



FCC/ IC TEST REPORT

According to

CFR47 §15.247/ RSS-247 Issue 1

Applicant	:	Qualcomm Atheros, Inc.
Address	:	1700 Technology Drive, San Jose, CA 95110
Manufacturer	:	Qualcomm Atheros, Inc.
Address	:	1700 Technology Drive, San Jose, CA 95110
Equipment	:	Single Stream 802.11a/b/g/n/ac + BT 4.1 M.2 Type Card
Brand	:	Qualcomm Atheros
Model No.	:	QCNFA435
FCC ID	:	PPD-QCNFA435
IC ID	:	4104A-QCNFA435

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of **Cerpass Technology Corp.** the test report shall not be reproduced except in full.

I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.10 – 2013** and the energy emitted by this equipment was **passed**.

CISPR PUB. 22 and FCC Part 15 in both radiated and conducted emission class B limits. Testing was carried out on Mar.06,2017~ Mar.13,2017, 2016 at **Cerpass Technology Corp.**

Prepared By:

Kerry Zhou

Approved by:

Miro Chueh (EMC/RF Manager)

Laboratory Accreditation:

Cerpass Technology Corporation Test Laboratory



NVLAP LAB Code:	200954-0
TAF LAB Code:	1439



Cerpass Technology (SuZhou) Co., Ltd.

NVLAP LAB Code:	200814-0
CNAS LAB Code:	L5515



Release History

Attachment No.	Version	Date	Description
SEDI1701087	Rev 01	2017-03-16	Initial release



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1. Report of Measurements and Examinations

1.1 List of Measurements and Examinations

Reference STD	Description of Test	Compliance results
FCC Rules §15.247(b); RSS-247 Issue 1 Section5.1(2)	Peak Output Power	PASS



2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

BT Specification	3.0HS
BT Frequency	2402~2480MHz
BT Channel Number	79
BT Channel Separation	1MHz
BT Type of Modulation	GFSK, Pi/4 DQPSK, 8DPSK
BT Data Rate	1Mbps(GFSK), 2Mbps(Pi/4 DQPSK), 3Mbps (8DPSK)
Channel Control	Auto
Antenna Type	See antenna requirement

Host Details,

Host Manufacture	Host Type	Host Model
Lenovo	Notebook Computer	Lenovo ideapad 520-15IKB



2.2 Carrier Frequency of Channels

Bluetooth Working Frequency of Each Channel:							
Channel	Frequency	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

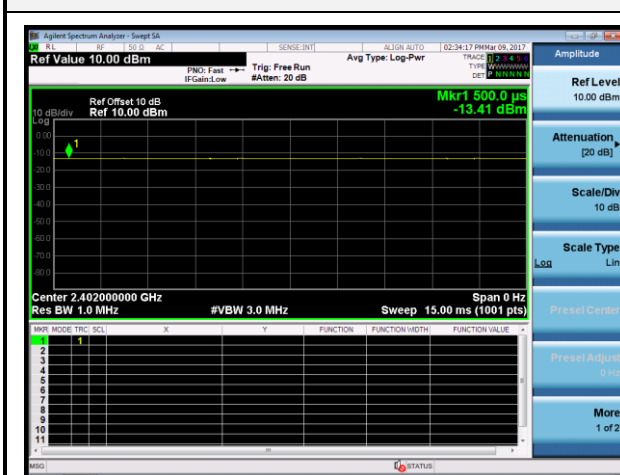


2.3 Duty cycle

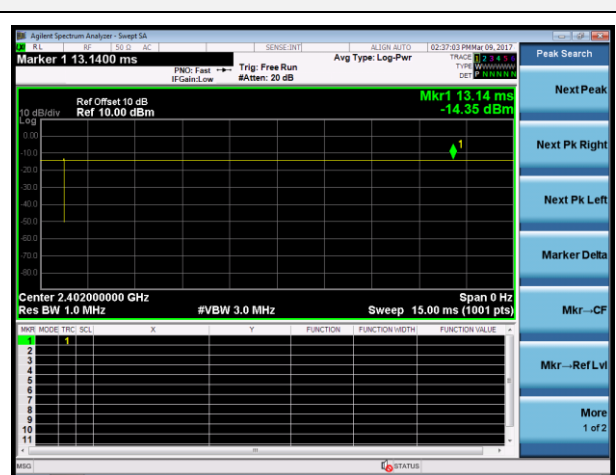
Test Item	Duty cycle
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Mode	Frequency (MHz)	Measurement (%)
DH5	2402	99%
2DH5	2402	99%
3DH5	2402	99%

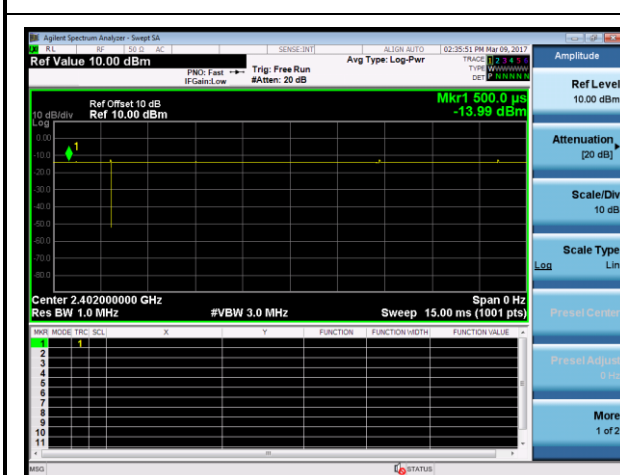
DH5 2402MHz



2DH5 2402MHz



3DH5 2402MHz





2.4 Test Manner

Test Manner	
1	During testing, the interface cables and equipment positions were varied according to RSS-247 Issue 1
2	Adjust the EUT at the test mode and the test channel. Then test.
Test mode	
The following test mode was performed for conduction and radiation test: Mode1: Transmit by DH5 Mode2: Transmit by 2DH5 Mode3: Transmit by 3DH5	



2.5 General Information of Test

Test Site:	Cerpass Technology Corp.
Performand Location :	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
NVLAP LAB Code :	200814-0
FCC Registration Number :	916572, 331395
IC Registration Number :	7290A-1, 7290A-2

2.6 Measurement Uncertainty

Measurement Item	Measurement Frequency	Polarization	Uncertainty
Radiated Emission	30 MHz ~ 40GHz	Vertical	± 4.11 dB
		Horizontal	± 4.10 dB
Maximum Peak Output Power	---	---	± 1.4 dB



3. Antenna Requirements

3.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

3.2 Antenna Construction and Directional Gain

Antenna	Manufacturer	Ant Type	Ant Part number	Peak Gain
Main(chain 0)	Amphenol	PIFA	DC33001GX00	-1.00dBi for 2.40~2.50GHz band -1.73dBi for 5.15~5.35GHz band -0.68dBi for 5.47~5.725GHz band -1.81dBi for 5.725~5.85GHz band
Aux(chain 1)			DC33001GX10	-1.63dBi for 2.40~2.50GHz band -3.79dBi for 5.15~5.35GHz band -3.24dBi for 5.47~5.725GHz band -4.66dBi for 5.725~5.85GHz band
Main(chain 0)	SPEED	PIFA	DC33001GV00	0.65dBi for 2.40~2.50GHz band 0.86dBi for 5.15~5.35GHz band -1.29dBi for 5.47~5.725GHz band -3dBi for 5.725~5.85GHz band
Aux(chain 1)			DC33001GV10	-0.14dBi for 2.40~2.50GHz band -1.73dBi for 5.15~5.35GHz band -1.57dBi for 5.47~5.725GHz band -3.87dBi for 5.725~5.85GHz band

Note: The EUT will collocation two kinds of antenna, we choose one of the high peak gain antenna for all RF testing.



4. Maximum Output Power

4.1 Test Limit

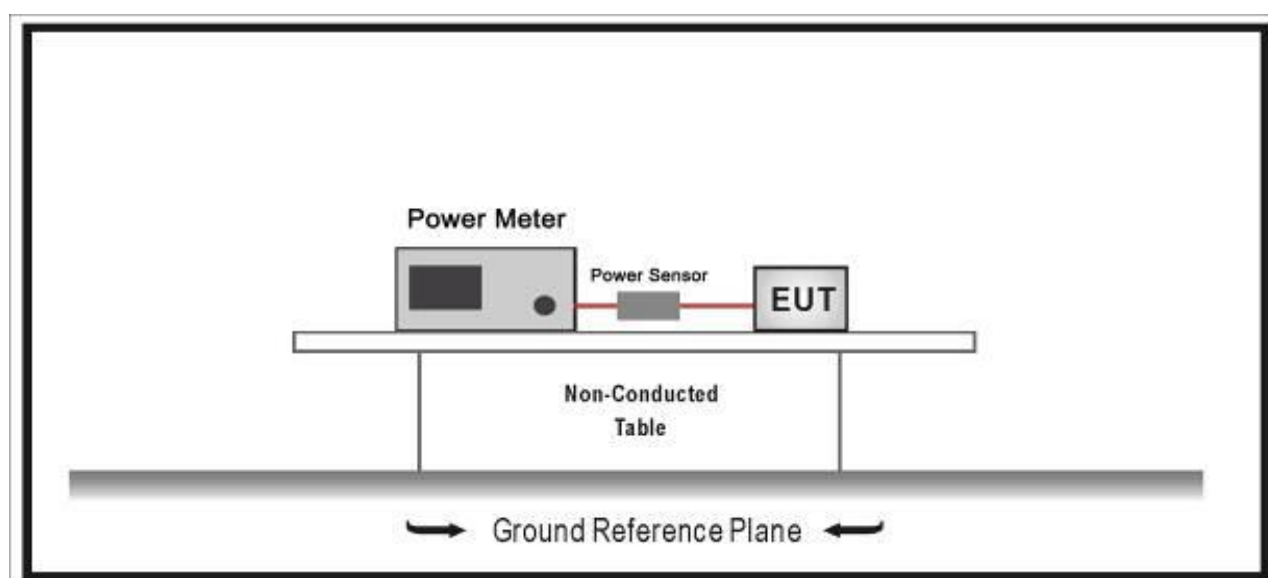
For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

4.2 Test Procedure

According to ANSI C63.10: 2013-7.8.5.

Use peak responding power meter for Peak Power test.

4.3 Test Setup Layout



4.4 Measurement Equipment

Instrument	Manufacturer	Type No.	Serial No.	Calibration Date	Valid Date.
Series Power Meter	ANRITSU	ML2495A	1224005	2016/03/27	2017/03/26
Temperature/Humidity Meter	Zhicheng	ZC1-11	CEP-TH-003	2016/03/31	2017/03/30



4.5 Test Result and Data

Test Item	Power Output
Test Mode	Mode 1: Transmitter-1Mbps (GFSK_DH5)
Test Date	2017-03-08

Channel No.	Frequency (MHz)	Peak Power (dBm)	Required Limit (dBm)	Result
01	2402	5.8	30	Pass
39	2441	5.9	30	Pass
78	2480	5.5	30	Pass

Test Item	Power Output
Test Mode	Mode 2: Transmitter-2Mbps (Pi/4 DQPSK_DH5)
Test Date	2017-03-08

Channel No.	Frequency (MHz)	Peak Power (dBm)	Required Limit (dBm)	Result
01	2402	5.9	30	Pass
39	2441	5.5	30	Pass
78	2480	5.7	30	Pass



Test Item	Power Output
Test Mode	Mode 3: Transmitter-3Mbps (8DPSK_DH5)
Test Date	2017-03-08

Channel No.	Frequency (MHz)	Peak Power (dBm)	Required Limit (dBm)	Result
01	2402	5.3	30	Pass
39	2441	5.9	30	Pass
78	2480	5.7	30	Pass