.000000	16	2437.999878	28	2457.999756
5	2419.499634	17	2439.499908	29	2459.499786
6	2420.999664	18	2440.999939	30	2460.999817
7	2422.999969	19	2442.999847	31	2462.999725
8	2424.500000	20	2444.499878	32	2464.499756
9	2425.999634	21	2445.999908	33	--
10	2427.999939	22	2,447.999817	34	--
11	2429.499969	23	2449.499847	35	--
12	2431.000000	24	2450.999878	36	--

3. Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	Godox	GX	PCB	N/A	0dBi	Antenna

2.2 DESCRIPTION OF THE TEST MODES

For conducted test items and radiated spurious emissions
Each of these EUT operation mode(s) or test configuration mode(s) mentioned below was evaluated respectively.

Pretest Mode	Description	Data/Modulation
Mode 1	TX Low channel	MSK
Mode 2	TX Mid channel	MSK
Mode 3	TX High channel	MSK

Note:
(1) All above mode have been measurement, only worst data was reported.

2.3 TEST SOFTWARE AND POWER LEVEL

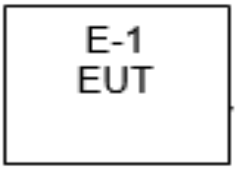
During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

RF Function	Type	Mode Or Modulation type	Ant Gain(dBi)	Power Class	Software For Testing
Other SRD	2.4G	MSK	0	Default	No software is required, the EUT has signal transmission when it is powered on

2.4 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 power parameters.

Radiated Spurious Emission Test



2.5 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.	Length	Note
N/A	N/A	N/A	N/A	N/A	N/A

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
N/A	N/A	N/A	N/A	N/A	N/A

Note:

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

2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2019.10.09	2020.10.08
Signal Analyzer	Agilent	N9020A	MY51110105	2020.03.05	2021.03.04
Active loop Antenna	ZHINAN	ZN30900C	16035	2018.03.11	2021.03.10
Bilog Antenna	TESEQ	CBL6111D	34678	2017.11.02	2020.11.01
Horn Antenna	SCHWARZBECK	BBHA 9120D(1201)	9120D-1343	2018.10.19	2021.10.18
SHF-EHF Horn Antenna (18G-40GHz)	A-INFO	LB-180400-KF	J211020657	2018.03.11	2021.03.10
Pre-Amplifier (0.1M-3GHz)	EM	EM330	060665	2019.10.09	2020.10.08
Pre-Amplifier (1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2019.10.12	2020.10.11
Pre-Amplifier (18G-40GHz)	SKET	LNPA-1840-50	SK2018101801	2019.10.12	2020.10.11
Temperature & Humidity	HH660	Mieo	N/A	2019.10.17	2020.10.16
Turn table	EM	SC100_1	60531	N/A	N/A
Antenna mast	EM	SC100	N/A	N/A	N/A
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 RE)			

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2019.10.09	2020.10.08
LISN	R&S	ENV216	101242	2019.10.09	2020.10.08
LISN	EMCO	3810/2NM	23625	2019.10.09	2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2019.10.17	2020.10.16
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 CE)			

RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
USB RF power sensor	DARE	RPR3006W	15I00041SNO03	2019.10.09	2020.10.08
Signal Analyzer	Agilent	N9020A	MY49100060	2019.10.09	2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2019.10.17	2020.10.16
Test SW	FARAD	LZ-RF /LzRf-3A3			

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 15.249 limit in the table below has to be followed.

FREQUENCY (MHz)	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.

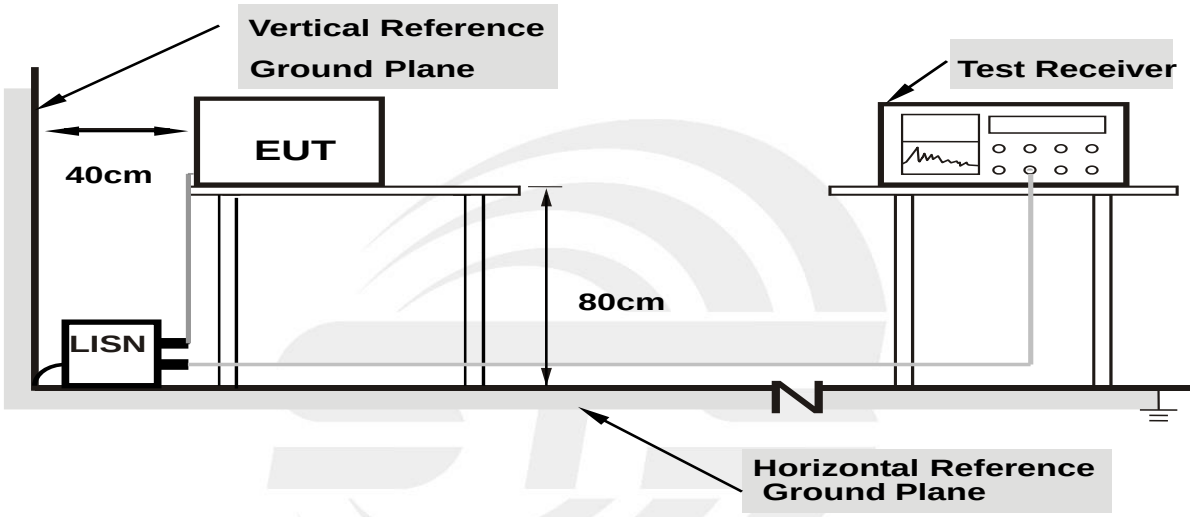
The following table is the setting of the receiver

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 TEST RESULT

Temperature:	25.7(C)	Relative Humidity:	53%RH
Test Voltage:	N/A	Phase:	L/N
Test Mode:	N/A		

Note: EUT is only power by DC Power, So it is not applicable for this test.

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on Part 15.249 and the Part 15.209(a) limit in the table below has to be followed.

Standard FCC 15.209

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
960~1000	500	3
Above 1000	Other:74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	3

Standard FCC 15.249

Frequency of Emission (MHz)	**Field Strength of fundamental (millivolts /meter)**	**Field Strength of Harmonics (microvolts/meter)**
900~928	50	500
2400~2483.5	50	500
5725~5875	50	500
24000~242500	250	2500

Notes:

(1) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

In case the emission fall within the restricted band specified on 15.205 RSS-Gen Issue 5 limit in the followed

In measuring unwanted emissions, the spectrum shall be investigated from 30 MHz or the lowest radio frequency signal generated in the equipment, whichever is lower, without going below 9 kHz, up to at least the frequency given below:
(a) If the equipment operates below 10 GHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
(b) If the equipment operates at or above 10 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
Particular attention should be paid to harmonics and sub-harmonics of the carrier frequency, as well as to those frequencies removed from the carrier by multiples of the oscillator frequency. Radiation at the frequencies of multiplier stages should also be checked.
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value need not be reported.
When limits are expressed in absolute terms, compliance with the emission limits below 1000 MHz shall be demonstrated using a CISPR quasi-peak detector and the related measurement bandwidth. As an alternative to CISPR quasi-peak measurement, compliance with the emission limits can be demonstrated using measuring equipment employing a peak detector function properly adjusted for factors such as pulse desensitization as required, with an equal or greater measurement bandwidth relative to the applicable CISPR quasi-peak bandwidth.
Above 1000 MHz, compliance with the emission limits shall be demonstrated using an average detector with a minimum resolution bandwidth of 1 MHz.

In case the emission fall within the restricted band specified on RSS 210 Issue 10 (B.10) limit in the followed
1. The field strength of fundamental and harmonic emissions, measured at 3 m, shall not exceed 50 mV/m and 0.5 mV/m respectively.
The field strength limits shall be measured using an average detector, except for the fundamental emission in the frequency band 902-928 MHz, which is based on measurements using an International Special Committee on Radio Interference (CISPR) quasi-peak detector.
2. Emissions radiated outside of the specified frequency bands, except for harmonic emissions, shall be attenuated by at least 50 dB below the level of the fundamental emissions or to the general field strength limits listed in RSS-Gen, whichever is less stringent.

NOTE:
(1)The limit for radiated test was performed according to RSS 210 Issue 10
(2)Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RESTRICTED FREQUENCY BANDS

FCC:

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			

IC:

FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (GHz)
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 – 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 – 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	

16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 – 8500	
108 – 138		

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

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

3.2.2 TEST PROCEDURE

a. The measuring distance of 3m shall be used for measurements. The EUT was placed on the top of arotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Below 1GHz)

b. The measuring distance of 3m shall used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Above 1GHz)

c. The height of the test antenna shall vary between 1m to 4m.Both horizontal and vertical polarization Of the antenna are set to make the measurement.

d. The initial step in collecting radiated emission data is a receive peak detector mode. Pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

e. All readings are peak unless otherwise stated QP in column of Note. Peak denoted that the Peak reading compliance with the QP limits and then QP Mode measurement didn't perform (Below 1GHz)

f. All readings are Peak mode value unless otherwise stated AVG in column of Note. If the Peak mode measured value compliance with the Peak limits and lower than AVG Limits, the EUT shall be deemed to meet Peak & AVG limits and then only Peak mode was measured, but AVG mode didn't perform.(Above 1GHz)

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

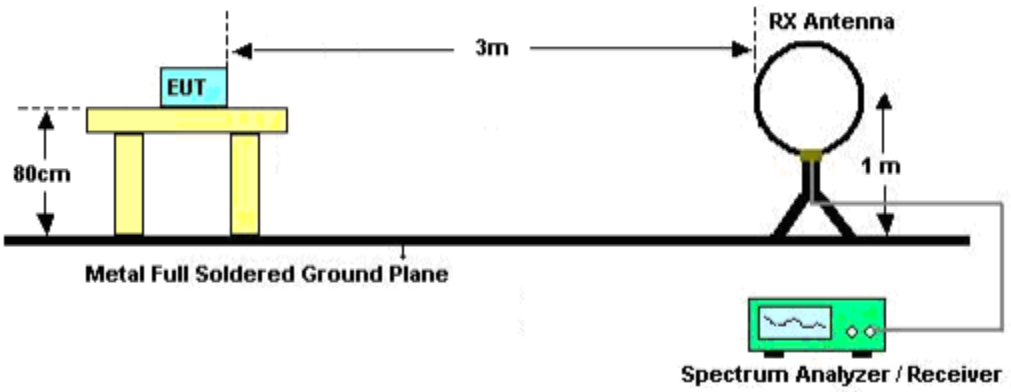
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

3.2.3 DEVIATION FROM TEST STANDARD

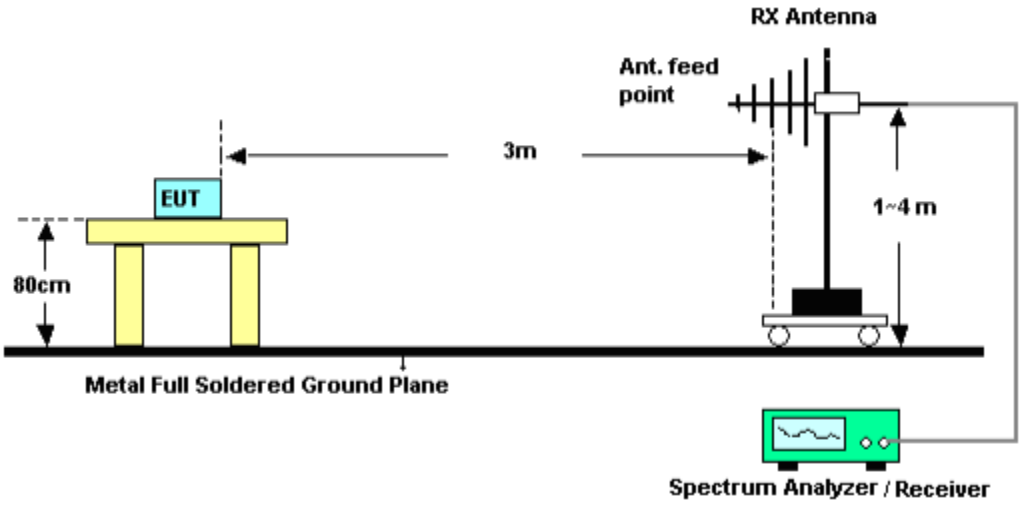
No deviation

3.2.4 TEST SETUP

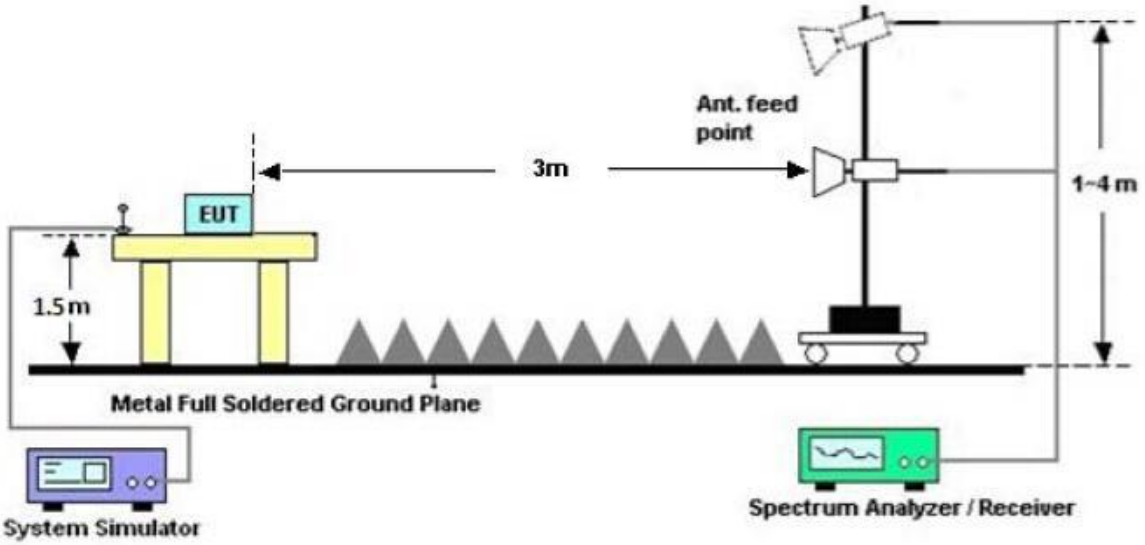
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



3.2.5 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:
Margin=PL-PK L or AL- AV L; Margin only shown the worst case.
Where
PR = Peak Reading
AR = Average Reading
PL = Peak Level
AL = Average Level
AF = Antenna Factor
PK L = Peak Limit
AV L = AV Limit
For example

Frequency	PR	AR	AF	PL	AL	PK L	AV L	Margin
(MHz)	(dBμV/m)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV/m)	(dBμV/m)	(dBμV/m)	(dB)
2178	40.23	30.31	9.83	50.06	40.14	74.00	54.00	-13.86

3.2.6 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.

Below 30 MHz

Temperature:	23.3(C)	Relative Humidity:	62%RH
Test Voltage:	DC 3.3V	Polarization:	---
Test Mode:	TX Mode		

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

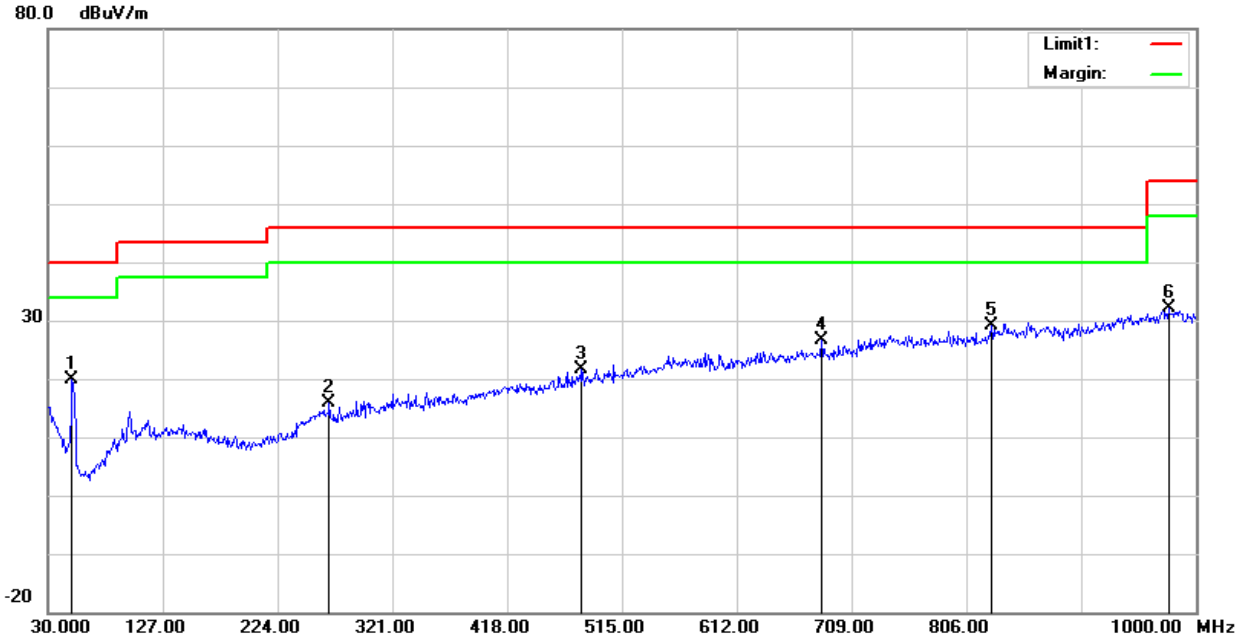
Limit line = specific limits(dBuv) + distance extrapolation factor.

Between 30MHz – 1000 MHz Radiation Spurious

Temperature:	23.3(C)	Relative Humidity:	62%RH
Test Voltage:	DC 3.3V	Phase:	Horizontal
Test Mode:	Mode 1/2/3(Mode 1 worst mode)		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	50.3700	43.38	-23.42	19.96	40.00	-20.04	QP
2	267.6500	30.98	-15.06	15.92	46.00	-30.08	QP
3	481.0500	30.16	-8.61	21.55	46.00	-24.45	QP
4	683.7800	30.84	-4.31	26.53	46.00	-19.47	QP
5	827.3400	30.10	-1.08	29.02	46.00	-16.98	QP
6	976.7200	29.73	2.45	32.18	54.00	-21.82	QP

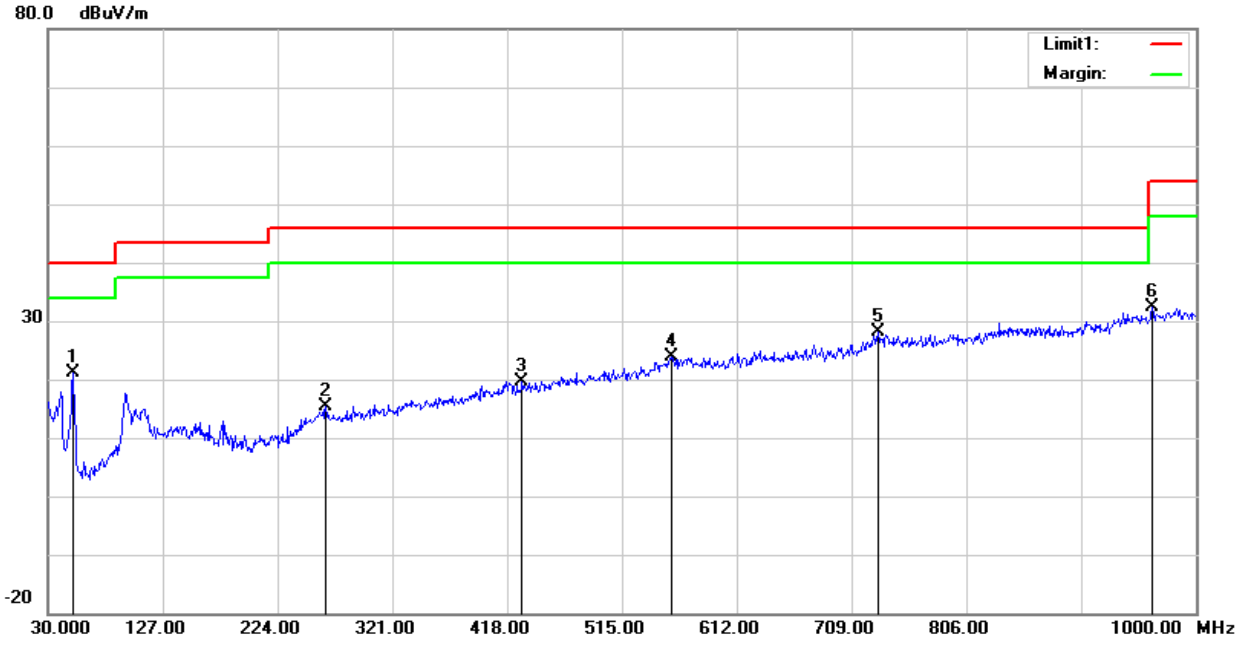
Remark:
1. Margin = Result (Result =Reading + Factor)–Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain



Temperature:	23.3(C)	Relative Humidity:	62%RH
Test Voltage:	DC 3.3V	Phase:	Vertical
Test Mode:	Mode 1/2/3(Mode 1 worst mode)		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	51.3400	44.90	-23.82	21.08	40.00	-18.92	QP
2	264.7400	30.09	-14.75	15.34	46.00	-30.66	QP
3	430.6100	29.74	-10.14	19.60	46.00	-26.40	QP
4	556.7100	29.49	-5.58	23.91	46.00	-22.09	QP
5	731.3100	30.64	-2.42	28.22	46.00	-17.78	QP
6	963.1400	30.55	1.84	32.39	54.00	-21.61	QP

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



Above 1G Radiation Spurious

MSK--Low

PK

Frequency	Meter Reading	Detector	Amplifier	Loss	Antenna Factor	Orrected Factor	Corrected Amplitude	FCC Part 15.249/15.209/205		RX Antenna
								Limit	Margin	Polar
(MHz)	(dBμV/m)	(PK/QP/AV)	（dB）	（dB）	（dB/m）	（dB）	(dBμV/m)	(dBμV/m)	(dB)	(H/V)
4826.18	71.24	PK	50.33	8.84	31.22	-10.27	60.97	74	-13.03	H
4826.18	70.44	PK	50.33	8.84	31.22	-10.27	60.17	74	-13.83	V
7238.88	68.13	PK	55.48	9.31	34.05	-12.12	56.01	74	-17.99	H
7238.88	66.73	PK	55.48	9.31	34.05	-12.12	54.61	74	-19.39	V
9652.12	71.32	PK	59.13	9.89	36.99	-12.25	59.07	74	-14.93	H
9652.12	70.50	PK	59.13	9.89	36.99	-12.25	58.25	74	-15.75	V

AV

Frequency	PK Reading	Duty cycle factor	AV Reading	Orrected Factor	Corrected Amplitude	FCC Part 15.249/15.209/205		RX Antenna
						Limit	Margin	Polar
(MHz)	(dBμV/m)	(dB)	(dBμV/m)	（dB）	(dBμV/m)	(dBμV/m)	(dB)	(H/V)
4826.18	71.24	8.98	62.26	-10.27	51.99	54.00	-2.01	H
4826.18	70.44	8.98	61.46	-10.27	51.19	54.00	-2.81	V
7238.88	68.13	8.98	59.15	-12.12	47.03	54.00	-6.97	H
7238.88	66.73	8.98	57.75	-12.12	45.63	54.00	-8.37	V
9652.12	71.32	8.98	62.34	-12.25	50.09	54.00	-3.91	H
9652.12	70.50	8.98	61.52	-12.25	49.27	54.00	-4.73	V

AV = Peak +20Log10(duty cycle factor) =PK-8.98

MSK--Mid

PK

Frequency	Meter Reading	Detector	Amplifier	Loss	Antenna Factor	Orrected Factor	Corrected Amplitude	FCC Part 15.249/15.209/205		RX Antenna
								Limit	Margin	Polar
(MHz)	(dBμV/m)	(PK/QP/AV)	（dB）	（dB）	（dB/m）	（dB）	(dBμV/m)	(dBμV/m)	(dB)	(H/V)
4876.00	71.29	PK	50.33	8.84	31.22	-10.27	61.02	74	-12.98	H
4876.00	70.16	PK	50.33	8.84	31.22	-10.27	59.89	74	-14.11	V
7314.11	68.00	PK	55.48	9.31	34.05	-12.12	55.88	74	-18.12	H
7314.11	66.55	PK	55.48	9.31	34.05	-12.12	54.43	74	-19.57	V
9752.14	71.15	PK	59.13	9.89	36.99	-12.25	58.90	74	-15.10	H
9752.14	70.17	PK	59.13	9.89	36.99	-12.25	57.92	74	-16.08	V

AV

Frequency	PK Reading	Duty cycle factor	AV Reading	Orrected Factor	Corrected Amplitude	FCC Part 15.249/15.209/205		RX Antenna
						Limit	Margin	Polar
(MHz)	(dBμV/m)	(dB)	(dBμV/m)	（dB）	(dBμV/m)	(dBμV/m)	(dB)	(H/V)
4876.00	71.29	8.98	62.31	-10.27	52.04	54.00	-1.96	H
4876.00	70.16	8.98	61.18	-10.27	50.91	54.00	-3.09	V
7314.11	68.00	8.98	59.02	-12.12	46.90	54.00	-7.10	H
7314.11	66.55	8.98	57.57	-12.12	45.45	54.00	-8.55	V
9752.14	71.15	8.98	62.17	-12.25	49.92	54.00	-4.08	H
9752.14	70.17	8.98	61.19	-12.25	48.94	54.00	-5.06	V

AV = Peak +20Log10(duty cycle factor) =PK-8.98

MSK--High

PK

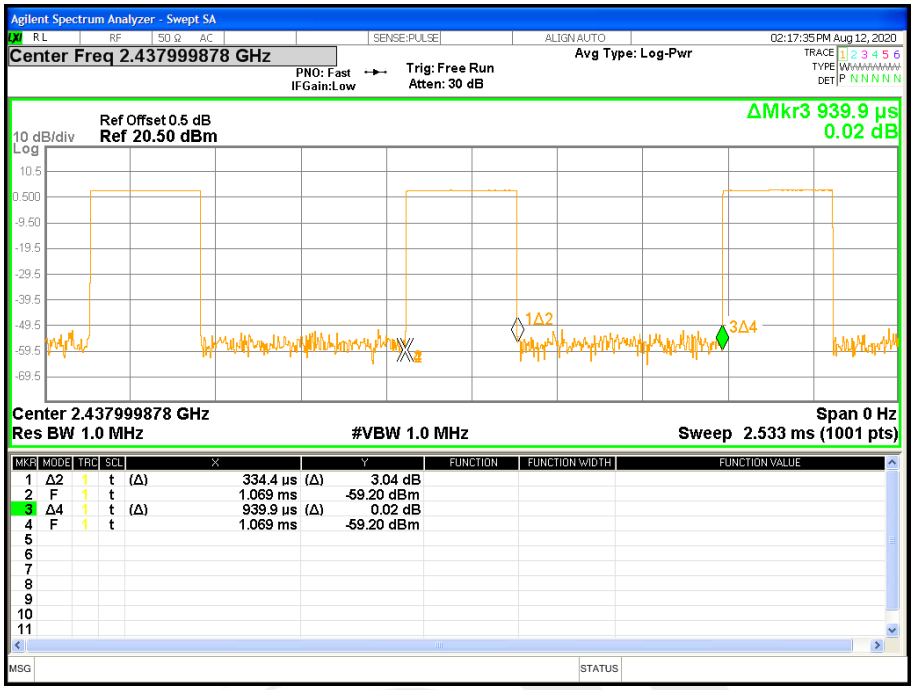
Frequency	Meter Reading	Detector	Amplifier	Loss	Antenna Factor	Orrected Factor	Corrected Amplitude	FCC Part 15.249/15.209/205		RX Antenna
								Limit	Margin	Polar
(MHz)	(dBμV/m)	(PK/QP/AV)	（dB）	（dB）	（dB/m）	（dB）	(dBμV/m)	(dBμV/m)	(dB)	(H/V)
4929.12	71.15	PK	50.33	8.84	31.22	-10.27	60.88	74	-13.12	H
4929.12	70.24	PK	50.33	8.84	31.22	-10.27	59.97	74	-14.03	V
7393.46	68.27	PK	55.48	9.31	34.05	-12.12	56.15	74	-17.85	H
7393.46	66.40	PK	55.48	9.31	34.05	-12.12	54.28	74	-19.72	V
9858.24	71.52	PK	59.13	9.89	36.99	-12.25	59.27	74	-14.73	H
9858.24	70.31	PK	59.13	9.89	36.99	-12.25	58.06	74	-15.94	V

AV

Frequency	PK Reading	Duty cycle factor	AV Reading	Orrected Factor	Corrected Amplitude	FCC Part 15.249/15.209/205		RX Antenna
						Limit	Margin	Polar
(MHz)	(dBμV/m)	(dB)	(dBμV/m)	（dB）	(dBμV/m)	(dBμV/m)	(dB)	(H/V)
4929.12	71.15	8.98	62.17	-10.27	51.90	54.00	-2.10	H
4929.12	70.24	8.98	61.26	-10.27	50.99	54.00	-3.01	V
7393.46	68.27	8.98	59.29	-12.12	47.17	54.00	-6.83	H
7393.46	66.40	8.98	57.42	-12.12	45.30	54.00	-8.70	V
9858.24	71.52	8.98	62.54	-12.25	50.29	54.00	-3.71	H
9858.24	70.31	8.98	61.33	-12.25	49.08	54.00	-4.92	V

AV = Peak +20Log10(duty cycle factor) =PK-8.98

Duty cycle



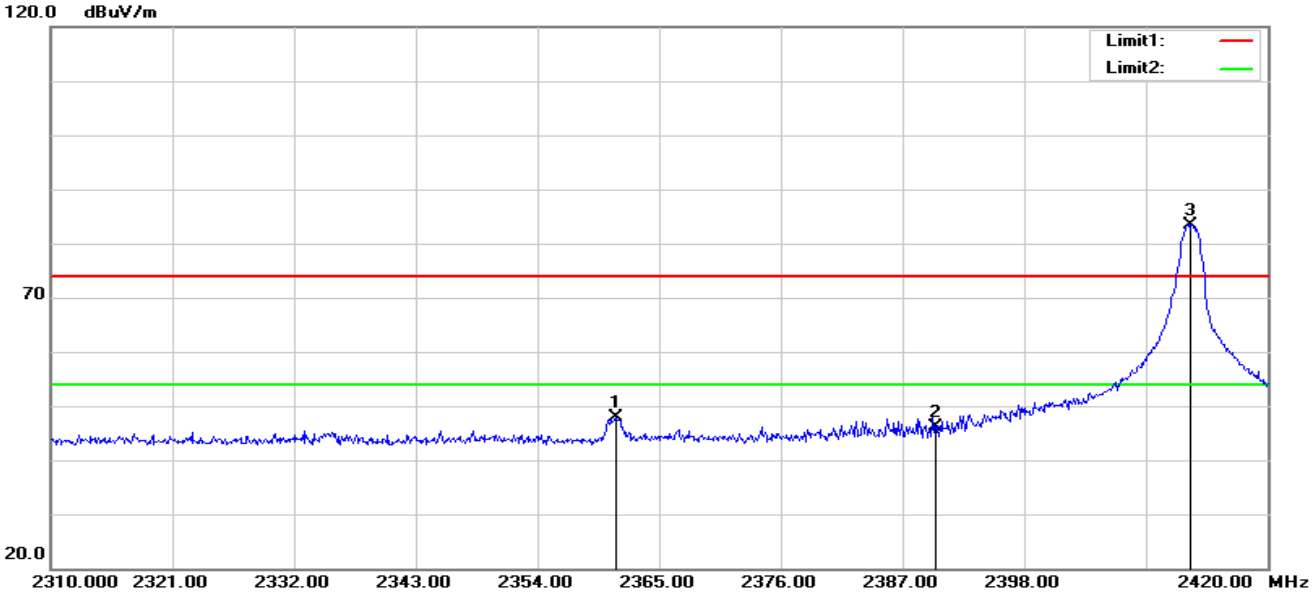
Ton	Tp	Duty factor(dB)
334.4	939.9	8.98

Note: Duty Factor=20*LOG10(1/(Ton/Tp))

(Radiation Band edge)

Low channel

Horizontal

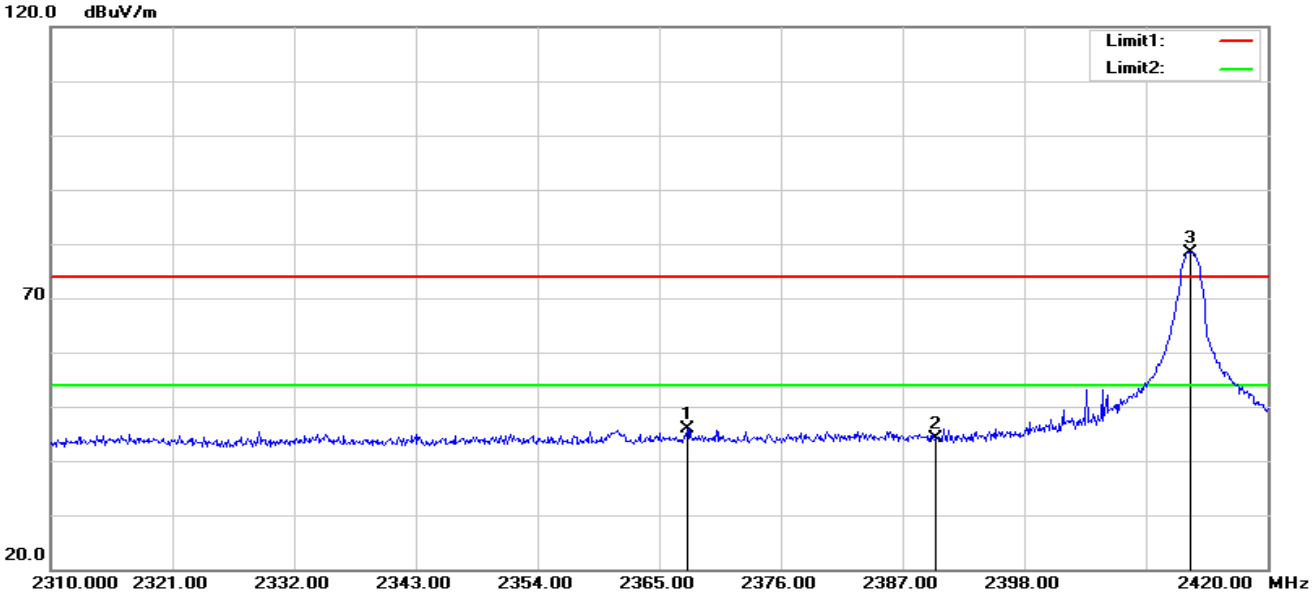


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2361.150	43.93	3.91	47.84	74.00	-26.16	peak
2	2390.000	41.84	4.34	46.18	74.00	-27.82	peak

Fundamental Frequency

No.	Frequency	Reading	Correct	Duty cycle	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
3	2413.000	78.89	4.49	-	83.38	114.00	-30.62	peak
4	2413.000	78.89	4.49	8.98	74.4	94.00	-19.6	AV

Vertical



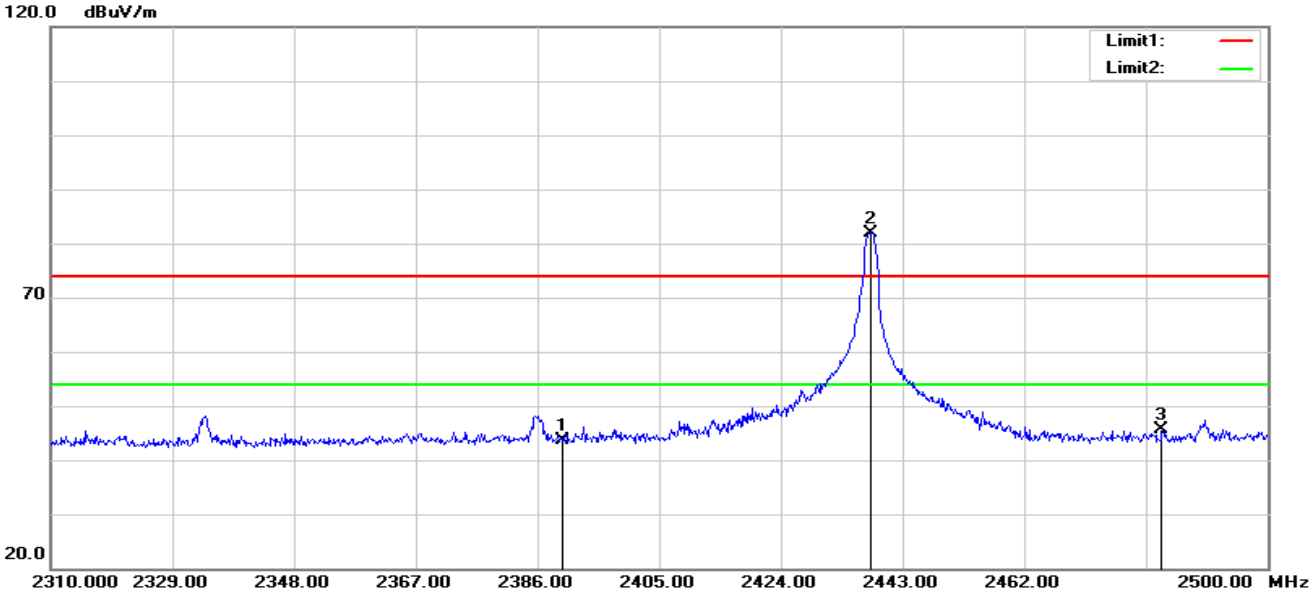
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2367.530	41.91	4.00	45.91	74.00	-28.09	peak
2	2390.000	39.82	4.34	44.16	74.00	-29.84	peak

Fundamental Frequency

No.	Frequency	Reading	Correct	Duty cycle	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
3	2413.000	73.91	4.49	-	78.4	114.00	-35.6	peak
4	2413.000	73.91	4.49	8.98	69.42	94.00	-24.58	AV

Mid channel

Horizontal

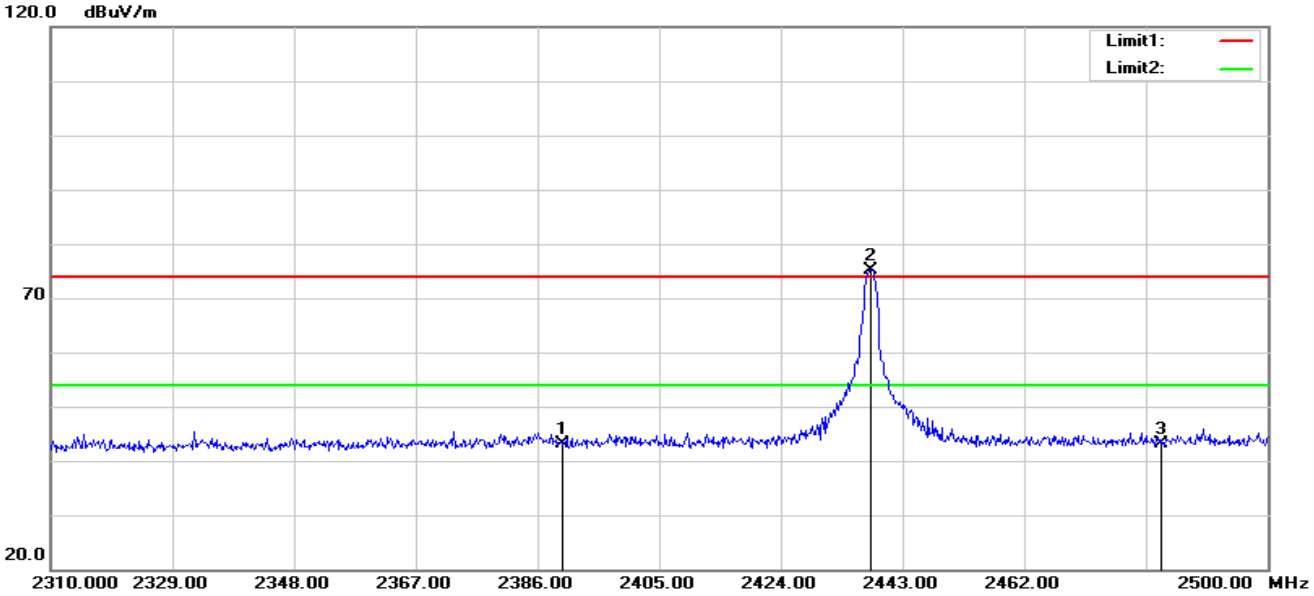


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2390.000	39.26	4.34	43.60	74.00	-30.40	peak
3	2483.500	40.97	4.60	45.57	74.00	-28.43	peak

Fundamental Frequency

No.	Frequency	Reading	Correct	Duty cycle	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
2	2438.000	77.45	4.51	-	81.96	114.00	-32.04	peak
4	2438.000	77.45	4.51	8.98	72.98	94.00	-21.02	AV

Vertical



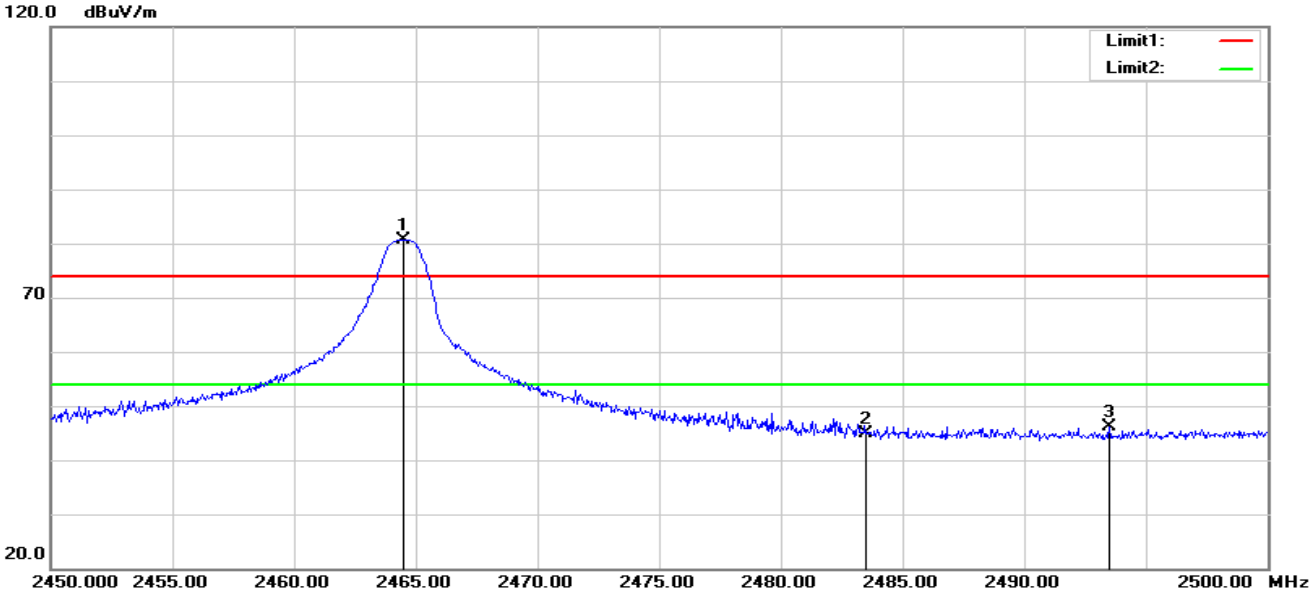
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	38.88	4.34	43.22	74.00	-30.78	peak
3	2483.500	38.50	4.60	43.10	74.00	-30.90	peak

Fundamental Frequency

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Duty cycle Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	2438.000	70.54	4.51	-	75.05	114.00	-38.95	peak
4	2438.000	70.54	4.51	8.98	66.07	94.00	-27.93	AV

High channel

Horizontal

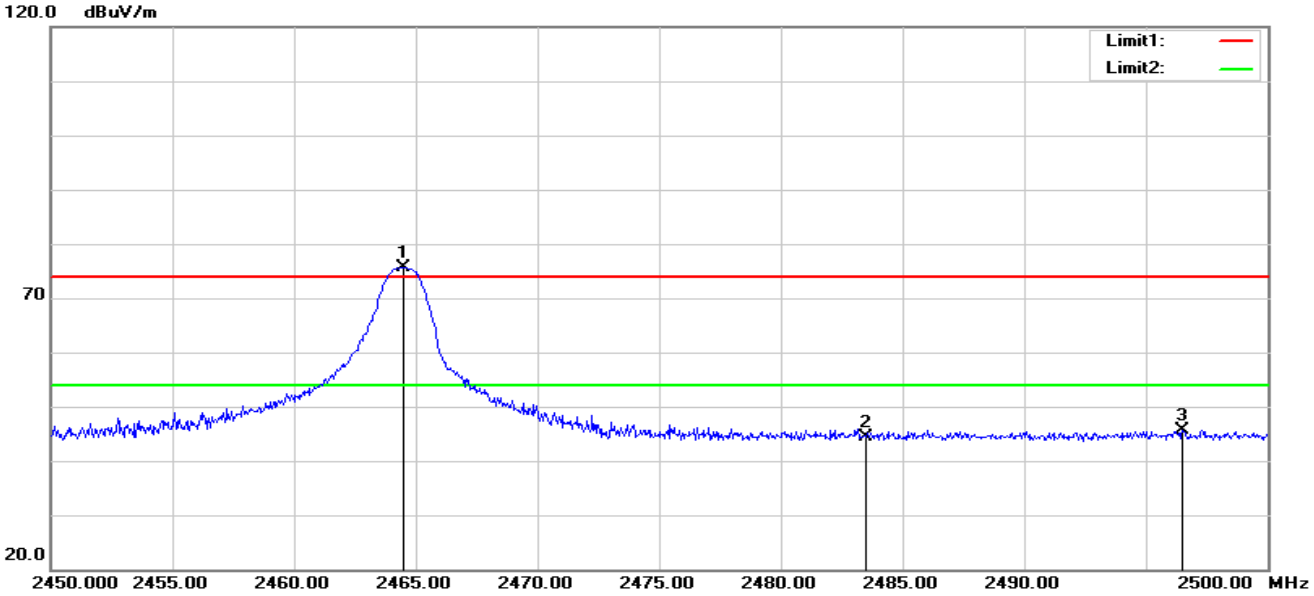


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
2	2483.500	40.25	4.60	44.85	74.00	-29.15	peak
3	2493.500	41.60	4.64	46.24	74.00	-27.76	peak

Fundamental Frequency

No.	Frequency	Reading	Correct	Duty cycle	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2464.500	76.04	4.56	-	80.6	114.00	-33.4	peak
4	2464.500	76.04	4.56	8.98	71.62	94.00	-22.38	AV

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	2483.500	39.74	4.60	44.34	74.00	-29.66	peak
3	2496.500	41.05	4.64	45.69	74.00	-28.31	peak

Fundamental Frequency

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Duty cycle Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2464.500	70.98	4.56	-	75.54	114.00	-28.46	peak
4	2464.500	70.98	4.56	8.98	66.56	94.00	-27.44	AV

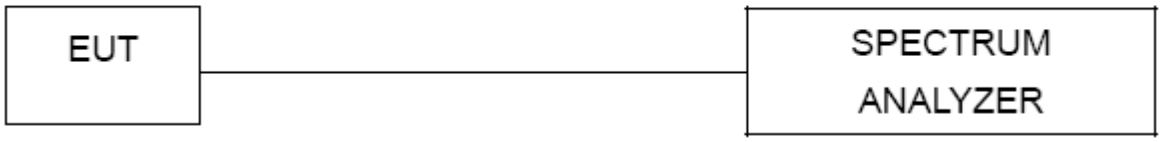
4. BANDWIDTH TEST

4.1 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

b. Spectrum Setting : RBW= 30KHz, VBW≧RBW, Sweep time = Auto.

4.2 TEST SETUP



4.3 EUT OPERATION CONDITIONS

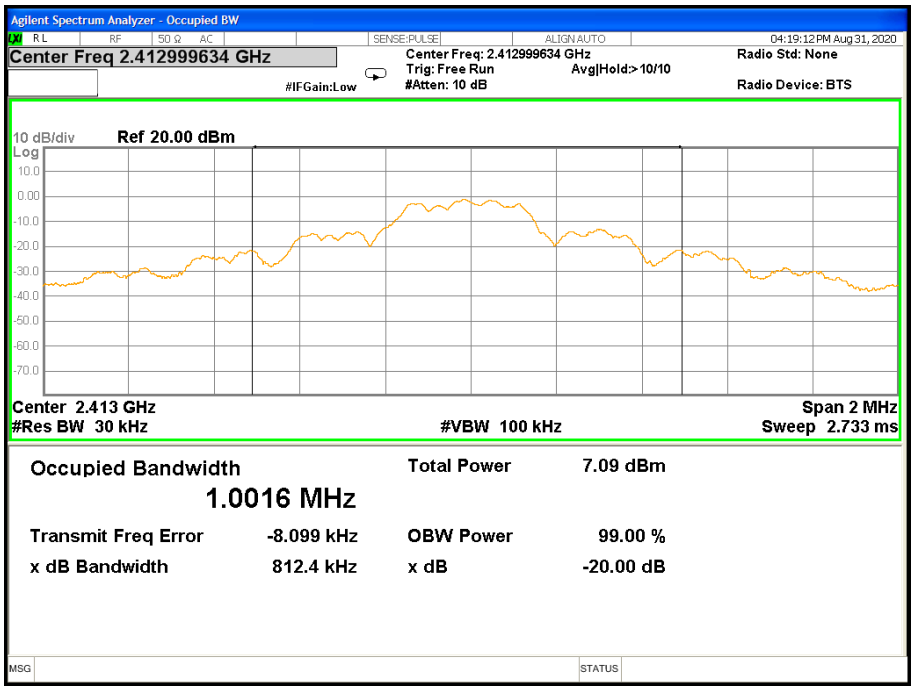
TX mode.

4.4 TEST RESULTS

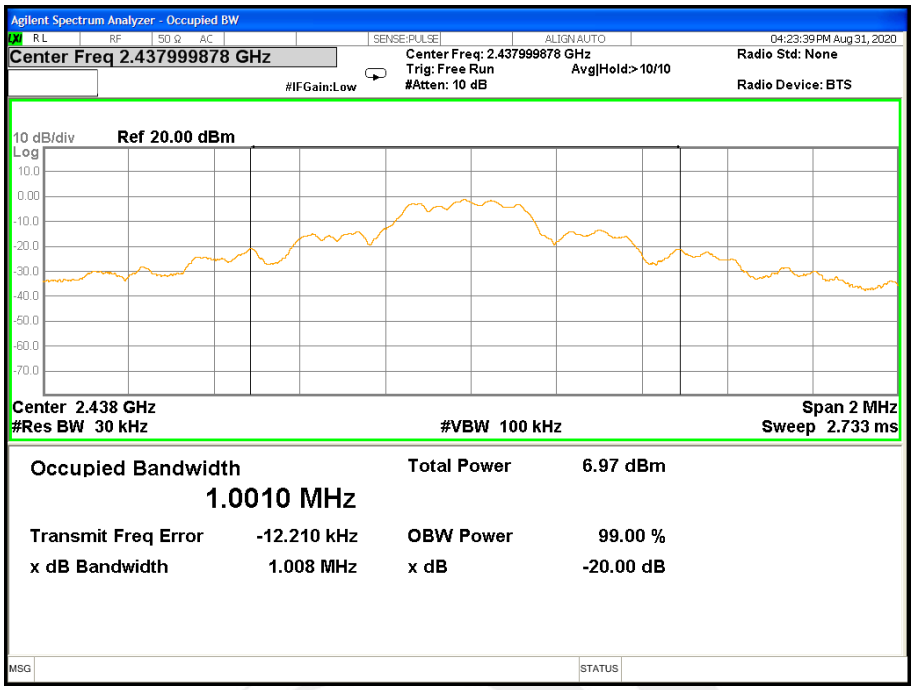
Temperature:	25 ℃	Relative Humidity:	50%
Test Voltage:	DC 3.3V		

Test Channel	Frequency(MHz)	99% Bandwidth(MHz)	20 dB Bandwidth(KHz)
CH01	2412.999634	1.0016	812.4
CH16	2437.999878	1.0010	1008
CH32	2464.499756	1.0284	972.4

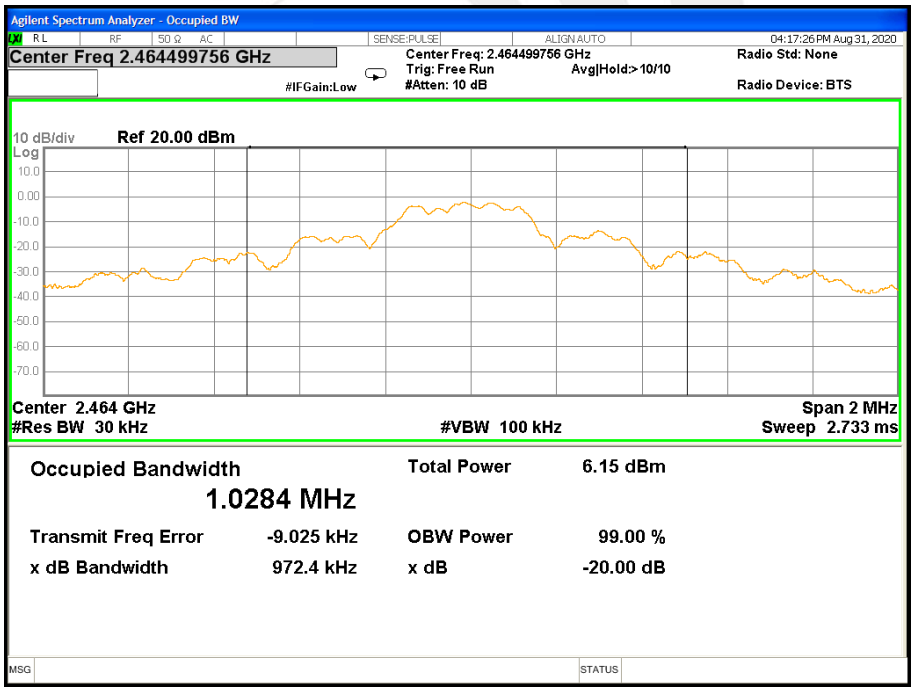
Low Channel



Mid Channel



High Channel



5. ANTENNA REQUIREMENT

5.1 STANDARD REQUIREMENT

According to the FCC Part 15 Paragraph 15.203& RSS-Gen Issue 5, 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.

5.2 EUT ANTENNA

The EUT antenna is PCB Antenna.It conforms to the standard requirements.

6.FREQUENCY STABILITY

6.1 LIMITS

The frequency tolerance of the carrier signal shall be maintained within +/-0.02% of the operating frequency over a temperature variation of -30 degrees to 50 degrees C at normal supply voltage,and for a variation in primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees.

6.2 TEST PROCEDURE

1.The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2.Turn the EUT on and couple its output to spectrum analyzer.
3.Turn the EUT off and set the chamber to the highest temperature specified.
4.Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize,turn the EUT on and measure the operating frequency after 2,5,and 10 minutes.
5.Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6.The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes.The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

6.3 TEST RESULT

Channel 16 (2437.999878MHz)

Voltage vs. Frequency Stability

Voltage vs. Frequency Stability Voltage(V)	Measurement Frequency(MHz)
3.795	2437.999892
3.3	2437.999412
2.805	2437.999103
Max.Deviation(MHz)	0.000014
Max.Deviation(ppm)	0.005742

Rated working voltage:DC 3.3V

Temperature vs. Frequency Stability

Temperature(℃)	Measurement Frequency(MHz)
-30	2437.999893
-20	2437.999598
-10	2437.999126
0	2437.999888
10	2437.998950
20	2437.999252
30	2437.999461
40	2437.999493
50	2437.999179
Max.Deviation(MHz)	0.000015
Max.Deviation(ppm)	0.006153

APPENDIX- PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

※※※※※END OF THE REPORT※※※※※