Test Report

Applicant:	Daiso Industries Co.,Ltd.
Product Name:	Bluetooth speaker
Brand Name:	N/A
Model No.:	SR9001
Report No.:	MTE/LUL/N19020290
Date of Receipt :	Feb. 19, 2019
Date of Test:	Feb. 21-25, 2019
Date of Report:	Feb. 26, 2019
Prepared by:	Shenzhen Most Technology Service Co., Ltd.

Shenzhen Most Technology Service Co., Ltd.
No.5, 2nd Langshan Road, North District, Hi-tech Industry Park,
Nanshan, Shenzhen, Guangdong, China
Phone: 86-755-86026850
Fax: 86-755-26013350
http:// www.szmost.com

TABLE OF CONTENTS

TEST REPORT DECLARATION

Report Number	MTE/LUL/N19020290	
Applicant	Daiso Industries Co.,Ltd.	
	1-4-14 Saijyo-Yoshiyukihigashi,Higashihiroshima-City,Hiroshima 739-8501 Japan	
Manufacturer	NINGBO DAWN IMPORT&EXPORT CORP.,LTD	
	ROOM 901 CHINA-BASE PLAZA NO. 666 TIANTONG SOUTH ROAD, NINGBO,CHINA	
Product	Product Name	Bluetooth speaker
	Model No.	SR9001
	Power Supply	5VDC by USB Port 3.7VDC by Battery
Test Result	The EUT was found compliant with the requirement(s) of the standards.	
Standard	ARIB STD T-66 Ver.3.6	

*Note

The above device has been tested by Shenzhen Most Technology Service Co., Ltd. To determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The test record, data evaluation & Equipment Under Test (EUT) configurations represented are contained in this test report and Shenzhen Most Technology Service Co., Ltd. Is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced except in full, without written approval of Shenzhen Most Technology Service Co., Ltd., this document may be altered or revised by Shenzhen Most Technology Service Co., Ltd., personal only, and shall be noted in the revision of the document.

Prepared by	Lili Lu
	Lili Lu(Engineer)
Reviewed by	Sunny
	Sunny Deng(Engineer)
Approved by	Yvette
	Yvette Zhou (Manager)

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Part	Rule Section	Description of Test	Result
4.1	3	Frequency Error	Complies
4.2	4	Occupied Bandwidth (99%) and Spread-spectrum Bandwidth (90%)	Complies
4.3	5	Unwanted Emission Intensity	Complies
4.4	6	Antenna Power Error	Complies
4.5	7	Limitation of Collateral Emission of Receiver	Complies
4.6	8	Transmission Antenna Gain (EIRP Antenna Power)	Complies
4.7	9	Transmission Radiation Angle Width (3dB Beamwidth)	Complies
4.8	10	Radio Interference Prevention Capability	Complies
4.9	11	Carrier Sense Capability	Complies
4.10	Note 2	Construction Protection Confirmation	Not applicable

NOTE:

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

(2) MIC Notice No.88 Appendix No.43

(3) MIC Ordinance Regulating Radio Equipment Section 4.17 of Article 49.20

1.1 TEST FACILITY

Test Site:	Shenzhen Most Technology Service Co., Ltd.
Location:	No.5, Langshan 2nd Rd., North Hi-Tech Industrial park, Nanshan, Shenzhen, Guangdong, China
Description:	There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2014 and CISPR 16 requirements. The FCC Registration Number is **490827.** The **IC** Registration Number is **7103A-1.**
Site Filing:	The site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.
Instrument Tolerance:	All measuring equipment is in accord with ANSI C63.4:2014 and CISPR 16 requirements that meet industry regulatory agency and accreditation agency requirement.
Ground Plane:	Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna.

1.2 MENSUREMENT UNCERTAINTY

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

No	Item	Uncertainty
1	Conducted Emission Test	±3.2dB
2	Radiated Emission Test	±4.7dB
3	RF power,conducted	±0.16dB
4	Spurious emissions,conducted	±0.21dB
5	All emissions,radiated(<1G)	±4.68dB
6	All emissions,radiated(>1G)	±5.0dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Bluetooth speaker	
Brand Name:	N/A	
Model Name	SR9001	
Serial Model	N/A	
Model Difference	N/A	
Product Description	Operation frequency:	2402MHz -2480MHz
	Modulation Type:	GFSK
	Number Of Channel:	40
	Antenna Designation:	Please see Note 2
	Antenna Gain(Peak):	0 dBi
	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.	
Adapter	N/A	
Power Supply	DC 5V by USB Port DC 3.7V by Battery	
Battery	3.7V	

Note:

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

2. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	Internal PCB Antenna	N/A	0	BT Antenna

2.2 DESCRIPTION OF TEST MODES

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

Pretest Mode	Description
Mode 1	GFSK Mode(CH0 CH19 CH39)

For Radiated Emission	
Final Test Mode	Description
Mode 1	GFSK Mode(CH0 CH19 CH39)

2.3 TEST CONDITIOPNS

DC input (VAC)	DC output in RF circuit (VDC)	DC output in modulation circuit (VDC)
5	3.35	3.35
5+10%	3.35	3.35
5-10%	3.35	3.35

Apply the input DC voltage to the EUT and vary the DC input voltage with +10% and -10%,
then check how much the ¨output voltage¨ varies at two measuring points within the radio section:
1) Measure the output voltage in the RF circuit
2) Measure the output voltage at the modulation circuit
a) .If the voltage variation at both parts appears to be more than 1%, then it is mandatory to perform further testing at 3 voltage levels (V-10%, V nominal, V+10%).
b). If the voltage variation at both parts appears to be less than 1%, then you only have to conduct further testing at V nominal.
During the input supply voltage to the EUT from the external power source, EUT only operated in normal voltage to test all regulations.

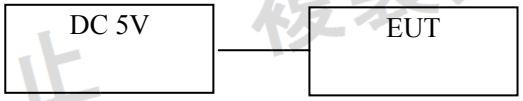
2.4 TABLE OF PARAMETERS OF TEST SOFTWARE SETTING

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 of FHSS

Test software Version	Test program: CSR		
Frequency	2402 MHz	2440 MHz	2480 MHz
Parameter	DEF	DEF	DEF

2.5 BLOCK DIGRAM SHOWING THE CONFUGURATION OF SYSTEM TESTED

Mode 1:



2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

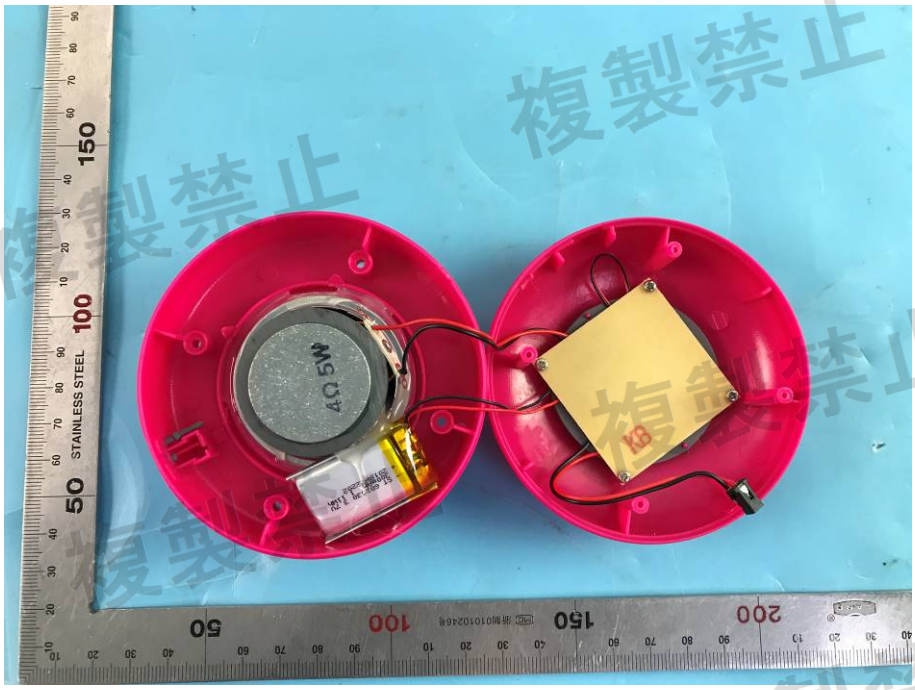
Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4408B	16040005	2018.03.10	Mar. 09.2019	1 year
2	Test Receiver	R&S	ESPI	101318	2018.03.10	Mar. 09.2019	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2018.03.10	Mar. 09.2019	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	62006 4416	2018.03.10	Mar. 09.2019	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	15090 201	2018.03.10	Mar. 09.2019	1 year
6	Horn Antenna	EM	EM-AH-1080	201107 1402	2018.03.10	Mar. 09.2019	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2018.03.10	Mar. 09.2019	1 year
8	Amplifier	EM	EM-30180	060538	2018.03.10	Mar. 09.2019	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2018.03.10	Mar. 09.2019	1 year
10	Power Meter	R&S	NRVS	100696	2018.03.10	Mar. 09.2019	1 year
11	Test Receiver	R&S	ESCI	101160	2018.03.10	Mar. 09.2019	1 year
12	LISN	R&S	ENV216	101313	2018.03.10	Mar. 09.2019	1 year
13	LISN	EMCO	3816/2	00042990	2018.03.10	Mar. 09.2019	1 year
14	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2018.03.10	Mar. 09.2019	1 year

3. RF SHIELDING METHOD

We apply the product for Japan RF certification. The RF module is installed on the PCB board. Outside with plastic shell, plastic shell with 6 angle screws has to be covered by a pad so that they are not easily accessible.

Item	Limits
Frequency Error	50ppm



4. TEST RESULT FOR WIFI

4.1 FREQUENCY ERROR

4.2 LIMIT

Item	Limits
Frequency Error	50ppm

4.3 MEASURING INSTRUMENTS AND SETTING

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

4.4 TEST PROCEDURES

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

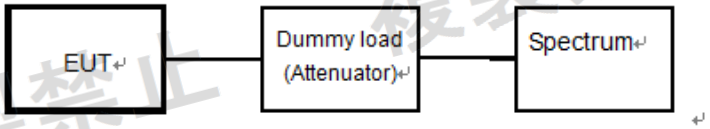
(2)In the case of burst waves, the measurement shall be done for enough time in order to obtain the enough measuring accuracy, and the average of the measured values becomes the final value.

(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.

4.5 TEST SETUP LAYOUT



4.5.1 EUT OPERATION DURING TEST

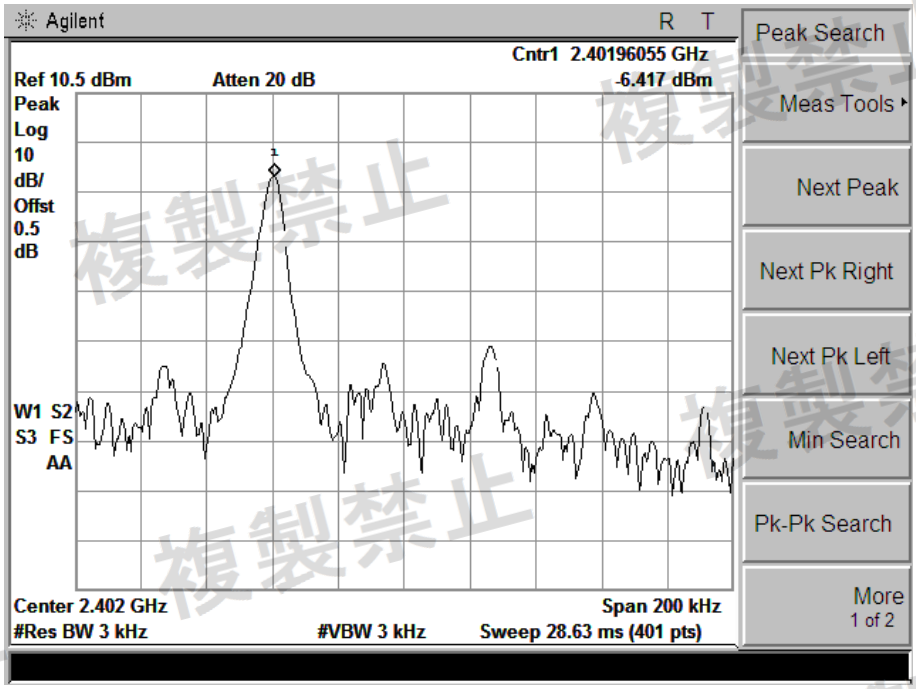
The EUT was placed on the test table and programmed in un-modulation function.

4.5.2 TEST RESULT

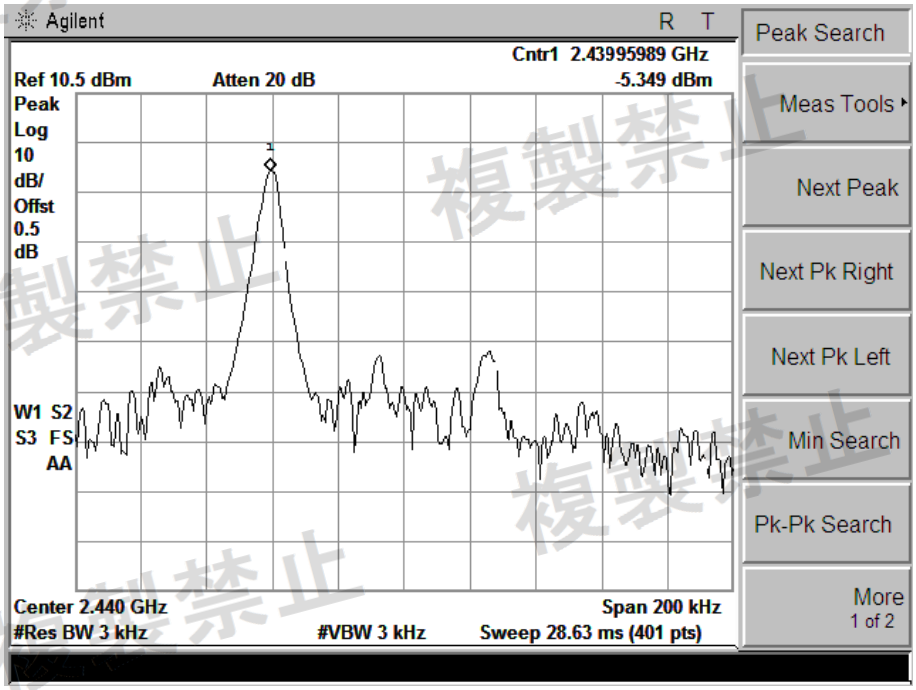
Temperature:	25^{0}C	Tested by:	Joe
Humidity:	57 % RH	Test Voltage	Normal Voltage
Operation Mode:	Normal Voltage-GFSK mode		

Test Voltage	Test Frequency (MHz)	Measured Frequency (MHz)	Frequency Error(ppm)	Limit (ppm)	P/F
Normal Voltage	2402	2401.9606	-16.403	±50	PASS
	2440	2439.9599	-16.434	±50	PASS
	2480	2479.9593	-16.411	±50	PASS

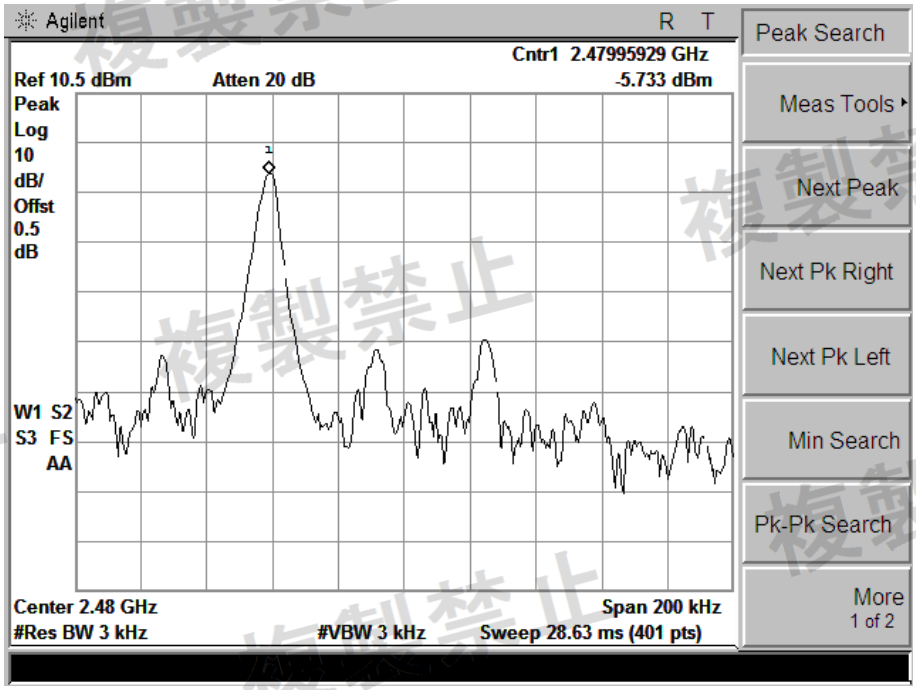
CH0



CH19


Agilent
R T
Cntr1 2.43995989 GHz
Ref 10.5 dBm
Atten 20 dB
-5.349 dBm
Peak
Log
10
dB/
Offst
0.5
dB
W1 S2
S3 FS
AA
Center 2.440 GHz
#Res BW 3 kHz
#VBW 3 kHz
Span 200 kHz
Sweep 28.63 ms (401 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

CH39


Agilent
R T
Cntr1 2.47995929 GHz
Ref 10.5 dBm
Atten 20 dB
-5.733 dBm
Peak
Log
10
dB/
Offst
0.5
dB
W1 S2
S3 FS
AA
Center 2.48 GHz
#Res BW 3 kHz
#VBW 3 kHz
Span 200 kHz
Sweep 28.63 ms (401 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

5. ANTENNA POWER

5.1 LIMIT

Item	Limits
Antenna Power Density	≦3mW/MHz (FH form 2427 - 2470.75 MHz) ≦10mW/MHz (OFDM,DS from2400~2483.5MHz) ≦10mW (Other from 2400~2483.5MHz)
Antenna Power Error	+20%, -80% (Base on manufacturer declare antenna power density)

5.2 MEASURING INSTRUMENTS AND SETTING

Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	1 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.3 TEST PROCEDURES

Attenuation of the attenuator shall be set to provide an optimum input level to the spectrum analyzer.

1 . Set the spectrum analyzer as follows for searching the frequency that outputs the maximum antenna power:

Center frequency: Test frequency

Frequency sweep width: Approximately twice of the occupied bandwidth Resolution bandwidth: 1MHz

Video bandwidth: Approximately three times of the resolution bandwidth

Y-axis scale: 10dB/Div

Sweep time: Minimum time to ensure the measuring accuracy

(In the case of burst wave, one burst shall be included per data point.)

Trigger condition: Free run

Data points: 400 points or more

Sweep mode: Continuous sweep

Detection mode: Positive peak

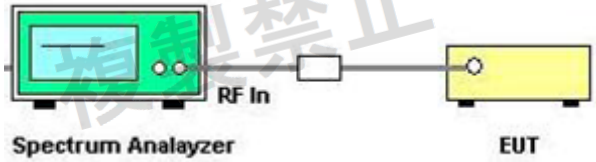
Display mode: Maximum hold

2, When the trace is complete, find the peak value of the power envelope and record. In the case of bandwith above RBW, connect to power meter directly.

3.Calculate antenna power density by the formula below
PT(mW/MHz) = Total Output Power (mW) / Burst Ratio / Spread Bandwidth (MHz) Burst Ratio =ON Time / OFF Time

4. Antenna Power Error is definition that actual measure antenna power tolerance between + 20% to - 80% power range that base on manufacturer declare the conducted power density.

5.4 TEST SETUP LAYOUT



5.5 TEST DEVIATION

There is no deviation with the original standard.

5.6 TEST RESULT

Temperature:	25^{0}C	Tested by:	Joe
Humidity:	57 % RH	Test Voltage	Normal Voltage
Operation Mode:	Normal Voltage- GFSK mode		

Mode	Channel	Test Frequency (MHz)	Conducted RF output power density (mW)	Rated power Density (mW)	Antenna Power Error (%)
GFSK	Low	2402	1.063	1.072	-0.840%
	Middle	2440	1.092	1.072	1.866%
	High	2480	1.088	1.072	1.493%
Limit : +20%, -80% (Base on manufacturer declare antenna power density)					

6. OCCUPIED BANDWITH

6.1 LIMIT

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

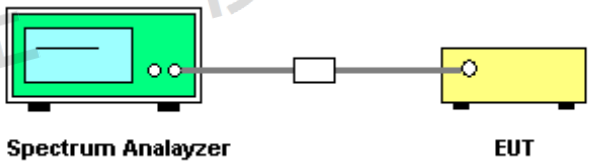
6.2 MEASURING INSTRUMENTS AND SETTING

6.3 TEST PROCEDURES

1. Setting of SA is following as: RB: 300kHz / VB:300kHz / SPAN: 50MHz / AT: 10dB Ref: 0dBm / 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.
4. Spread Spectrum Factor = Spread Spectrum Bandwidth / modulation rate of EUT.
5. Spread Spectrum Factor limit is greater than 5

6.4 TEST SETUP LAYOUT



6.5 TEST DEVIATION

There is no deviation with the original standard.

6.6 EUT OPERATION DURING TEST

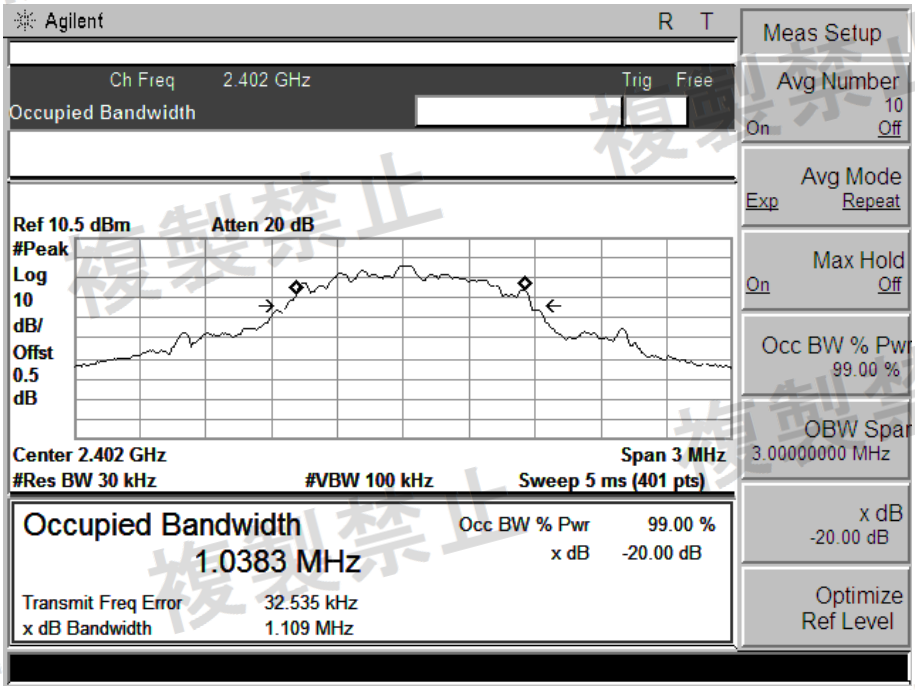
The EUT was programmed to be in continuously transmitting mode.

6.7 TEST RESULT

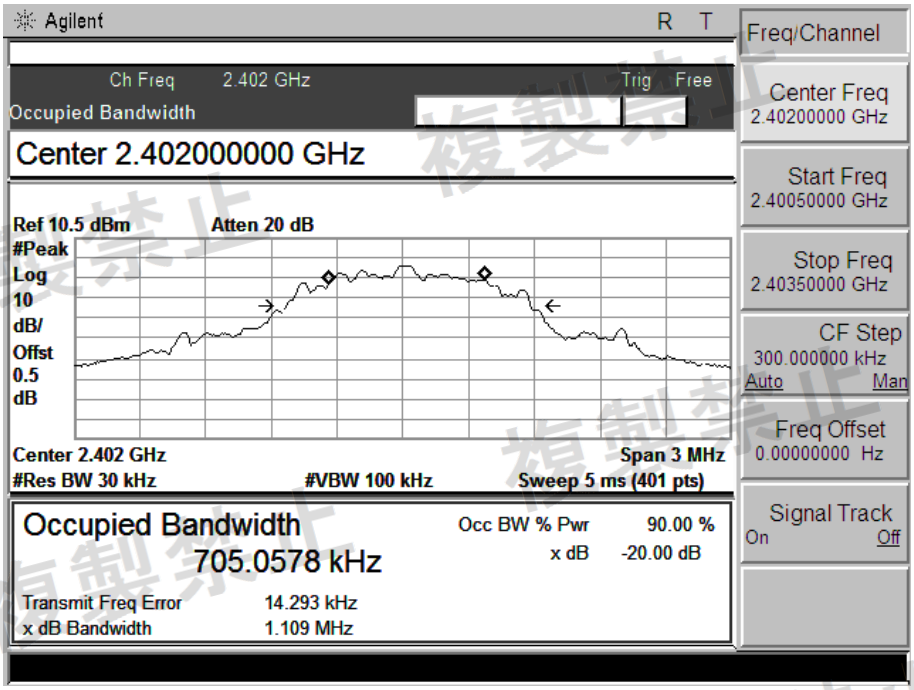
Temperature:	25^{0}C	Tested by:	Joe
Humidity:	57 % RH	Test Voltage	Normal Voltage
Operation Mode:	Normal Voltage-GFSK mode		

Mode	Channel	Test Frequency (MHz)	Occupied Bandwidth (MHz)	Spread Bandwidth (MHz)
GFSK	Low	2402	1.0383	0.7051
	Middle	2440	1.0381	0.6877
	High	2480	1.0503	0.7260

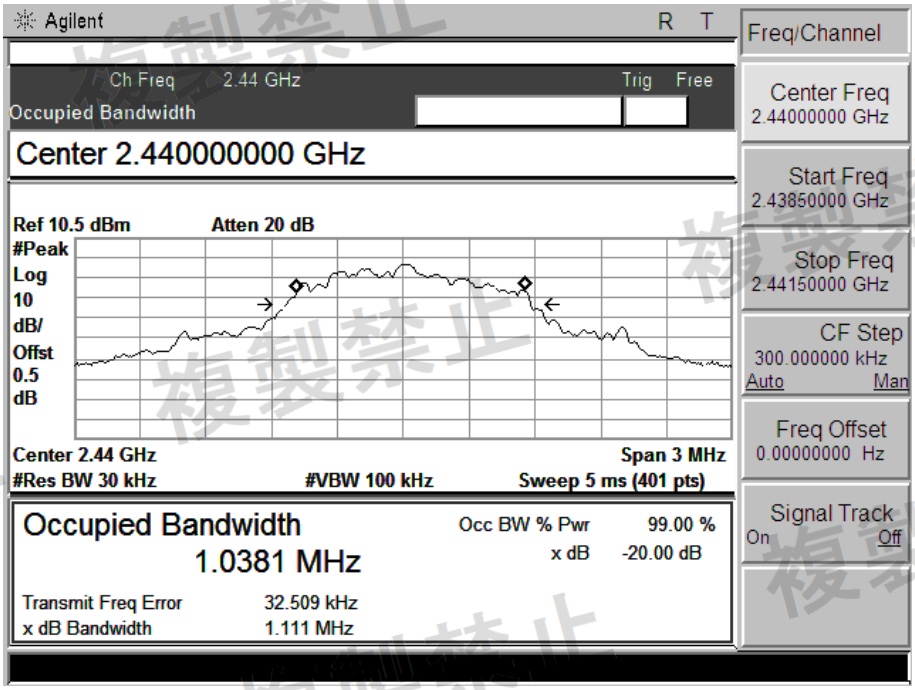
CH0-Occupied Bandwidth (99%)- GFSK Mode



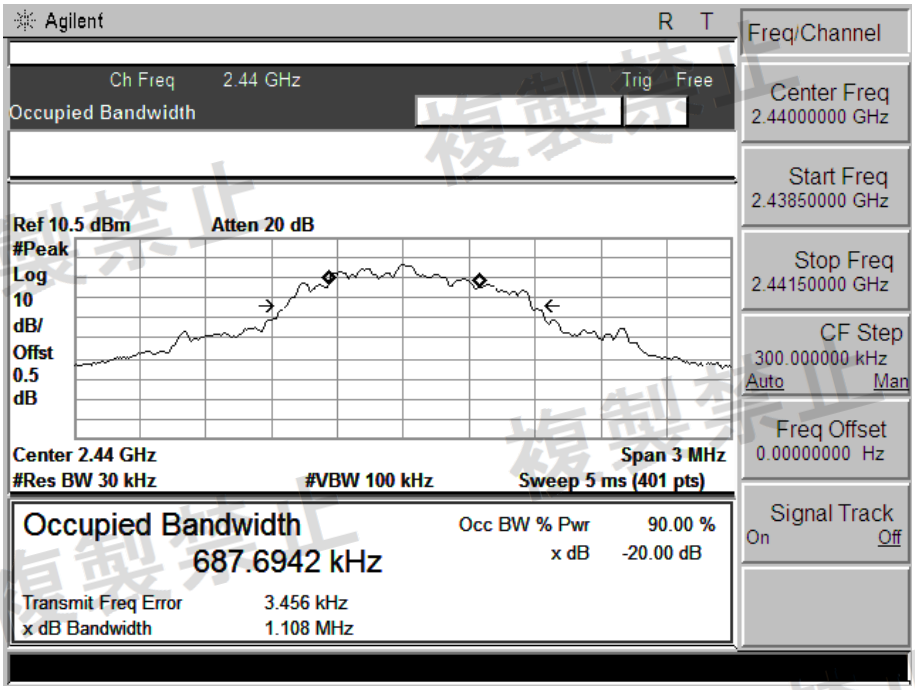
CH0-Spread Bandwidth (90%)- GFSK Mode



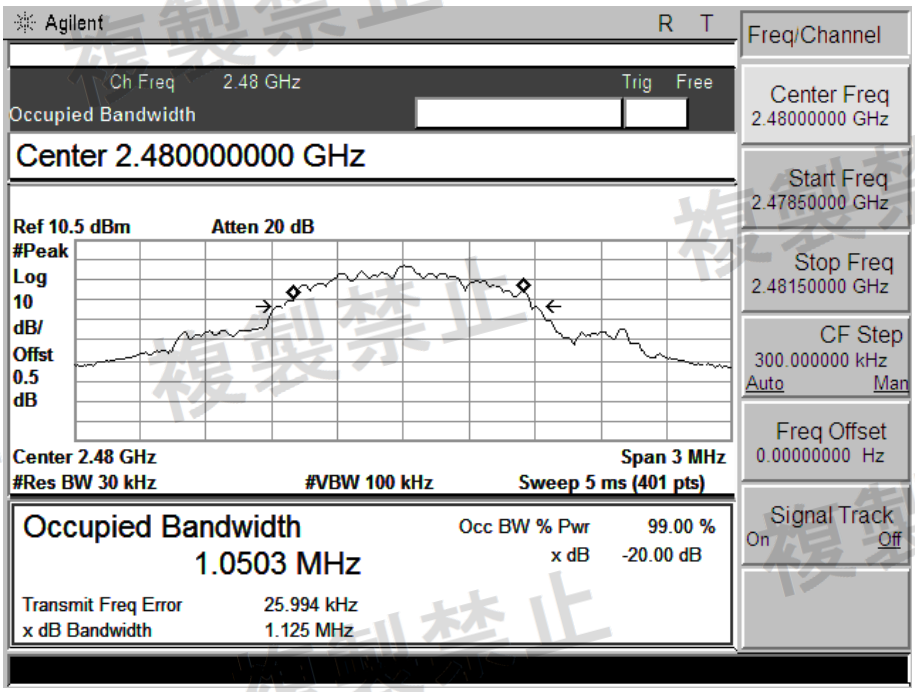
CH19-Occupied Bandwidth (99%)- GFSK Mode



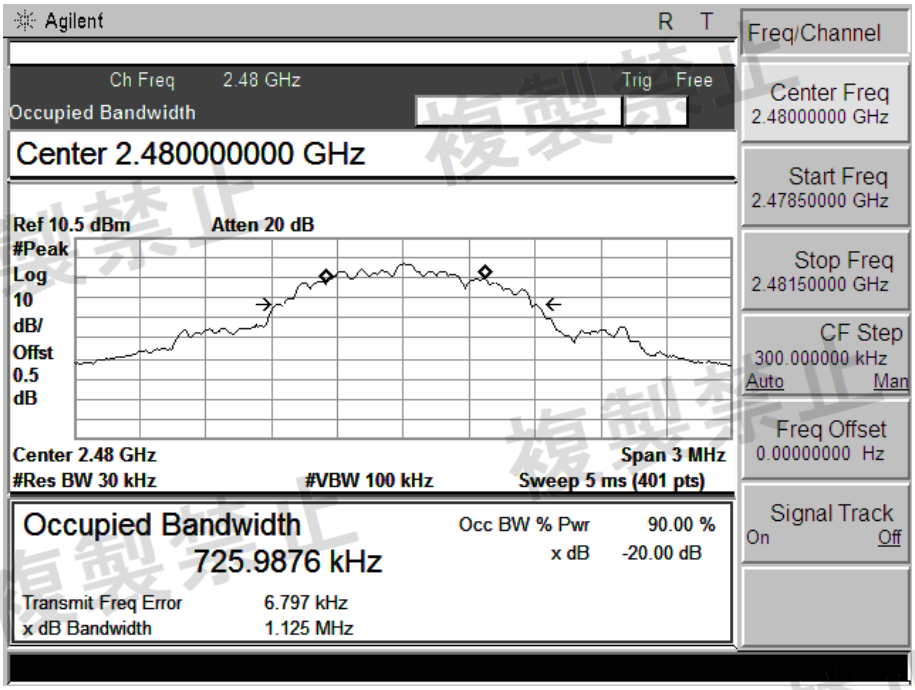
CH19-Spread Bandwidth (90%)- GFSK Mode



CH39-Occupied Bandwidth (99%)- GFSK Mode



CH39-Spread Bandwidth (90%)- GFSK Mode



7. UNWANTED EMISSION INTENSITY MEASUREMENT

7.1 LIMIT

Item	Limits
TX Spurious Emission	≦ 0.25 μW (30MHz≦f≦1000MHz)
	≦2.5 μW (1000MHz<f≦2387MHz)
	≦25 μW (2387MHz<f≦2400MHz)
	≦25 μW (2483.5MHz≦f<2496.5MHz)
	≦2.5 μW (2496.5MHz≦f<12500MHz)

7.2 MEASURING INSTRUMENTS AND SETTING

Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	1 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

7.3 TEST PROCEDURES

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 12500MHz 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.

7.4 TEST SETUP LAYOUT

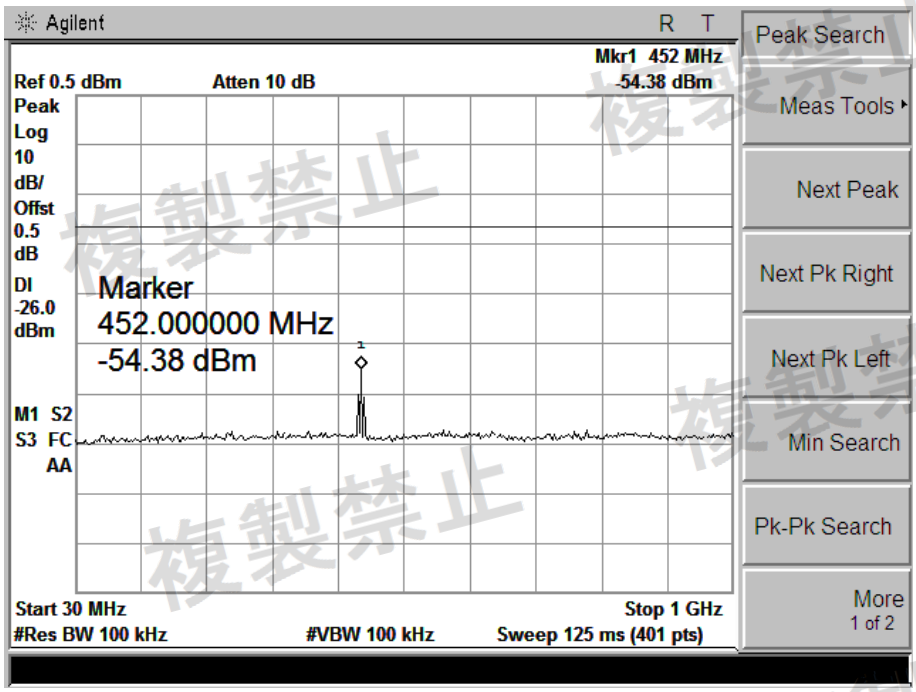
7.5 TEST DEVIATION

There is no deviation with the original standard.

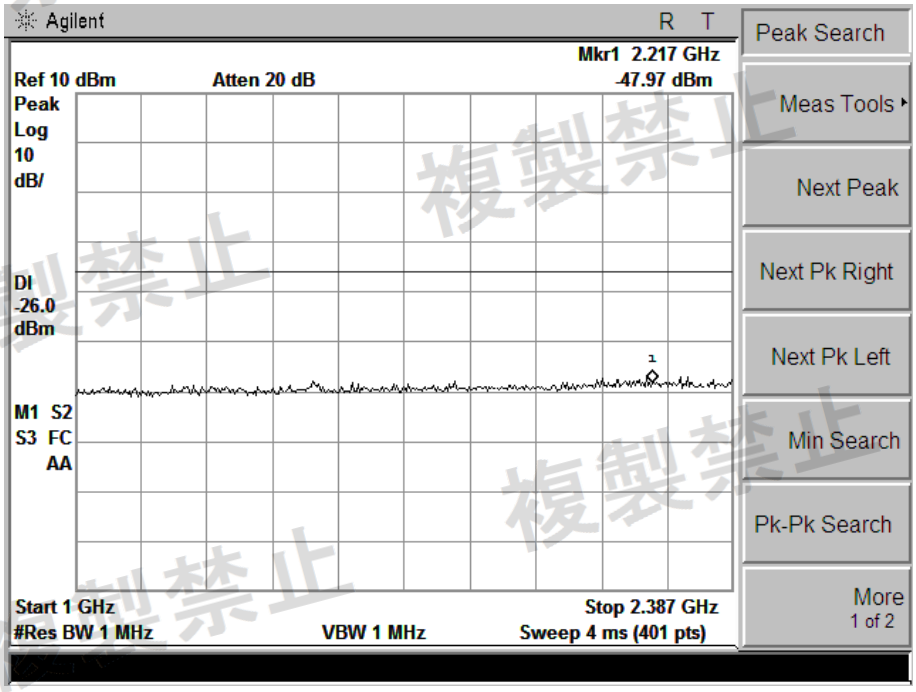
7.6 TEST RESULT

Temperature:	25^{0}C	Tested by:	Joe
Humidity:	57 % RH	Test Voltage	Normal Voltage
Operation Mode:	Normal Voltage-GFSK mode(CH0, CH19,CH39)		

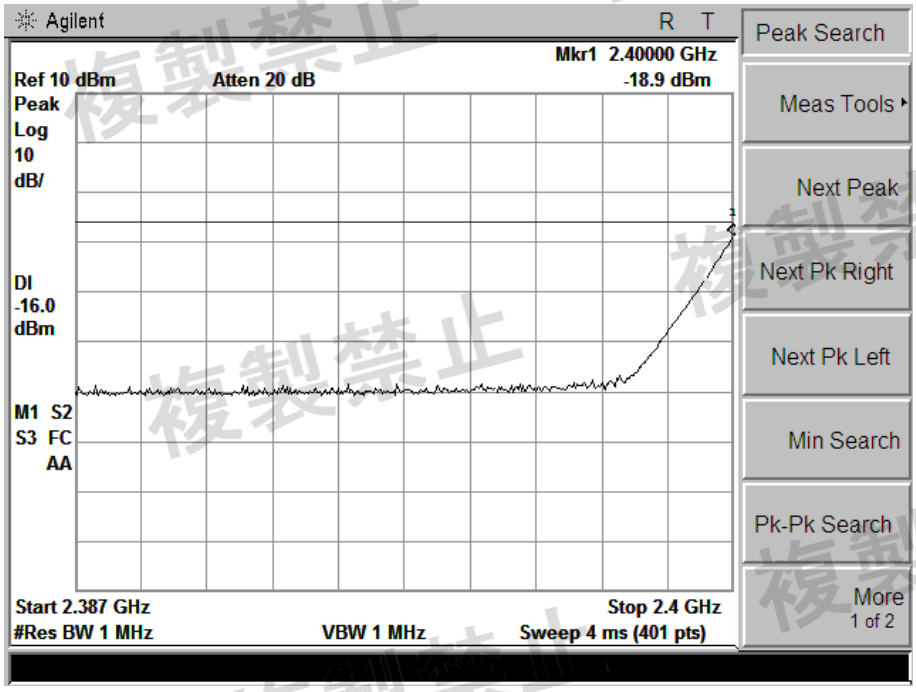
CH 0 (GFSK mode) - Frequency Band 1 (30 MHz ≦ f ≦ 1000 MHz)



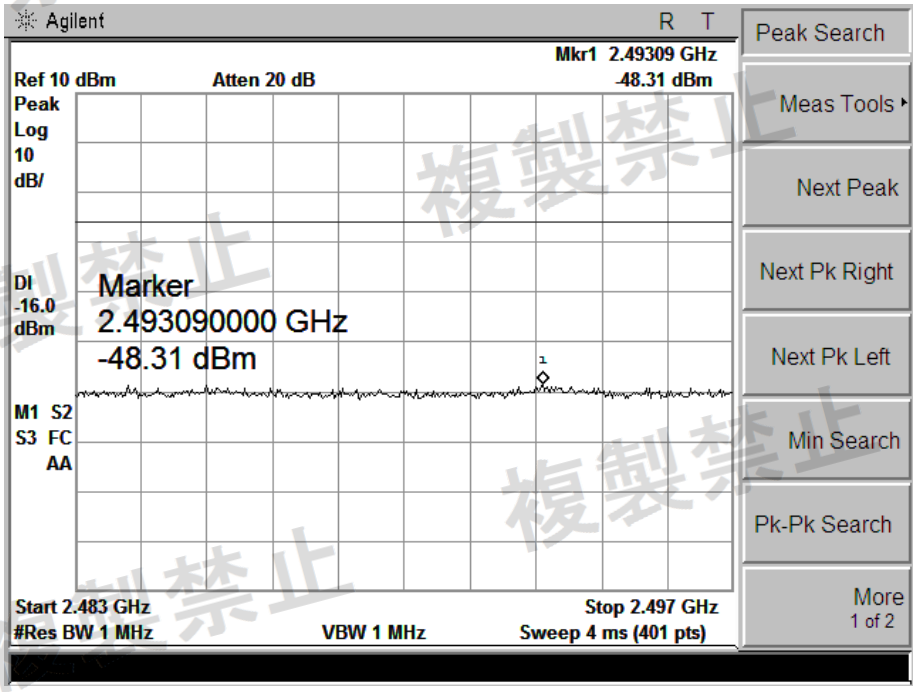
CH 0 (GFSK mode) - Frequency Band 2 (1000 MHz < f ≦ 2387 MHz)



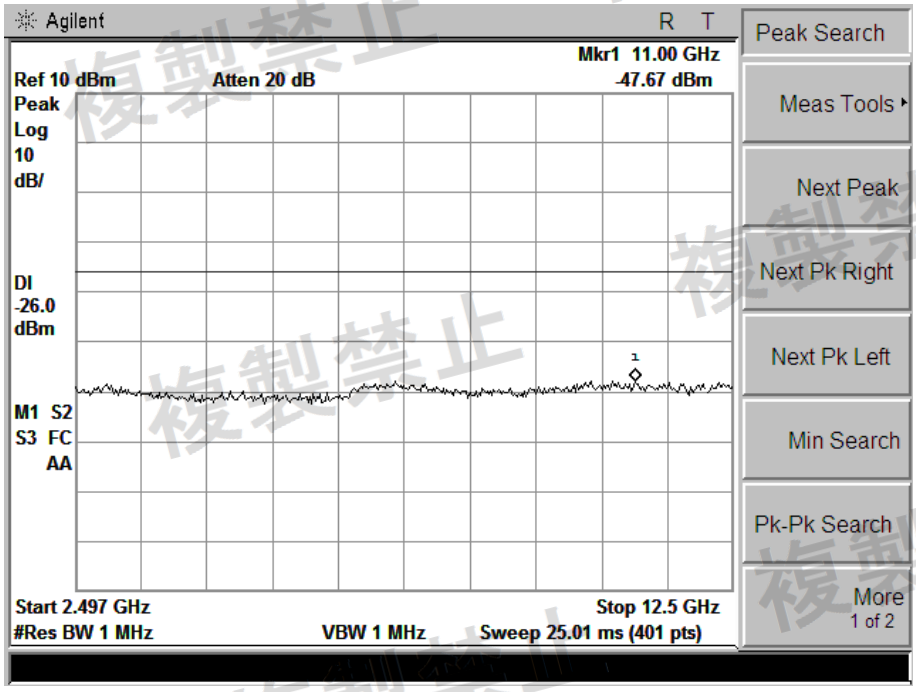
CH 0 (GFSK mode) - Frequency Band 3 (2387 MHz < f ≦ 2400 MHz)



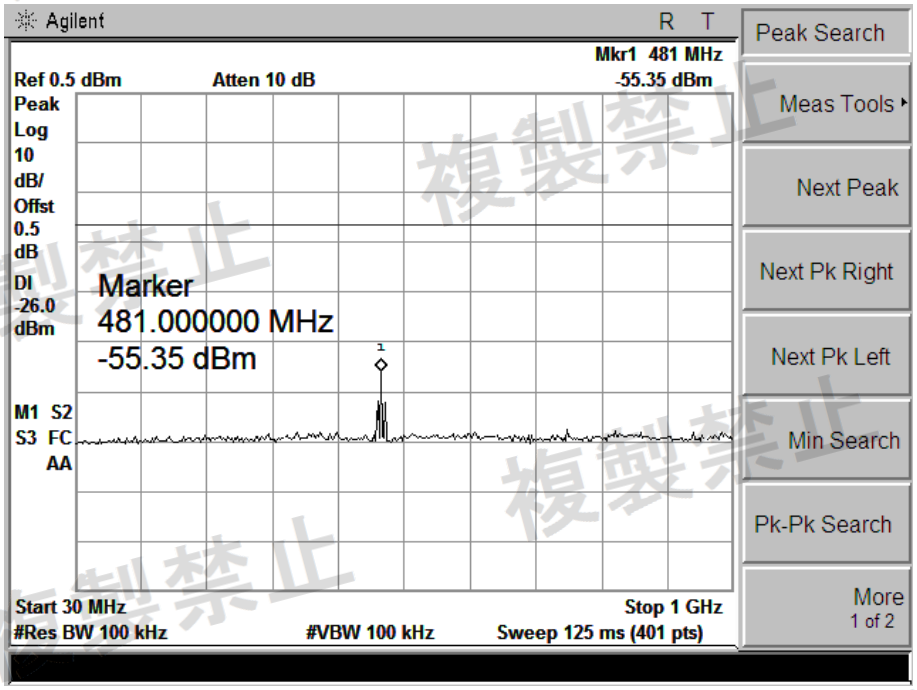
CH 0 (GFSK mode) - Frequency Band 4 (2483.5 MHz ≦ f < 2496.5 MHz)



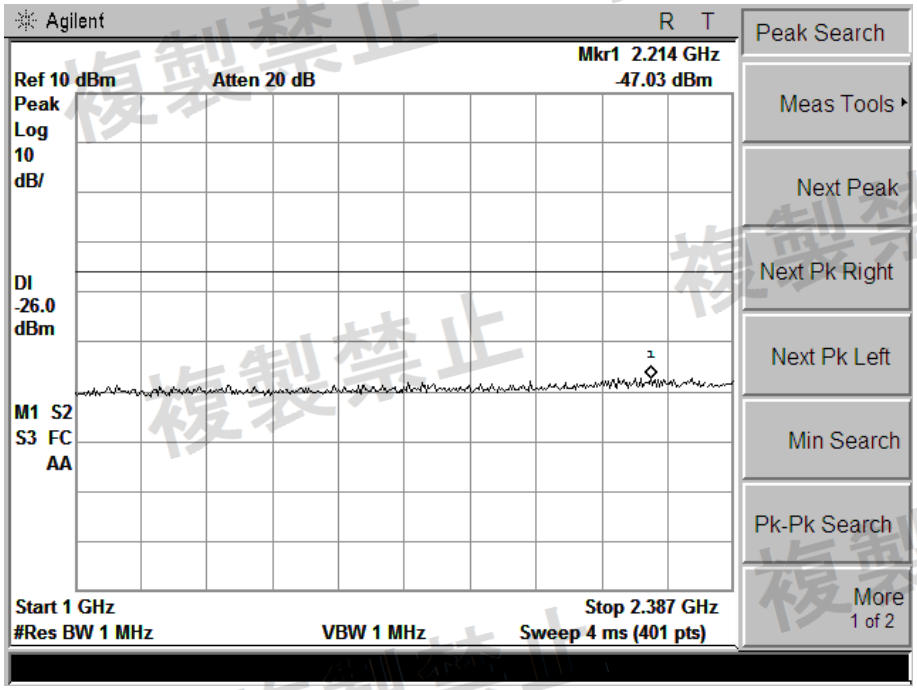
CH 0 (GFSK mode) - Frequency Band 5 (2496.5 MHz ≦ f < 12.5 GHz)



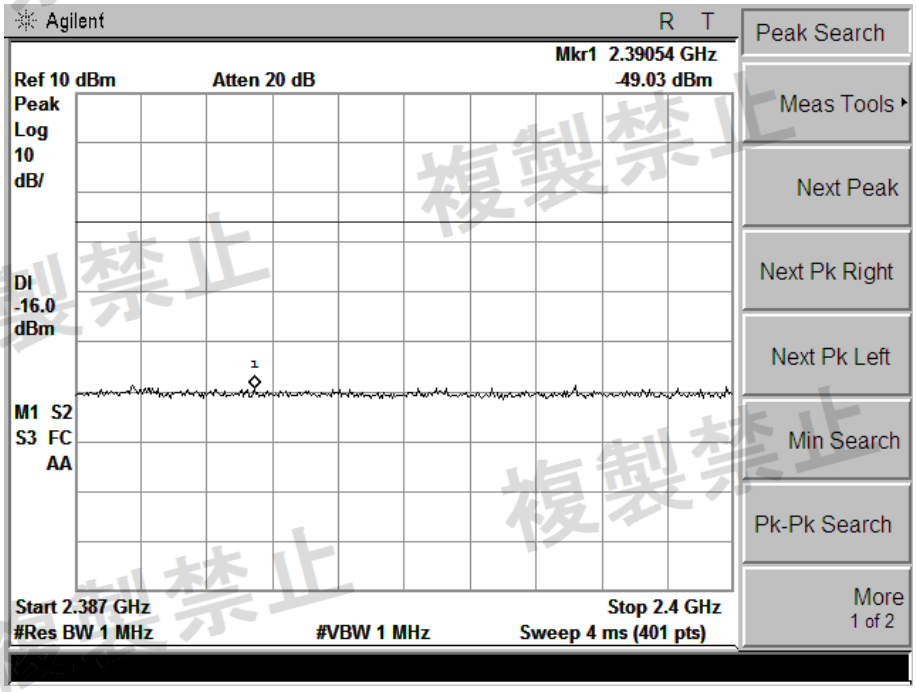
CH 19 (GFSK mode) - Frequency Band 1 (30 MHz ≦ f ≦ 1000 MHz)



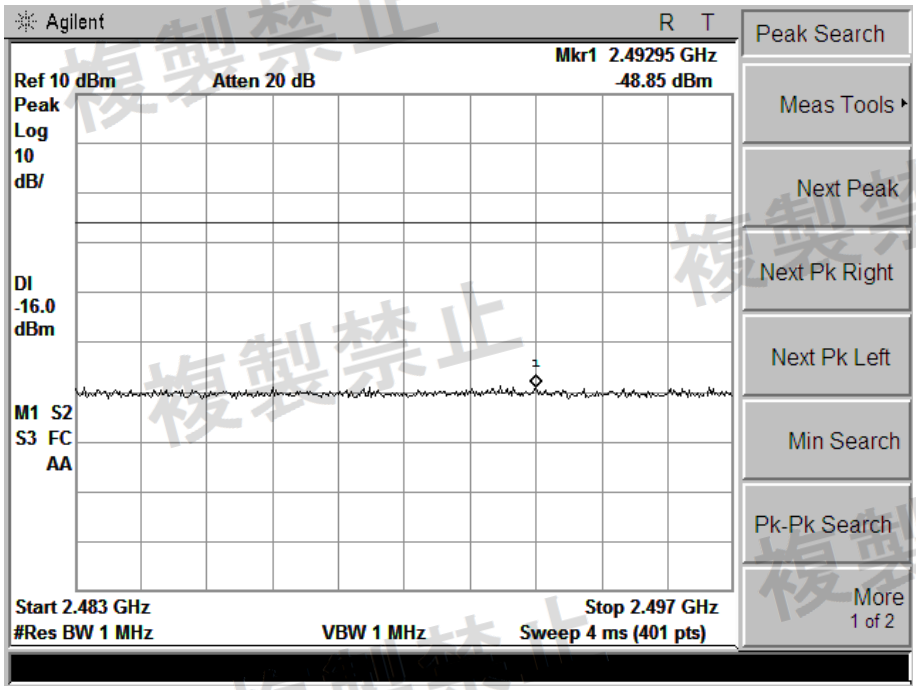
CH 19 (GFSK mode) - Frequency Band 2 (1000 MHz < f ≦ 2387 MHz)



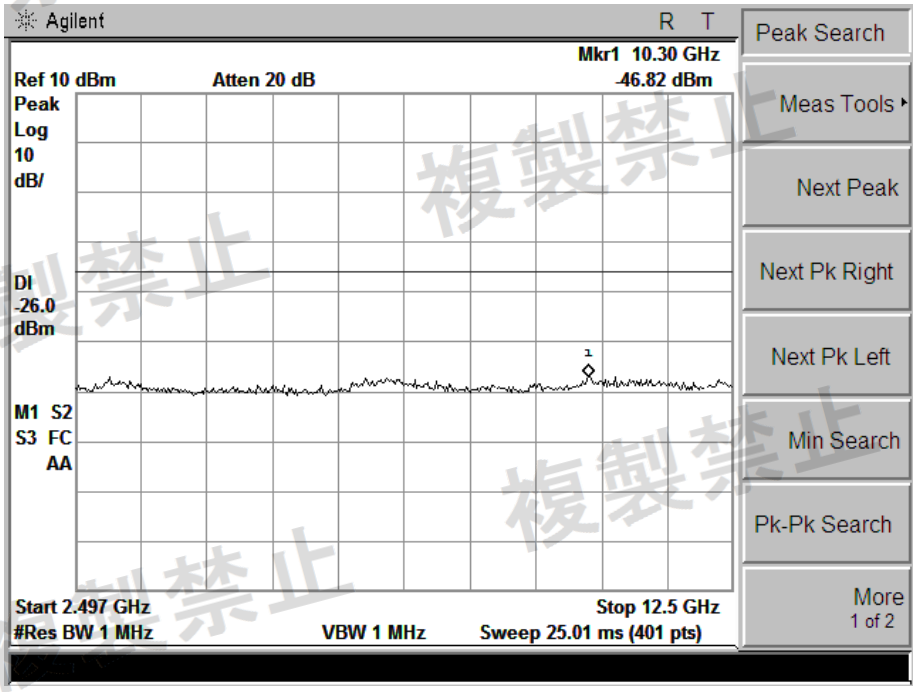
CH 19 (GFSK mode) - Frequency Band 3 (2387 MHz < f ≦ 2400 MHz)



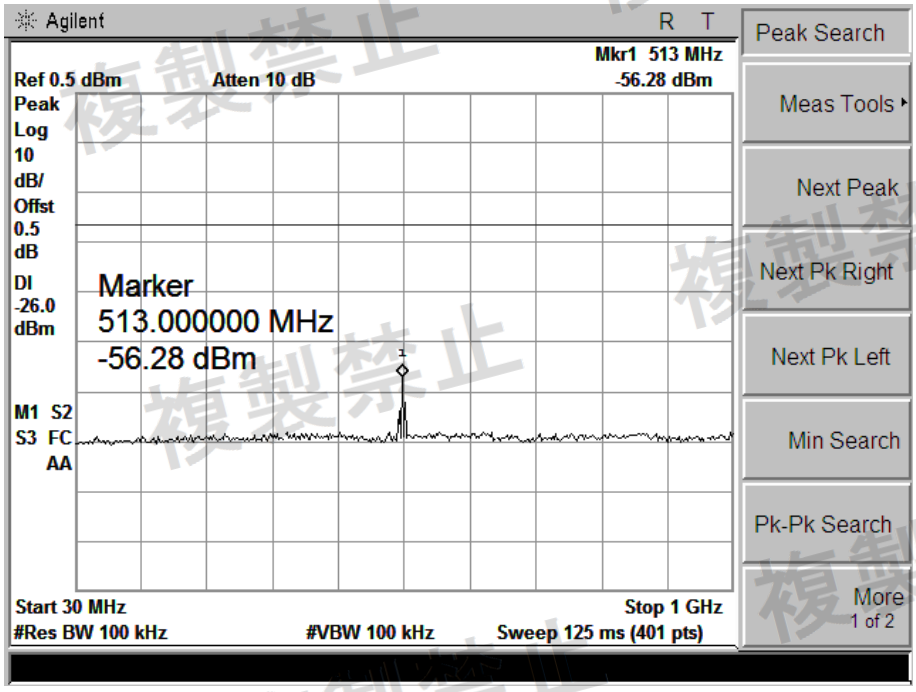
CH 19 (GFSK mode) - Frequency Band 4 (2483.5 MHz ≦ f < 2496.5 MHz)



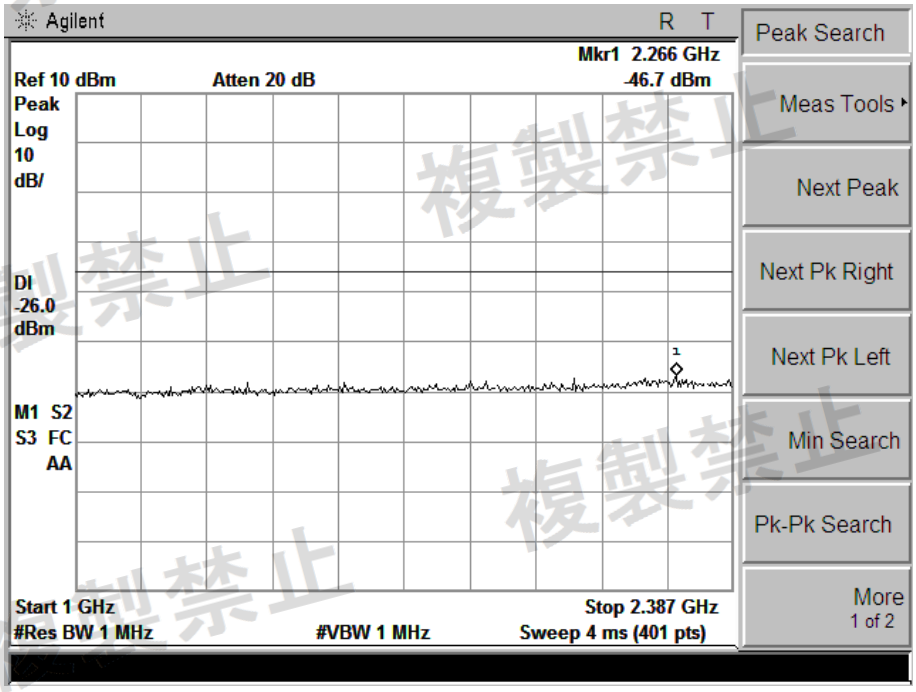
CH 19 (GFSK mode) - Frequency Band 5 (2496.5 MHz ≦ f < 12.5 GHz)



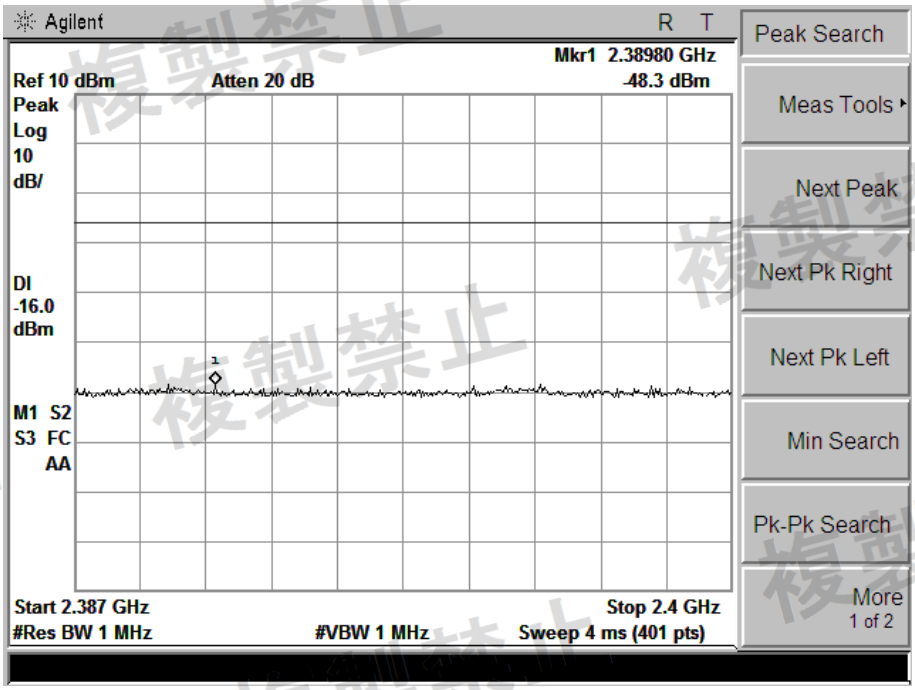
CH 39 (GFSK mode) - Frequency Band 1 (30 MHz ≦ f ≦ 1000 MHz)



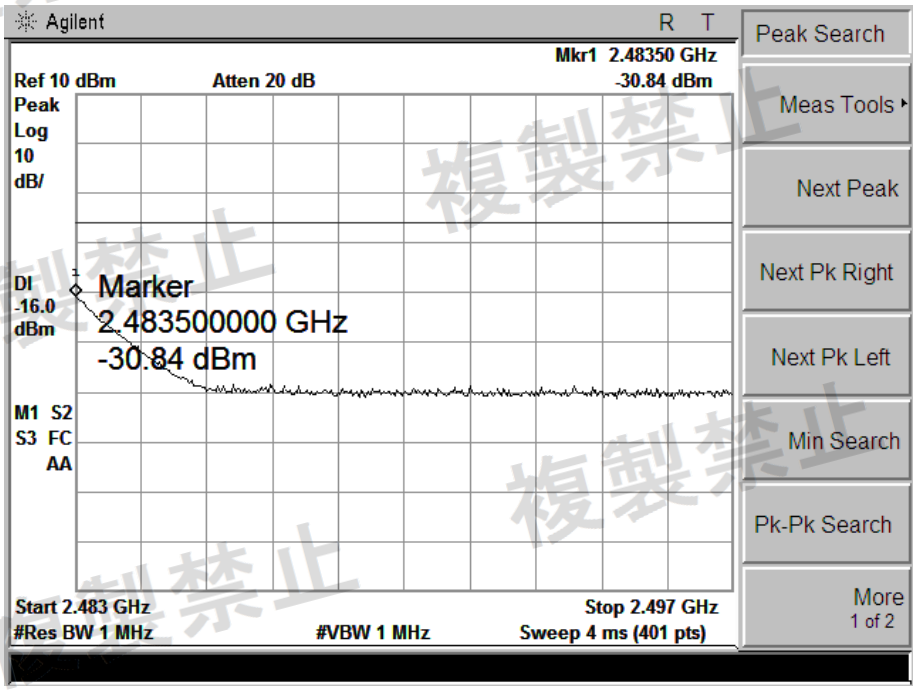
CH 39 (GFSK mode) - Frequency Band 2 (1000 MHz < f ≦ 2387 MHz)



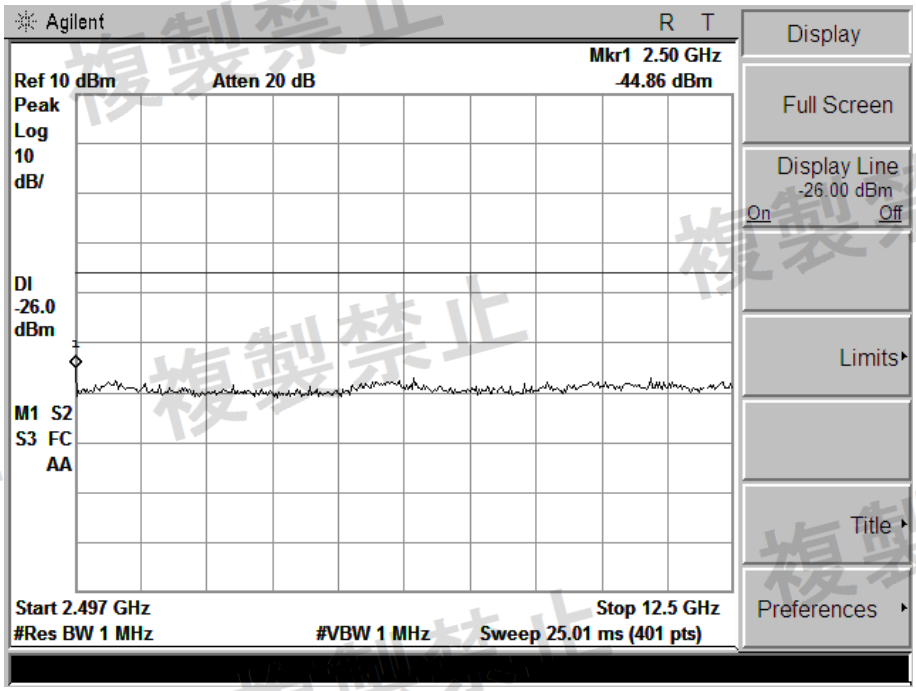
CH 39 (GFSK mode) - Frequency Band 3 (2387 MHz < f ≦ 2400 MHz)



CH 39 (GFSK mode) - Frequency Band 4 (2483.5 MHz ≦ f < 2496.5 MHz)



CH 39 (GFSK mode) - Frequency Band 5 (2496.5 MHz ≦ f < 12.5 GHz)



8. IMITATION OF COLLATERAL EMISSION OF RECEIVER MEASUREMENT

8.1LIMIT

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

8.2 MEASURING INSTRUMENTS AND SETTING

Please refer to section 5 in this report. 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

8.3 TEST PROCEDURES

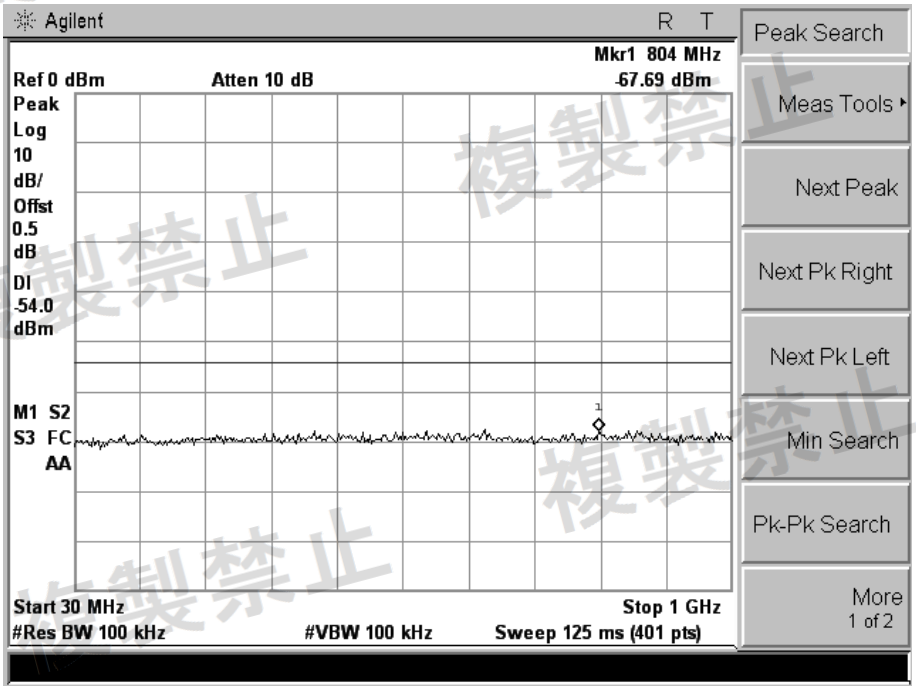
1. EUT have the continuous reception mode and fixed only one channelize.
2. Setting of SA is following as RB / VB: 100 kHz (below 1GHz emissions) / 1 MHz (above 1GHz emissions) /
   AT: 10dB / Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
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 andstop frequency 12500MHz. 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.

8.4 TEST RESULT

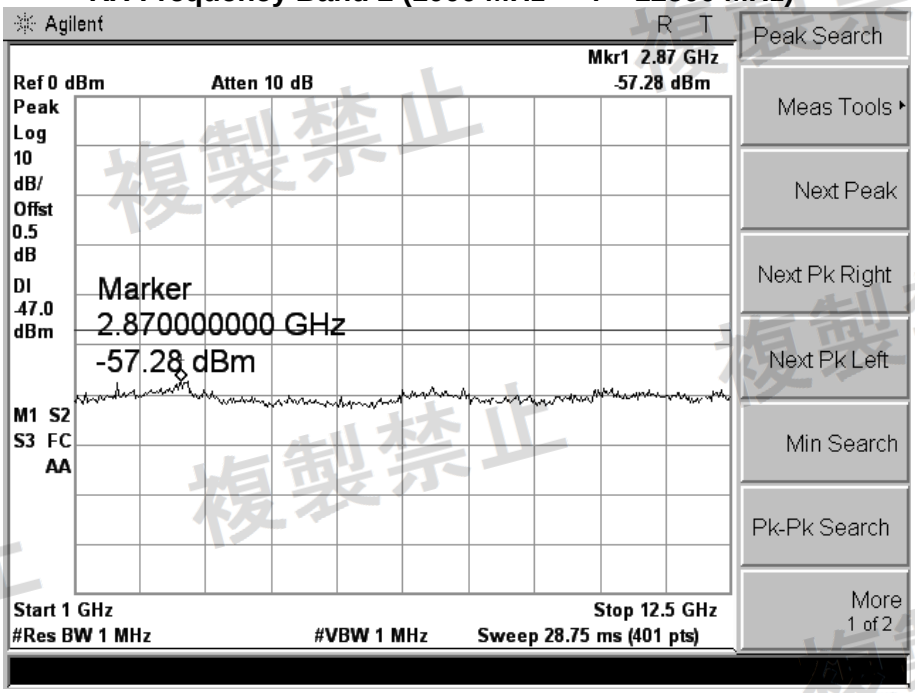
Temperature:	25^{0}C	Tested by:	Joe
Humidity:	57 % RH	Test Voltage	Normal Voltage
Operation Mode:	Normal Voltage		

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

RX-Frequency Band 1 (30 MHz ≦ f < 1000 MHz)



RX-Frequency Band 2 (1000 MHz ≦ f < 12500 MHz)



9. TRANSMISSION ANTENNA GAIN (EIRP ANTENNA POWER) MEASUREMENT

9.1 LIMIT

Item	Limits
EIRP Power Density	≦16.91dBm/MHz (FH form 2427 - 2470.75 MHz) ≦22.14dBm/MHz (OFDM,DS from 2400~2483.5MHz) ≦22.14dBm (Other from 2400~2483.5MHz)
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	

9.2 MEASURING INSTRUMENTS AND SETTING

Please refer to section 5 in this report. The following table is the setting of spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB/VB	1 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

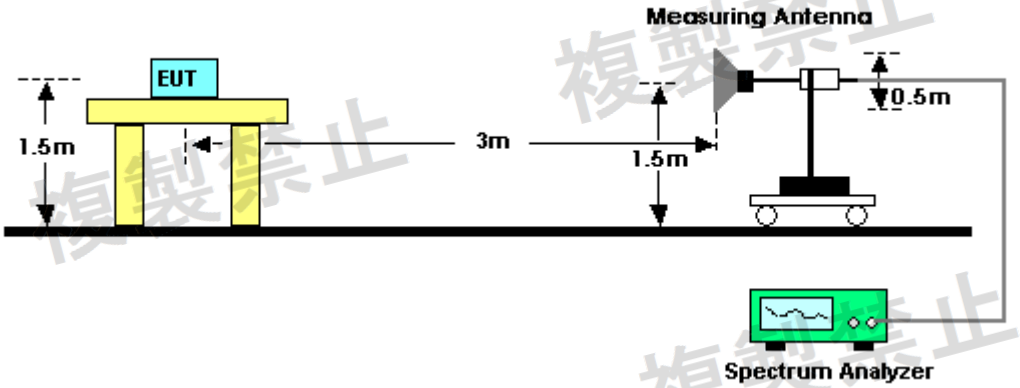
9.3 TEST PROCEDURES

1. Set EUT ad measuring antenna at the same height and roughly facing each other
2. Move the measuring antenna height up and down within ± 50cm of EUT height and swing it to find the maximum output of the measuring antenna. The output level at the spectrum analyzer is read sa "E"
3. Remove the EUT from the turn table and put the replacing antenna facing to measuring antenna at same height. Set the standard signal generator (SSG) at same frequency and transmit on then receive the signal.
4. Swing the replacing antenna give a maximum receiving level.
5. Move the measuring antenna height up and down within ± 50cm of replacing antenna height and swing it to find the maximum receiving level
6. Set SSG output power at Pt to give the equivalent output level of "E" or caluate Pt with SSG output which gives the nearest of "E" and difference (± 1dB). Record the Pt
7. Calculate EIRP by the formula below EIRP = Gt − L + Pt.
   Gt: gain of replacing antenna (dBi)

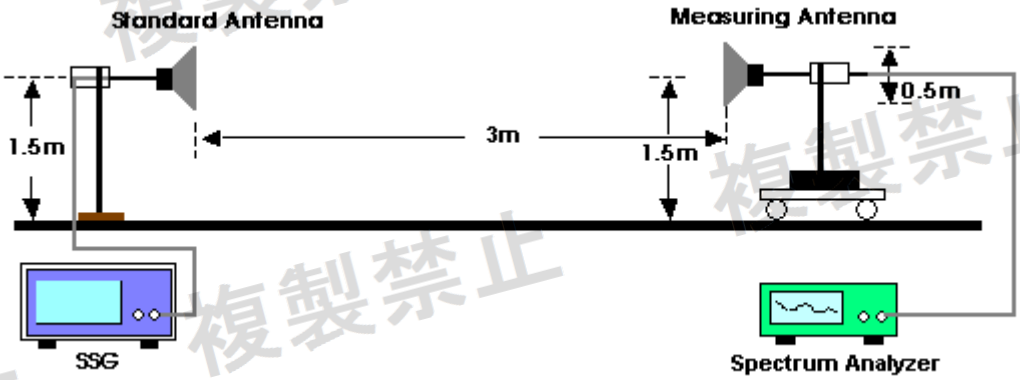
   L: feeder loss between SSG and replacing antenna Pt: Output power of the SSG
8. If the antenna for the EUT has circular polarization, sum of V-field and H-field will be result if measuring antenna is linear polarization

9.4 TEST SETUP LAYOUT

For EUT radiation measurement



For standard antenna measurement



9.5 TEST DEVIATION

There is no deviation with the original standard.

9.6 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

9.7 RESULTS OF TRANSMISSION ANTENNA GAIN

Note: This test item will not be applied to the transmission antenna which has a gain of 2.14 dBi or less.

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

10.1 LIMIT

Item	Limits
3dB antenna beam width	360/A (If A<1; then A=1) A = {EIRP Power [mW] / 16.36 for DS, OFDM} or A = {EIRP Power [mW] / 4.9 for FH}
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	

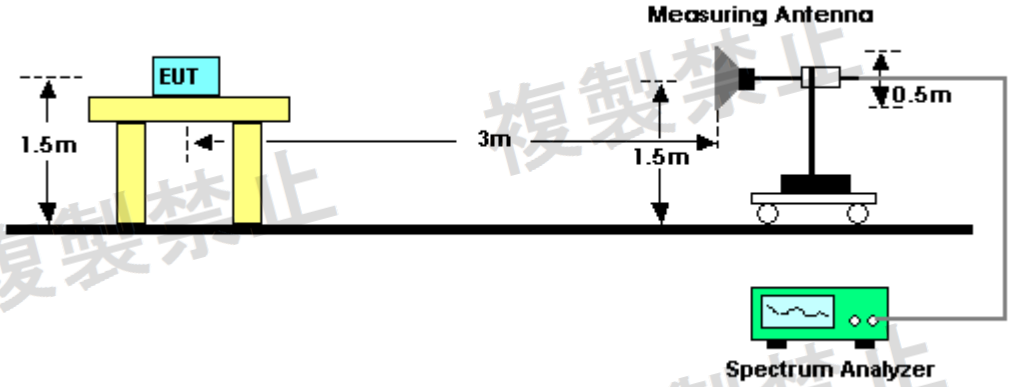
10.2 MEASURING INSTRUMENTS AND SETTING

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

10.3 TEST PROCEDURES

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 receving 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. The output level at the spectrum analyzer is read as "E"
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] / 16.36 for DS, OFDM}
   or A = {EIRP Power [mW] / 4.9 for FH}

10.4 TEST SETUP LAYOUT



10.5 TEST DEVIATION

There is no deviation with the original standard.

10.6 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

10.7 TEST RESULT OF TRANSMISSION RADIATION ANGLE WIDTH (3DB BEAMWIDTH)

Note: This test item will not be applied to the transmission antenna which has a gain of 2.14 dBi or less.

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

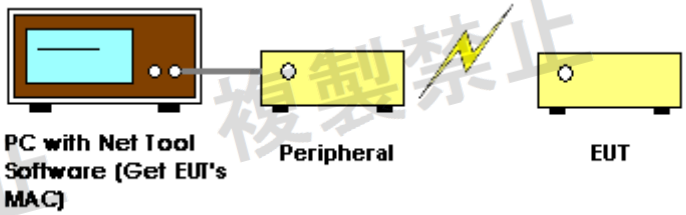
1. In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification codes form EUT. b. Check the transmitted identification codes with the demodulator.
2. In the case of receiving the identification ocde:

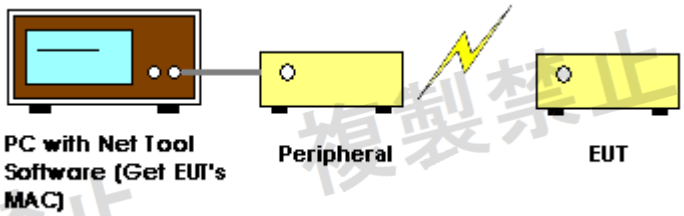
a. Transmit the predetermined identification codes form the counterpart.

b . Check if communication is normal.

c. Transmit the wrong identification codes form the counterpart.

d. Check if communication always that identification codes are different





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

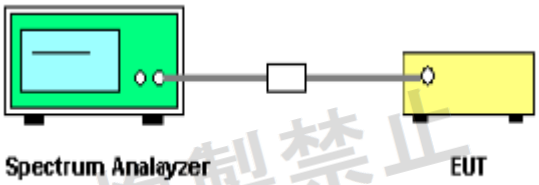
EUT：	Bluetooth speaker	Test Date:	Feb. 25, 2019
Temperature:	25^{0}C	Tested by:	Joe
Humidity:	57 % RH		
Test result:	CONFORM		

12. CARRIER SENSE CAPABILITY MEASUREMENT

12.1 LIMIT

Carrier Sense : Good – EUT stop RF transmission signal after carrier inject to EUT.

12.2TEST SETUP LAYOUT



TEST PROCEDURES

1. SSG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SSG and power level is 0dBm. Then turn off the RF signal of SSG.
2. EUT have transmitted the maximum modulation signal and fixed channelize.
3. Setting of SA is following as: RB:1MHz / VB:1MHz / SPAN: 50MHz / AT: 10dB /Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak.
4. SSG RF Signal On.
5. EUT shall be stop the transmitted any signal and SSG RF Signal Off. Then EUT will be continuous transmitted signal.

TEST RESULTS

Not applicable to device which is not operated outdoor