JAPAN TEST REPORT

Report No:STS1903107W01

Issued for

Particle Industries,Inc

126 Post St,4th floor, San Francisco,CA 94108 USA

Product Name:	Xenon
Brand Name:	N/A
Test Model Name:	XENN
Series Model:	N/A
Test Standard:	Article 2 Paragraph 1 of Item 19, annex 43 and annex 1

TEST RESULT CERTIFICATION

Applicant's name .... : Particle Industries,Inc

Address.. : 126 Post St,4th floor, San Francisco,CA 94108 USA

Manufacture's Name .... : ABO Electronics (Shenzhen) Co., Ltd

Address.. : 2nd Floor, Building A, Block D, 99 Ind Zone, Minzhu, XiHuan Road, Shajing, Baoan, Shenzhen, PRC

Test specification:

Standard .... : Article 2 Paragraph 1 of Item 19, annex 43 and annex 1

Product description

Product name……………………: Xenon

Trade mark………………..………: N/A

Test model name………..……..…: XENN

Series model………………..……….: N/A

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with Article 2 Paragraph 1 of Item 19, annex 43 and annex 1 requirements. And it is applicable only to the tested sample identified in the report.

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Testing .... :

Date of receipt of test item .... : 04 Mar. 2019

Date (s) of performance of tests .... : 04 Mar. 2019 ~ 19 Mar. 2019

Date of Issue .... : 21 Mar. 2019

Test Result .... : **Pass**

Testing Engineer   :

(Chris chen)

Technical Manager   :

(Sunday Hu)

Authorized Signatory :

(Vita Li)

Shenzhen STS Test Services Co., Ltd.

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	21 Mar. 2019	STS1903107W01	ALL	Initial Issue

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards: STD-T66 V3.7

Rule Section	Description of Test	Result	jugement
3.2	Frequency Error	-3.831ppm	PASS
3.2	Occupied Bandwidth (99%) Spread-spectrum Bandwidth (90%)	1.0740MHz 0.704 MHz	PASS
3.2	Unwanted Emission Intensity	--	PASS
3.2	Power Error	-55.30%	PASS
3.3	Limitation of Collateral Emission of Receiver	--	PASS
3.6	Transmission Radiation power	N/A	N/A
3.2	Transmission Radiation Angle Width (3DB Beamwidth)	N/A	N/A
3.4	Radio Interference Prevention Capability	--	PASS
3.2	Spreading Factor	N/A	N/A
Note(2)	Carrier Sense Capability	N/A	N/A
3.7	Construction Protection Confirmation	--	PASS

NOTE:

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

(2) Article 2 Paragraph 1 of Item 19, annex 43 and annex 1

(3) Section 4.17 Radio Equipment of Radio Stations of a Low-Power Data Communication System (Article 49.20)

1.1 TEST FACTORY

Shenzhen STS Test Services Co., Ltd.
Add. : 1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road,
Fuyong Street, Bao'an District, Shenzhen, Guangdong, China
FCC Registration No.: 625569
A2LA Certificate No.: 4338.01

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	±0.71dB
2	Unwanted Emissions, conducted	±0.63dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Equipment	Xenon
Brand Name	N/A
Model Name	XENN
Series Model	XXXXXX
Model Difference	N/A
Product Description	The EUT is Xenon <table><tr><td>Operation Frequency:</td><td>2402~2480 MHz</td></tr><tr><td>Modulation Type:</td><td>GFSK</td></tr><tr><td>Number Of Channel:</td><td>40CH</td></tr><tr><td>Antenna Designation:</td><td>Antenna A: PCB Antenna Antenna B: PIFA Antenna</td></tr><tr><td>Antenna Gain(Peak):</td><td>Antenna A: 0 dBi Antenna B: 2 dBi</td></tr></table>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.
Battery	Rated Voltage: 3.7V Capacity: 1800mAh, 6.66Wh
Hardware version	N/A
Software version	N/A

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

2

Channel List for BLE							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
37	2402	09	2422	18	2442	28	2462
00	2404	10	2424	19	2444	29	2464
01	2406	38	2426	20	2446	30	2466
02	2408	11	2428	21	2448	31	2468
03	2410	12	2430	22	2450	32	2470
04	2412	13	2432	23	2452	33	2472
05	2414	14	2434	24	2454	34	2474
06	2416	15	2436	25	2456	35	2476
07	2418	16	2438	26	2458	36	2478
08	2420	17	2440	27	2460	39	2480

3. Table for Filed Antenna

Ant.	Antenna Brand	Antenna Model	Antenna Type	Connector	Gain (dBi)	NOTE
A,B	N/A	N/A	Ant. A: PCB Ant. B: PIFA	N/A	Ant. A: 0 dBi Ant. B: 2 dBi	BLE ANT.

2.2 DESCRIPTION OF THE 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.

Worst Mode	Description
Mode 1	TX Mode (CH37)
Mode 2	TX Mode (CH17)
Mode 3	TX Mode (CH39)

2.3 TEST CONDITIONS

The module was tested while in a continuous transmitter/receiver mode.
The EUT was tuned to a low, middle, and high channel for all tests. For all test case pre/scans were completed in all Modes to determine worst case levels.
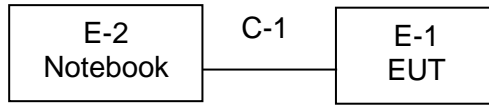
Power Supply Voltage Fluctuation Test

Voltage Fluctuation Test	Normal Voltage
Input DC Power	3.7

2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Mode 1:

```
+-------------+   C-1   +-------------+
|    E-2      |---------|    E-1      |
|  Notebook   |         |    EUT      |
+-------------+         +-------------+
```

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.	Serial No.	Note
N/A	N/A	N/A	N/A	N/A	N/A

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
E-2	Notebook	HP	500-320cx	N/A	N/A
C-1	USB Cable	N/A	100cm	N/A	N/A

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".

2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
USB RF power sensor	DARE	RPR3006W	15I00041SNO03	2018.10.13	2019.10.12
Signal Generator	Agilent	N5182A	MY46240556	2018.10.16	2019.10.15
Signal Analyzer	Agilent	N9020A	MY49100060	2018.10.13	2019.10.12
Wireless Communications Test Set	R&S	CMW 500	133884	2019.03.02	2020.03.01
Temperature & Humidity	HH660	Mieo	N/A	2018.10.11	2019.10.10
Temperature& Humidity test chamber	Safety test	GDS-250	171200018	2019.03.02	2020.03.01
programmable power supply	Agilent	E3642A	MY40002025	2018.10.13	2019.10.12
Attenuator	HP	8494B	DC-18G	2018.05.07	2019.05.06

Test Equipment Calibration

All of the test equipment is effective use and calibration certification institution, GRGT, the address is 163 tianhe district in huangpu road xiping cloud road .Guangzhou, China

3. CONSTRUCTION PROTECTION CONFIRMATION

Our products apply for Japanese radio frequency (rf) certification. The RF IC is sheided by the shieding cover which is welded on the PCB, it can't be removed easily.
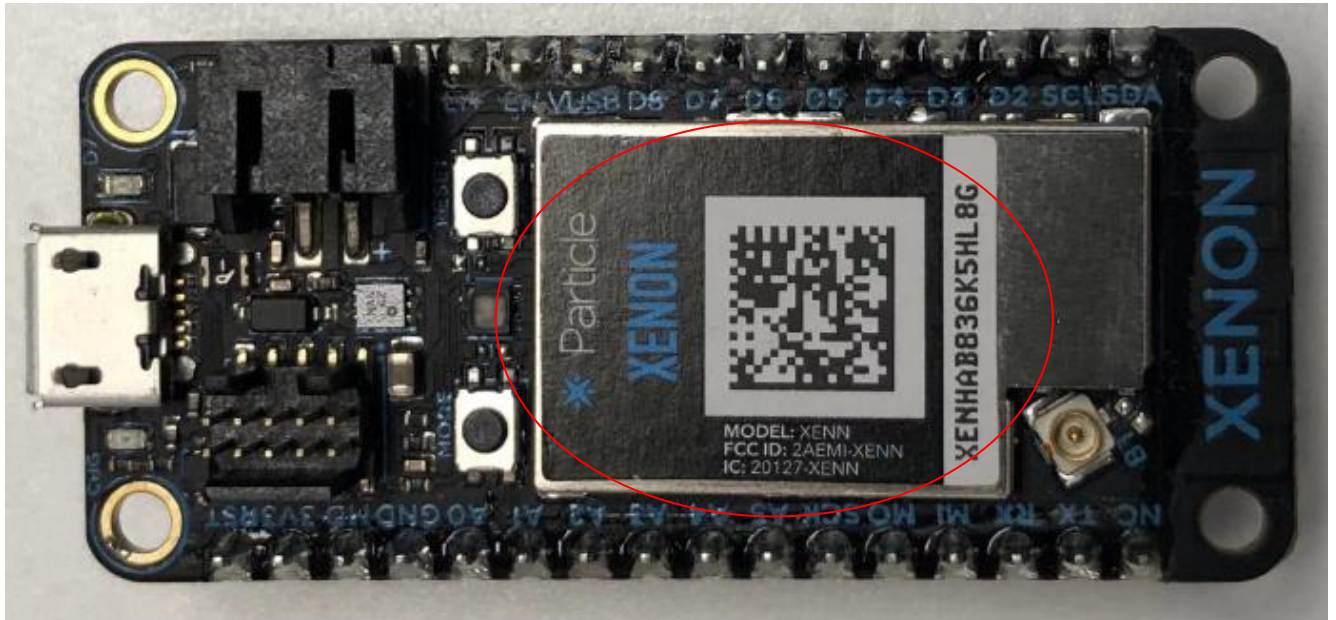
4. FREQUENCY ERROR

4.1 LIMIT

| Item	Limits
Frequency Error	$\pm$50ppm

4. 2 TEST PROCEDURES
The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	10KHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

(1)In the case of unmodulated signal (continuous or continuous burst), measure the frequency directly by a frequency meter.

(2)In the case of burst waves, the measurement shall be done for enough time in order to obtain the enough measuring accuracy, and the average of the measured values becomes the final value.

(3)In the case of a test mode with a specific frequency spectrum, measure the frequency of the specific spectrum by a spectrum analyzer.

(4)In the cases above, if the frequency equivalent to the test frequency is not directly measured in principle, it shall be obtained by necessary calculation.

In the case of modulated signal, if there is no specific spectrum measurable by a spectrum analyzer but a specific dip is observed, it is allowed to measure the frequency with the signal generator (synthesized).   That is, observe a signal of the signal generator concurrently (or alternately) with the tested signal using the spectrum analyzer while setting the frequency of the signal generator to the position of the dip on the screen of the spectrum analyzer, and determine the frequency of the signal generator at the time as a measured value.

4.3 TEST SETUP

1.Oven
2.EUT
3.DCBlocking device
4.Spectrum
5.PC
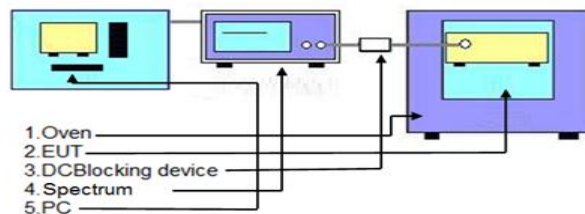
4.4 EUT OPERATION DURING TEST
The EUT was placed on the test table and programmed in un-modulation function.
.

4.5 TEST RESULT

Note: Antenna B power＞Antenna A power, Antenna A, Antenna B all has been tested, Antenna A, Antenna B cannot transmit of the same time, only shown the worst case of Antenna B.

Temperature:	25^0C	Humidity:	55 % RH
Operation Mode:	TX mode		

Antenna B

| TEST CONDITIONS		Channel	F_C	Tolerance	Limit
		MHz	MHz	ppm	(ppm)
V nom (V)	3.7	2402	2401.9910	-3.747	±50
		2440	2439.9910	-3.689	±50
		2480	2479.9905	-3.831	±50

CH37   Worst Mode

CH17   Worst Mode

CH39 Worst Mode
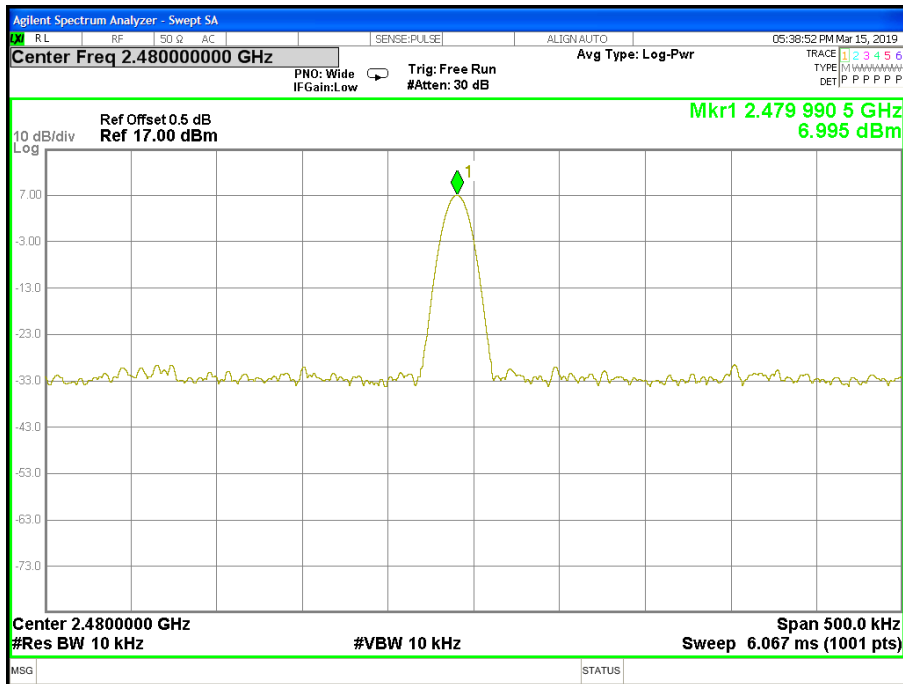
5. ANTENNA POWER

5.1 LIMIT

Item	Limits
Antenna Power Density	$\leqq$ 3mW/MHz (FH form 2400 – 2483.5 MHz) $\leqq$ 10mW/MHz (OFDM,DS from2400~2483.5MHz,802.11b/g/n HT20) $\leqq$ 5mW/MHz (OFDM,DS from2400~2483.5MHz,802.11n HT40) $\leqq$ 10mW (Other from 2400~2483.5MHz)
Power Error	+20%, -80% (Base on manufacturer declare power)

5.2 TEST PROCEDURE
1. EUT turn to test frequency channel and keep continuous transmiting
2. Reading the output power from the Power meter as P_{EUT}
3. Turn the Signal generator to frequency channel the same as the EUT
4. Turn the level of Signal generator, scan with the power meter until the power equal to P_{EUT}, the level of Signal generator recorded as "P"
5. The antenna power of EUT is "P".
6. EIRP power="P"+antenna gain

5.3 TEST SETUP
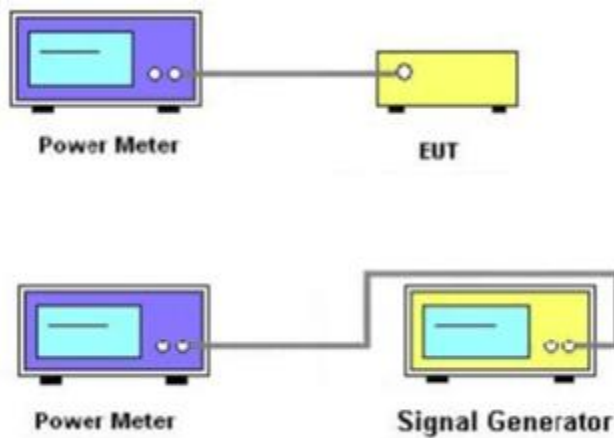
5.4 TEST DEVIATION
There is no deviation with the original standard.

5.5 TEST RESULT

Temperature:	25^{0}C		Humidity:	55 % RH
Operation Mode:	TX mode			

Antenna Power Density
Antenna A:

TEST CONDITIONS		Channel (MHz)	Ant output POWER (dBm)	Ant output (mW)	Declared Power (mW)	Tolerance
						%
Vnom(V)	3.7	2402	-1.7360	0.671	1.5000	-55.30
		2440	0.2490	1.059	1.5000	-29.40
		2480	0.0980	1.023	1.5000	-31.81
Limit : (1) Antenna Power Density Limit (10mW) (2) Tolerance +20%, -80% (Base on manufacturer declare Antenna Power Density)						

Antenna B:

TEST CONDITIONS		Channel (MHz)	Ant output POWER (dBm)	Ant output (mW)	Declared Power (mW)	Tolerance
						%
Vnom(V)	3.7	2402	6.9740	4.982	6.0000	-16.97
		2440	7.1280	5.162	6.0000	-13.97
		2480	7.0220	5.037	6.0000	-16.04
Limit : (1) Antenna Power Density Limit (10mW) (2) Tolerance +20%, -80% (Base on manufacturer declare Antenna Power Density)						

6. RADIATION POWER

6.1 LIMIT

Item	Limits
Radiation power EIRP	FH form 2400 – 2483.5 MHz ,EIRP≦6.91dBm/MHz CCK/OFDM/DBPSK (2400~2483.5MHz) OFDM or DS other than (802.11b/g/n HT20) EIRP≦12.14 dBm/MHz OFDM or DS other than (802.11n HT40) EIRP≦9.13dBm/MHz Other from 2400~2483.5MHz: 12.14 dBm or less
Power Error	+20%, -80% (Base on manufacturer declare power)

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6.2 TEST RESULT
Note: The antenna gain is less than 2.14dBi, no requirement.

7. OCCUPIED BANDWITH AND SPREAD BANDWIDTH

7.1 LIMIT

Item	Limits
Occupied Band Width:	≤83.5MHz（FH;FH+DS;FH+OFDM） ≤26MHz（Others）
Spreading Bandwidth:	≧500 kHz

7.2 TEST PROCEDURES

1. Setting of SA is following as: RB: 100KHz / VB:100KHz / SPAN: 2MHz
   / AT: 20dB Ref:10dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode:
   Positive peak / Trace mode: Max hold
2. EUT have transmitted the maximum modulation signal and fixed channelize (For DSSS
   or OFDM Device) or continuous maximum power of hopping mode(For FHSS Device).
   SA set to 99% of occupied bandwidth to measure occupied bandwidth. The limit is less
   than 26MHz(For DSSS or OFDM Device) or 83.5MHz(For FHSS Device).
3. SA set to 90% of occupied bandwidth to measure Spread Spectrum Bandwidth and
   must greater than 500kHz.

7.3 TEST SETUP

1. Oven
2. EUT
3. DCBlocking device
4. Spectrum
5. PC
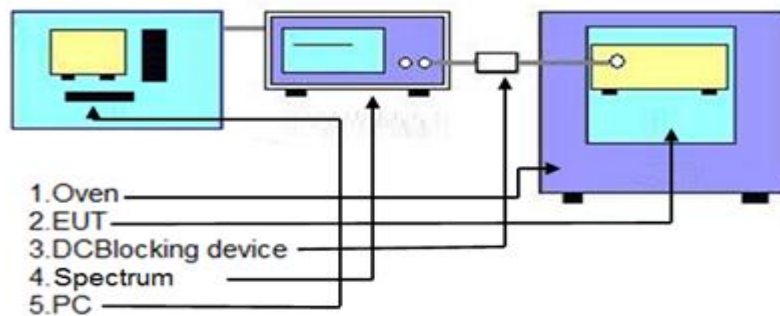
7.4 TEST DEVIATION

There is no deviation with the original standard.

7.5 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

7.6 TEST RESULT

Note: Antenna B power＞Antenna A power, Antenna A, Antenna B all has been tested, Antenna A, Antenna B cannot transmit of the same time, only shown the worst case of Antenna B.

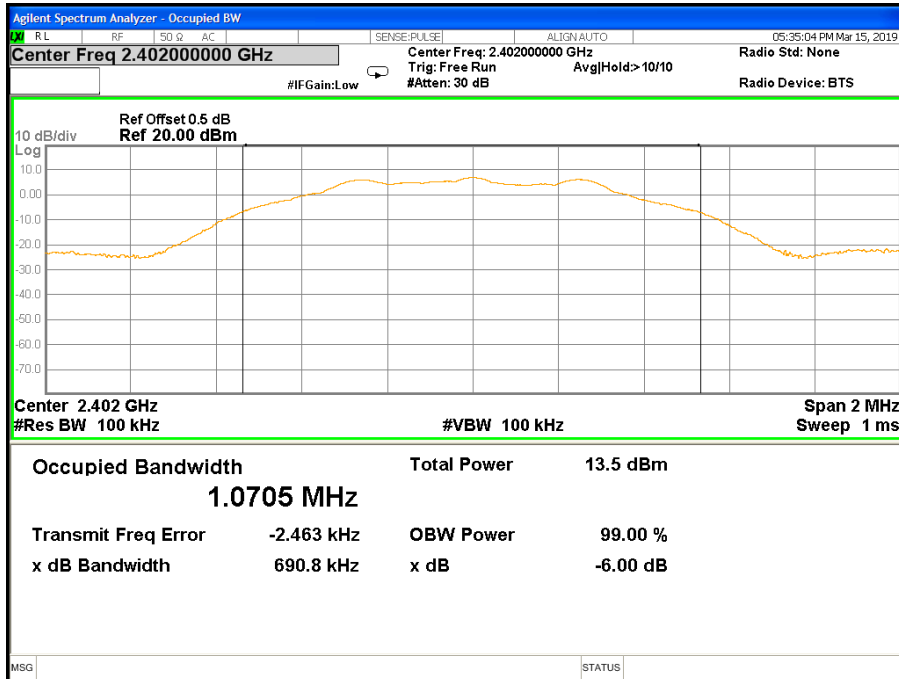| Temperature:	25^0C		Humidity:	55 % RH
Operation Mode:	TX mode			

Antenna B

DC Voltage		channel (MHz)	Occupied Bandwidth (MHz)	Spread Bandwidth (MHz)
Nor Voltage(V)	3.7	2402	1.0705	0.698
		2440	1.0698	0.700
		2480	1.0740	0.704

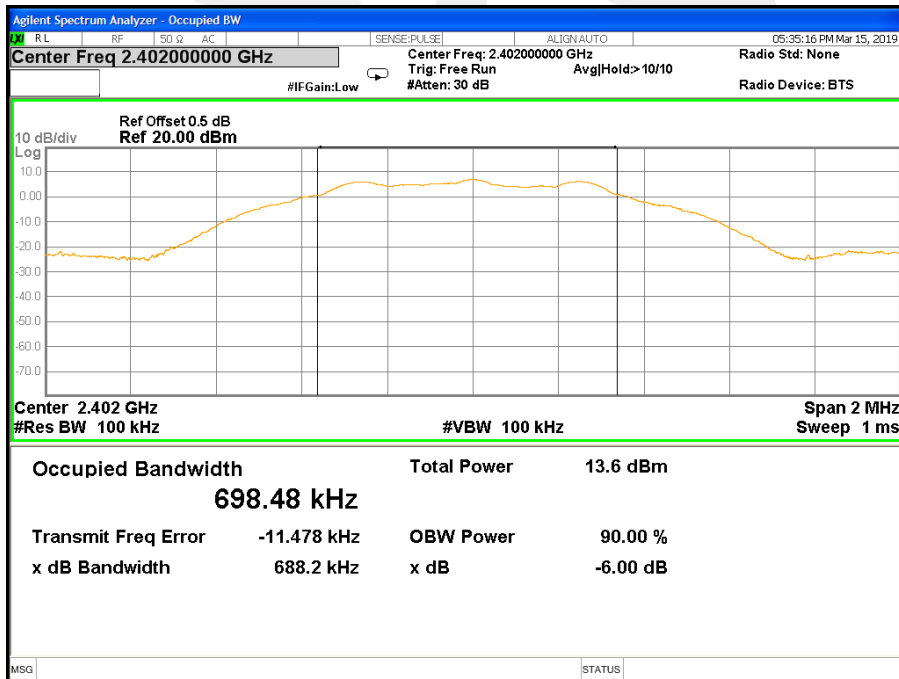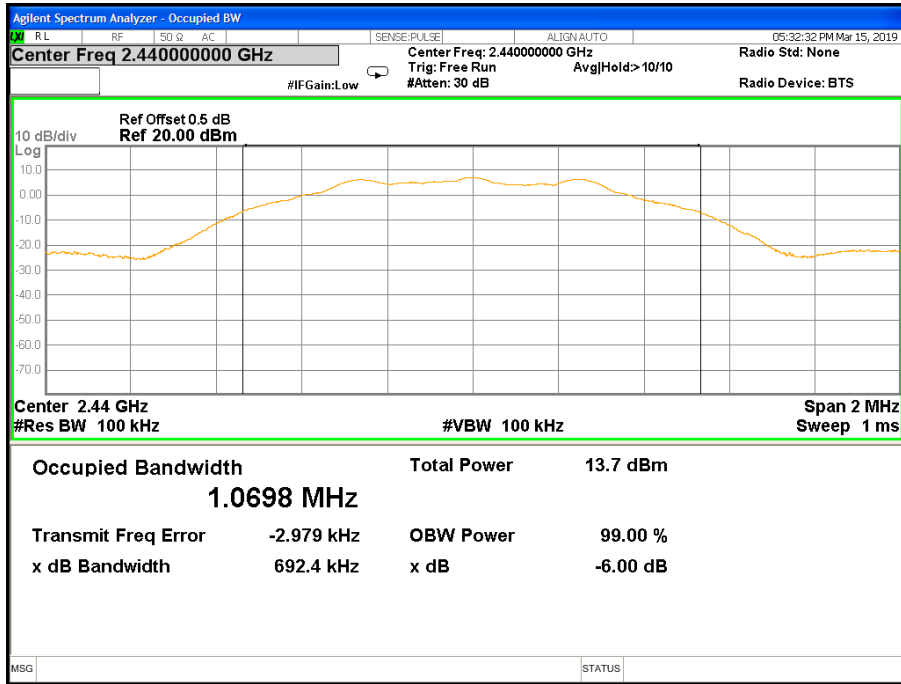## CH37-Occupied Bandwidth (99%) Worst Mode

Agilent Spectrum Analyzer - Occupied BW

LXI R L RF 50 Ω AC SENSE:PULSE ALIGN AUTO 05:35:04 PM Mar 15, 2019
Center Freq 2.402000000 GHz | Center Freq: 2.402000000 GHz | Radio Std: None
Trig: Free Run Avg|Hold:>10/10
#IFGain:Low #Atten: 30 dB Radio Device: BTS

Ref Offset 0.5 dB
10 dB/div Ref 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0

Center 2.402 GHz Span 2 MHz
#Res BW 100 kHz #VBW 100 kHz Sweep 1 ms

Occupied Bandwidth	Total Power	13.5 dBm
1.0705 MHz		
Transmit Freq Error -2.463 kHz	OBW Power	99.00 %
x dB Bandwidth 690.8 kHz	x dB	-6.00 dB

MSG STATUS

CH37-Spread Bandwidth (90%) Worst Mode

Agilent Spectrum Analyzer - Occupied BW

LXI R L RF 50 Ω AC SENSE:PULSE ALIGN AUTO 05:35:16 PM Mar 15, 2019
Center Freq 2.402000000 GHz | Center Freq: 2.402000000 GHz | Radio Std: None
Trig: Free Run Avg|Hold:>10/10
#IFGain:Low #Atten: 30 dB Radio Device: BTS

Ref Offset 0.5 dB
10 dB/div Ref 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0

Center 2.402 GHz Span 2 MHz
#Res BW 100 kHz #VBW 100 kHz Sweep 1 ms

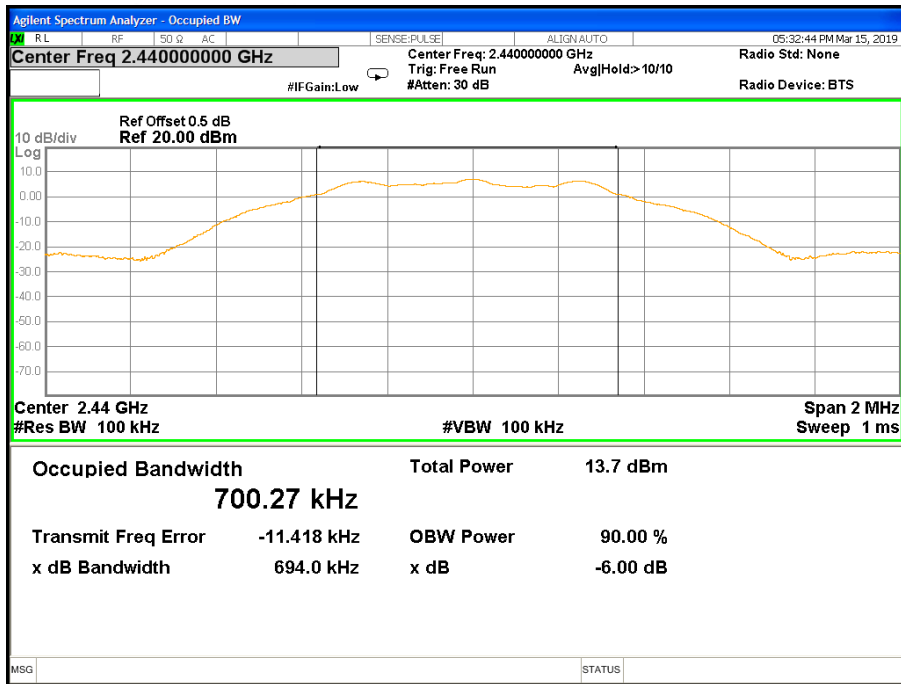| Occupied Bandwidth	Total Power	13.6 dBm
698.48 kHz		
Transmit Freq Error -11.478 kHz	OBW Power	90.00 %
x dB Bandwidth 688.2 kHz	x dB	-6.00 dB

MSG STATUS

CH17-Occupied Bandwidth (99%) Mode Worst Mode

CH17-Spread Bandwidth (90%) Mode Worst Mode

CH39-Occupied Bandwidth (99%) Worst Mode

Occupied Bandwidth		Total Power	13.6 dBm
1.0740 MHz			
Transmit Freq Error	-2.963 kHz	OBW Power	99.00 %
x dB Bandwidth	697.7 kHz	x dB	-6.00 dB

CH39-Spread Bandwidth (90%) Worst Mode

Occupied Bandwidth		Total Power	13.6 dBm
703.52 kHz			
Transmit Freq Error	-11.870 kHz	OBW Power	90.00 %
x dB Bandwidth	697.1 kHz	x dB	-6.00 dB
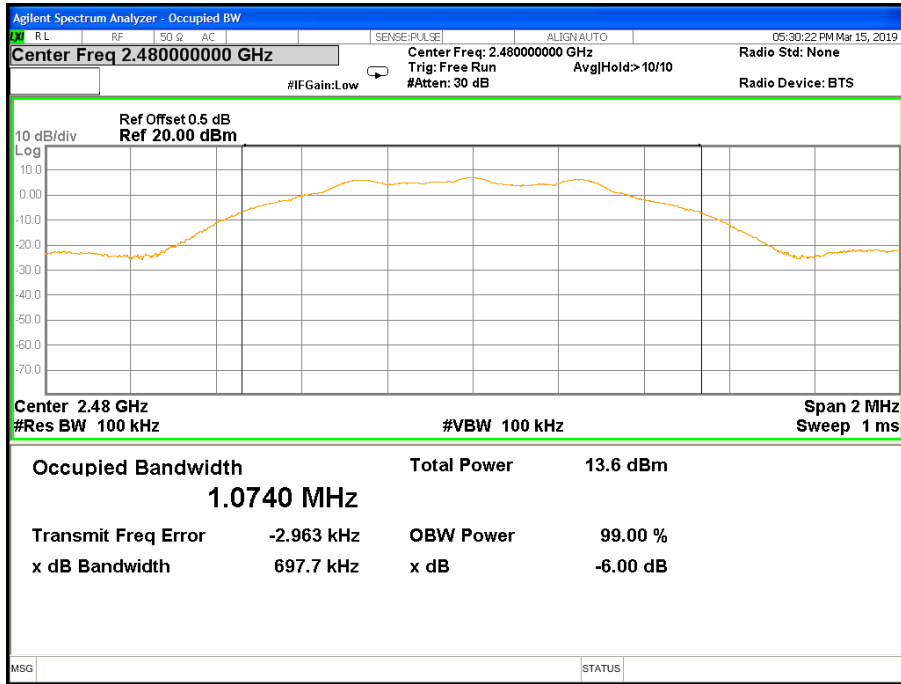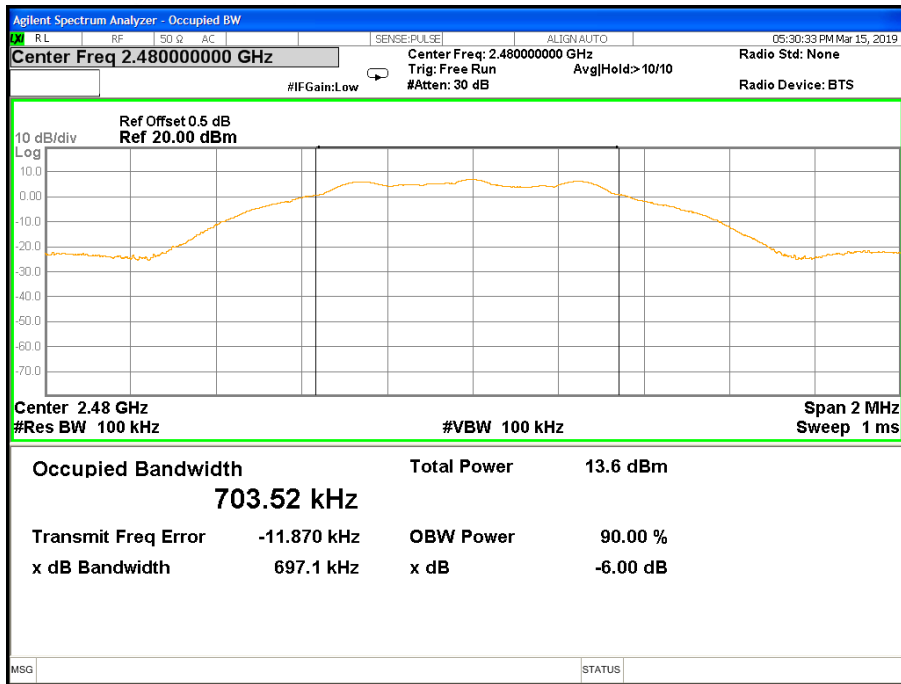
8. UNWANTED EMISSION INTENSITY MEASUREMENT

8.1 LIMIT

Item	Limits
TX Spurious Emission	$\leqq 2.5$ μW (30MHz$\leqq$f$\leqq$1000MHz)
	$\leqq 2.5$ μW (1000MHz<f$\leqq$2387MHz)
	$\leqq 25$ μW (2387MHz<f$\leqq$2400MHz)
	$\leqq 25$ μW (2483.5MHz$\leqq$f<2496.5MHz)
	$\leqq 2.5$ μW (2496.5MHz$\leqq$f<12500MHz)

8.2 TEST PROCEDURES

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	100KHz /100KHz(Below 1GHz)
RB / VB	1MHz /1MHz (Above 1GHz)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

1. EUT have transmitted the maximum modulation signal and fixed channelize.
2. Setting of SA is following as: Below 1GHz RB:100KHz / VB:100KHz
   Above 1GHz RB:1MHz / VB:1MHz / AT: 10dB Ref: 0dBm / Sweep time: Auto
   Sweep Mode: Continuous sweep / Detect mode: Positive peak
   Trace mode: Max hold
3. Setting of SA is following as 30MHz and stop frequency 1000MHz Then to mark peak reading value + cable loss shall be less than 0.25μW.
4. Setting of SA is following as 1000MHz and stop frequency 2387MHz Then to mark peak reading value + cable loss shall be less than 2.5μW.
5. SA adjusted to start frequency 2387MHz and stop frequency 2400MHz. Then to mark peak reading value + cable loss shall be less than 25μW.
6. SA adjusted to start frequency 2483.5MHz and stop frequency 2496.5MHz Then to mark peak reading value + cable loss shall be less than 25μW
7. SA adjusted to start frequency 2496.5MHz and stop frequency 12750MHz Then to mark peak reading value + cable loss shall be less than 2.5μW
8. Measure side band spurious as follows: For 2.4GHz band: 2374MHz~2400MHz and 2483.5MHz~2509.5MHz RBW = VBW = 30kHz, Result_Value = Meaured_Value + 15.2 [dBm]
9. If the Result_Value is over the requirement, take total sum of 1MHz band centered at the spur frequency like ACLP measurement as Result_Value.

8.3 TEST SETUP

1. Oven
2. EUT
3. DCBlocking device
4. Spectrum
5. PC
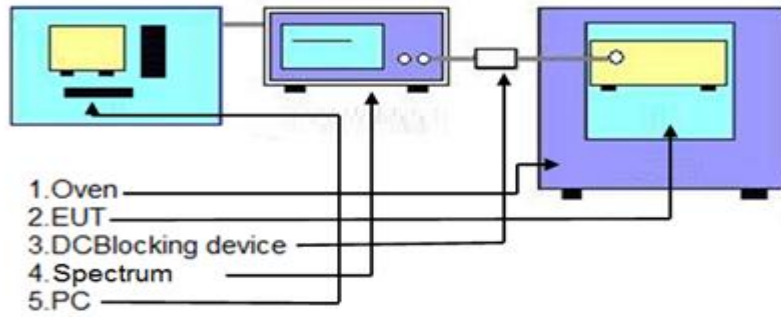
8.4 TEST DEVIATION

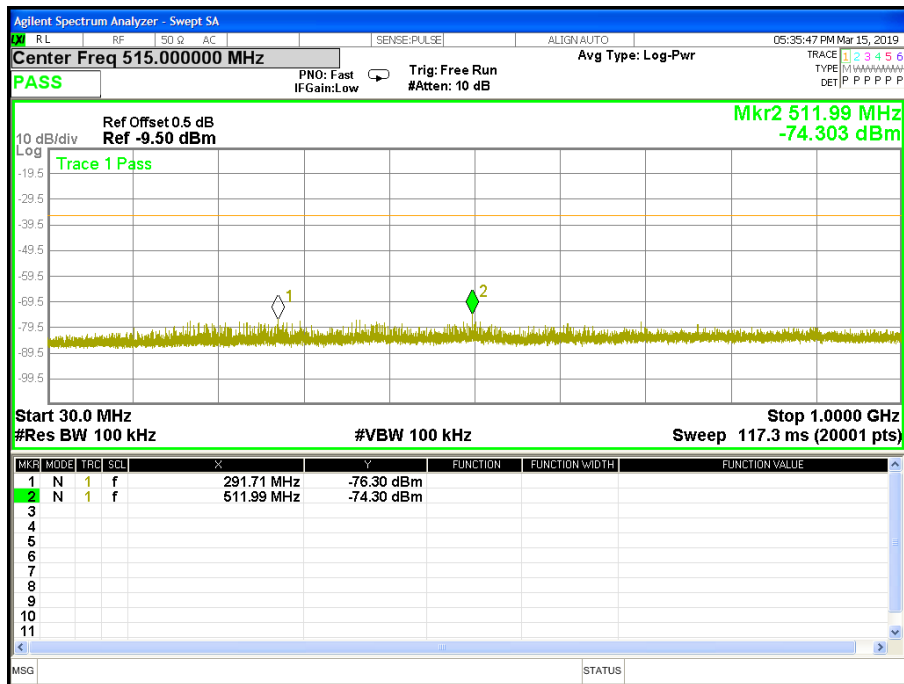There is no deviation with the original standard.

8.5 TEST RESULT

Note: Antenna B power＞Antenna A power, Antenna A, Antenna B all has been tested, Antenna A, Antenna B cannot transmit of the same time, only shown the worst case of Antenna B.

Temperature:	25^{0}C	Humidity:	55 % RH
Test Voltage	Nor. Voltage	Operation Mode:	TX mode

Antenna B

CH 37 (TX mode) - Frequency Band 1 (30 MHz $\leq$ f $\leq$ 1000 MHz)

Worst Mode

CH 37 TX mode - Frequency Band 2 (1000 MHz < f ≦ 2520 MHz)
Worst Mode
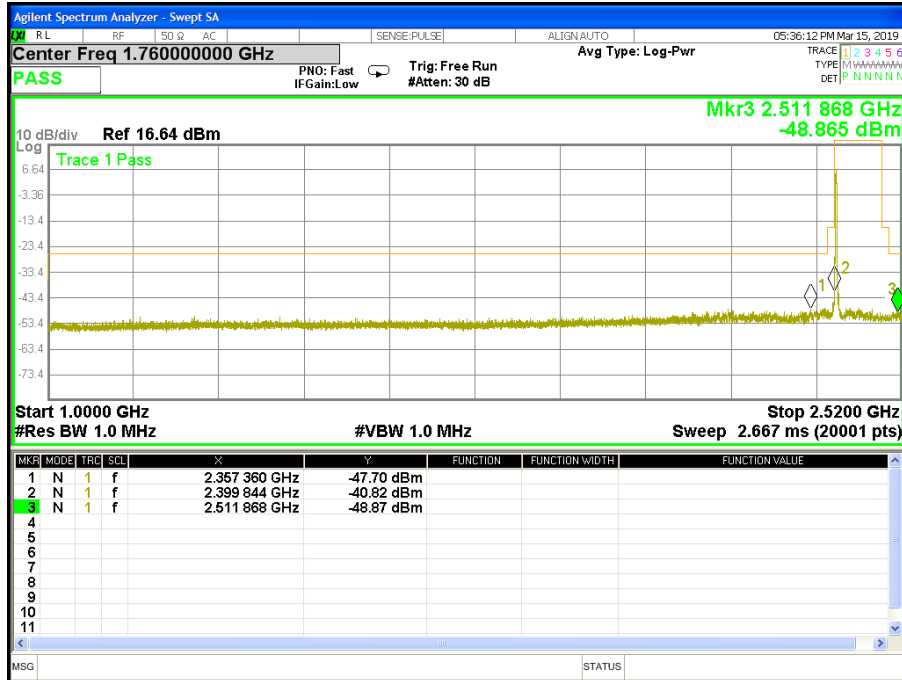
CH 37 TX mode - Frequency Band 3 (2520 MHz ≦ f < 12.75 GHz)
Worst Mode
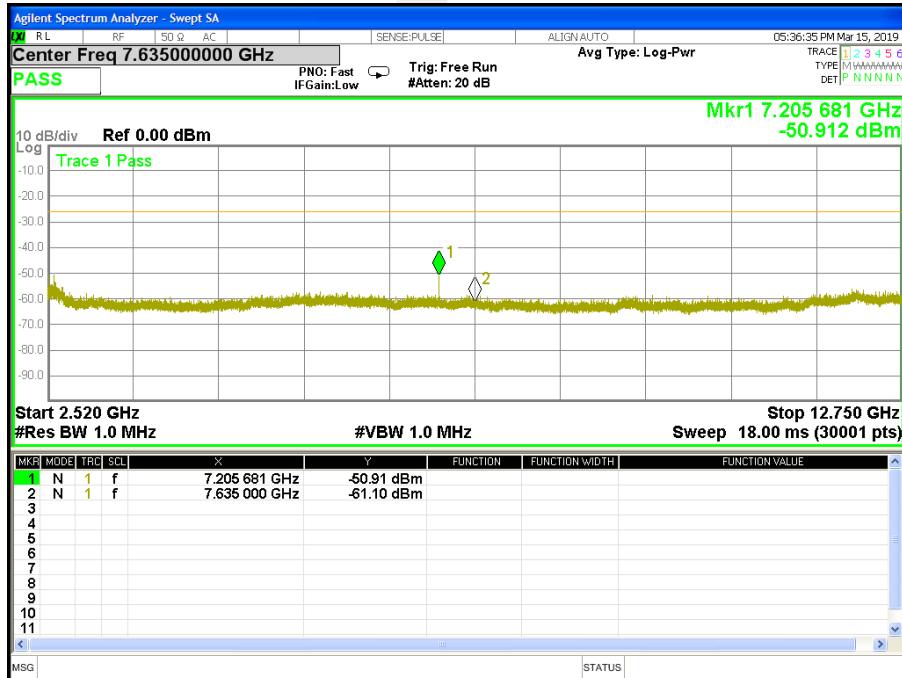
CH 17 TX mode - Frequency Band 1 (30 MHz ≦ f ≦ 1000 MHz)
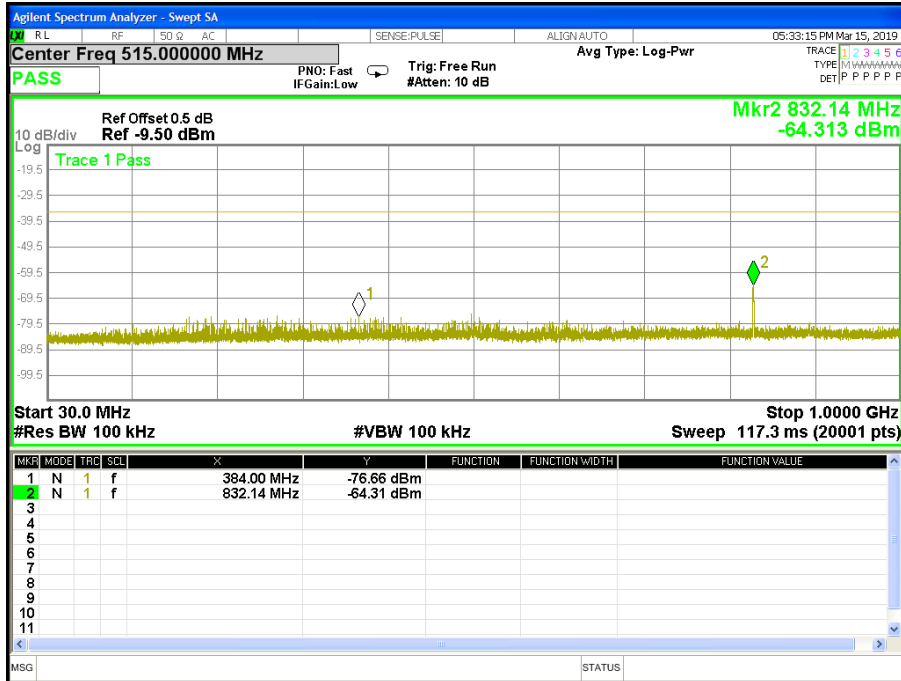
Worst Mode

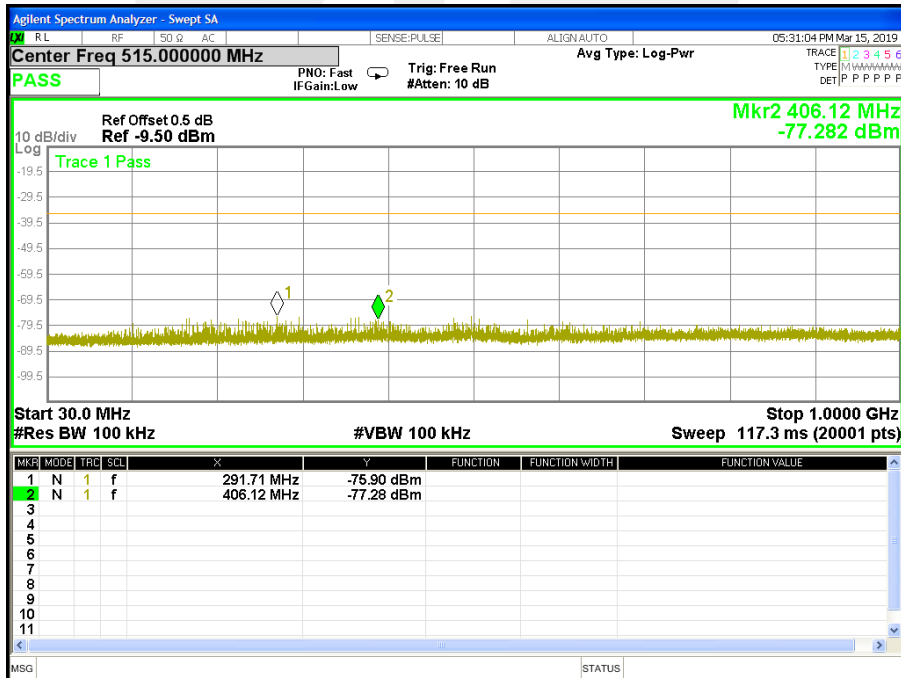## CH 17 TX mode - Frequency Band 2 (1000 MHz < f ≦ 2520 MHz)
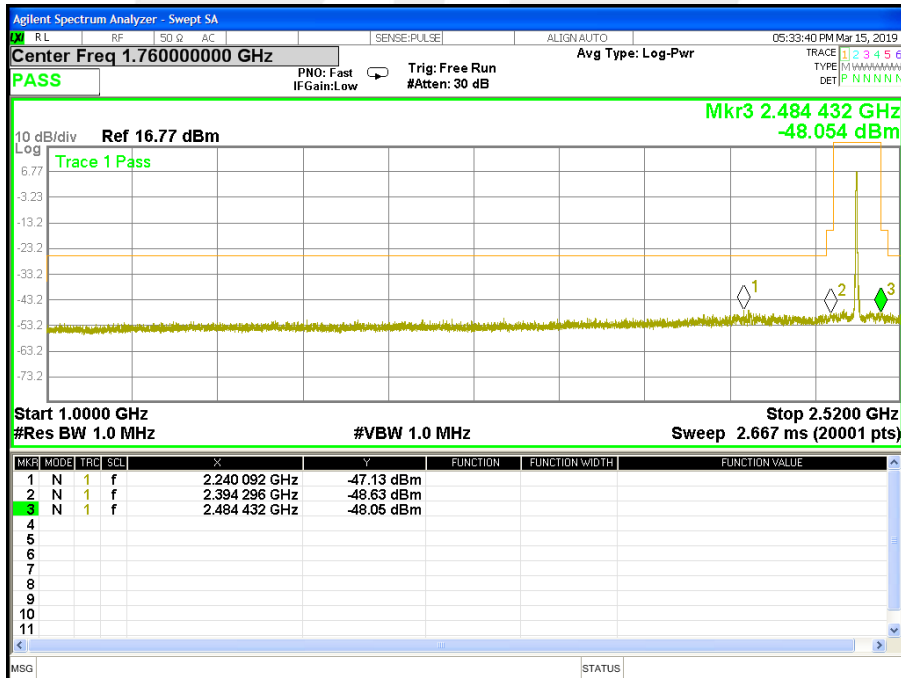
Worst Mode

CH 17 TX mode - Frequency Band 3 (2520 MHz $\leq$ f < 12.75 GHz)
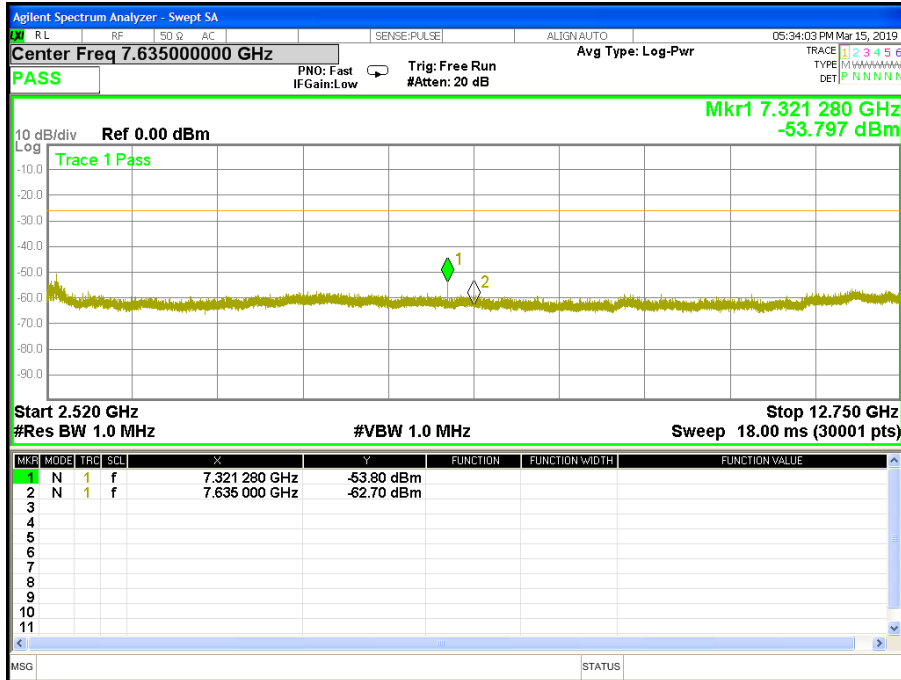
Worst Mode

CH 39 TX mode - Frequency Band 1 (30 MHz $\leq$ f $\leq$ 1000 MHz)

Worst Mode

CH 39 TX mode - Frequency Band 2 (1000 MHz < f ≤ 2520 MHz)
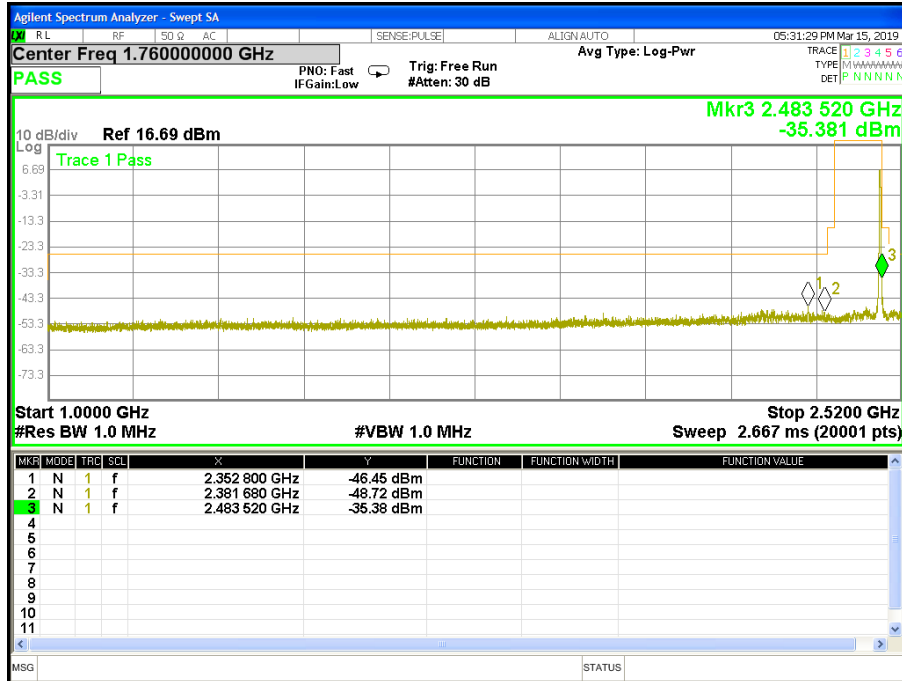
Worst Mode

CH 39 TX mode - Frequency Band 3 (2520 MHz ≤ f < 12.75 GHz)

Worst Mode

9. IMITATION OF COLLATERAL EMISSION OF RECEIVER MEASUREMENT

9.1 LIMIT

Item	Limits
RX Spurious Emission:	≦4nW (f<1GHz)
	≦20nW (1GHz≦f)

9.2 TEST PROCEDURES

The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB	100 kHz (below 1GHz emissions) 1 MHz (above 1GHz emissions)
VB	100 kHz (below 1GHz emissions) 1 MHz (above 1GHz emissions)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

1. EUT have the continuous reception mode and fixed only one channelize.
2. Setting of SA is following as RB / VB: 100 kHz (below 1GHz emissions) / 1 MHz
   (above 1GHz emissions) /
   AT: 10dB / Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect
   mode: Positive peak / Trace mode: Max hold
3. SA set RB: 100kHz and VB: 100kHz. Then adjust to start frequency 30MHz and
   stop frequency 1000MHz. Search to mark peak reading value + cable loss shall
   be less than 4nW
4. SA set RB: 1MHz and VB: 1MHz. Then adjust to start frequency 1000MHz and
   stop frequency 12750MHz. Search to mark peak reading value + cable loss shall
   be less than 20nW
5. If power level of lower emissions are more than 1/10 of limit (.0.4nW for f < 1GHz,
   2nW for f >= 1GHz), all those are to be indicated in the 2nd and 3rd lines. If others
   are 1/10 or less more of the limit, no necessary to be indicated.

9.3 TEST RESULT

Note: Antenna B power＞Antenna A power, Antenna A, Antenna B all has been tested, Antenna A, Antenna B cannot transmit of the same time, only shown the worst case of Antenna B.
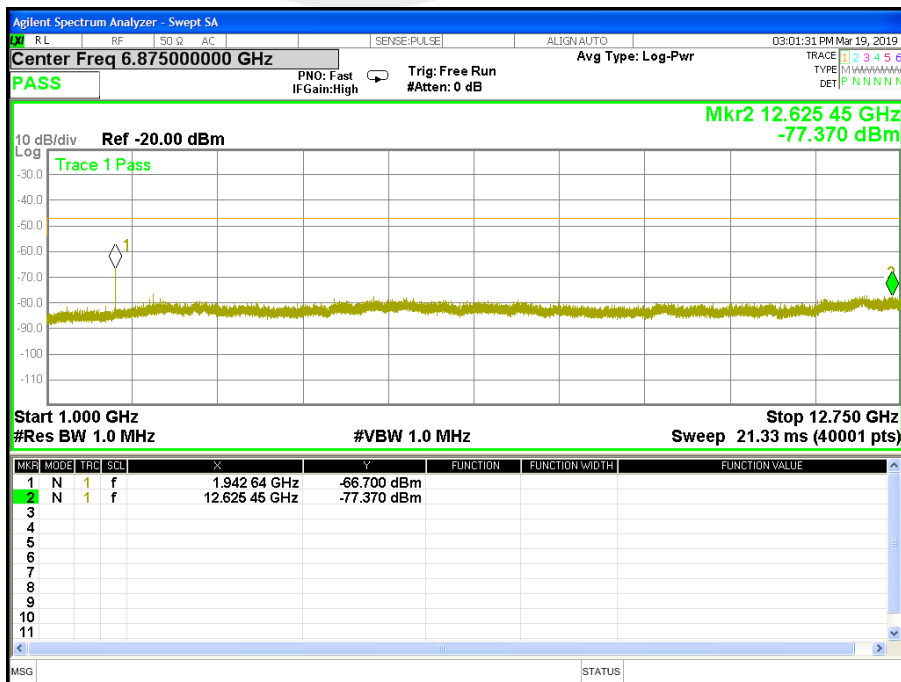
Temperature:	25^{0}C	Humidity:	55 % RH
Operation Mode:	Nor. Voltage RX mode		

The worst test channel of all channels was showed as the follow:

RX-Frequency Band 1 (30 MHz ≦ f < 1000 MHz) Worst Mode
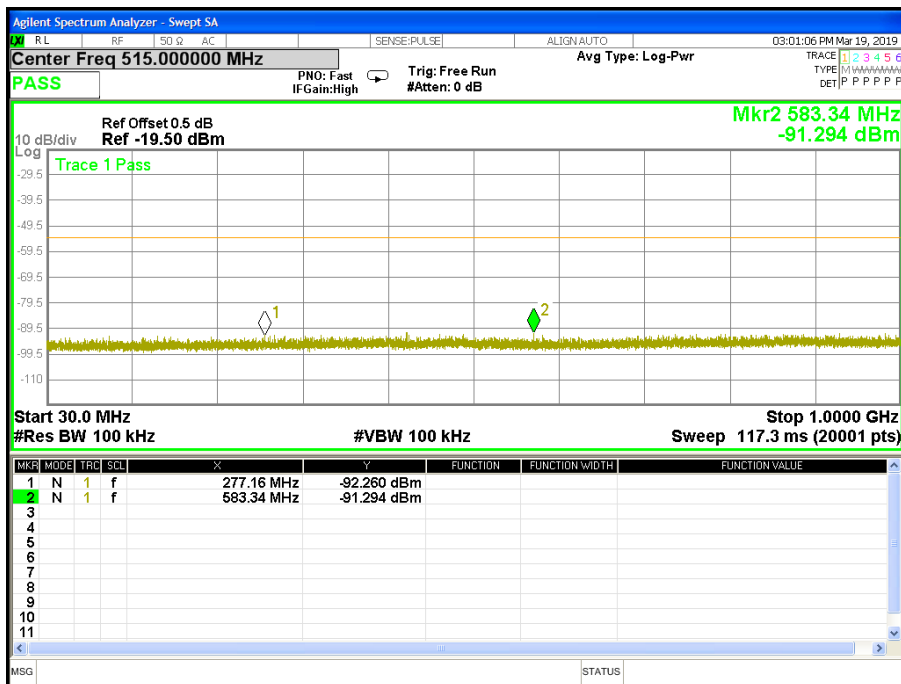
RX-Frequency Band 2 (1000 MHz ≦ f < 12750 MHz) Worst Mode

## 10. TRANSMISSION RADIATION ANGLE WIDTH (3DB BEAMWIDTH) MEASUREMENT

10.1 LIMIT

Item	Limits
3dB antenna beam width	e ≦ 360/A (The A is 10 in maximum) A = {EIRP Power [mW/MHz] /{2.14dBi+output power(10mW /MHz, 3mW/MHz)} Shall be 1 when A is lower than 1
Note: This test item is not applied for radio equipment with equivalent isotropic radiation power lower than 12.14dBm/MHz, but Antenna Power(Conducted) limit is 10 mW/MHz (10 dBm/MHz), So the test item will not be applied to the transmission antenna which has a gain of 2.14dBi or less	

10.2 TEST PROCEDURES

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	0 MHz
RB	1 MHz
VB	1 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

1. Set EUT and measuring antenna at the same height and roughly facing each other.
2. Set spectrum analyzer with condition in section 4.7.2 and tune reference level to observe receiving signal position.
3. Rotate directions of the EUT horizontally and ertically to find the maximum receiving power.
4. Move the measuring antenna height up and down within ± 50cm of EUT height and swing it to find the maximum output of measuing antenna. "E" is the half-power beam width (angle between two points at which radiated power becomes 1/2)
5. Caluate permitted radiation angle in horizontal and vertical using EIRP measured in another test method.
6. Calculate 3dB antenna beam width by the formula below 360/A (If A<1; then A=1).
   A = {EIRP Power [mW/MHz] /{2.14dBi+output power(10mW /MHz, 3mW/MHz)}
   Shall be 1 when A is lower than 1

10.3 TEST SETUP
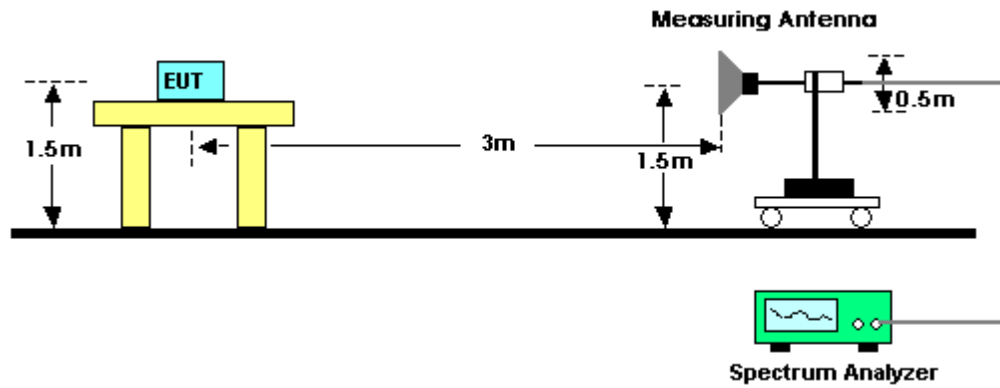
10.4 TEST DEVIATION
 There is no deviation with the original standard.

10.5 EUT OPERATION DURING TEST
 The EUT was programmed to be in continuously transmitting mode.

10.6 TEST RESULT
 Note: The antenna gain is less than 2.14dBi, no requirement.

11. RADIO INTERFERENCE PREVENTION CAPABILITY MEASUREMENT

11.1 LIMIT

| Item	Limits
Identification code	≧48 bits

11.2 MEASURING ID CODE SOFTWARE

Item	Limits
MAC IP List	MAC Scan

11.3 TEST PROCEDURES

1. In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification codes form EUT. b. Check the transmitted identification codes with the demodulator.
2. In the case of receiving the identification ocde: a. Transmit the predetermined identification codes form the counterpart. b . Check if communication is normal. c. Transmit the signals other than predetermined ID codes form the counterpart. d. check if the EUT stops the transmission, or if it displays that idnetification codes are different from the predetermined ones.

11.4 TEST SETUP

PC with Net Tool Software (Get EUT's MAC)   Peripheral   EUT
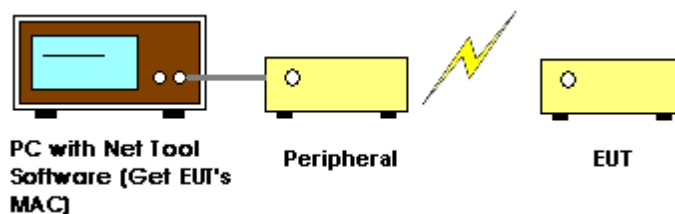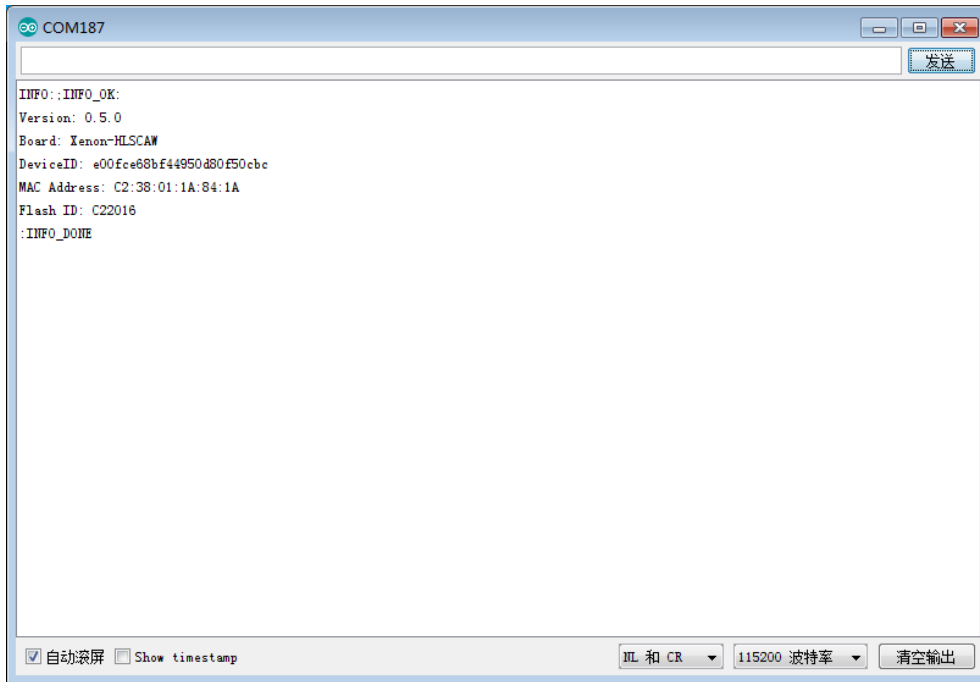
11.5 TEST DEVIATION
There is no deviation with the original standard.

11.6 EUT OPERATION DURING TEST

The EUT was programmed to be in normal transmitting mode.

11.7 TEST RESULT OF RADIO INTERFERENCE PREVENTION CAPABILIT

Note: The MAC Address is C2:38:01:1A:84:1A.

12. CARRIER SENSE CAPABILITY

### 12.1 INTERFERENCE PREVENTION FUNCTION

12.2 TEST REQUIREMENT
MIC Notice No.88 Appendix No.43

Article 2, Paragraph 1, Item 19 Rules Section 10

12.3 TEST PROCEDURE
1. SG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SG and power level is (on 22.79+G-20*log(f)dBm)(G is the antenna gain,f is the test frequency).

2. turn off the RF signal of the SG.

3. EUT have transmitted the maximum modulation signal and fixed channelize.

4. Setting of SA :RBW/VBW=1MHz/1MHz,Span=50MHz,Sweep time=auto,Sweep mode=continuous, Detect mode=positive peak

5. SG RF signal on.

6. EUT shall be stop the transmitted any signal and SG RF signal off, the EUT will be continuous

❖ Measurement System Diagram
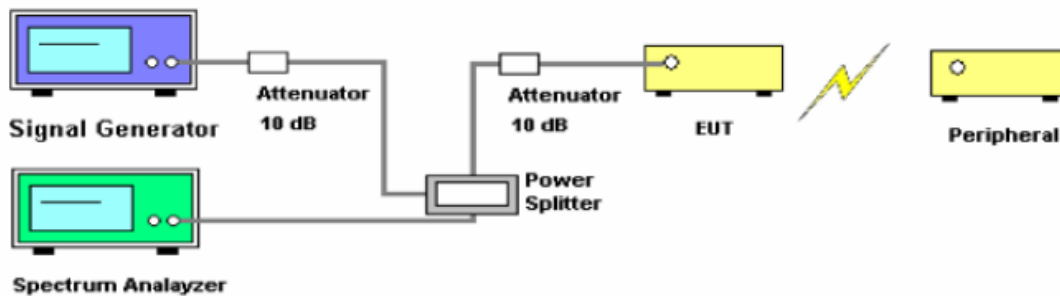
❖ Conditions of Application Equipment (EUT)

- The EUT state shall be "normal mode link with wireless router".

12.4 TEST RESULT

Note: no requirement.

EUT TEST PHOTO

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

※ ※ ※ ※ END OF THE REPORT ※ ※ ※ ※ ※