



MEASUREMENT REPORT

2.4GHz Band Wide-band Low Power Data Communication System

Applicant: OHM ELECTRIC INC.

Address: 3-8, ASAHI, YOSHIKAWA-CITY, SAITAMA 342-8502,
JAPAN

Product: Bluetooth Earphone

Model No.: HP-W170N

Serial Model No.: HP-W170N-S, HP-W170N-K, HP-W170N-P, HP-W170N-A

Brand Name: AudioComm

Standards: ARIB STD-T66 v3.7

Result: Complies

Test Date: June 21 ~ June 26, 2018

Reviewed By : Kevin Guo
(Kevin Guo)

Approved By : Robin Wu
(Robin Wu)



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ARIB STD-T66. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
1806RSU021-J1	Rev. 01	Initial report	06-27-2018	Valid

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§2.1033 General Information

Applicant:	OHM ELECTRIC INC.
Applicant Address:	3-8, ASAHI, YOSHIKAWA-CITY, SAITAMA 342-8502, JAPAN
Manufacturer:	JAZZBERRY CORPORATION LIMITED
Manufacturer Address:	UNIT 408B, LIPPO SUN PLAZA, 28 CANTON RD, TSIM SHA TSUI, KOWLOON, HK
Test Site:	MRT Technology (Suzhou) Co., Ltd
Test Site Address:	D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China
Rule Part(s):	MIC Notice No.88 Annex 43
Test Device Serial No.:	N/A ☐ Production ☒ Pre-Production ☐ Engineering

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- MRT facility is a FCC registered (MRT Reg. No. 893164) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.
- MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.
- MRT facility is a VCCI registered (R-4179, G-814, C-4664, T-2206) test laboratory with the site description on file at VCCI Council.
- MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications and Radio testing for FCC, Industry Canada, EU and TELEC Rules.



1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Ministry of Internal Affairs and Communications.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2009 on September 30, 2013.



2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name	Bluetooth Earphone
Model No.	HP-W170N
Serial Model No.	HP-W170N-S, HP-W170N-K, HP-W170N-P, HP-W170N-A
Brand Name	AudioComm
Bluetooth Version:	V4.2 (Support EDR only)

2.2. Product Specification Subjective to this Report

Frequency Range	2402~2480MHz
Bluetooth Version	V2.1+EDR
Type of Modulation	FHSS
Data Rate	1Mbps(GFSK), 2Mbps($\pi/4$ DQPSK)
Antenna Type:	Internal Antenna
Antenna Gain	-1.2dBi
Declared Output Power	Normal Operation (79 Channels) & AFH Operation (20 Channels): For 1Mbps (GFSK): 0.5mW/MHz For 2Mbps($\pi/4$ DQPSK): 0.5mW/MHz

Note: For other features of this EUT, test report will be issued separately.

2.3. Opreation Frequency / Channel List

Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2403 MHz	02	2404 MHz
03	2405 MHz	04	2406 MHz	05	2407 MHz
06	2408 MHz	07	2409 MHz	08	2410 MHz
09	2411 MHz	10	2412 MHz	11	2413 MHz
12	2414 MHz	13	2415 MHz	14	2416 MHz
15	2417 MHz	16	2418 MHz	17	2419 MHz
18	2420 MHz	19	2421 MHz	20	2422 MHz
21	2423 MHz	22	2424 MHz	23	2425 MHz
24	2426 MHz	25	2427 MHz	26	2428 MHz
27	2429 MHz	28	2430 MHz	29	2431 MHz
30	2432 MHz	31	2433 MHz	32	2434 MHz
33	2435 MHz	34	2436 MHz	35	2437 MHz
36	2438 MHz	37	2439 MHz	38	2440 MHz
39	2441 MHz	40	2442 MHz	41	2443 MHz
42	2444 MHz	43	2445 MHz	44	2446 MHz
45	2447 MHz	46	2448 MHz	47	2449 MHz
48	2450 MHz	49	2451 MHz	50	2452 MHz
51	2453 MHz	52	2454 MHz	53	2455 MHz
54	2456 MHz	55	2457 MHz	56	2458 MHz
57	2459 MHz	58	2460 MHz	59	2461 MHz
60	2462 MHz	61	2463 MHz	62	2464 MHz
63	2465 MHz	64	2466 MHz	65	2467 MHz
66	2468 MHz	67	2469 MHz	68	2470 MHz
69	2471 MHz	70	2472 MHz	71	2473 MHz
72	2474 MHz	73	2475 MHz	74	2476 MHz
75	2477 MHz	76	2478 MHz	77	2479 MHz
78	2480 MHz	N/A	N/A	N/A	N/A

Note: Normal operation uses all 79 channels and AFH mode uses 20 channels.

2.4. Description of Available Antennas

Antenna Type	Frequency Band (MHz)	Max Peak Gain (dBi)
Internal Antenna	2400 ~ 2500	-1.2

2.5. Device Capabilities

This device contains the following capabilities:

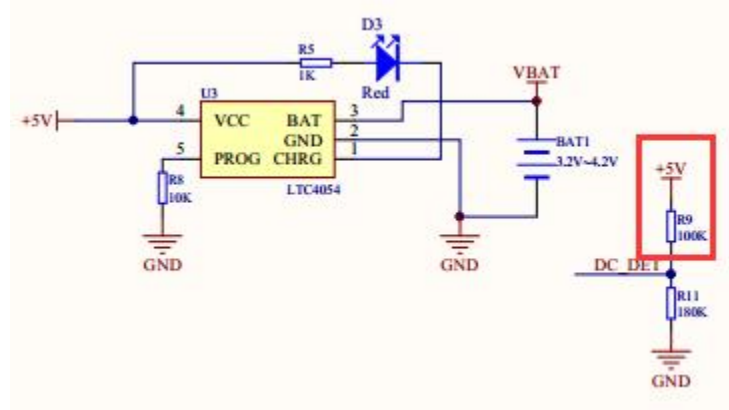
Bluetooth (v2.1+EDR) Device.

2.6. Test Configuration

The device was tested per the guidance of ARIB STD-T66.

The change of the measured voltage at the radio part of the EUT is below $\pm 1\%$, when input voltage from external power supply to the equipment under test is varied by $\pm 10\%$, thus the RF test is tested at rated voltage only.

Extreme Voltage	5.0V	4.5V	5.5V
Measure Voltage	5.0V	5.03V	5.02V
Tolerance	-	0.60%	0.40%



2.7. Test Mode

Test Mode	Mode 1: Transmitter - Normal - 1Mbps (GFSK)
	Mode 2: Transmitter - Normal - 2Mbps ($\pi/4$ DQPSK)
	Mode 3: Transmitter - AFH - 1Mbps (GFSK)
	Mode 4: Transmitter - AFH - 2Mbps ($\pi/4$ DQPSK)
	Mode 5: Receiver - Normal - 1Mbps (GFSK)
	Mode 6: Receiver - Normal - 2Mbps ($\pi/4$ DQPSK)
	Mode 7: Receiver - AFH - 1Mbps (GFSK)
	Mode 8: Receiver - AFH - 2Mbps ($\pi/4$ DQPSK)

2.8. Test Software

The test utility software used during testing was “FCCAssit”, and the version was “2.4”.

3. TEST EQUIPMENT CALIBRATION DATE

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2019/04/20
ESG Vector Signal Generator	Agilent	E4438C	MRTSUE06026	1 year	2018/12/06
Programmable Temperature & Humidity Chamber	BAOYT	BYH-1500L	MRTSUE06051	1 year	2018/12/06
Thermohygrometer	Testo	608-H1	MRTSUE06401	1 year	2018/08/14

Note: All equipments are calibrated by China Ceprei Laboratory, which is the body that the calibration conducted in countries except Japan, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).

4. MEASUREMENT UNCERTAINTY

Conducted Test Item
The maximum measurement uncertainty is defined as: ± 1.127 dB.

5. TEST RESULT

5.1. Summary

Company Name: OHM ELECTRIC INC.
Product Name Bluetooth Earphone
Method/System: Frequency Hopping Spread Spectrum (FHSS)
Number of Channels: 79

Test Description	Test Limit	Test Condition	Test Result	Reference
Output Power	$\leq 3\text{mW/MHz}$	Conducted	Pass	Section 5.2
Output Power Tolerance	+20% to -80%		Pass	
E.I.R.P	$\leq 6.91\text{dBm/MHz}$		Pass	
Spread Bandwidth	$\geq 500\text{kHz}$		Pass	Section 5.3
Spread Factor	≥ 5 for 2400 ~ 2483.5MHz		Pass	
Occupied Bandwidth	$\leq 83.5\text{MHz}$ for FHSS		Pass	Section 5.4
Frequency Tolerance	-50 ~ +50ppm		Pass	Section 5.5
Dwell Time	$\leq 400\text{ms}$		Pass	Section 5.6
Transmitter Spurious Emissions	$\leq 2.5\mu\text{W}$ for 30 ~ 2387MHz $\leq 25\mu\text{W}$ for 2387 ~ 2400MHz $\leq 25\mu\text{W}$ for 2483.5 ~ 2496.5MHz $\leq 2.5\mu\text{W}$ for 2496.5 ~ 12500MHz		Pass	Section 5.7
Receiver Spurious Emissions	$\leq 4\text{nW}$ for 30 ~ 1000MHz $\leq 20\text{nW}$ for 1000 ~ 12500MHz		Pass	Section 5.8
Interference Protection Function	Automatic Transmission or Receiving function of Identification Sign		Pass	Section 5.9

Notes:

- 1) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 2) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.

5.2. Output Power, Output Power Tolerance and EIRP

5.2.1. Test Limit

Output Power $\leq 3\text{mW/MHz}$

Output Power Tolerance: +20% to -80%

EIRP $\leq 6.91\text{dBm/MHz}$

5.2.2. Test Procedure used

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

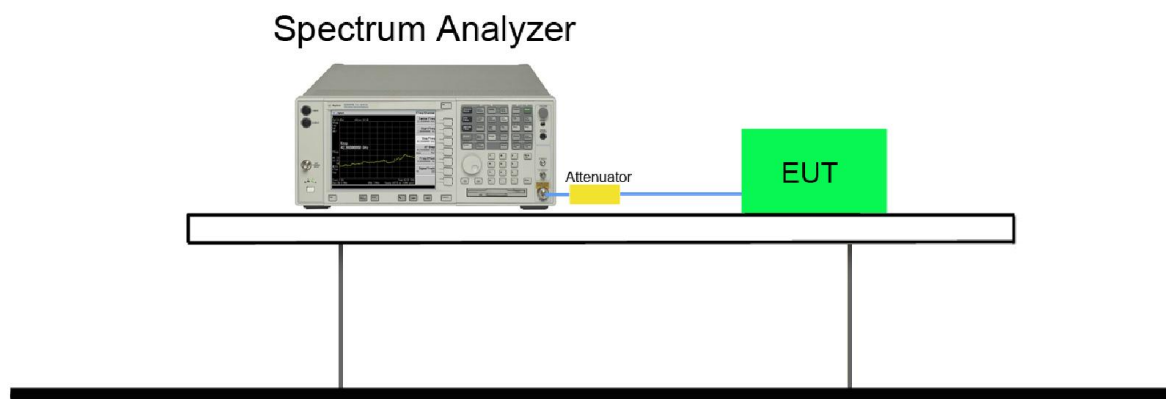
A RMS Average detector function must be used.

A measurement instrument with an integrated 1MHz power bandwidth function may be used to automate the test process.

The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slowly, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.

'Trace Average' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

5.2.3. Test Setup



5.2.4. Test Result

EUT	Bluetooth Earphone	Temperature	22°C
Test Engineer	Snake Ni	Relative Humidity	53%
Test Item	Output Power	Test Date	2018/06/25

Test Mode	Frequency (MHz)	Reading Value (dBm/MHz)	Real Value (mW/MHz)	Limit (mW/MHz)	Result
Transmitter - Normal					
GFSK_DH5	2402	-9.33	0.12	3	Pass
	2441	-7.75	0.17	3	Pass
	2480	-6.60	0.22	3	Pass
π/4DQPSK_2DH5	2402	-9.34	0.12	3	Pass
	2441	-7.75	0.17	3	Pass
	2480	-6.60	0.22	3	Pass
Transmitter - AFH					
GFSK_DH5	2402	-9.43	0.11	3	Pass
	2411	-8.97	0.13	3	Pass
	2421	-8.44	0.14	3	Pass
π/4DQPSK_2DH5	2402	-9.38	0.12	3	Pass
	2411	-8.95	0.13	3	Pass
	2421	-8.33	0.15	3	Pass

Note: Real Value (mW/MHz) = $10^{\text{[Reading Value (dBm/MHz)/10]}}$.

EUT	Bluetooth Earphone	Temperature	22°C
Test Engineer	Snake Ni	Relative Humidity	53%
Test Item	Output Power Tolerance	Test Date	2018/02/06

Test Mode	Frequency (MHz)	Output Power (mW/MHz)	Declared Output Power (mW/MHz)	Tolerance (%)	Limit	Result
Transmitter - Normal						
GFSK_DH5	2402	0.12	0.5	-38.0	+20%~-80%	Pass
	2441	0.17	0.5	-33.0	+20%~-80%	Pass
	2480	0.22	0.5	-28.0	+20%~-80%	Pass
π/4DQPSK_2DH5	2402	0.12	0.5	-38.0	+20%~-80%	Pass
	2441	0.17	0.5	-33.0	+20%~-80%	Pass
	2480	0.22	0.5	-28.0	+20%~-80%	Pass
Transmitter - AFH						
GFSK_DH5	2402	0.11	0.5	-39.0	+20%~-80%	Pass
	2411	0.13	0.5	-37.0	+20%~-80%	Pass
	2421	0.14	0.5	-36.0	+20%~-80%	Pass
π/4DQPSK_2DH5	2402	0.12	0.5	-38.0	+20%~-80%	Pass
	2411	0.13	0.5	-37.0	+20%~-80%	Pass
	2421	0.15	0.5	-35.0	+20%~-80%	Pass

Note: Tolerance = (Output Power - Declared Output Power) / Declared Output Power*100%

EUT	Bluetooth Earphone	Temperature	22°C
Test Engineer	Snake Ni	Relative Humidity	53%
Test Item	EIRP	Test Date	2018/02/06

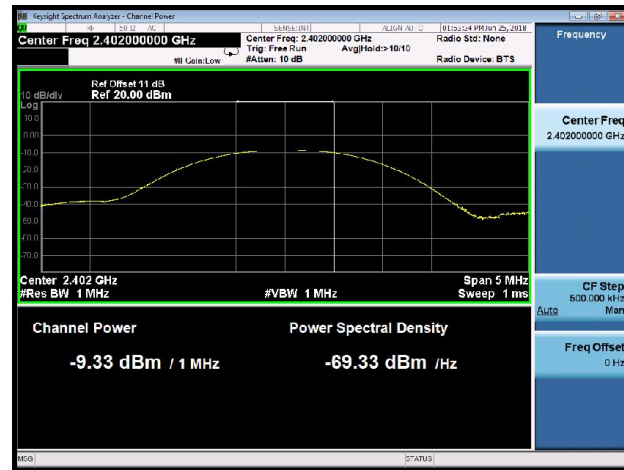
Test Mode	Frequency (MHz)	Output Power (dBm/MHz)	EIRP (dBm/MHz)	Limit (dBm/MHz)	Result
Transmitter - Normal					
GFSK_DH5	2402	-9.33	-10.53	6.91	Pass
	2441	-7.75	-8.95	6.91	Pass
	2480	-6.60	-7.80	6.91	Pass
π/4DQPSK_2DH5	2402	-9.34	-10.54	6.91	Pass
	2441	-7.75	-8.95	6.91	Pass
	2480	-6.60	-7.80	6.91	Pass
Transmitter - AFH					
GFSK_DH5	2402	-9.43	-10.63	6.91	Pass
	2411	-8.97	-10.17	6.91	Pass
	2421	-8.44	-9.64	6.91	Pass
π/4DQPSK_2DH5	2402	-9.38	-10.58	6.91	Pass
	2411	-8.95	-10.15	6.91	Pass
	2421	-8.33	-9.53	6.91	Pass

Note: EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi), Antenna Gain = -1.2 dBi.

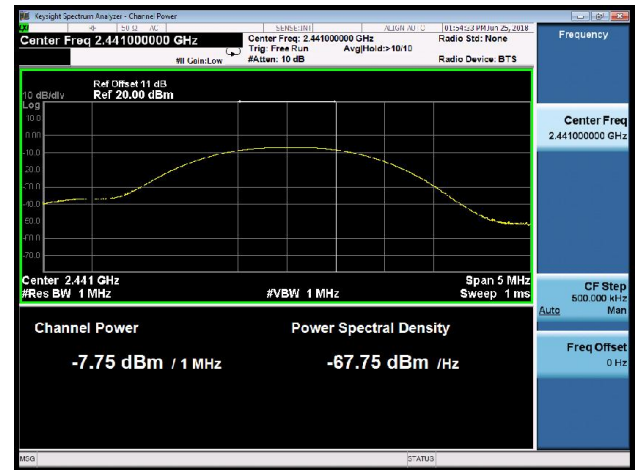
Output Power - Normal

GFSK_DH5

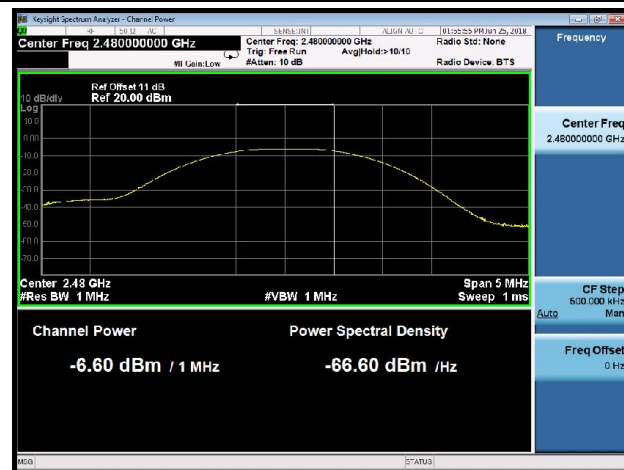
2402MHz



2441MHz



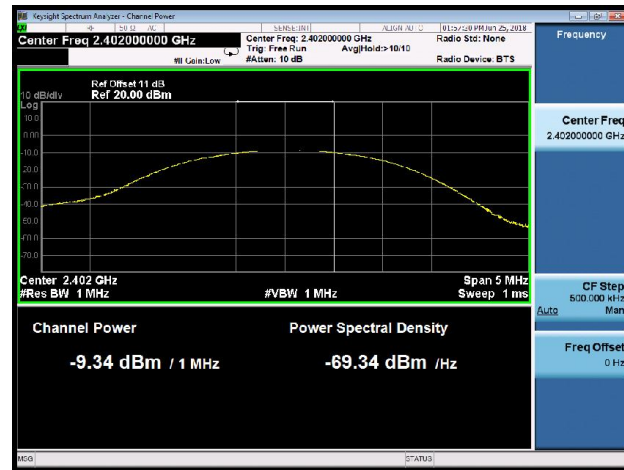
2480MHz



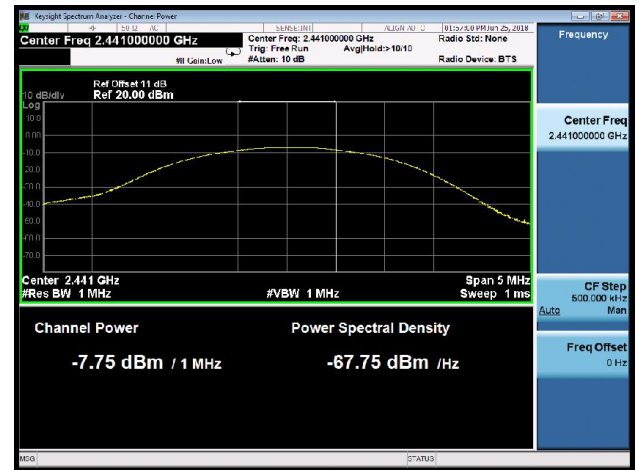
Output Power - Normal

$\pi/4$ DQPSK_2DH5

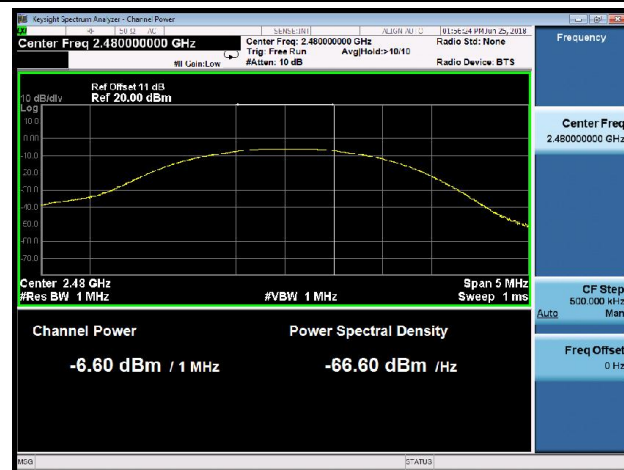
2402MHz



2441MHz



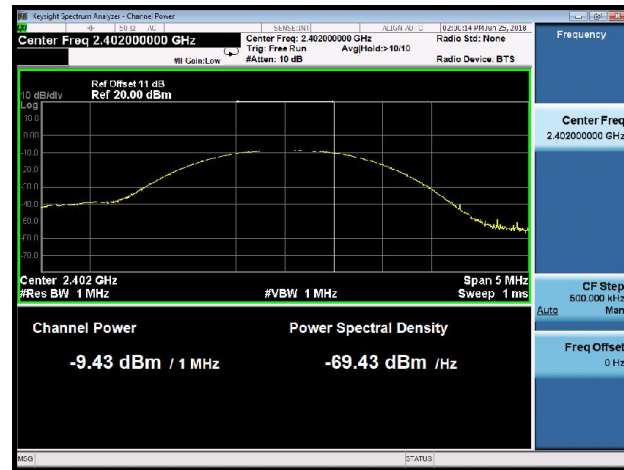
2480MHz



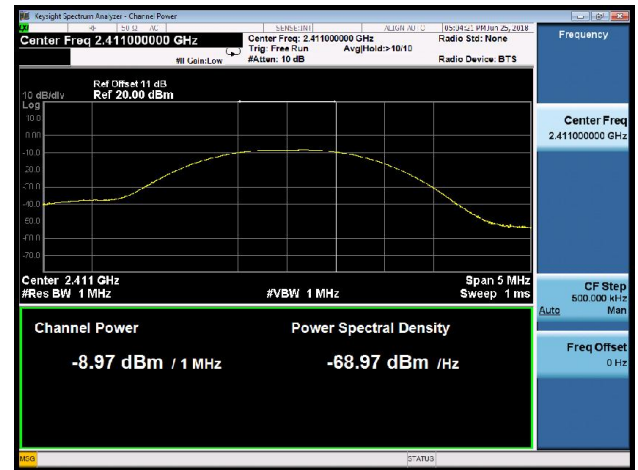
Output Power - AFH

GFSK_DH5

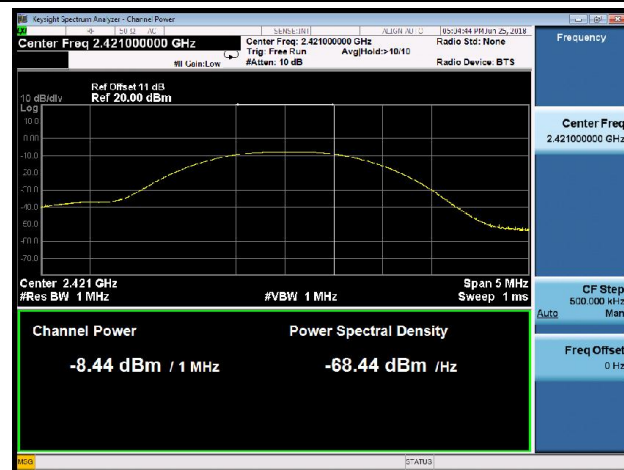
2402MHz



2411MHz



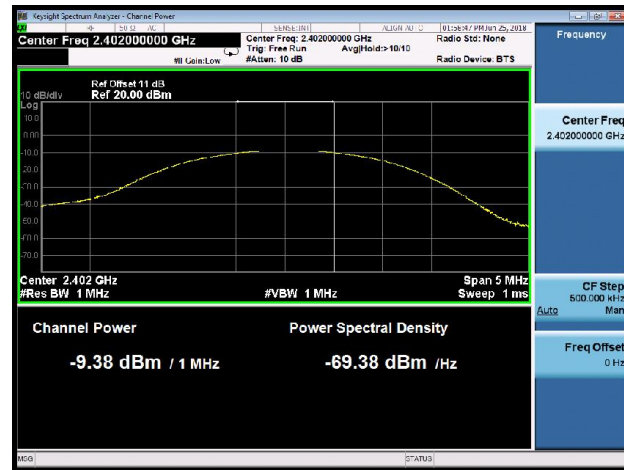
2421MHz



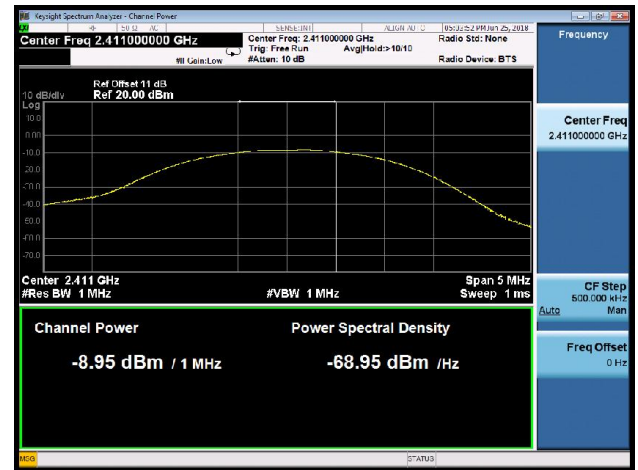
Output Power - AFH

$\pi/4$ QPSK_2DH5

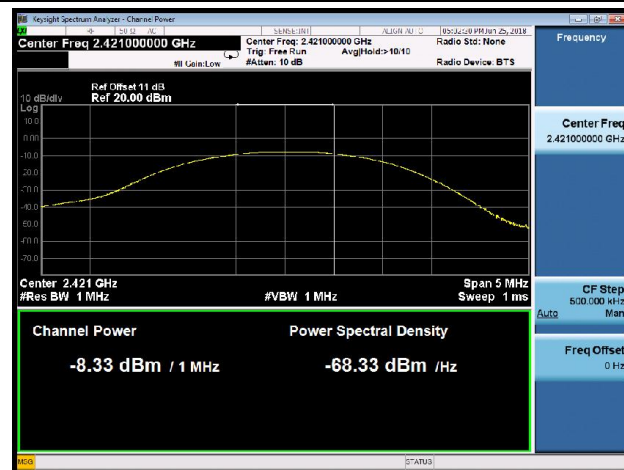
2402MHz



2411MHz



2421MHz



5.3. Spread Bandwidth and Spread Factor

5.3.1. Test Limit

Spread Bandwidth ≥ 500 kHz

Spread Factor ≥ 5 for 2400 – 2483.5 MHz

5.3.2. Test Procedure Used

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

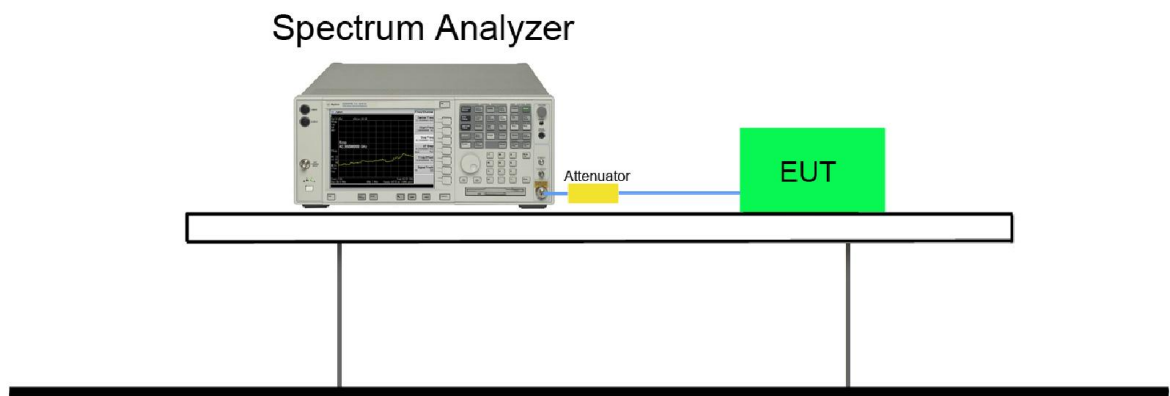
A positive peak detector function must be used.

A measurement instrument with an integrated 90% power bandwidth function may be used to automate the test process.

The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slowly, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.

'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

5.3.3. Test Setup



5.3.4. Test Result

EUT	Bluetooth Earphone	Temperature	22°C
Test Engineer	Snake Ni	Relative Humidity	53%
Test Site	TR3	Test Date	2018/06/25

Spread Bandwidth

Test Mode	Frequency (MHz)	Spread Bandwidth (MHz)	Limit (KHz)	Result
Transmitter - Normal				
GFSK_DH5	2402~2480	70.59	≥ 500	Pass
π/4DQPSK_2DH5	2402~2480	70.46	≥ 500	Pass
Transmitter - AFH				
GFSK_DH5	2402~2421	18.14	≥ 500	Pass
π/4DQPSK_2DH5	2402~2421	18.18	≥ 500	Pass

Spread Factor

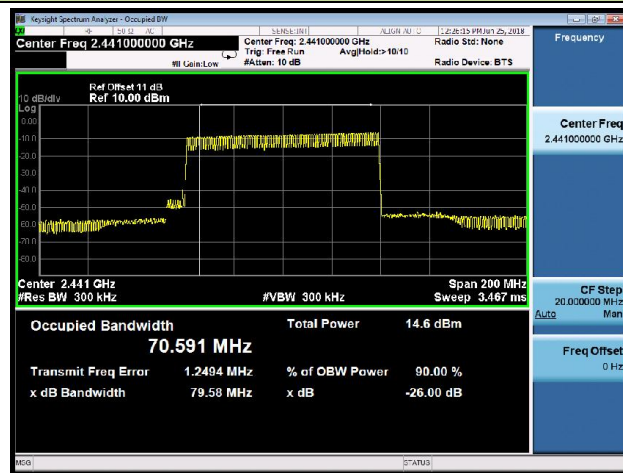
Test Mode	Frequency (MHz)	Spread Factor	Limit	Result
Transmitter - Normal				
GFSK_DH5	2402~2480	70.59	≥ 5	Pass
π/4DQPSK_2DH5	2402~2480	70.46	≥ 5	Pass
Transmitter - AFH				
GFSK_DH5	2402~2421	18.14	≥ 5	Pass
π/4DQPSK_2DH5	2402~2421	18.18	≥ 5	Pass

Note: Spread Factor = (Spread Bandwidth) / (Frequency equal to the transmission rate of the modulation signal).

The case of Bluetooth is 1MHz for GFSK, 2MHz for π/4DQPSK modulation.

Spread Bandwidth

GFSK_DH5 (Hopping) - Normal



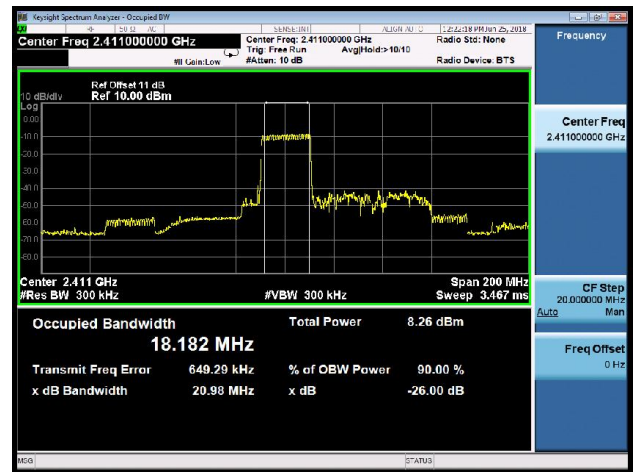
GFSK_DH5 (Hopping) - AFH



$\pi/4$ DQPSK_2DH5 (Hopping) - Normal



$\pi/4$ DQPSK_2DH5 (Hopping) - AFH



5.4. Occupied Bandwidth

5.4.1. Test Limit

≤ 83.5 MHz for FHSS

5.4.2. Test Procedure Used

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

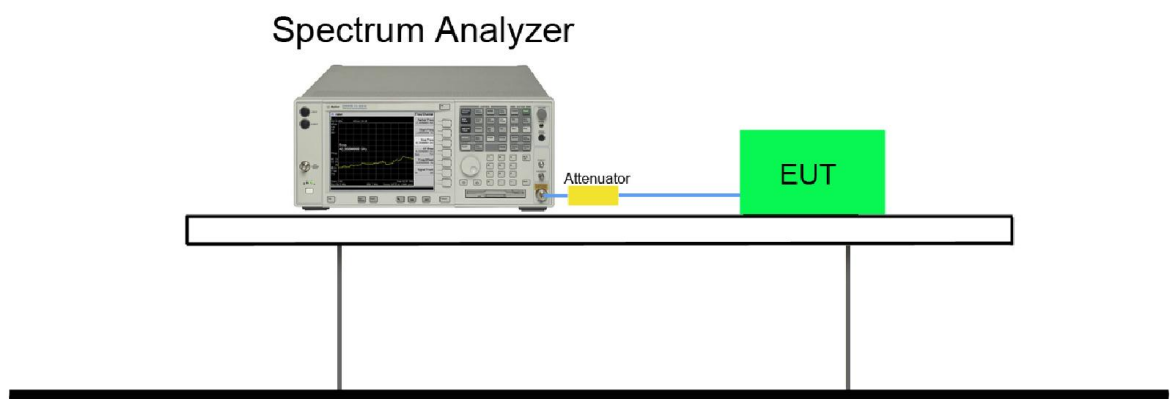
A positive peak detector function must be used.

A measurement instrument with an integrated 99% power bandwidth function may be used to automate the test process.

The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slowly, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.

'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

5.4.3. Test Setup



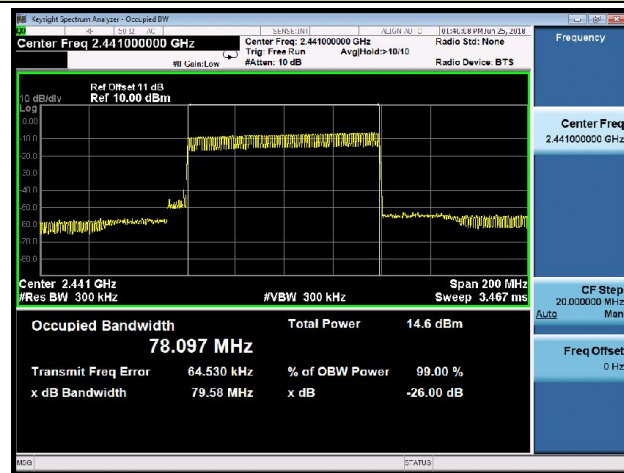
5.4.4. Test Result

EUT	Bluetooth Earphone	Temperature	22°C
Test Engineer	Snake Ni	Relative Humidity	53%
Test Site	TR3	Test Date	2018/06/25

Test Mode	Frequency (MHz)	Occupied Bandwidth (MHz)	Limit (MHz)	Result
Transmitter - Normal				
GFSK_DH5	2402~2480	78.10	≤ 83.5	Pass
$\pi/4$ DQPSK_2DH5	2402~2480	78.24	≤ 83.5	Pass
Transmitter - AFH				
GFSK_DH5	2402~2421	19.60	≤ 83.5	Pass
$\pi/4$ DQPSK_2DH5	2402~2421	19.93	≤ 83.5	Pass

Occupied Bandwidth

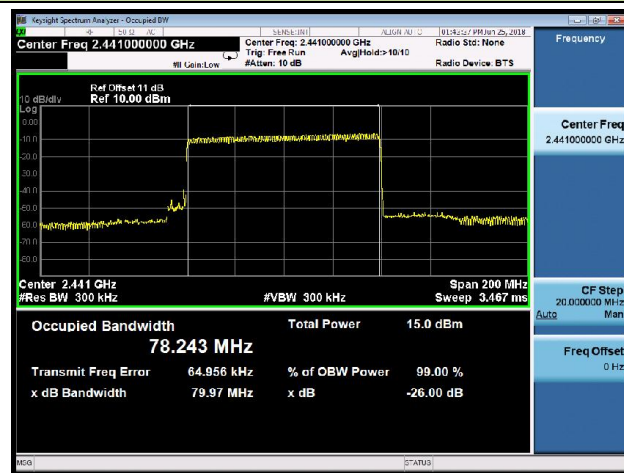
GFSK_DH5 (Hopping) - Normal



GFSK_DH5 (Hopping) - AFH



$\pi/4$ DQPSK_DH5 (Hopping) - Normal



$\pi/4$ DQPSK_DH5 (Hopping) - AFH



5.5. Frequency Tolerance

5.5.1. Test Limit

$\leq 50\text{ppm}$

5.5.2. Test Procedure Used

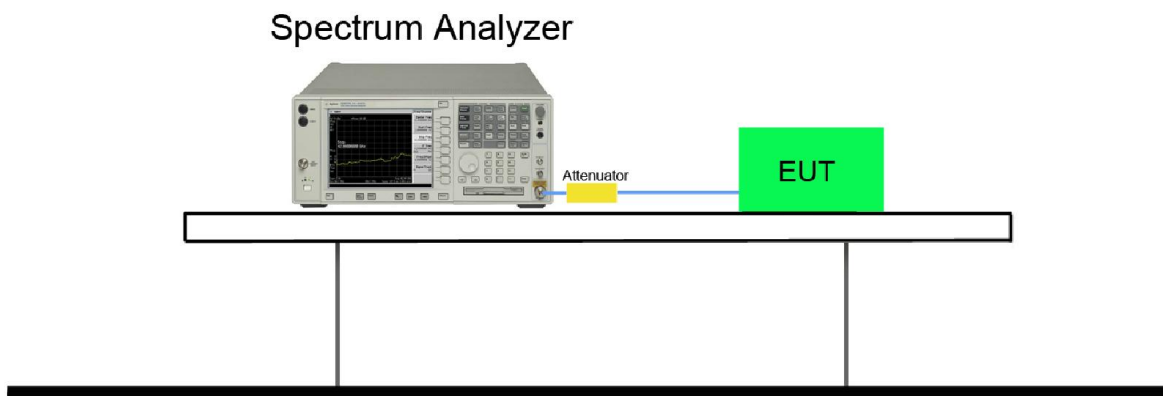
A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

A positive peak detector function must be used.

The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slowly, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.

'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

5.5.3. Test Setup

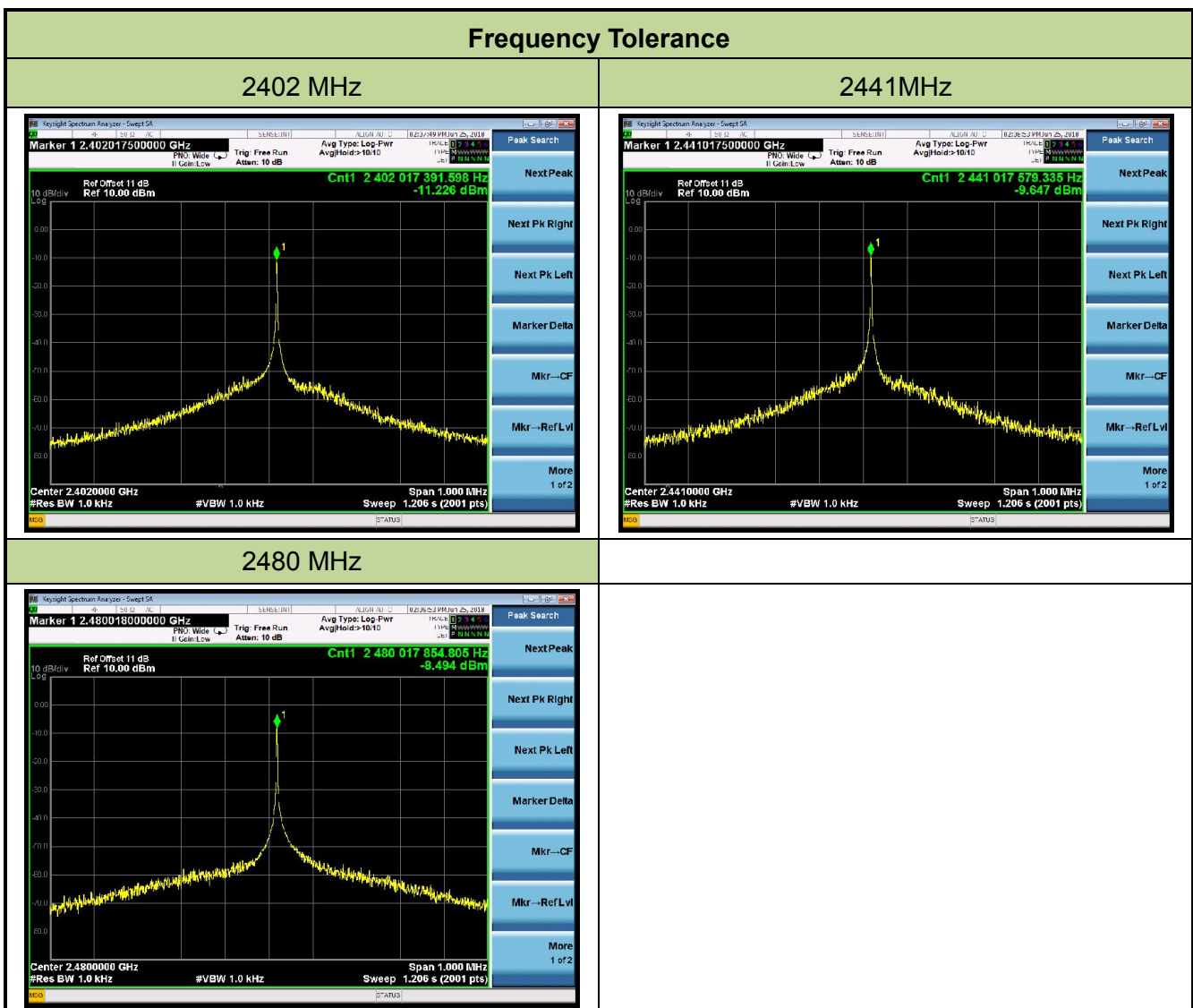


5.5.4. Test Result

EUT	Bluetooth Earphone	Temperature	22°C
Test Engineer	Snake Ni	Relative Humidity	53%
Test Site	TR3	Test Date	2018/06/25

Test Mode	Center Frequency (MHz)	Measurement Frequency (MHz)	Frequency Tolerance (ppm)	Limit (ppm)	Result
Carrier Wave	2402	2402.017392	7.26	-50 ~ +50	Pass
	2441	2441.017579	7.20	-50 ~ +50	Pass
	2480	2480.017855	7.20	-50 ~ +50	Pass

Note: Frequency Tolerance (ppm) = [Measurement Frequency - Center Frequency] / Center Frequency * 10⁶



5.6. Dwell Time

5.6.1. Test Limit

$\leq 0.4s$

5.6.2. Test Procedure Used

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

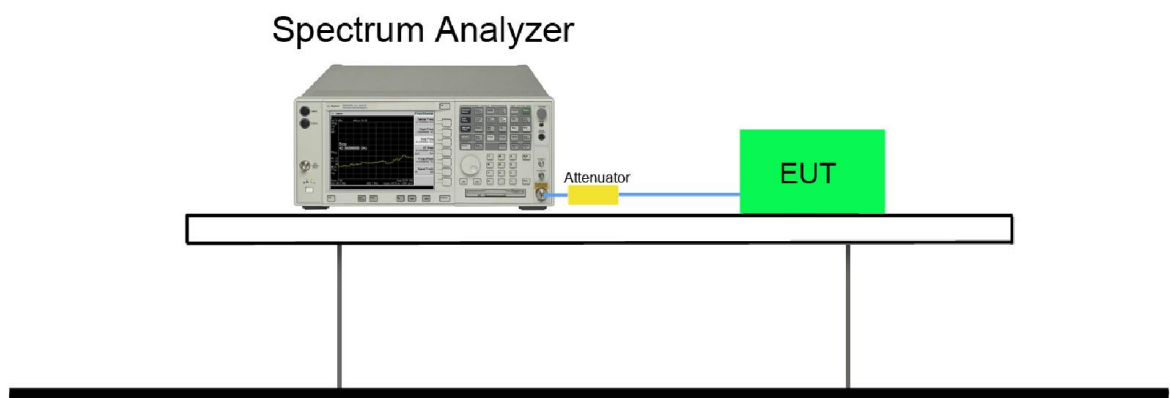
A positive peak detector function must be used.

The center frequency is set to the test frequency and the span is switched to zero.

The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slowly, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.

'Single sweep' mode may be used to capture a packet over a single scan.

5.6.3. Test Setup



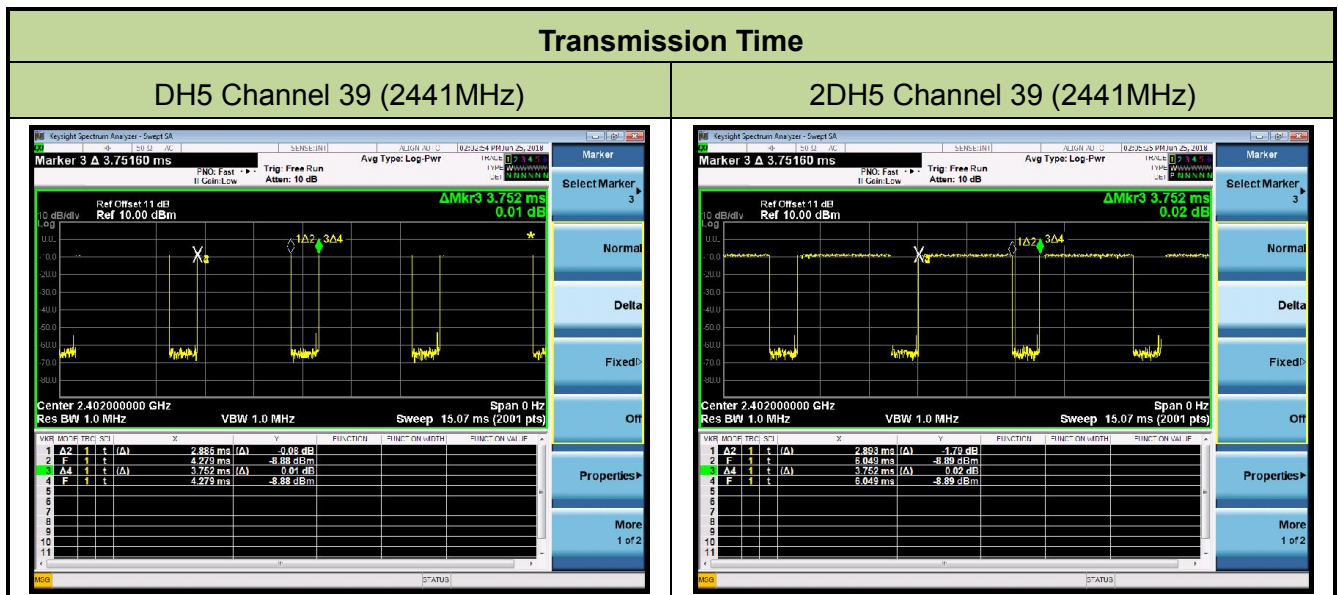
5.6.4. Test Result

EUT	Bluetooth Earphone	Temperature	22°C
Test Engineer	Snake Ni	Relative Humidity	53%
Test Site	TR3	Test Date	2018/06/25

Test Mode	Frequency (MHz)	Burst Ratio (Duty cycle)	Dwell Time (s)	Limit (s)	Result
GFSK_DH5	2441	0.769	0.27	≤ 0.4	Pass
π/4DQPSK_2DH5	2441	0.771	0.27	≤ 0.4	Pass

Note 1: Burst Ratio = ON Time / (ON Time + OFF Time);

Note 2: Dwell Time = (Spreading Factor * 0.4) * (Duty cycle / 79).



5.7. Transmitter Spurious Emissions

5.7.1. Test Limit

$\leq 2.5\mu\text{W}$ for 30 ~ 2387MHz

$\leq 25\mu\text{W}$ for 2387 ~ 2400MHz

$\leq 25\mu\text{W}$ for 2483.5 ~ 2496.5MHz

$\leq 2.5\mu\text{W}$ for 2496.5 ~ 12500MHz

5.7.2. Test Procedure Used

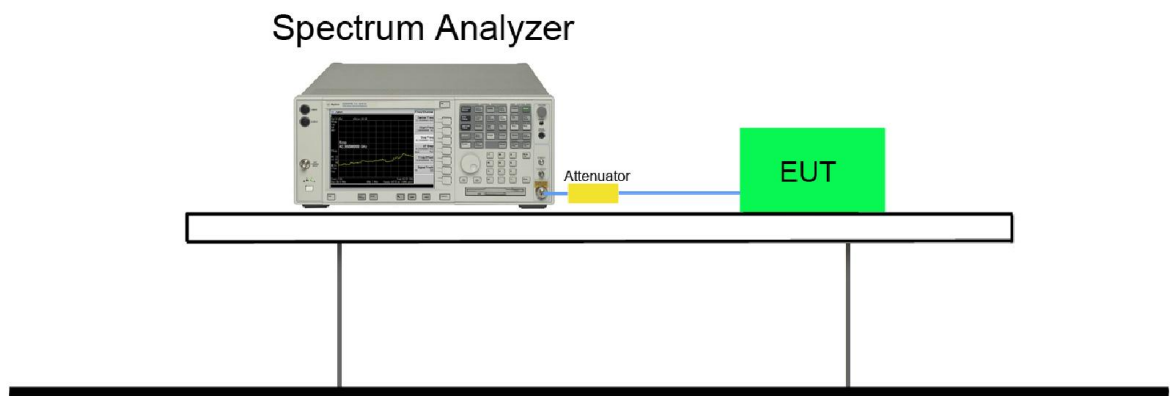
A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

A positive peak detector function must be used.

The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slowly, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.

'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

5.7.3. Test Setup



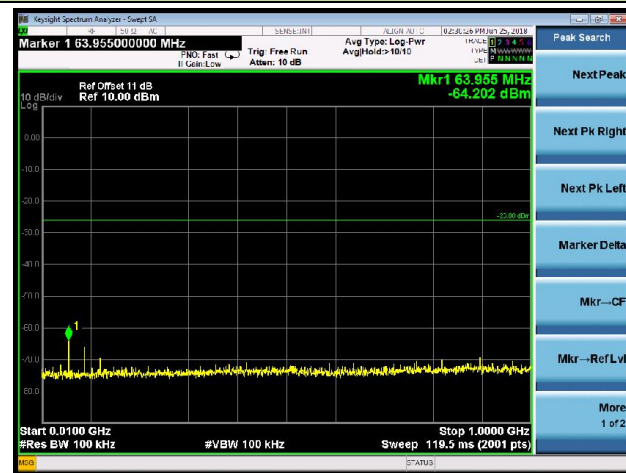
5.7.4. Test Result

EUT	Bluetooth Earphone	Temperature	22°C
Test Engineer	Snake Ni	Relative Humidity	53%
Test Site	TR3	Test Date	2018/06/25

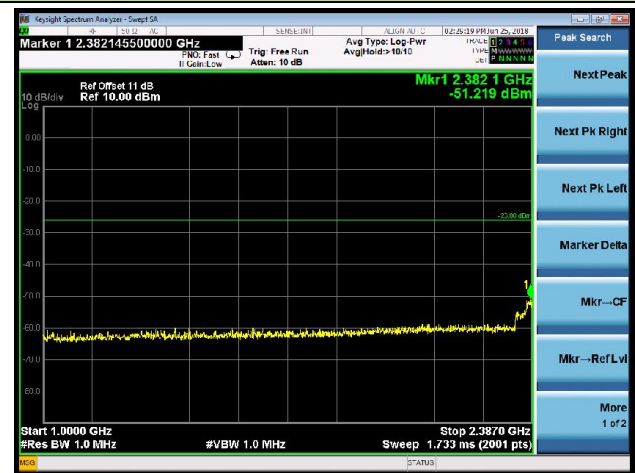
Test Mode	Frequency Range (MHz)	Max Reading Level (dBm)	Limit (dBm)	Result
GFSK_DH5	10 ~ 1000	-64.20	-26 (2.5uW)	Pass
	1000 ~ 2387	-51.22	-26 (2.5uW)	Pass
	2387 ~ 2400	-38.18	-16 (25uW)	Pass
	2483.5 ~ 2496.5	-45.87	-16 (25uW)	Pass
	2496.5 ~ 8000	-46.25	-26 (2.5uW)	Pass
	8000 ~ 12500	-57.98	-26 (2.5uW)	Pass
$\pi/4$ DQPSK_2DH5	10 ~ 1000	-63.02	-26 (2.5uW)	Pass
	1000 ~ 2387	-51.56	-26 (2.5uW)	Pass
	2387 ~ 2400	-36.60	-16 (25uW)	Pass
	2483.5 ~ 2496.5	-46.18	-16 (25uW)	Pass
	2496.5 ~ 8000	-48.11	-26 (2.5uW)	Pass
	8000 ~ 12500	-57.72	-26 (2.5uW)	Pass

GFSK_DH5 Transmitter Spurious Emissions

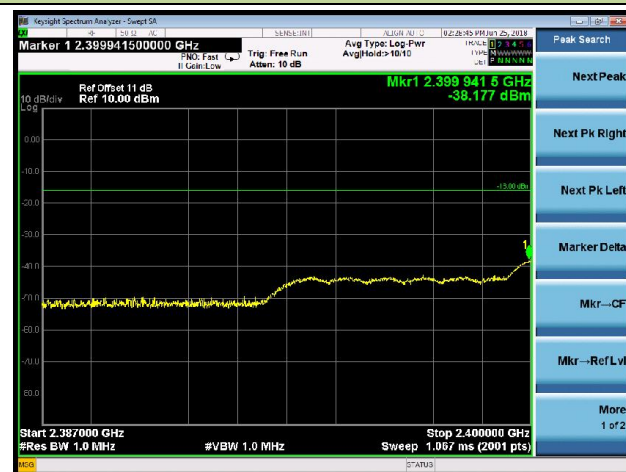
10 ~1000MHz



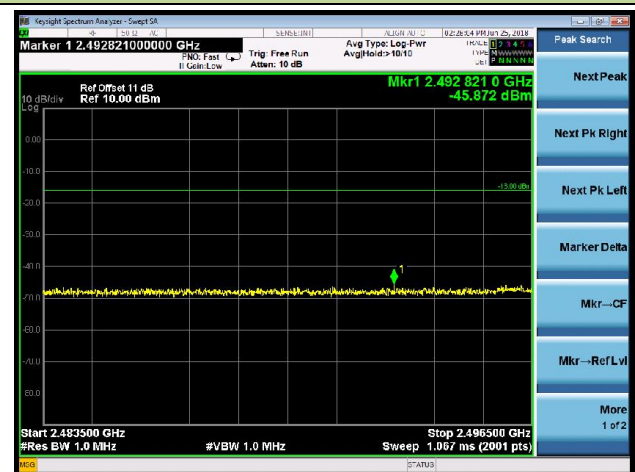
1000 ~ 2387MHz



2387 ~ 2400MHz



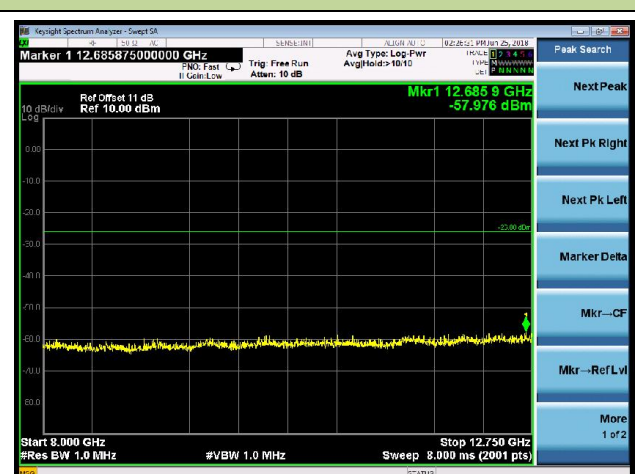
2483.5 ~ 2496.5MHz



2496.5 ~ 8000MHz

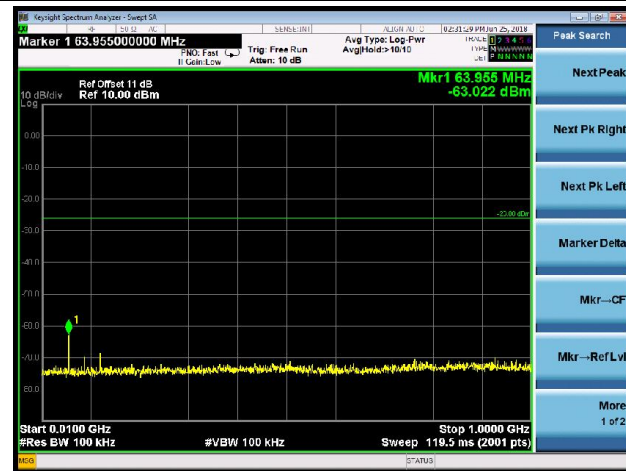


8000 ~ 12500MHz

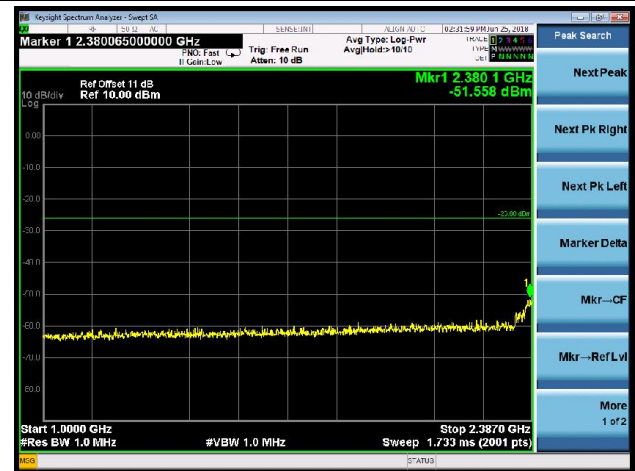


π/4DQPSK_2DH5 Transmitter Spurious Emissions

10 ~1000MHz



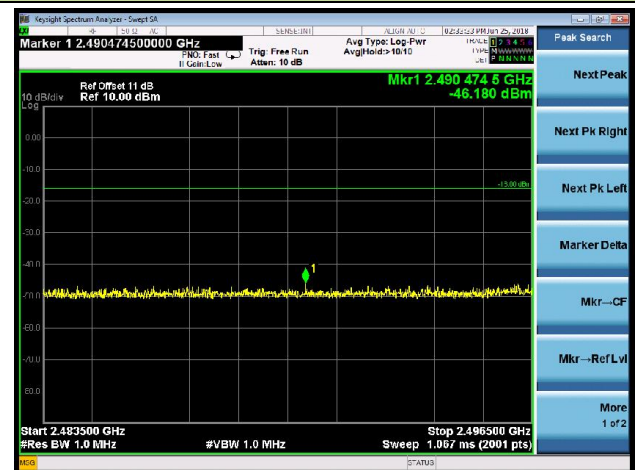
1000 ~ 2387MHz



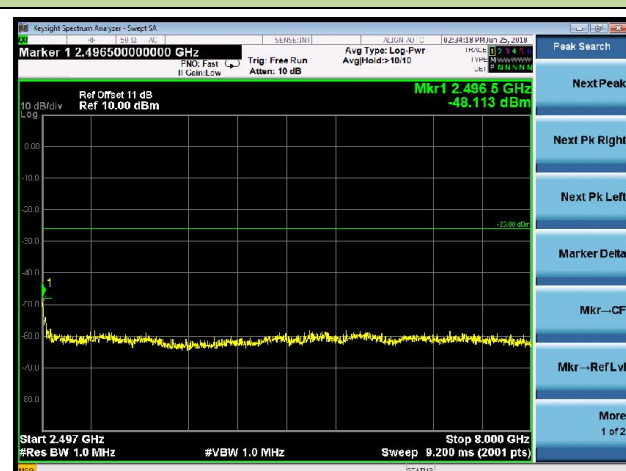
2387 ~ 2400MHz



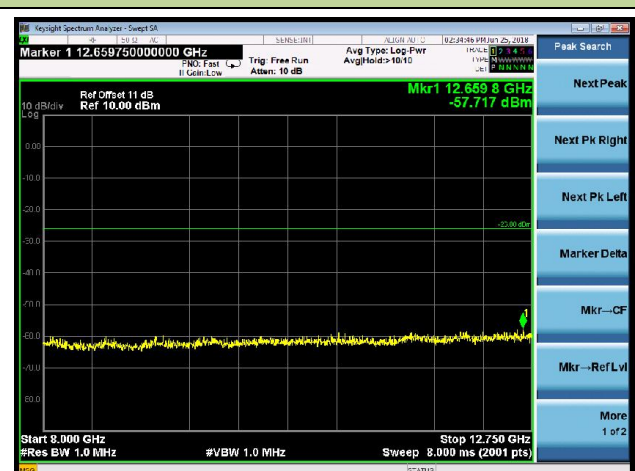
2483.5 ~ 2496.5MHz



2496.5 ~ 8000MHz



8000 ~ 12500MHz



5.8. Receiver Spurious Emissions

5.8.1. Test Limit

$\leq 4\text{nW}$ for 30 ~ 1000MHz

$\leq 20\text{nW}$ for 1000 ~ 12500MHz

5.8.2. Test Procedure Used

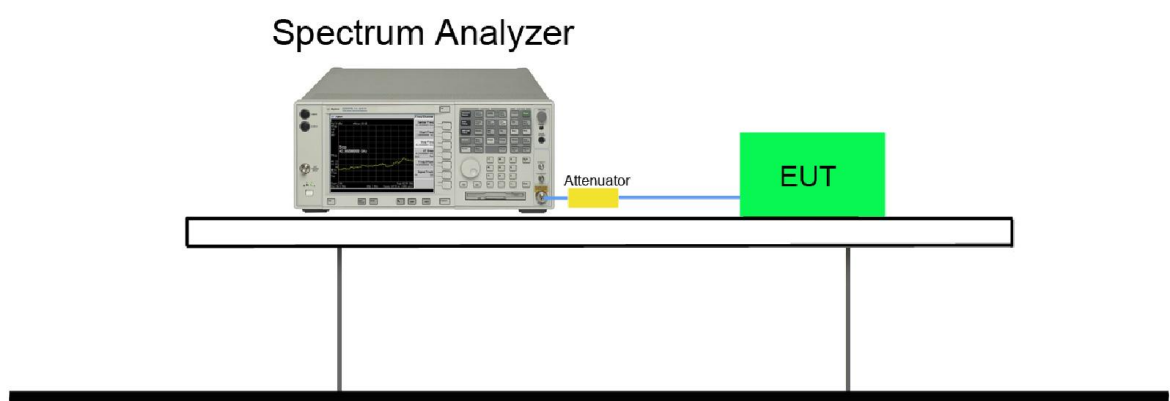
A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

A positive peak detector function must be used.

The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slowly, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.

'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

5.8.3. Test Setup



5.8.4. Test Result

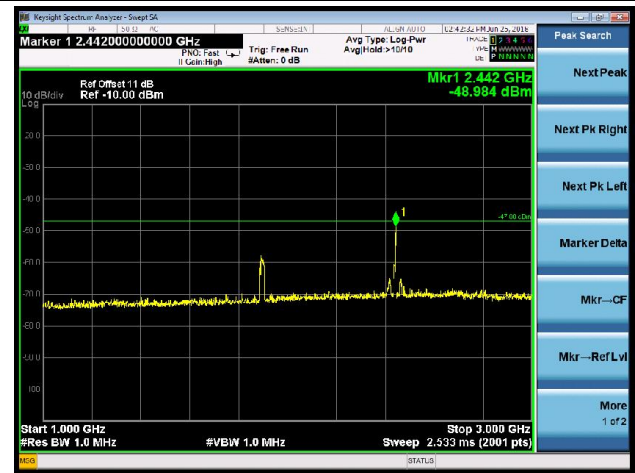
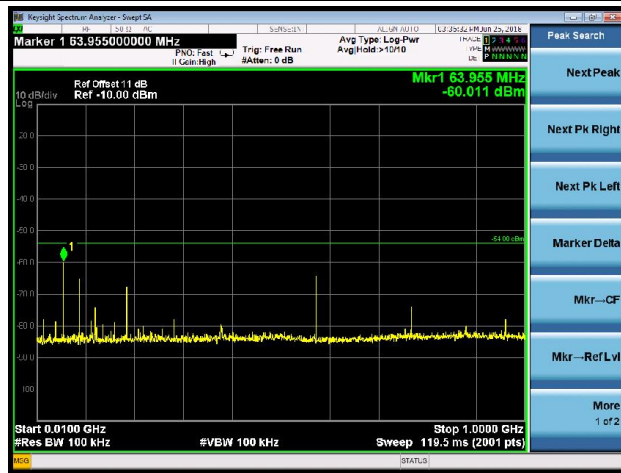
EUT	Bluetooth Earphone	Temperature	22°C
Test Engineer	Snake Ni	Relative Humidity	53%
Test Site	TR3	Test Date	2018/06/25

Test Mode	Frequency Range (MHz)	Max Reading Level (MHz)	Limit (dBm)	Result
GFSK_DH5	10 ~ 1000	-60.01	-54 (4nW)	Pass
	1000 ~ 3000	-48.98	-47 (20nW)	Pass
	3000 ~ 8000	-68.01	-47 (20nW)	Pass
	8000 ~ 12500	-68.66	-47 (20nW)	Pass
$\pi/4$ DQPSK_2DH5	10 ~ 1000	-62.40	-54 (4nW)	Pass
	1000 ~ 3000	-49.11	-47 (20nW)	Pass
	3000 ~ 8000	-67.83	-47 (20nW)	Pass
	8000 ~ 12500	-68.37	-47 (20nW)	Pass

GFSK_DH5 Receiver Spurious Emissions

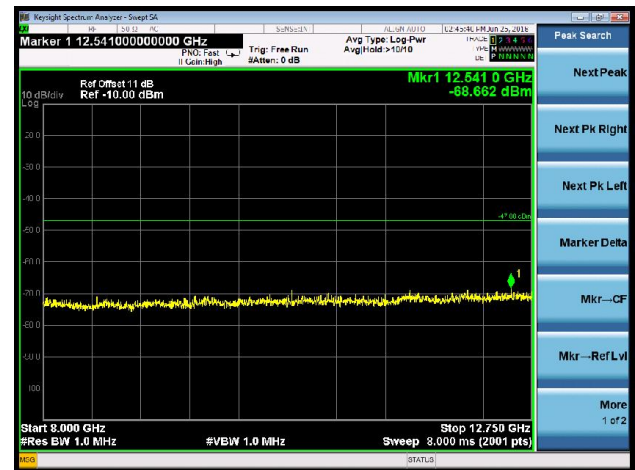
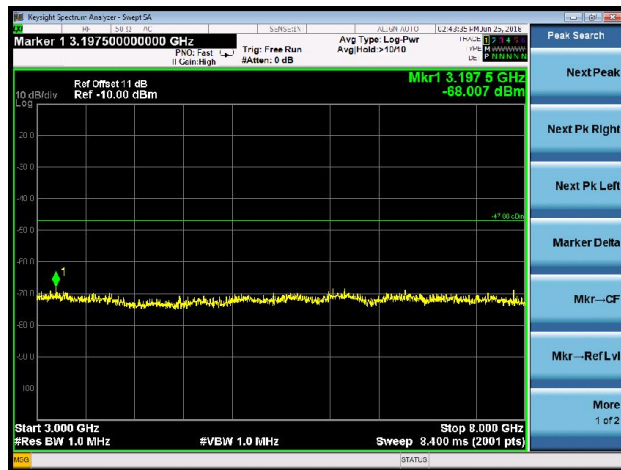
10 ~ 1000MHz

1000 ~ 3000MHz



3000 ~ 8000MHz

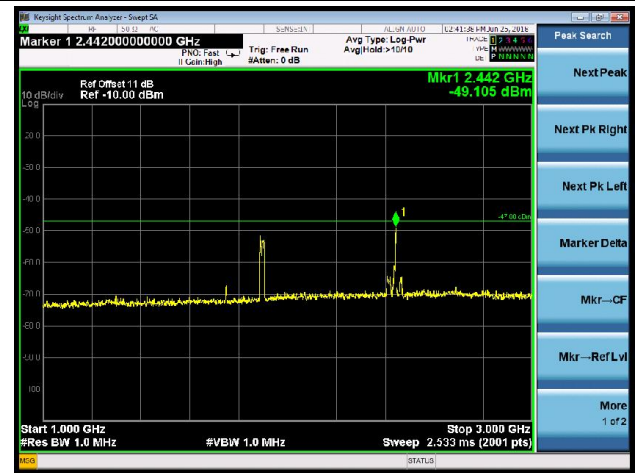
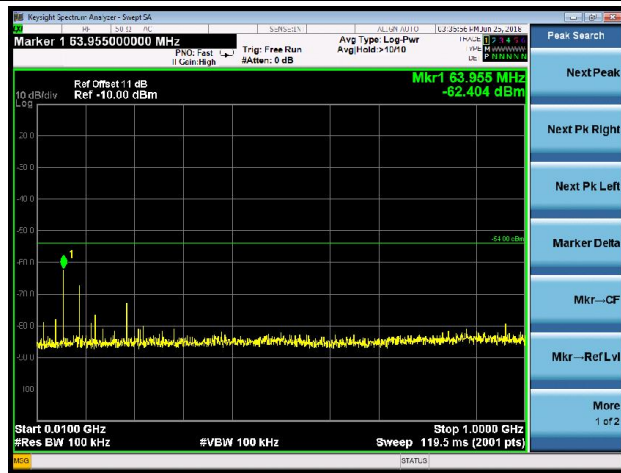
8000 ~ 12500MHz



π/4DQPSK_2DH5 Receiver Spurious Emissions

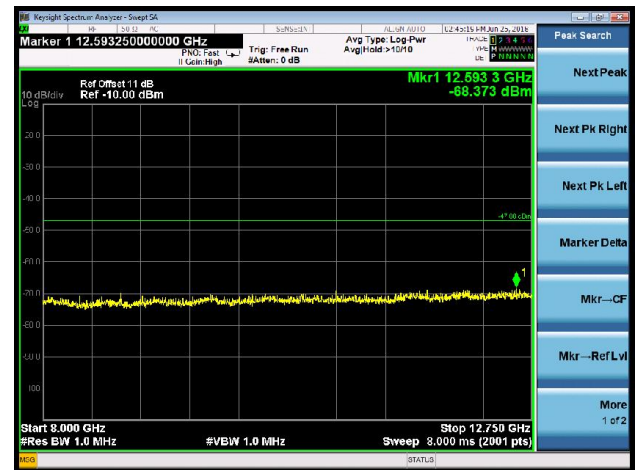
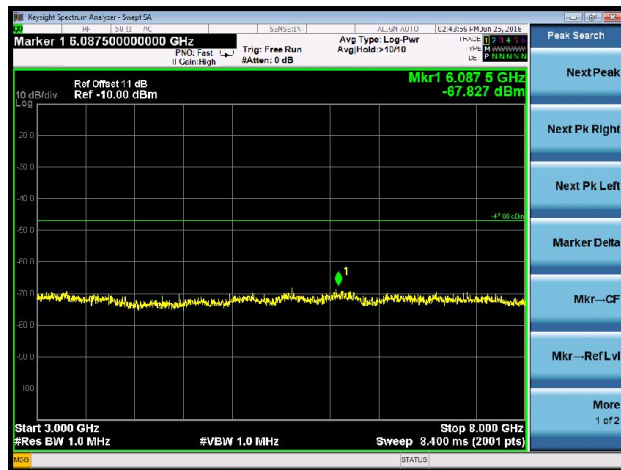
10 ~ 1000MHz

1000 ~ 3000MHz



3000 ~ 8000MHz

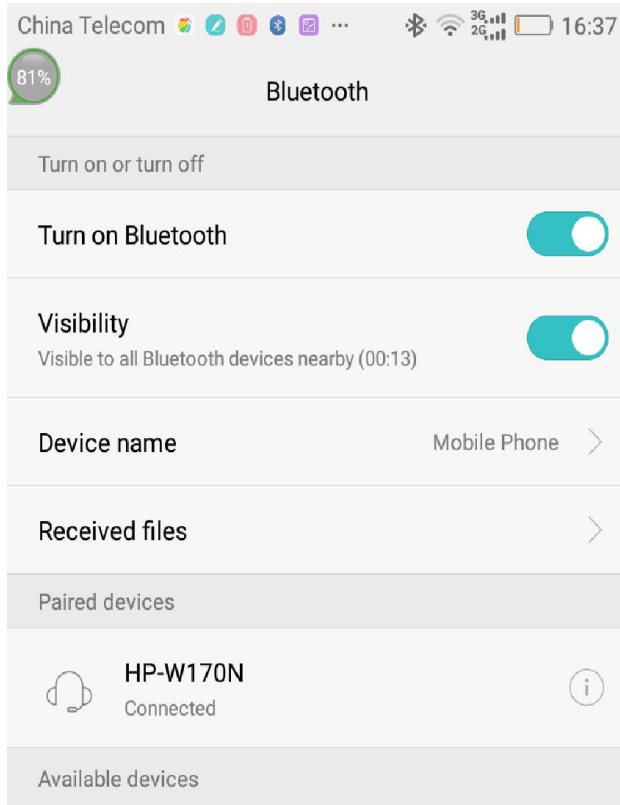
8000 ~ 12500MHz



5.9. Interference Prevention Function

When the DUT work on normal operation, we can read the companion device address from the Bluetooth Earphone.

So the DUT have Interference prevention function.



Test Result:	Pass
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6. CONCLUSION

The data collected relate only the item(s) tested and show that the device is in compliance with MIC

Notice No.88 Annex 43.

The End