



Part 15C

TEST REPORT

Product Name	Access Router
Model	AR169-P-M9
FCC ID	QIS-AR169PM9
Applicant	Huawei Technologies Co., Ltd
Manufacturer	Huawei Technologies Co., Ltd
Date of issue	July 22, 2015

TA Technology (Shanghai) Co., Ltd.

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GENERAL SUMMARY

Reference Standard(s)	<p>FCC CFR47 Part 15C (2013) Radio Frequency Devices</p> <p>15.205 Restricted bands of operation;</p> <p>15.207 Conducted limits;</p> <p>15.209 Radiated emission limits; general requirements;</p> <p>15.247 Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850MHz.</p> <p>ANSI C63.4 Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40GHz. (2009)</p> <p>DA00-705 Filing and Frequency Measurement Guidelines For Frequency Hopping Spread Spectrum System.(2000)</p>
Conclusion	<p>This portable wireless equipment has been measured in all cases requested by the relevant standards. Test results in Chapter 2 of this test report are below limits specified in the relevant standards.</p> <p>General Judgment: Pass</p>
Comment	<p>The test result only responds to the measured sample.</p>

Approved by Kai Xu
Kai Xu
Director

Revised by Lingling Kang
Lingling Kang
RF Manager

Performed by Changxu Wan
Changxu Wan
RF Engineer

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1. General Information

1.1. Notes of the test report

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L2264.

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 428261.

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 8510A.

TA Technology (Shanghai) Co., Ltd. guarantees the reliability of the data presented in this test report, which is the results of measurements and tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and technical facilities available at TA Technology (Shanghai) Co., Ltd. at the time of execution of the test.

TA Technology (Shanghai) Co., Ltd. is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the items under test and the results of the test. The sample under test was selected by the Client. This report only refers to the item that has undergone the test.

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of **TA Technology (Shanghai) Co., Ltd.**

If the electronic report is inconsistent with the printed one, it should be subject to the latter.

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1.2. Testing laboratory

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City: Shanghai
Post code: 201201
Country: P. R. China
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E-mail: xukai@ta-shanghai.com

1.3. Applicant Information

Company: Huawei Technologies Co., Ltd
Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Address: Bantian, Longgang District, Shenzhen, 518129
P.R.China

1.4. Manufacturer Information

Company: Huawei Technologies Co., Ltd
Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Address: Bantian, Longgang District, Shenzhen, 518129
P.R.China

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1.5. Information of EUT

General information

Name of EUT:	Access Router		
IMEI:	/		
Hardware Version:	VER.D		
Software Version:	V200R006C10B350		
Antenna Type:	External Antenna		
Antenna Connector:	RP-SMA-J(meet with the standard FCC Part 15.203 requirement)		
Device Operating Configurations:			
Test Mode	Basic Rate	Enhanced Data Rate(EDR)	
Modulation Type:	Frequency Hopping Spread Spectrum (FHSS)		
	GFSK	$\pi/4$ DQPSK	8DQPSK
Packet Type:(Maximum Payload)	DH5	2DH5	3DH5
Max. Conducted Power	3.57 dBm		
Power Supply:	Charger (AC Adapter)		
Operating Frequency Range(s)	2402 ~ 2480MHz		
Tested Frequency Range(s)	2400 ~ 2483.5 MHz		

1.6. Test Date

The test is performed from March 17, 2015 to March 21, 2015.

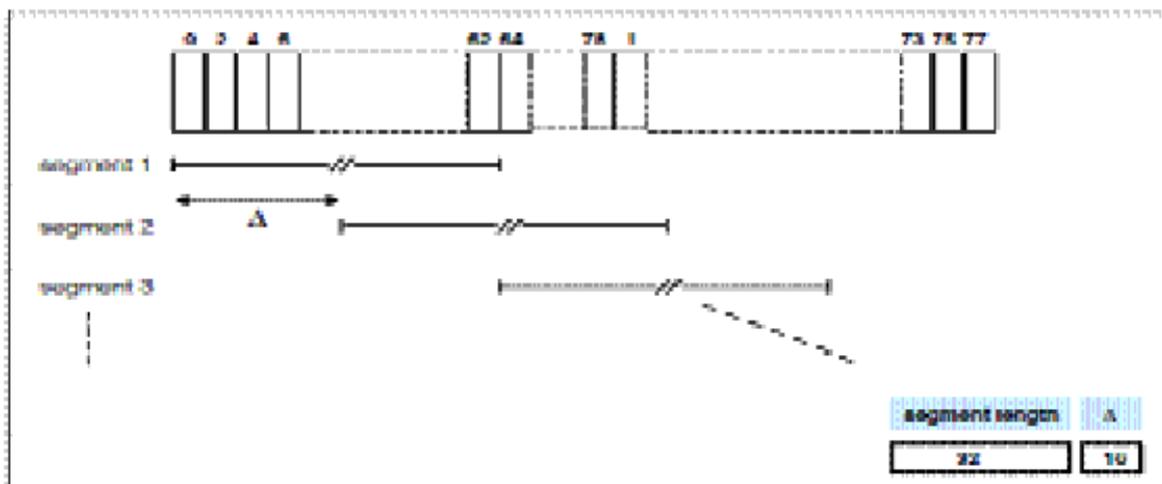
2. Information about the FHSS characteristics

2.1. Pseudorandom Frequency Hopping Sequence

Frequency Hopping Systems. A spread spectrum system in which the carrier is modulated with the coded information in a conventional manner causing a conventional spreading of the RF energy about the frequency carrier. The frequency of the carrier is not fixed but changes at fixed intervals under the direction of a coded sequence. The wide RF bandwidth needed by such a system is not required by spreading of the RF energy about the carrier but rather to accommodate the range of frequencies to which the carrier frequency can hop. The test of a frequency hopping system is that the near term distribution of hops appears random, the long term distribution appears evenly distributed over the hop set, and sequential hops are randomly distributed in both direction and magnitude of change in the hop set.

The selection scheme chooses a segment of 32 hop frequencies spanning about 64 MHz and visits these hops in a pseudo-random order. Next, a different 32-hop segment is chosen, etc. In the page, master page response, slave page response, page scan, inquiry, inquiry response and inquiry scan hopping sequences, the same 32-hop segment is used all the time (the segment is selected by the address; different devices will have different paging segments).

When the basic channel hopping sequence is selected, the output constitutes a pseudo-random sequence that slides through the 79 hops. The principle is depicted in the figure below.



Hop selection scheme in CONNECTION state.

Pseudorandom Frequency Hopping Sequence Table as below:

Channel: 08, 24, 40, 56, 40, 56, 72, 09, 01, 09, 33, 41, 33, 41, 65, 73, 53, 69, 06, 22, 04, 20, 36, 52, 38, 46, 70, 78, 68, 76, 21, 29, 10, 26, 42, 58, 44, 60, 76, 13, 03, 11, 35, 43, 37, 45, 69, 77, 55, 71, 08, 24, 08, 24, 40, 56, 40, 48, 72, 01, 72, 01, 25, 33, 12, 28, 44, 60, 42, 58, 74, 11, 05, 13, 37, 45, etc.

Each frequency used equally on the average by each transmitter.

The system receiver have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

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2.2. Equal Hopping Frequency Use

All Bluetooth units participating in the Pico net are time and hop-synchronized to the channel. Each new transmission event begins on the next channel in the hopping sequence after the final channel used in the previous transmission event.

2.3. System Receiver Input Bandwidth

Each channel bandwidth is 1MHz. The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

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3. Test Information

3.1. Test Mode

During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure max power transmission and proper modulation.

EUT is stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate.

Then this mode was measured in the following mode: EUT with cradle and EUT without cradle. The worst emission was found in EUT with cradle mode and the worst case was recorded.

Test Modes		
Band	Radiated Test Cases	Conducted Test Cases
BT	DH5 GFSK(Channel 0/39/78)	DH5 GFSK(Channel 0/39/78) 2DH5 $\pi/4$ -DQPSK(Channel 0/39/78) 3DH5 8DQPSK(Channel 0/39/78)

Note: The maximum RF output power levels are DH5 for GFSK modulation, For RSE and CSE, only the maximum RF output power is chosen.

3.2. Summary of test results

Number	Summary of measurements of results	Clause in FCC rules	Verdict
1	Peak Power Output -Conducted	15.247(b)(1)	PASS
2	Occupied Bandwidth (20dB)	15.247(a)(1)	PASS
3	Frequency Separation	15.247(a)(1)	PASS
4	Time of Occupancy (Dwell Time)	15.247(a)(1)(iii)	PASS
5	Band Edge Compliance	15.247(d)	PASS
6	Spurious Radiated Emissions in the restricted band	15.247(d),15.205,15.209	PASS
7	Number of Hopping Frequency	15.247(a)(1)(iii)	PASS
8	Spurious RF Conducted Emissions	15.247(d)	PASS
9	Radiates Emission	15.247(d),15.205,15.209	PASS
10	AC Power Line Conducted Emission	15.207	PASS

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3.3. Peak Power Output –Conducted

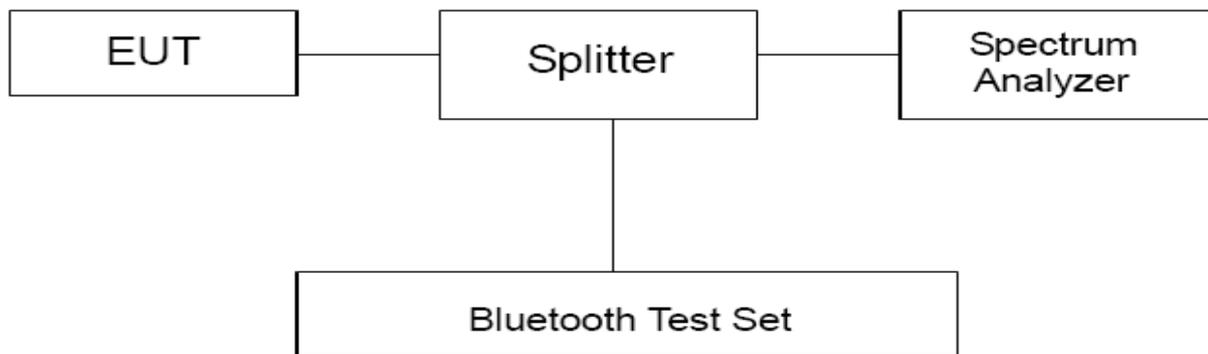
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The EUT is controlled by the Bluetooth test set to ensure max power transmission with proper modulation. The peak detector is used. RBW is set to 2 MHz; VBW is set to 6 MHz. These measurements have been tested at following channels: 0, 39, and 78.

Test Setup



Limits

Rule Part 15.247 (b) (1) specifies that " 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."

Peak Output Power	$\leq 0.125W$ (21dBm)
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.44$ dB.

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Test Results

Note: The measured power density (dBm) has the offset with cable loss already.

Channel	Peak Output Power (dBm)			Conclusion
	CH0/2402	CH39/2441	CH78/2480	
DH1	-1.82	1.49	3.51	PASS
DH3	-1.79	1.49	3.53	PASS
DH5	-1.76	1.55	3.57	PASS
2DH1	-3.79	-0.12	1.90	PASS
2DH3	-3.76	-0.62	1.70	PASS
2DH5	-3.43	-0.03	2.09	PASS
3DH1	-3.57	-0.23	1.58	PASS
3DH3	-3.68	-0.26	1.73	PASS
3DH5	-3.67	-0.22	1.77	PASS

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3.4. Occupied Bandwidth (20dB)

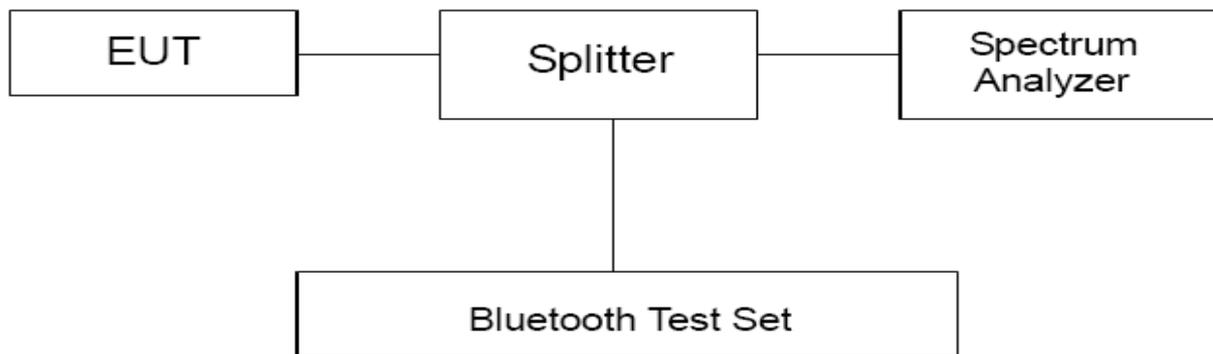
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The occupied bandwidth is measured using spectrum analyzer. RBW is set to 20kHz and VBW is set to 60kHz on spectrum analyzer. -20dB occupied bandwidths are recorded.

Test Setup



Limits

No specific occupied bandwidth requirements in part 15.247(a) (1).

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 936$ Hz.

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Test Results

DH5

Channel	Frequency (MHz)	20dB Bandwidth (kHz)
0	2402	1017
39	2441	1017
78	2480	1017



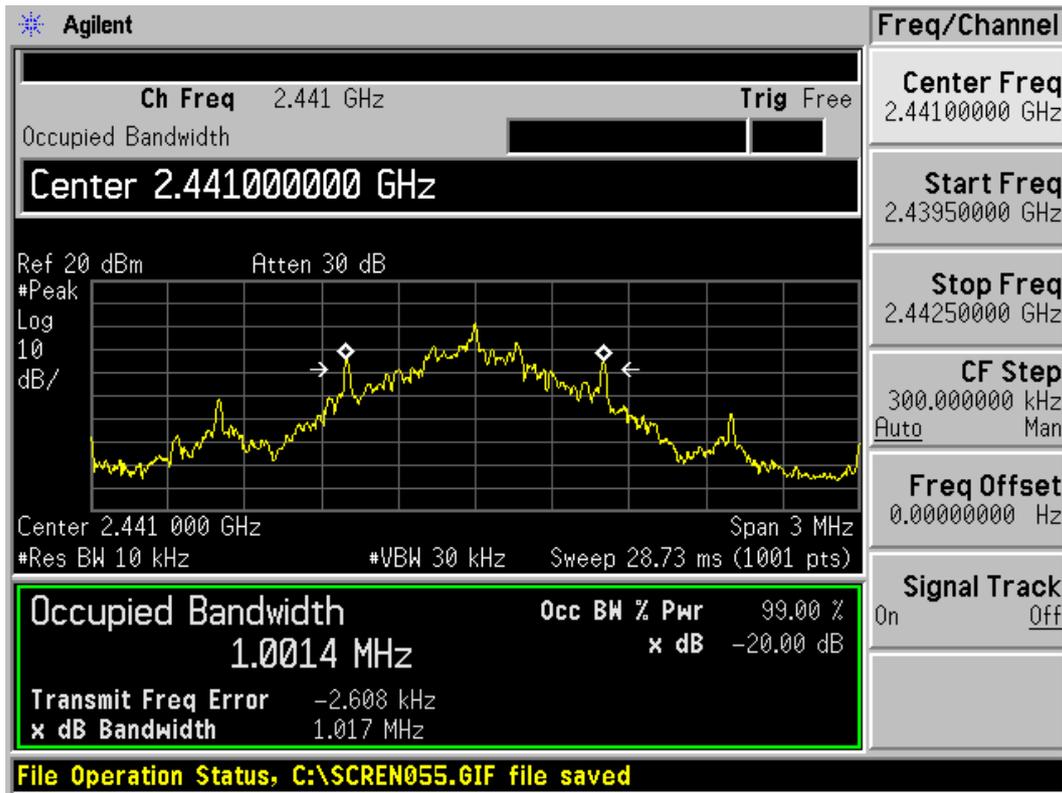
Carrier frequency (MHz): 2402

Channel No.:0

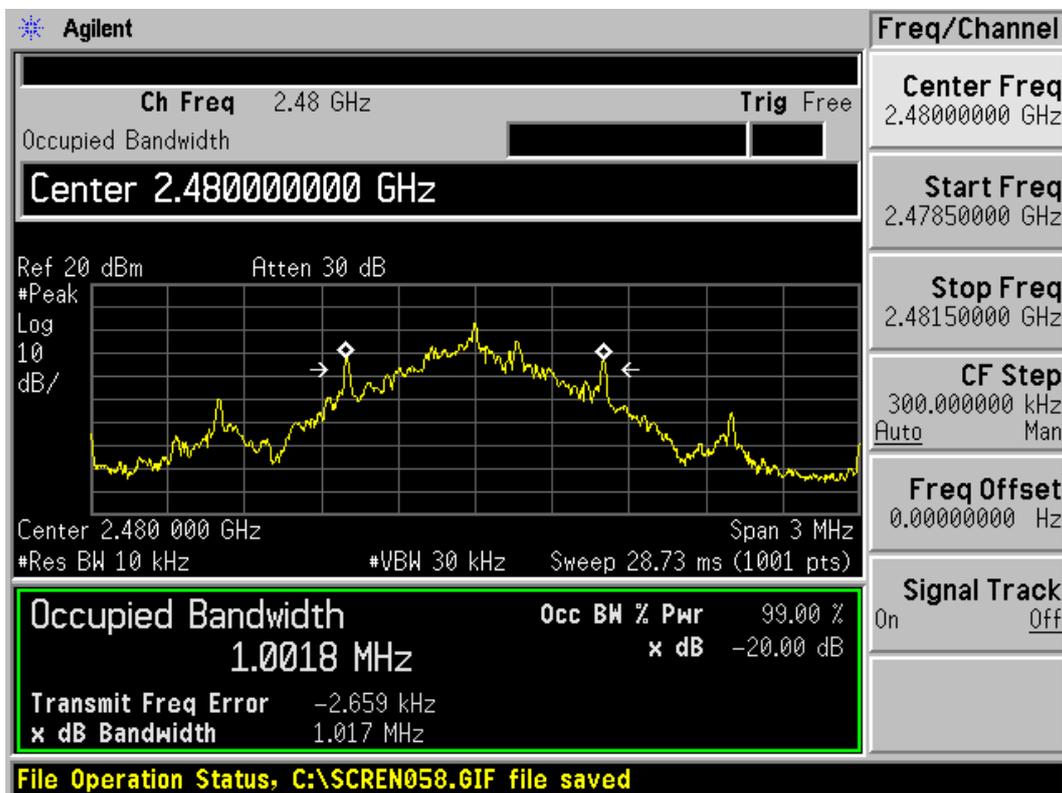
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Carrier frequency (MHz): 2441
Channel No.:39



Carrier frequency (MHz): 2480
Channel No.:78

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2DH5

Channel	Frequency (MHz)	20dB Bandwidth (kHz)
0	2402	809.034
39	2441	1014
78	2480	807.540



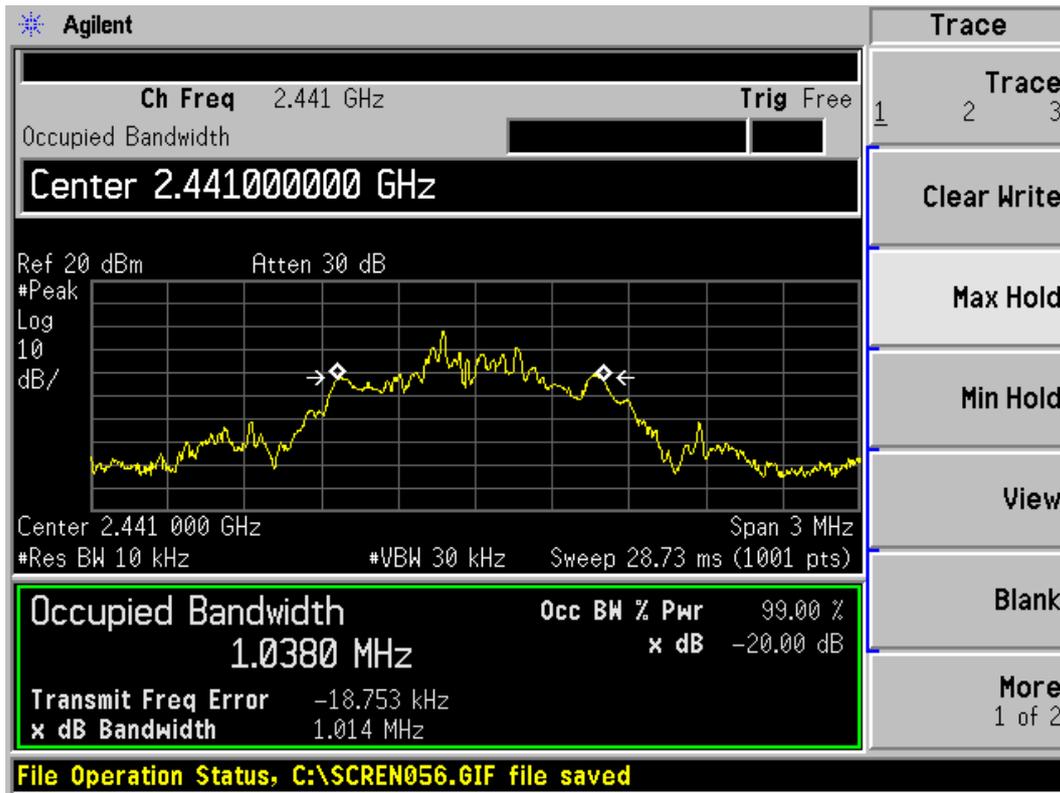
Carrier frequency (MHz): 2402

Channel No.:0

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Carrier frequency (MHz): 2441
Channel No.:39



Carrier frequency (MHz): 2480
Channel No.:78

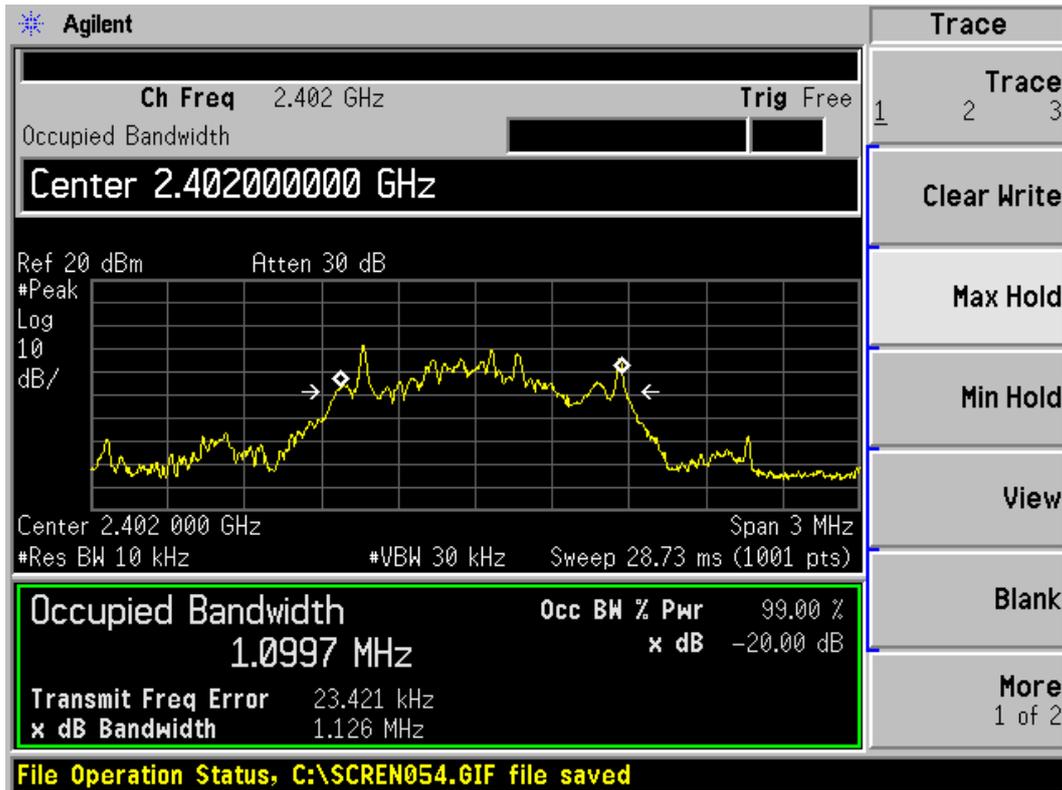
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3DH5

Channel	Frequency (MHz)	20dB Bandwidth (kHz)
0	2402	1126
39	2441	1129
78	2480	1121



Carrier frequency (MHz): 2402

Channel No.:0

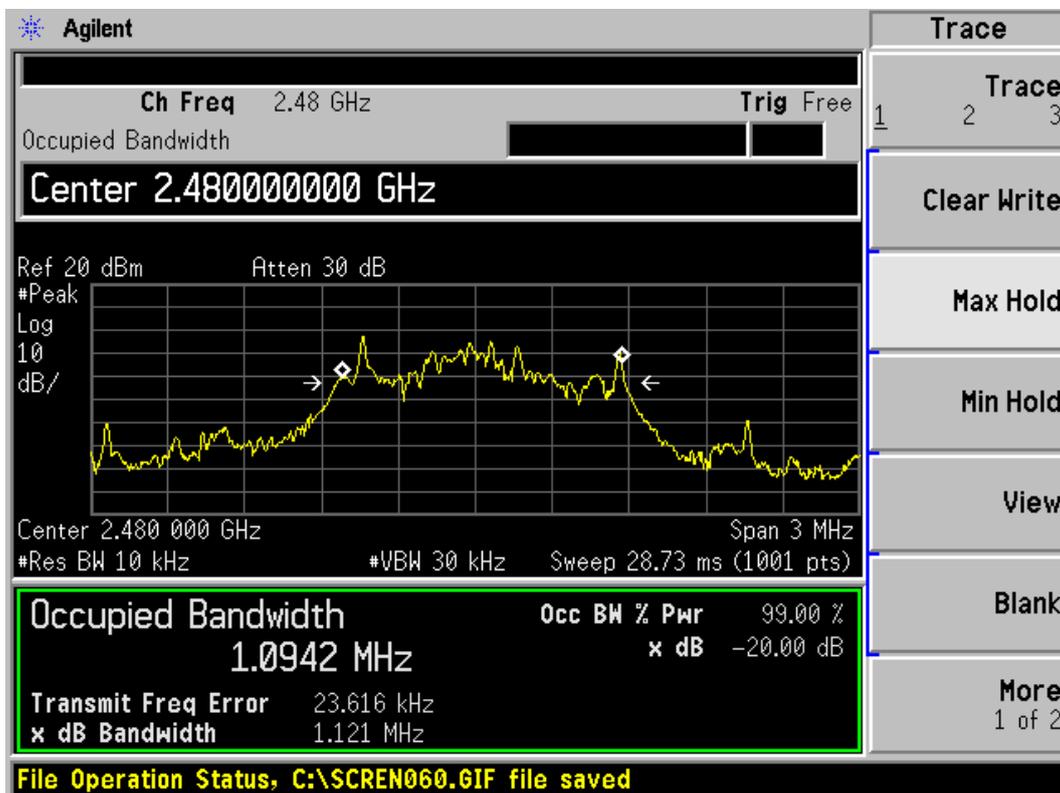
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Carrier frequency (MHz): 2441
Channel No.:39



Carrier frequency (MHz): 2480
Channel No.:78

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3.5. Frequency Separation

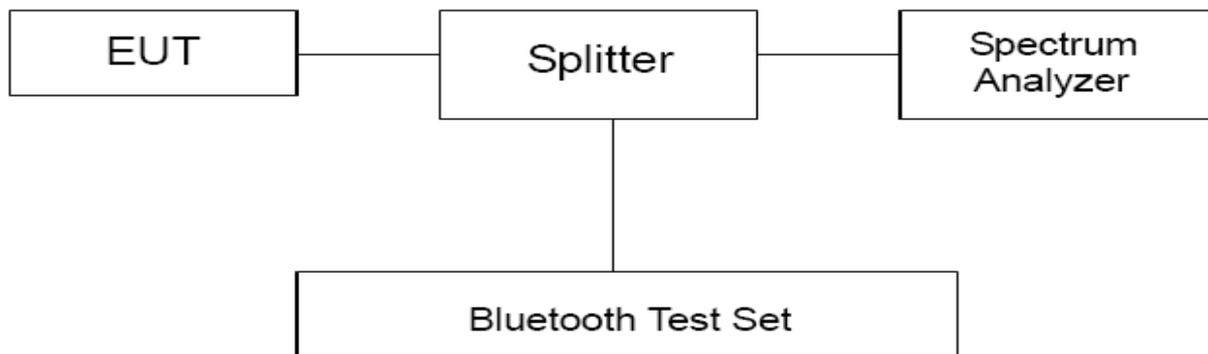
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. RBW is set to 300 kHz and VBW is set to 3MHz on spectrum analyzer. Set EUT on Hopping on mode.

Test setup



Limits

Rule Part 15.247(a)(1) specifies that "Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. "

Note: The value of two-thirds of 20 dB bandwidth is always greater than 25 kHz.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 936$ Hz.

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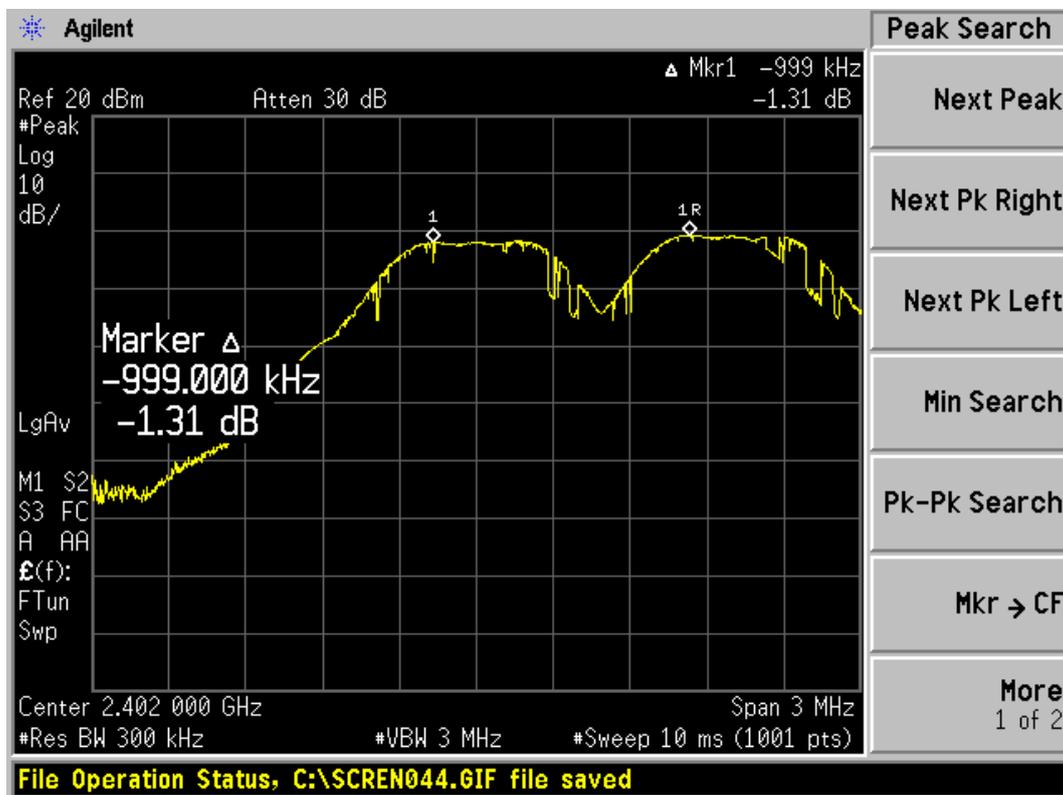
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Test Results:

DH5

Carrier frequency (MHz)	Carrier frequency separation(kHz)	20dB Bandwidth (kHz)	Limit(kHz)	Conclusion
2402	999	1017	678	PASS
2441	999	1017	678	PASS
2480	996	1017	678	PASS

Note: The limit is two-thirds of 20 dB bandwidth.



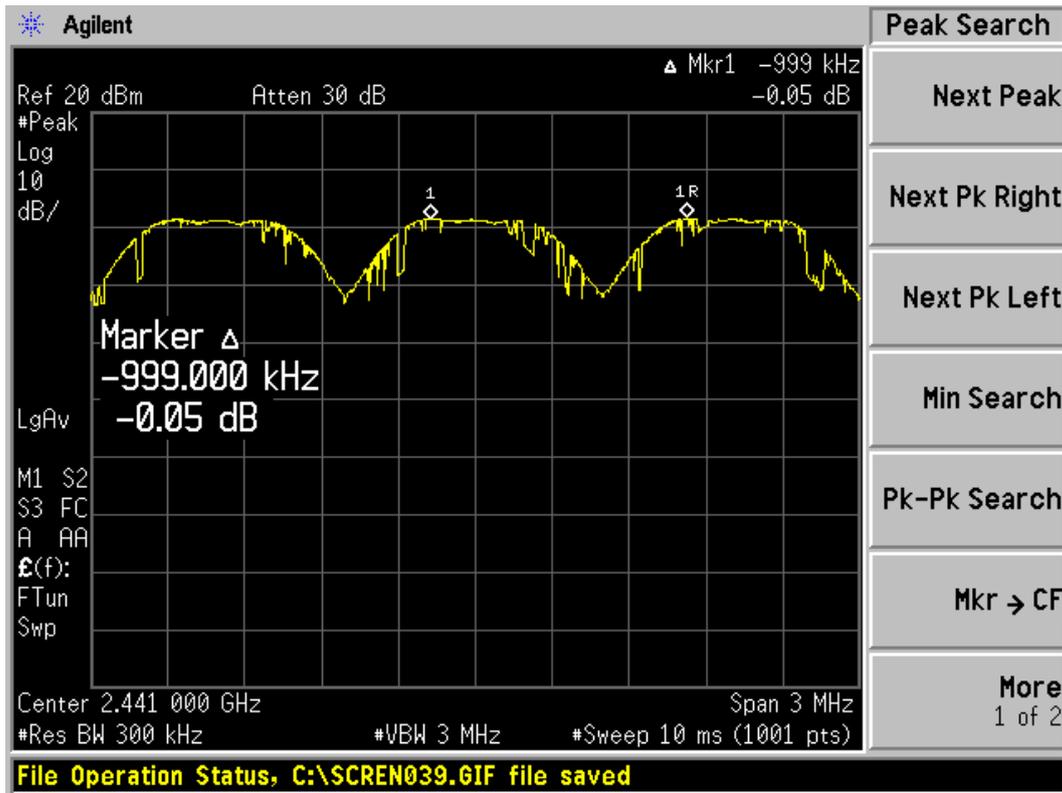
Carrier frequency (MHz): 2402

Channel No.:0

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Carrier frequency (MHz): 2441

Channel No.:39



Carrier frequency (MHz): 2480

Channel No.:78

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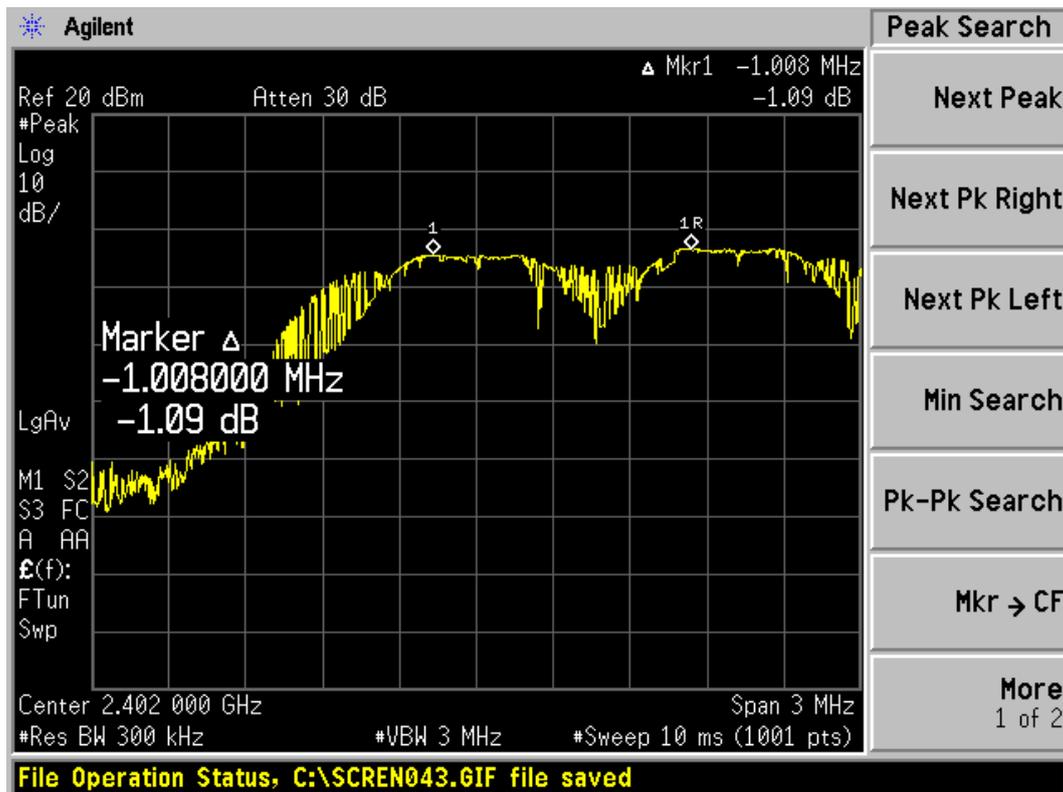
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2DH5

Carrier frequency (MHz)	Carrier frequency separation(kHz)	20dB Bandwidth (kHz)	Limit(kHz)	Conclusion
2402	1008	809.034	539.356	PASS
2441	1002	1014	676	PASS
2480	1002	807.540	538.36	PASS

Note: The limit is two-thirds of 20 dB bandwidth.



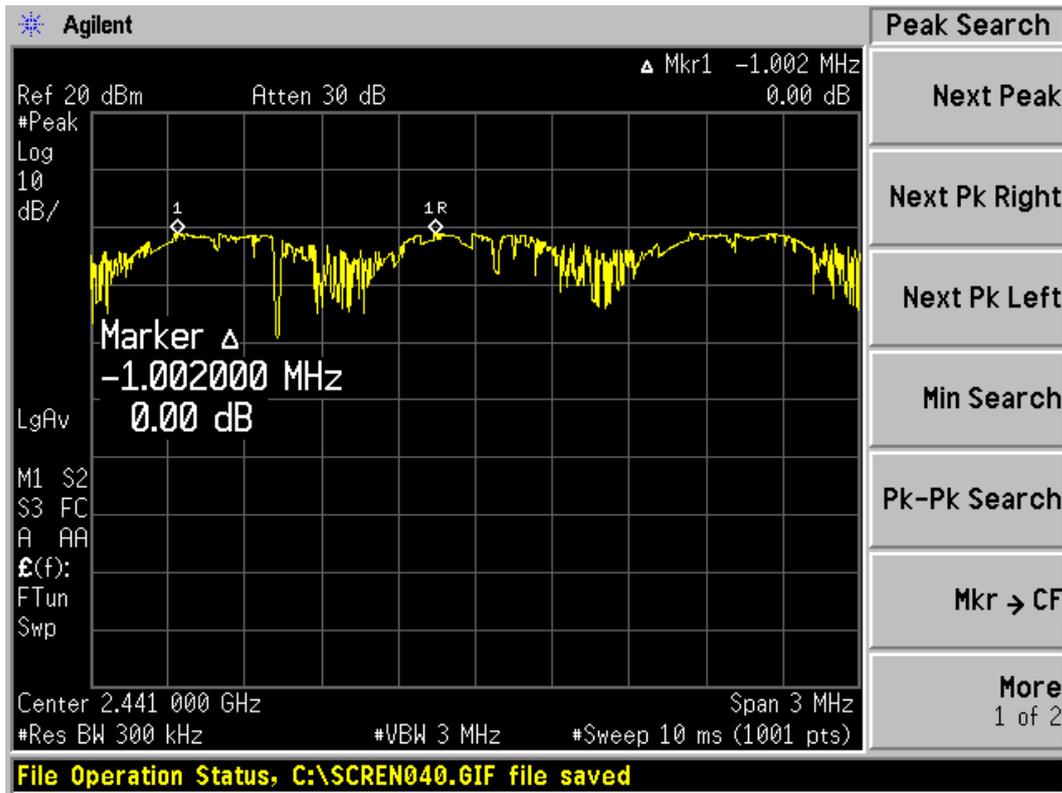
Carrier frequency (MHz): 2402

Channel No.:0

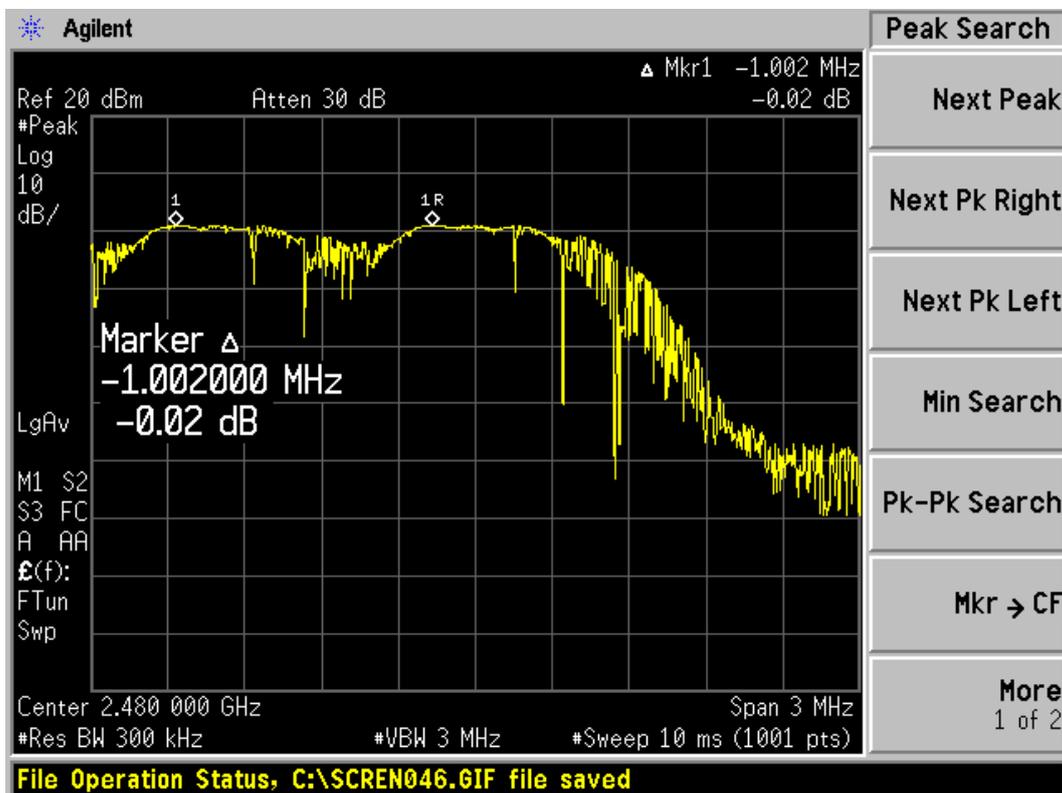
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Carrier frequency (MHz): 2441
Channel No.:39



Carrier frequency (MHz): 2480
Channel No.:78

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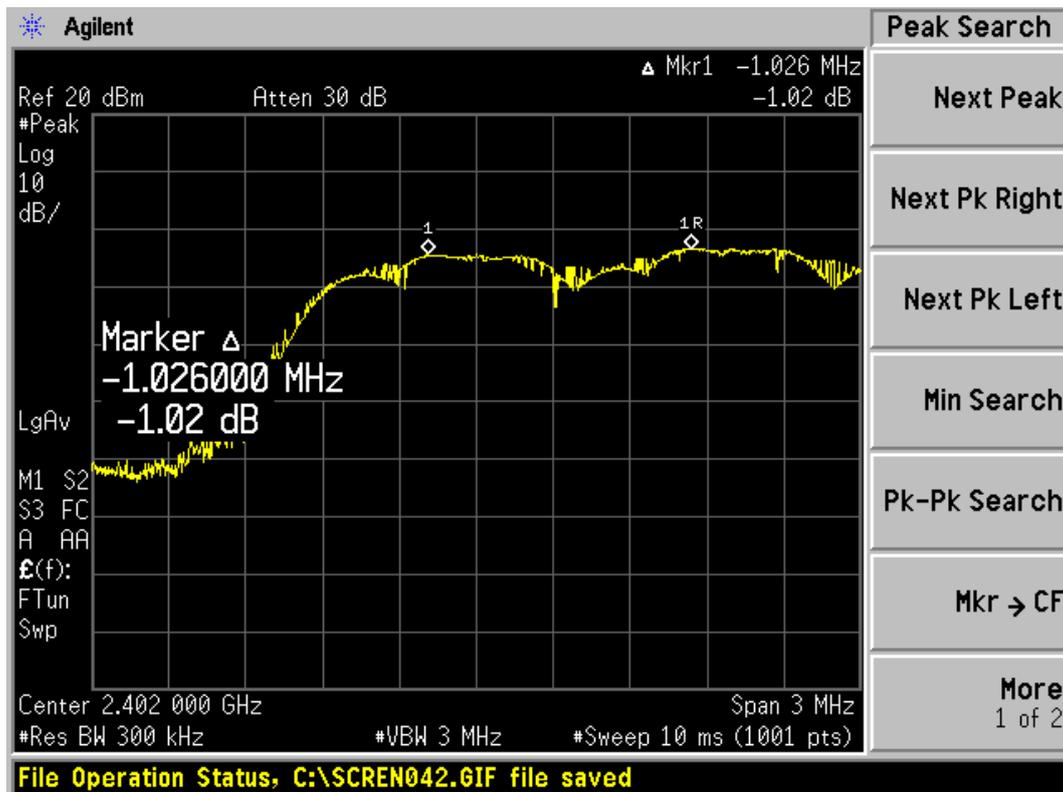
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3DH5

Carrier frequency (MHz)	Carrier frequency separation(kHz)	20dB Bandwidth (kHz)	Limit(kHz)	Conclusion
2402	1026	1126	750.667	PASS
2441	1002	1129	752.667	PASS
2480	990	1121	747	PASS

Note: The limit is two-thirds of 20 dB bandwidth.



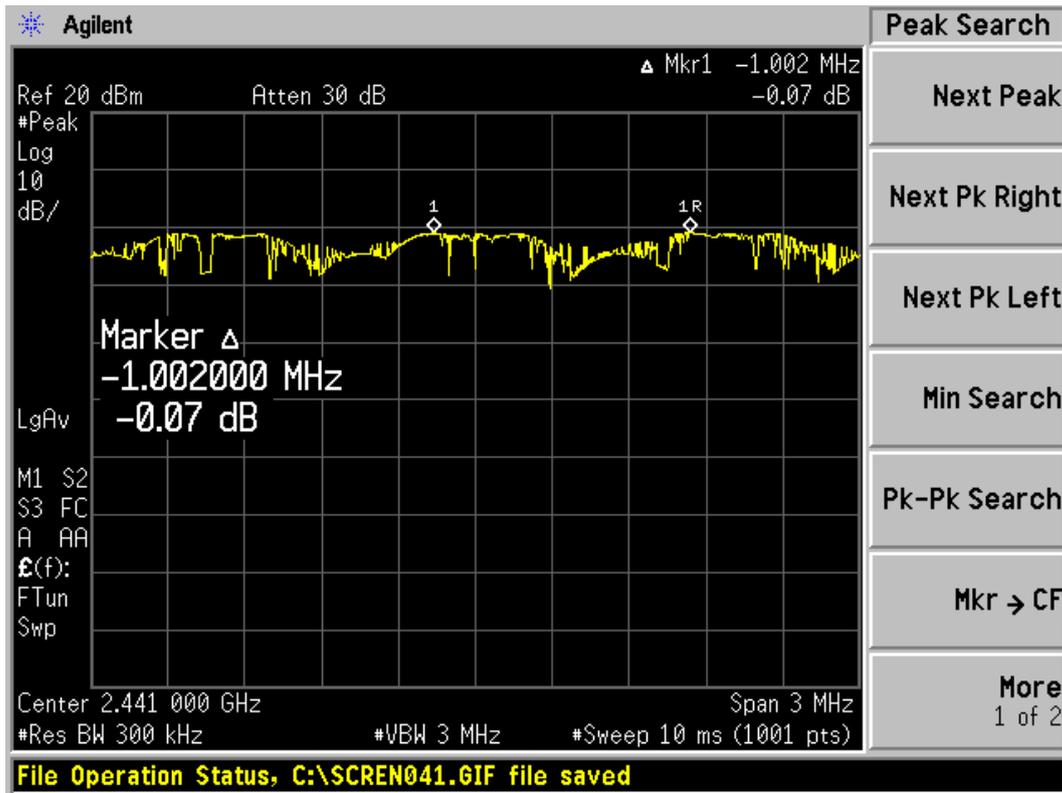
Carrier frequency (MHz): 2402

Channel No.:0

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Carrier frequency (MHz): 2441

Channel No.:39



Carrier frequency (MHz): 2480

Channel No.:78

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3.6. Time of Occupancy (Dwell Time)

Ambient condition

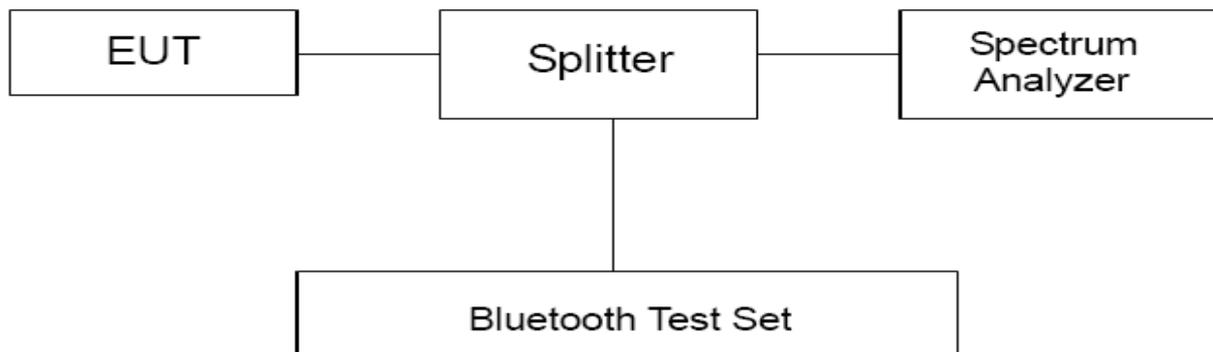
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. RBW is set to 1MHz and VBW is set to 3MHz on spectrum analyzer. The time slot length is measured of three different packet types, which are available in the Bluetooth technology. Those are DH1, DH3 and DH5 packets. The dwell time is calculated by: Dwell time = time slot length * hop rate * 0.4s with:

- hop rate=1600 * 1/s for DH1 packet =1600
- hop rate=1600/3 * 1/s for DH3 packet =533.33
- hop rate=1600/5 * 1/s for DH5 packet =320

Test Setup



Limits

Rule Part 22.913(a) specifies that " Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.."

Dwell time	≤ 400ms
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$.

Requirements	Uncertainty	
Dwell Time	DH1	$U = 0.64\text{ms}$
	DH3	$U = 0.80\text{ms}$
	DH5	$U = 0.70\text{ms}$

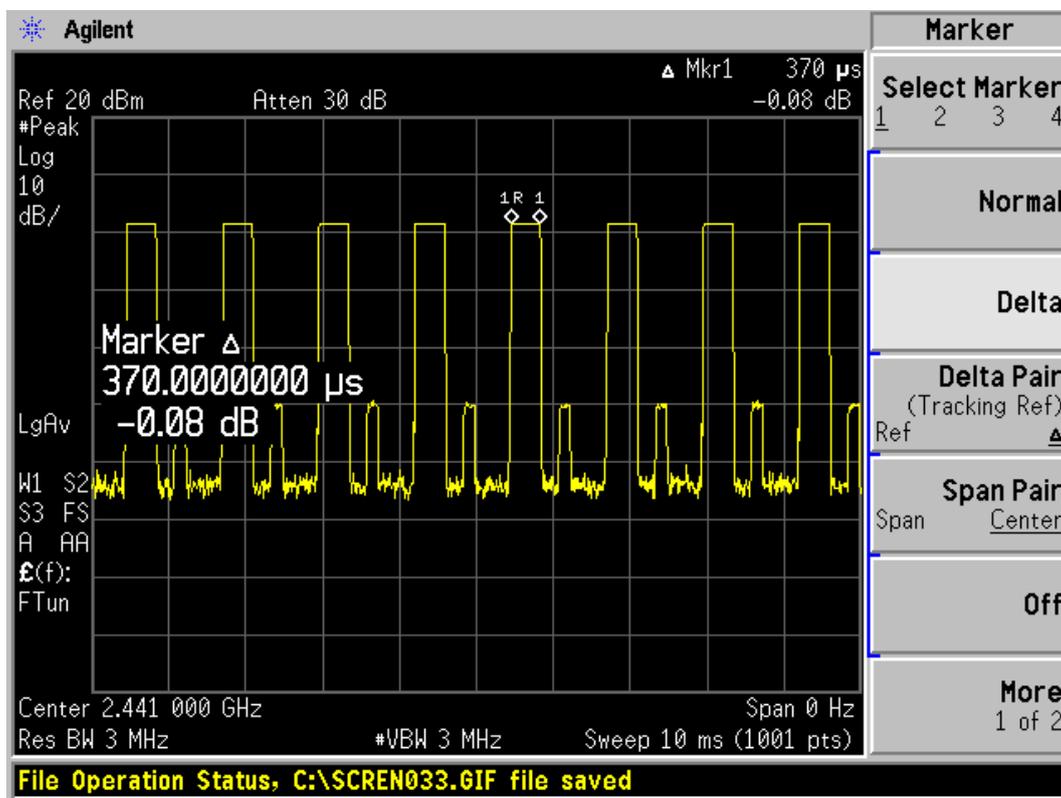
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Test Results:

CH 39

Packet type	hop rate (1/s)	Time slot length(ms)	Dwell time (ms)	Limit (ms)	Conclusion
DH1	1600	0.37	236.8	400	PASS
DH3	533.33	1.63	347.73	400	PASS
DH5	320	2.88	368.64	400	PASS

Note: Dwell time = time slot length * hop rate * 0.4s

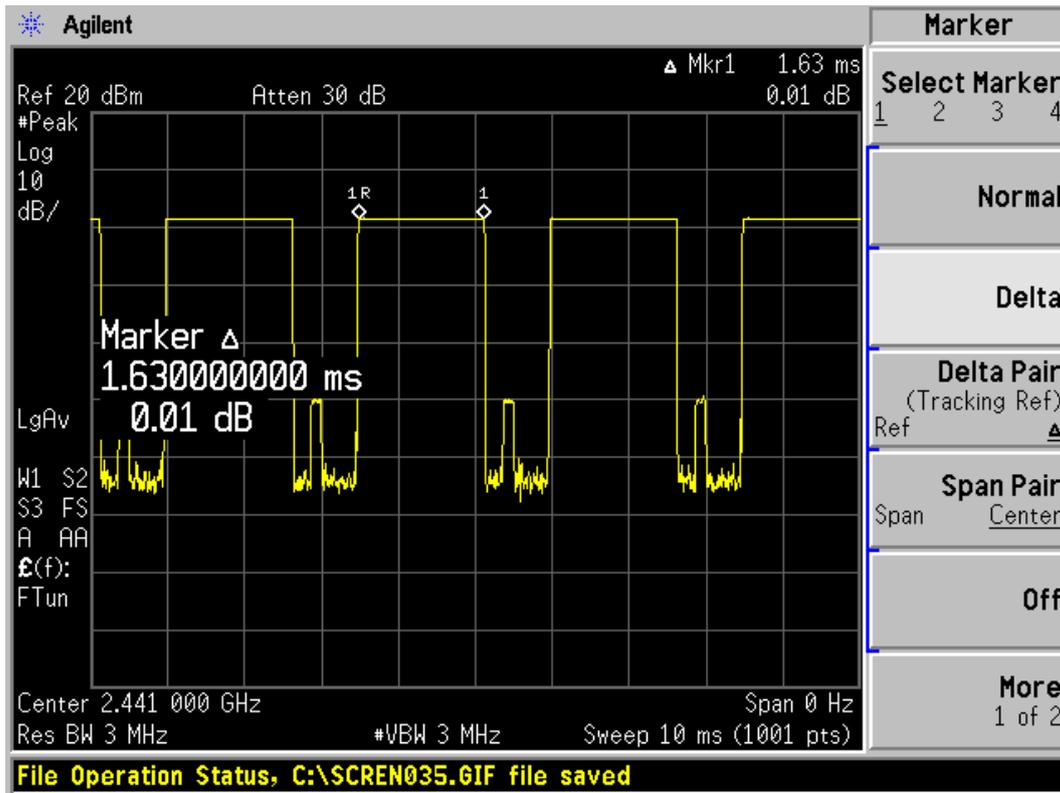


Carrier frequency (MHz): 2441,DH1

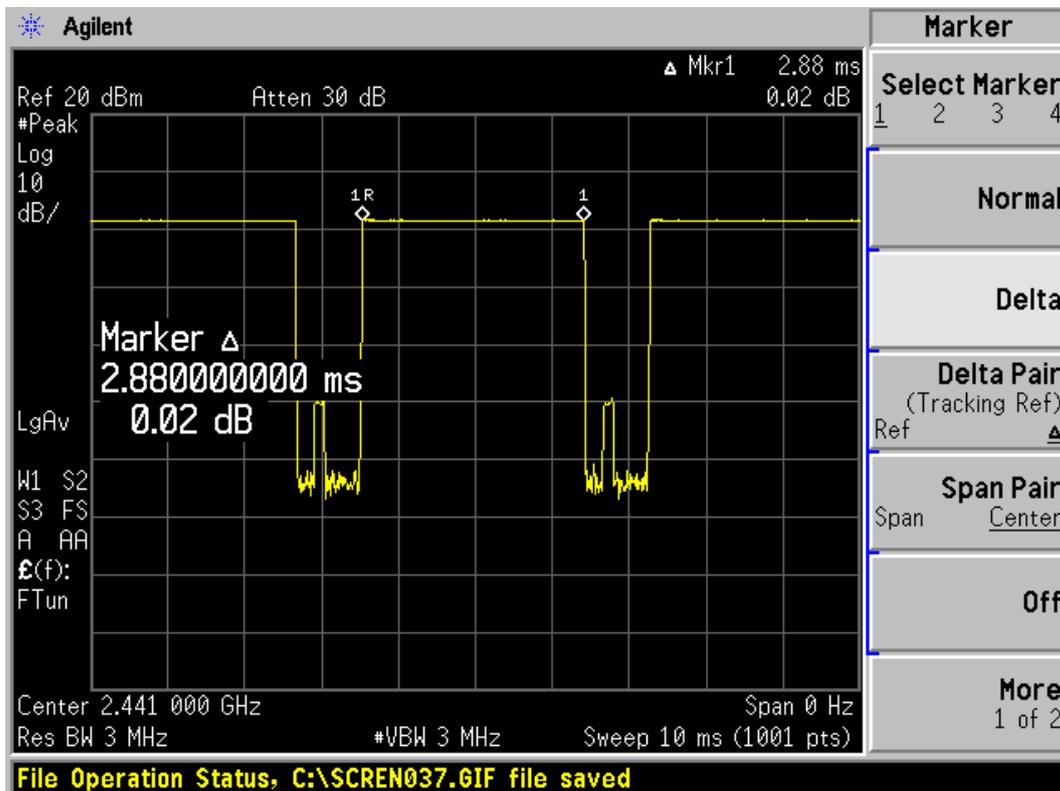
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Carrier frequency (MHz): 2441,DH3



Carrier frequency (MHz): 2441,DH5

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3.7. Band Edge Compliance

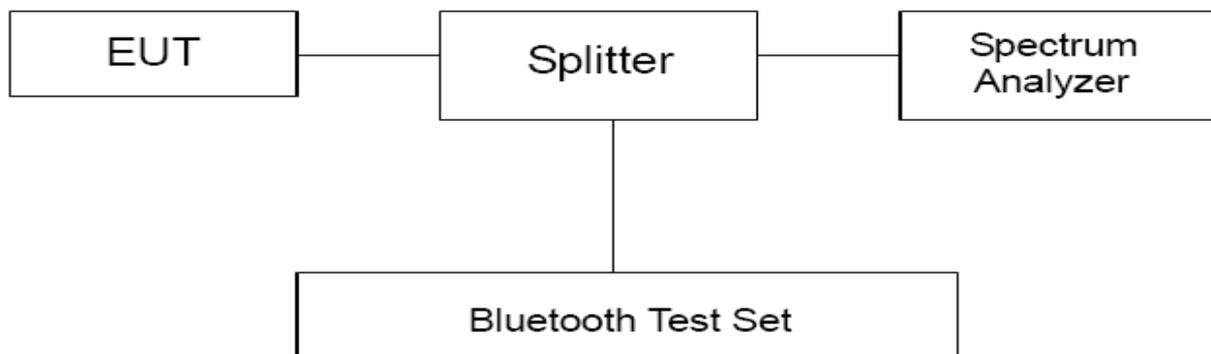
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The lowest and highest channels were measured. The peak detector is used. RBW is set to 100 kHz and VBW is set to 300 kHz on spectrum analyzer. EUT test for Hopping On mode and Hopping Off mode.

Test Setup



Limits

Rule Part 15.247(d) specifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.”

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
2GHz-3GHz	1.407 dB

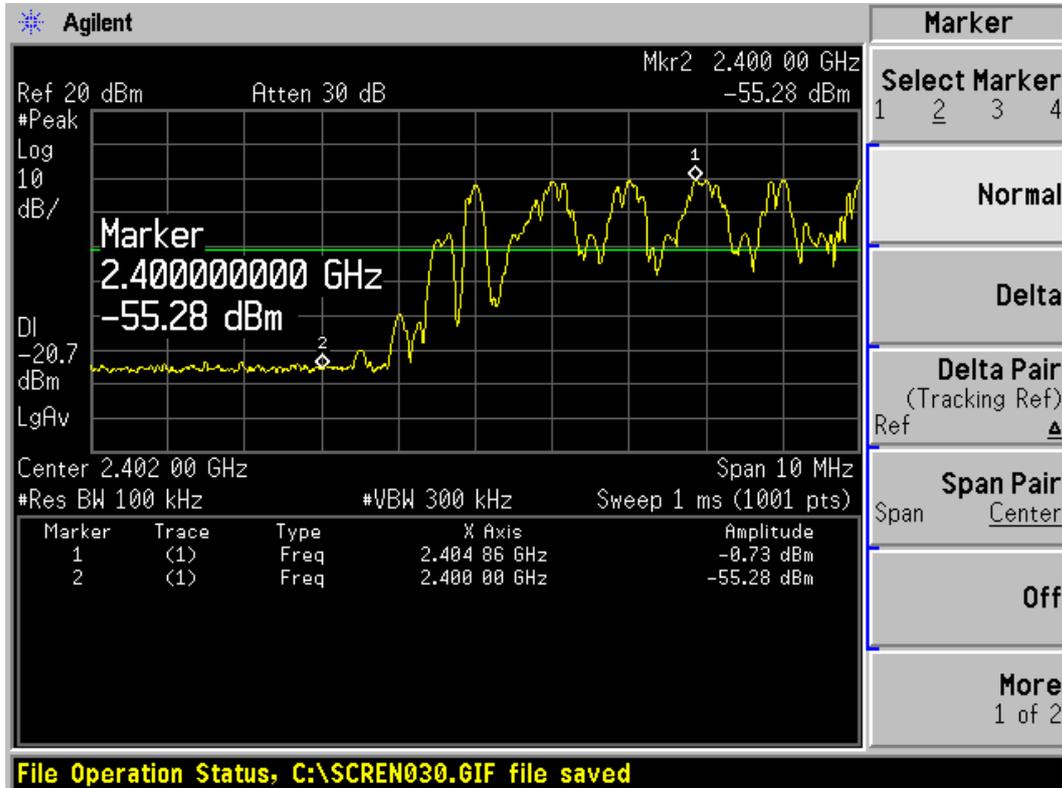
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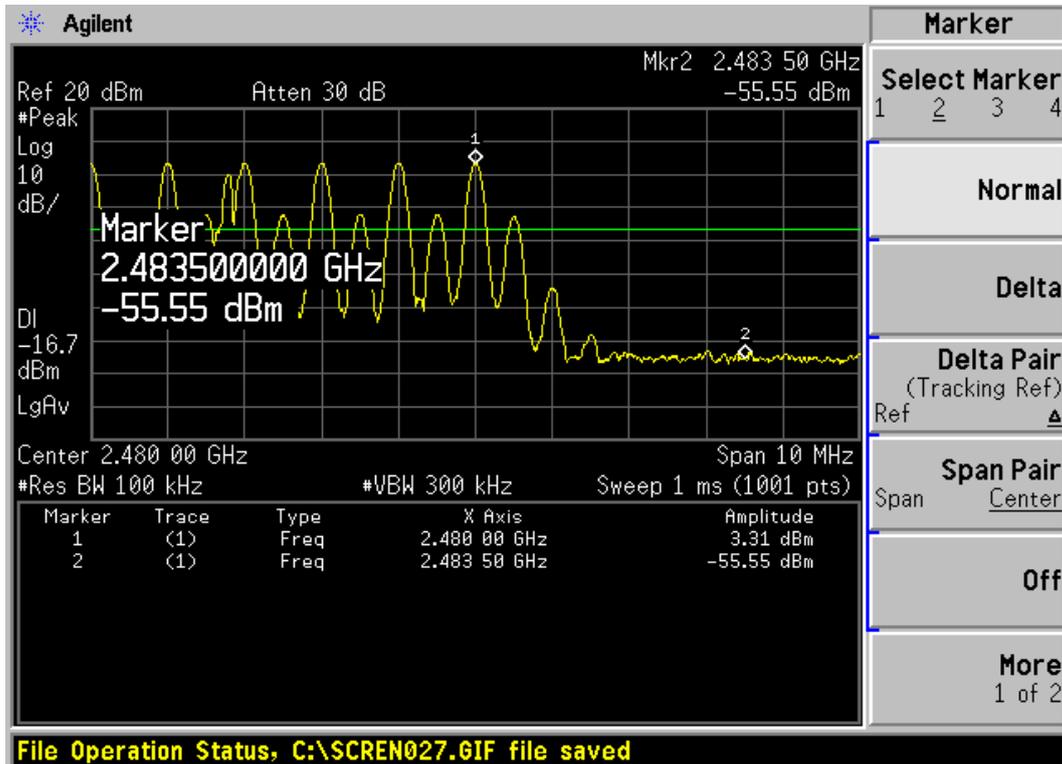
Test Results: PASS

Hopping On-DH5-



Carrier frequency (MHz): 2402

Channel No.:0



Carrier frequency (MHz): 2480

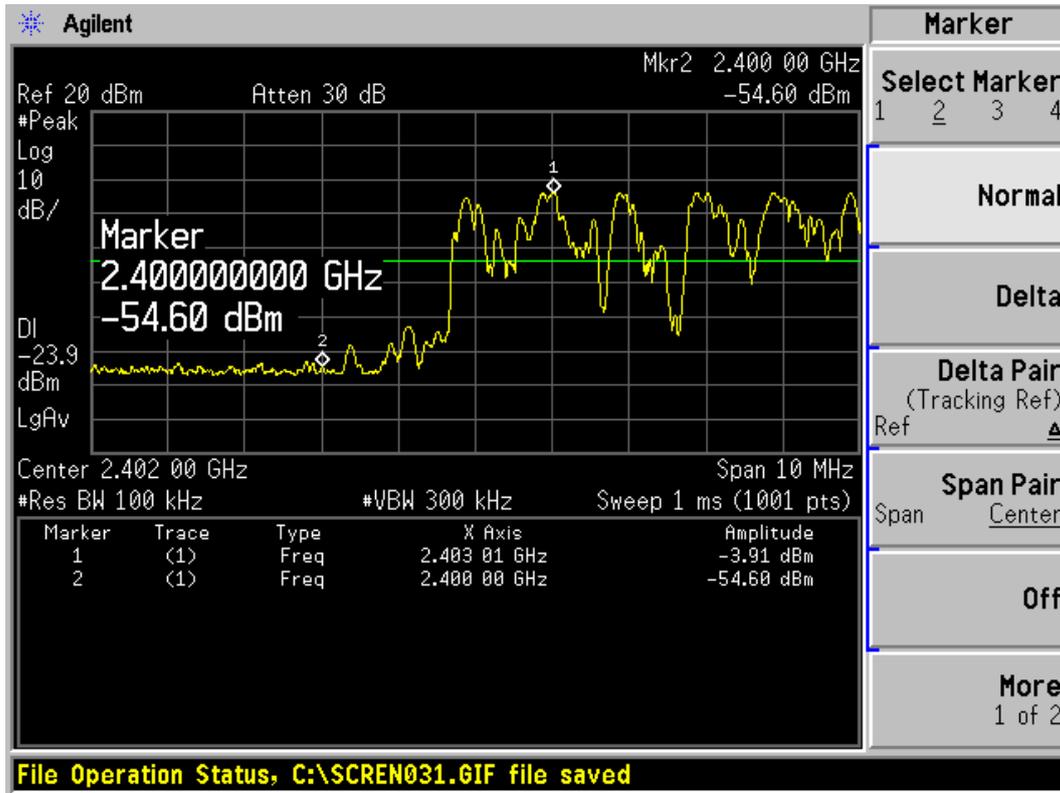
Channel No.:78

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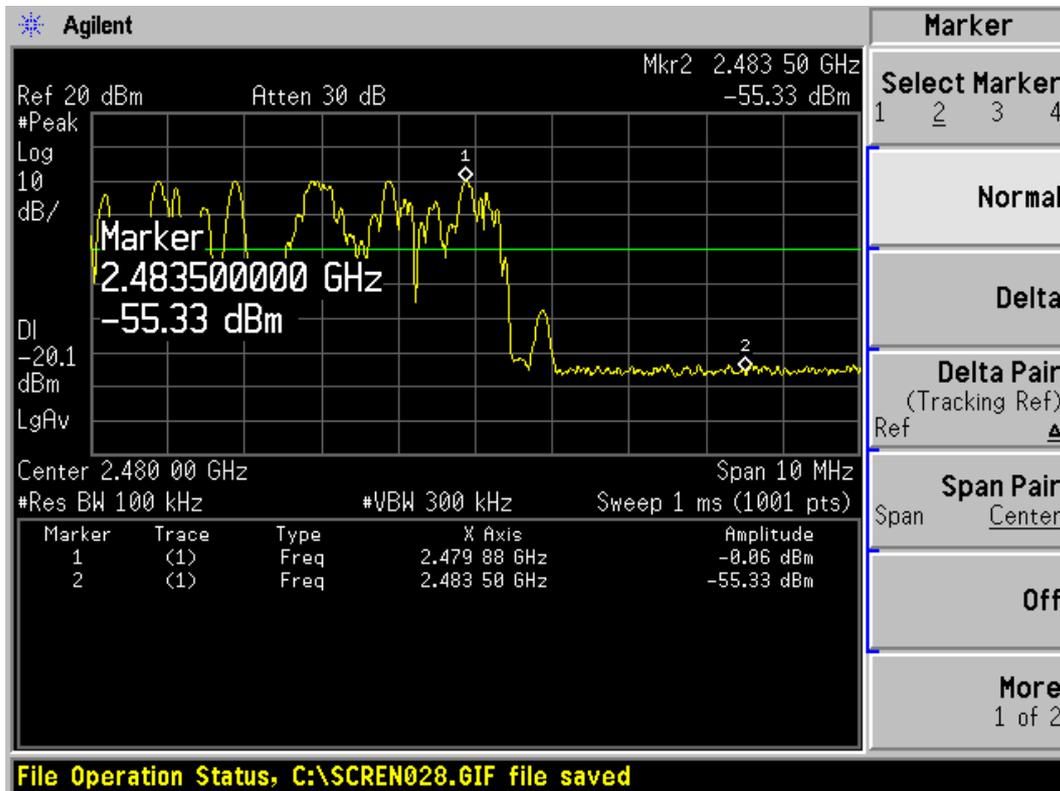
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Hopping On-2DH5



Carrier frequency (MHz): 2402
Channel No.:0



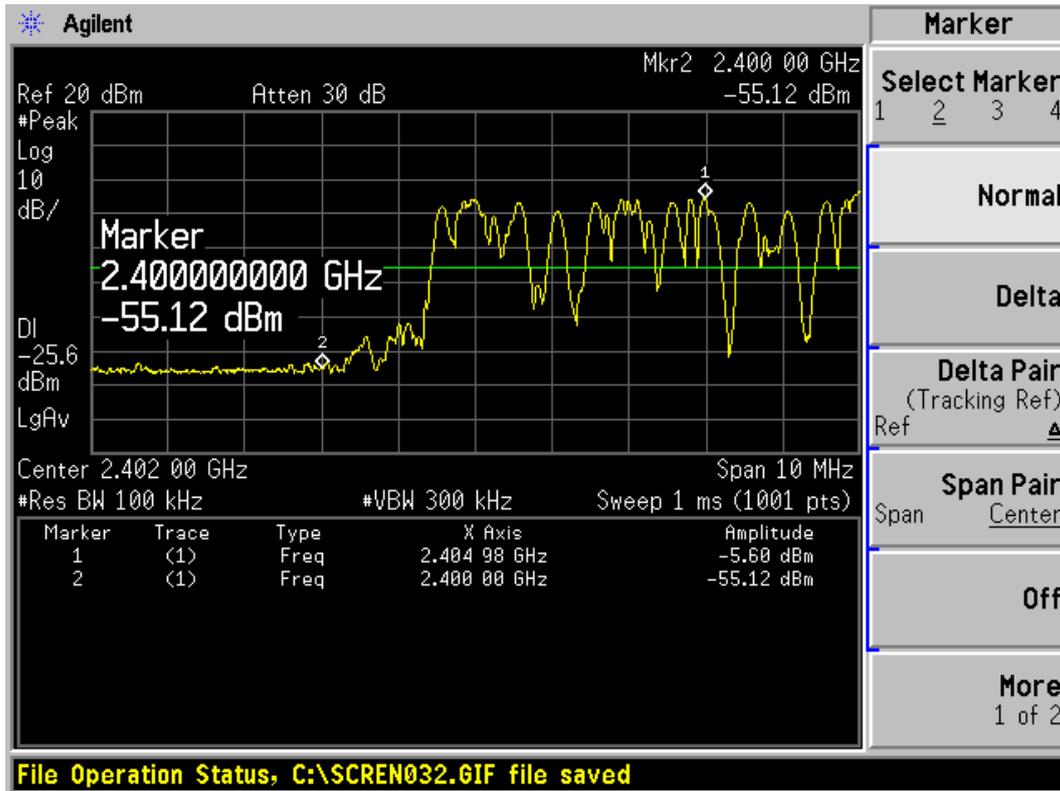
Carrier frequency (MHz): 2480
Channel No.:78

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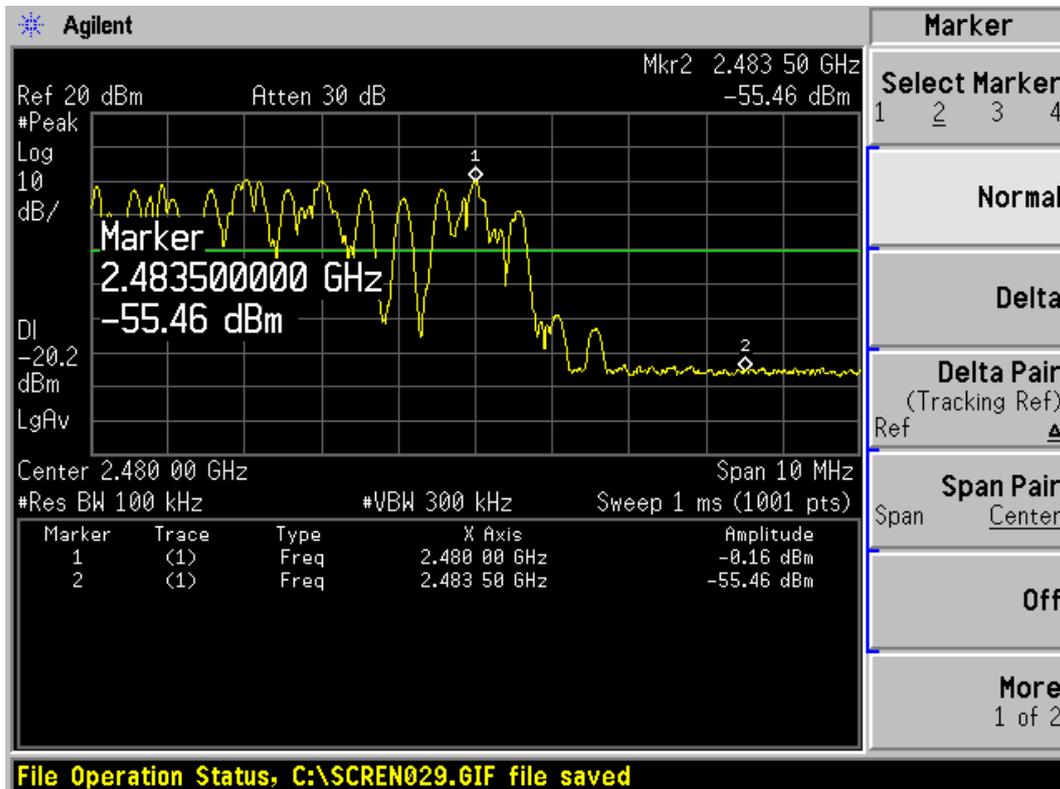
Report No.: RHA1503-0018RF03R3

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Hopping On-3DH5



Carrier frequency (MHz): 2402
Channel No.:0



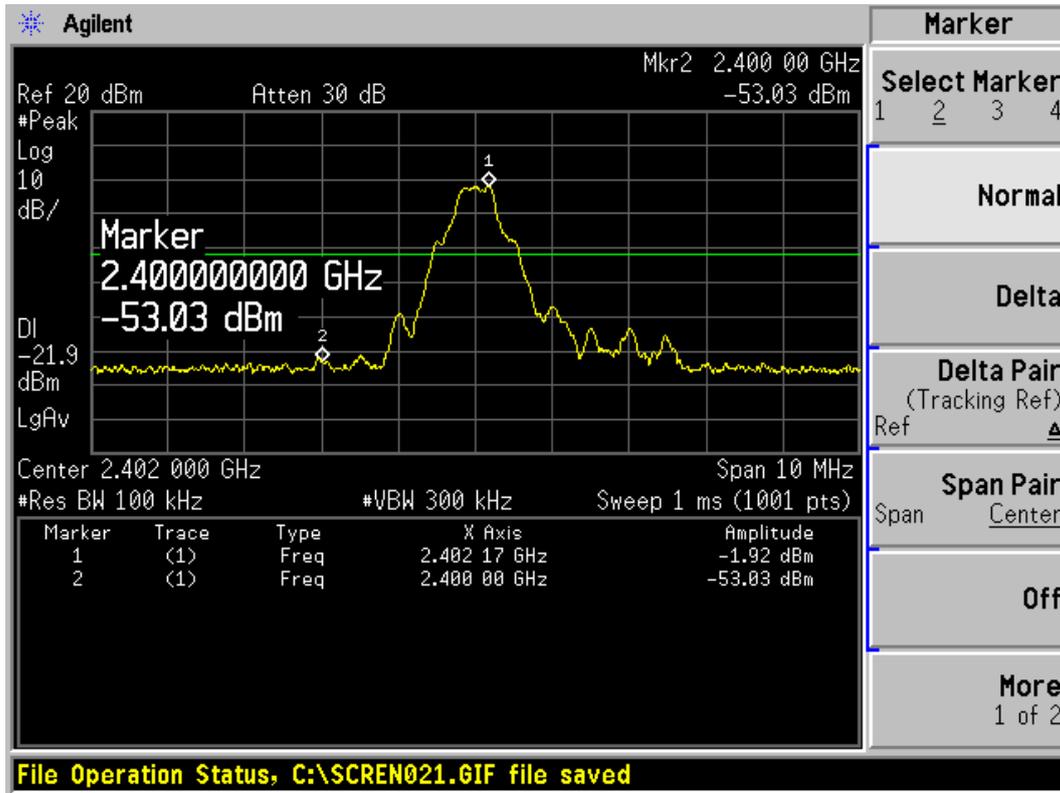
Carrier frequency (MHz): 2480
Channel No.:78

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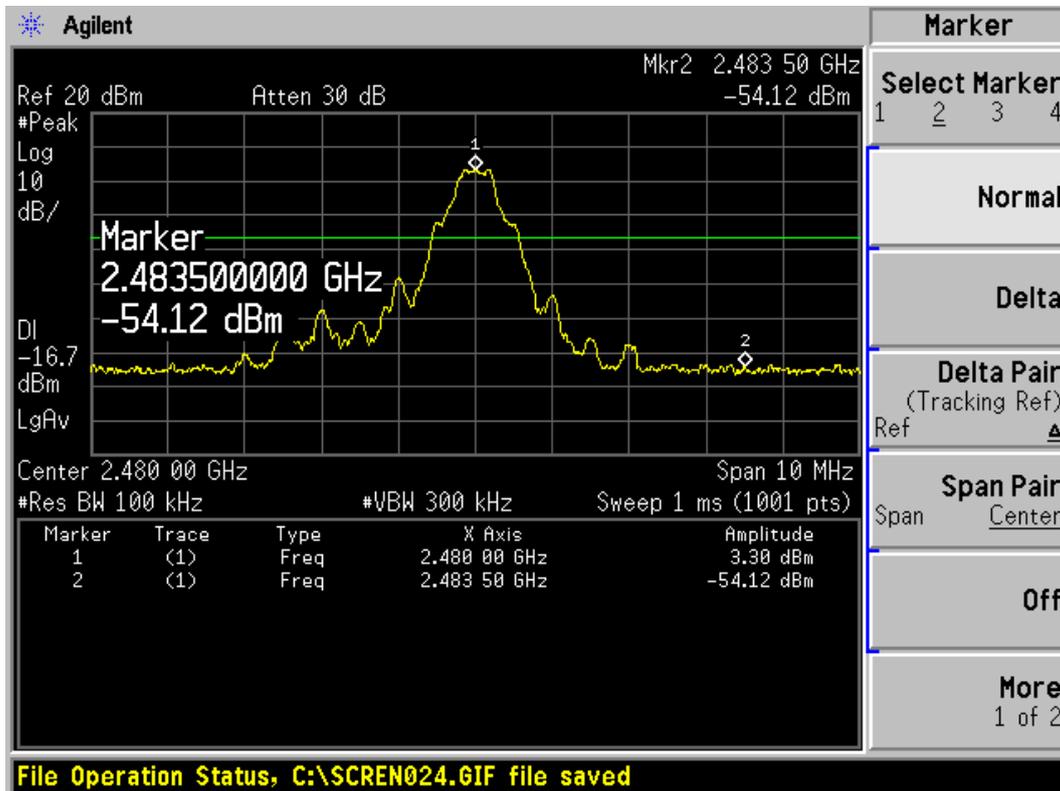
Report No.: RHA1503-0018RF03R3

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Hopping Off-DH5-



Carrier frequency (MHz): 2402
Channel No.:0



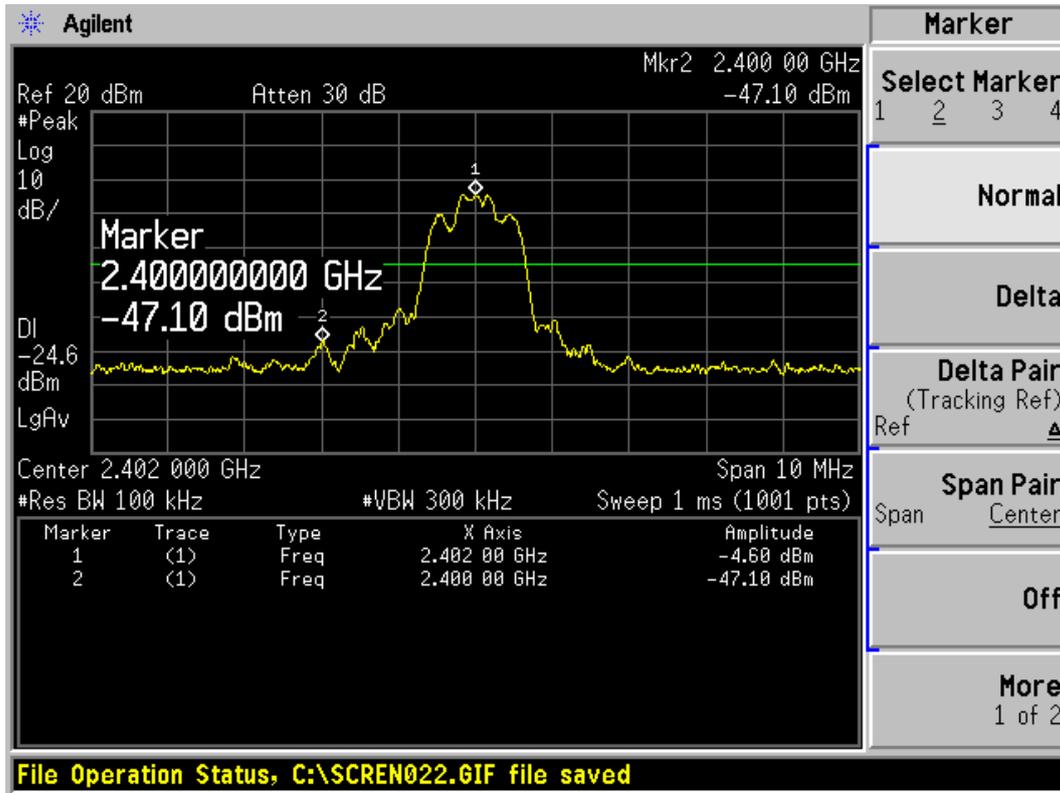
Carrier frequency (MHz): 2480
Channel No.:78

TA Technology (Shanghai) Co., Ltd. Test Report

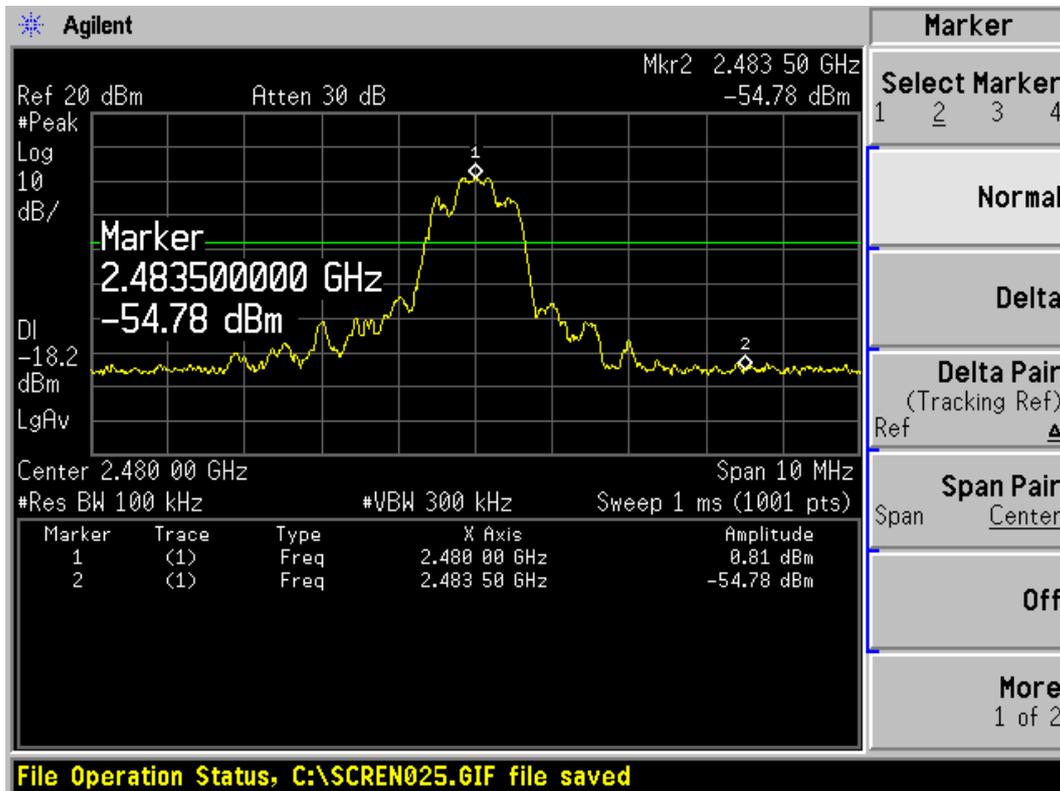
Report No.: RHA1503-0018RF03R3

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Hopping Off-2DH5



Carrier frequency (MHz): 2402
Channel No.:0



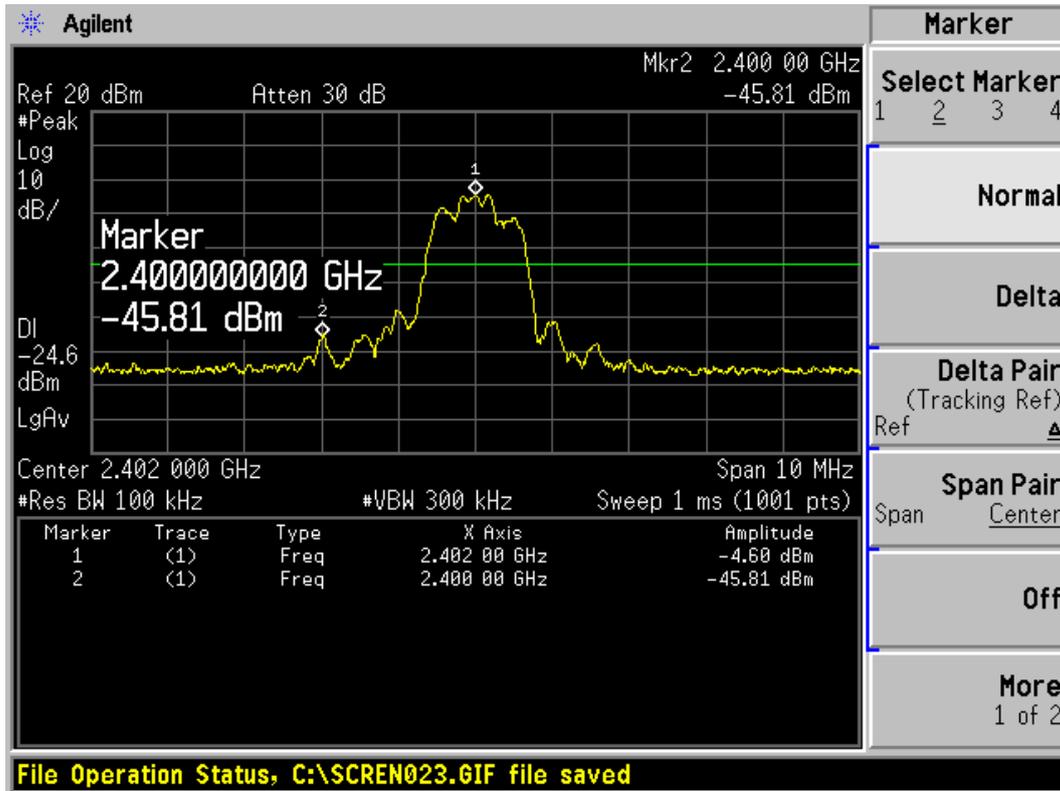
Carrier frequency (MHz): 2480
Channel No.:78

TA Technology (Shanghai) Co., Ltd. Test Report

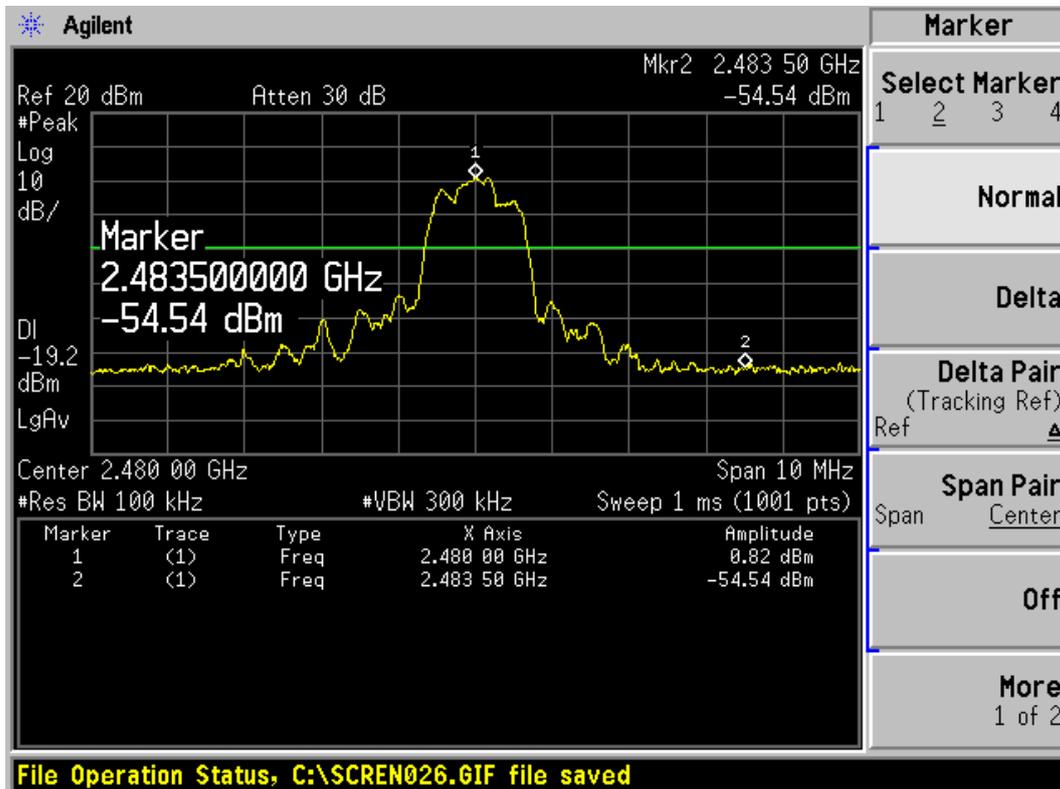
Report No.: RHA1503-0018RF03R3

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Hopping Off-3DH5



Carrier frequency (MHz): 2402
Channel No.:0



Carrier frequency (MHz): 2480
Channel No.:78

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Test Report

3.8. Spurious Radiated Emissions in the Restricted Band

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.

Set the spectrum analyzer in the following:

(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

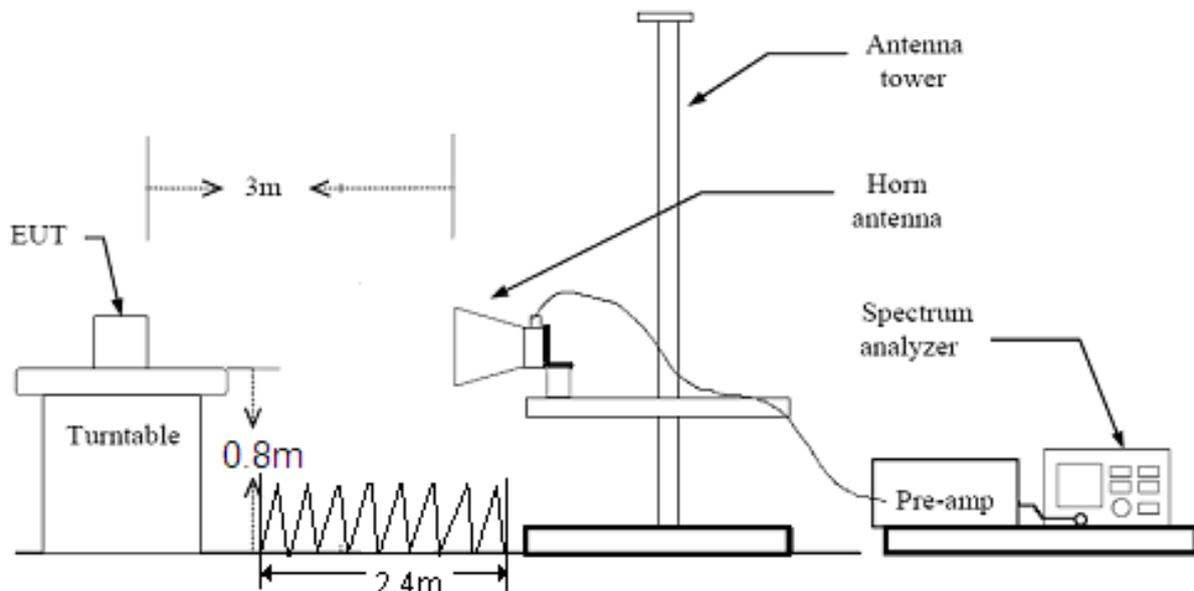
(b) The dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from $20\log(\text{dwell time}/100 \text{ ms})$, in an effort to demonstrate compliance with the 15.209 limit.

If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak- average correction factor, derived from the appropriate duty cycle calculation.

This setting method can refer to **DA00-705**.

The test is in transmitting mode. The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis) and docking mode. The worst emission was found in stand-up position (Y axis) and the worst case was recorded.

Test setup



Note: Area side:2.4mX3.6m

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Limits

Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

Limit in restricted band

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54

§15.35(b)

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

Peak Limit=74 dBuV/m

Average Limit=54 dBuV/m

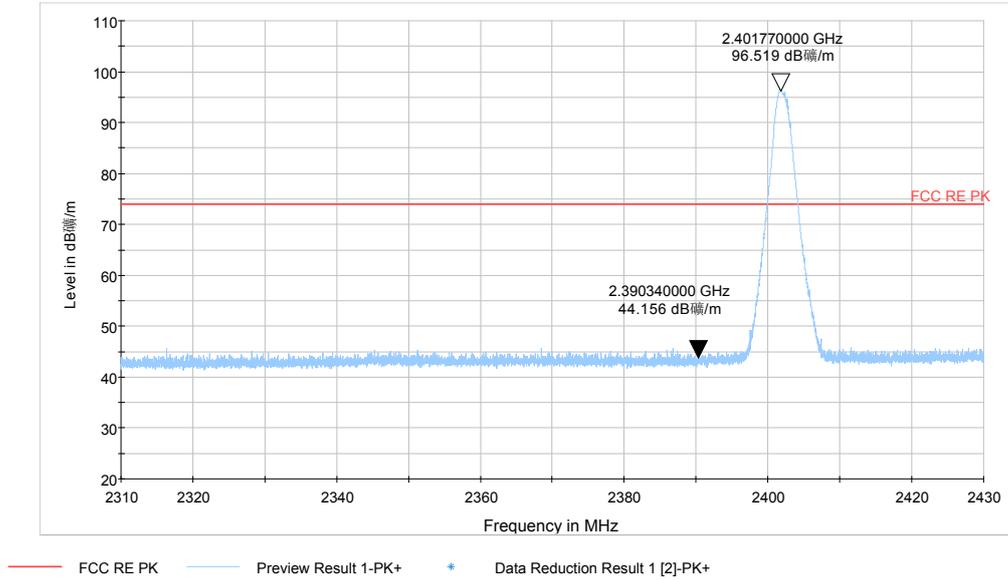
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U = 3.55$ dB.

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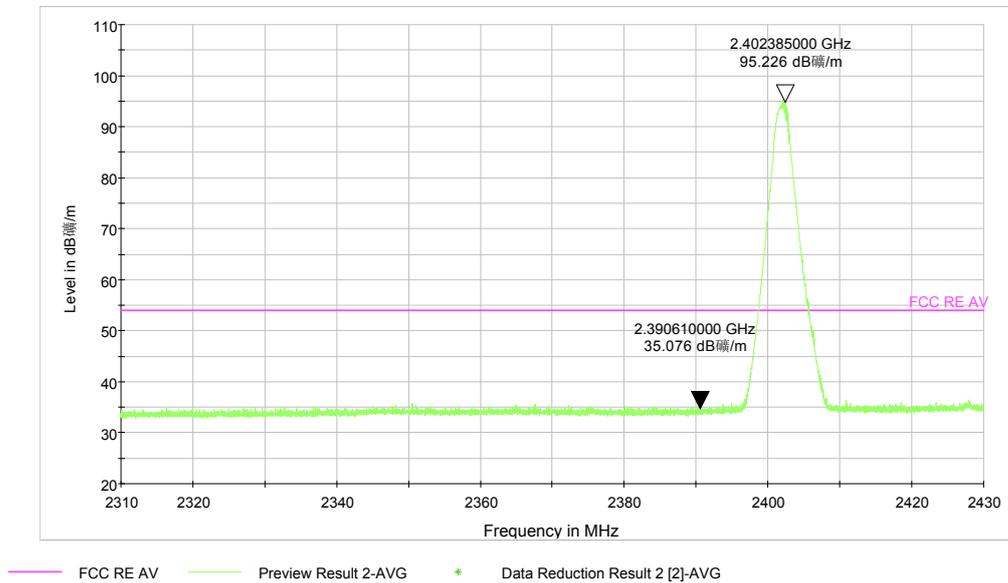
Test Results:

EDR- Channel 0



lower band edge Peak-CH 0

Note: The signal beyond the limit is carrier, a font (Level in dB μ V/m) in the test plot =(level in dBuV/m)



lower band edge average-CH 0

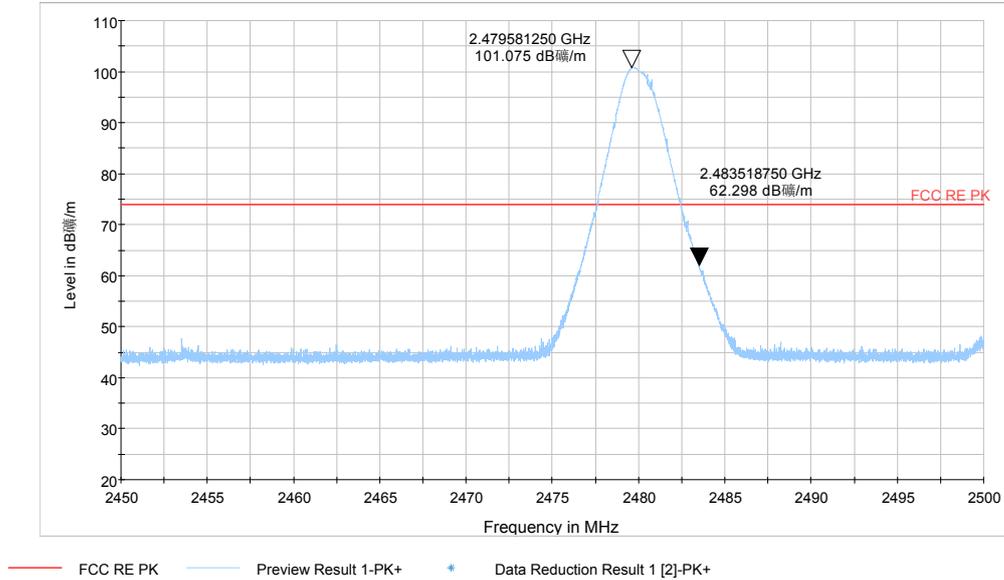
Note: The signal beyond the limit is carrier, a font (Level in dB μ V/m) in the test plot =(level in dBuV/m)

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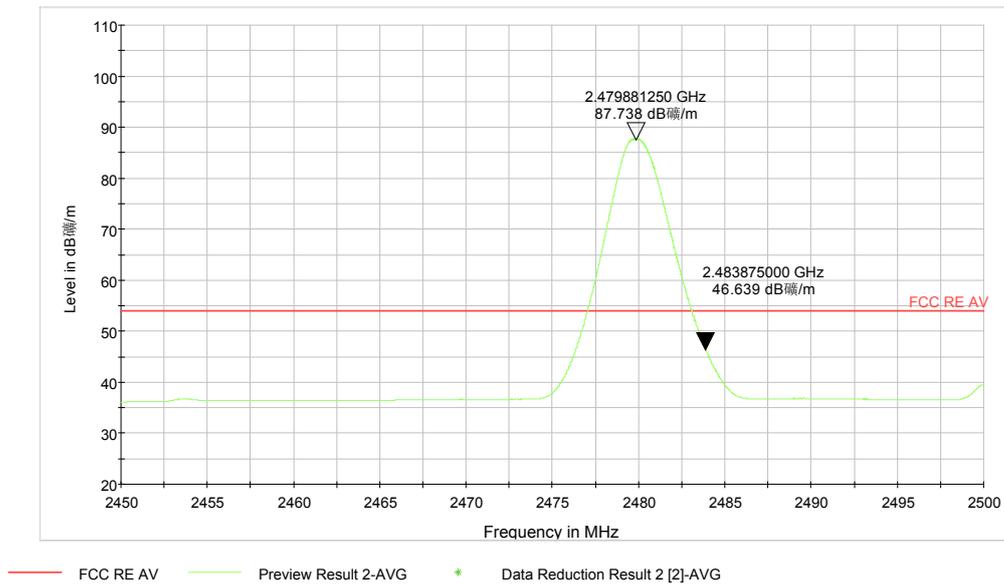
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EDR- Channel 78



Higher band edge Peak-CH 78

Note: The signal beyond the limit is carrier, a font (Level in dB μ V/m) in the test plot =(level in dBuV/m)



Higher band edge average-CH 78

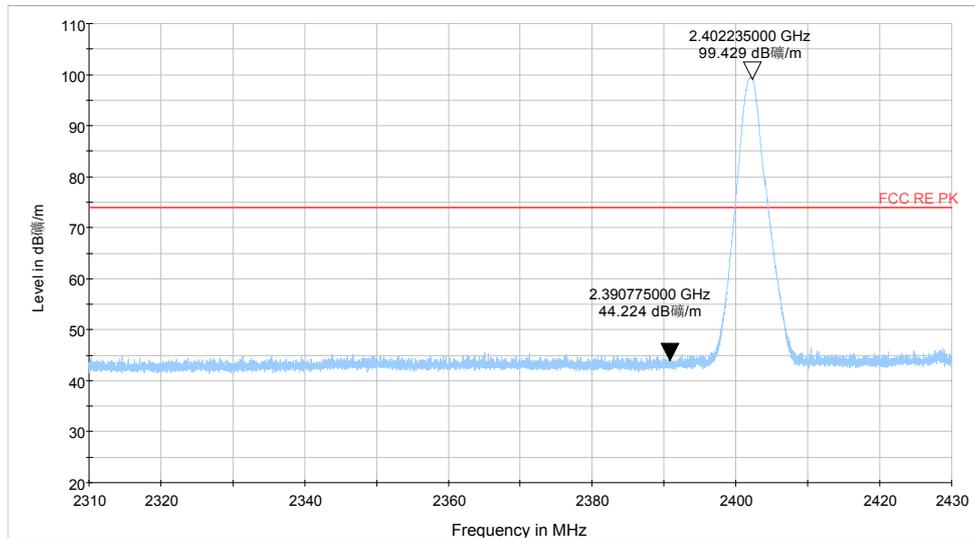
Note: The signal beyond the limit is carrier, a font (Level in dB μ V/m) in the test plot =(level in dBuV/m)

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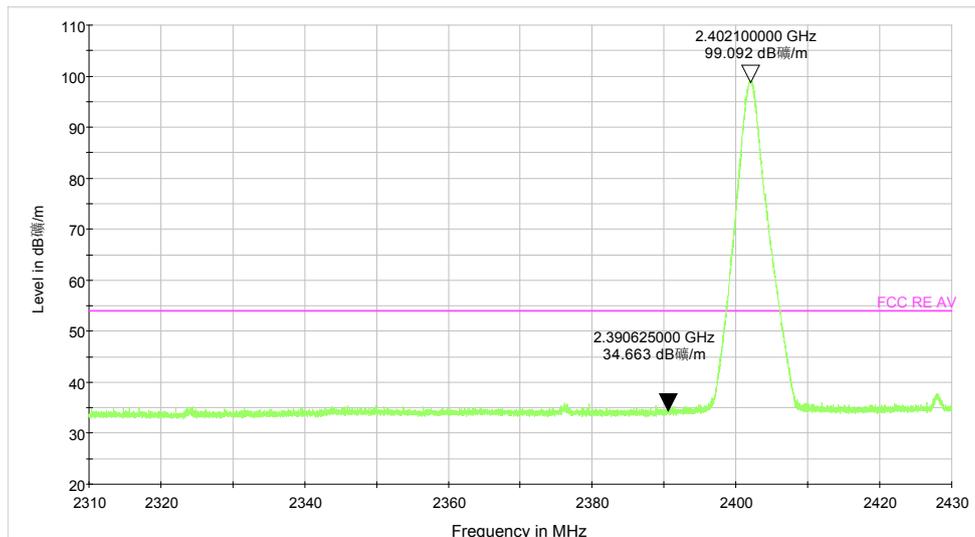
GFSK- Channel 0



— FCC RE PK — Preview Result 1-PK+ * Data Reduction Result 1 [2]-PK+

lower band edge Peak-CH 0

Note: The signal beyond the limit is carrier, a font (Level in dB μ V/m) in the test plot =(level in dBuV/m)



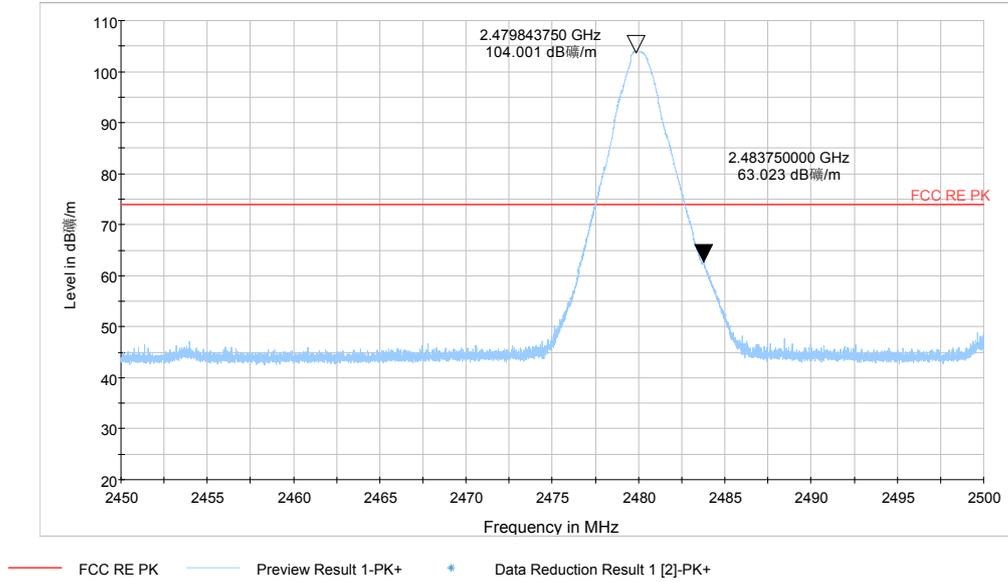
— FCC RE AV — Preview Result 2-AVG * Data Reduction Result 2 [2]-AVG

lower band edge average-CH 0

Note: The signal beyond the limit is carrier, a font (Level in dB μ V/m) in the test plot =(level in dBuV/m)

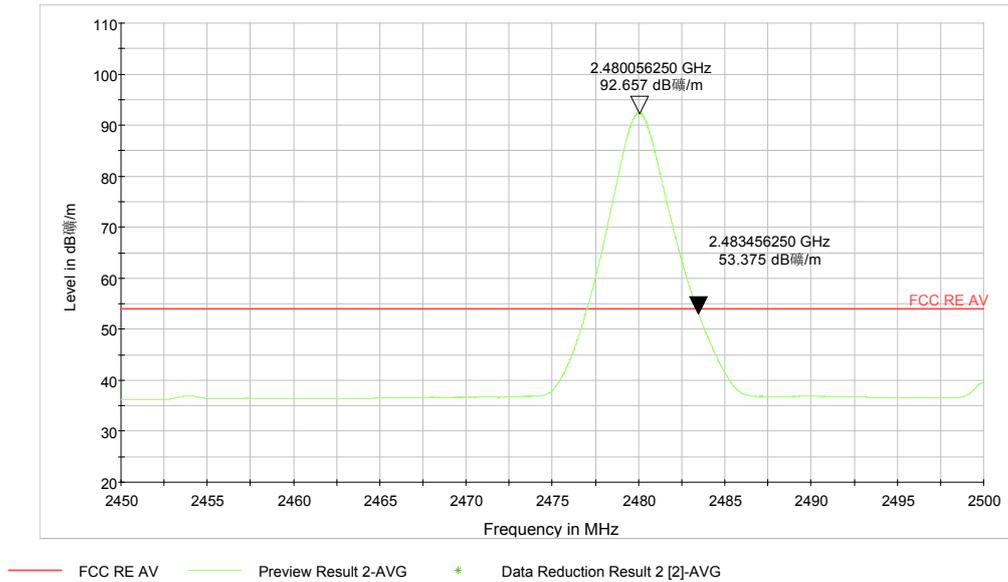
TA Technology (Shanghai) Co., Ltd. Test Report

GFSK- Channel 78



Higher band edge Peak-CH 78

Note: The signal beyond the limit is carrier, a font (Level in dB μ V/m) in the test plot =(level in dBuV/m)



Higher band edge average-CH 78

Note: The signal beyond the limit is carrier, a font (Level in dB μ V/m) in the test plot =(level in dBuV/m)

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3.9. Number of hopping Frequency

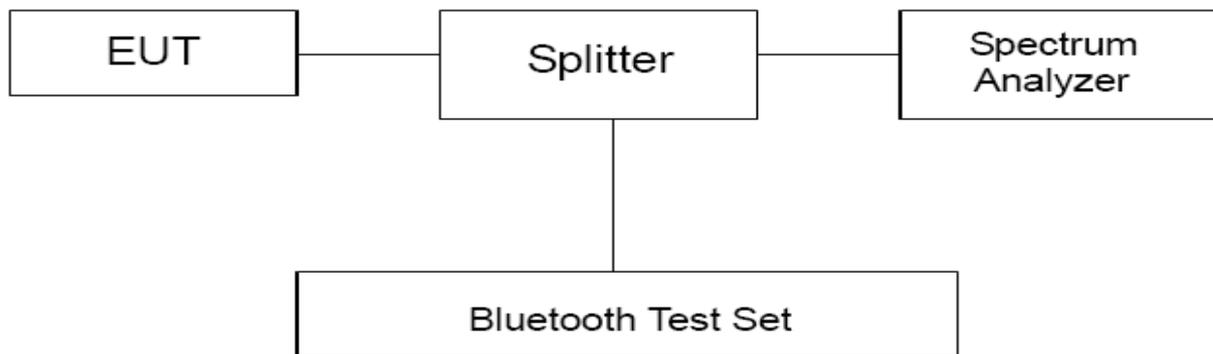
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. RBW is set to 1 MHz and VBW is set to 3 MHz on spectrum analyzer. Set EUT on Hopping on mode.

Test setup



Limits

Rule Part 15.247(a) (1) (iii) specifies that "Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels..".

Limits	≥ 15 channels
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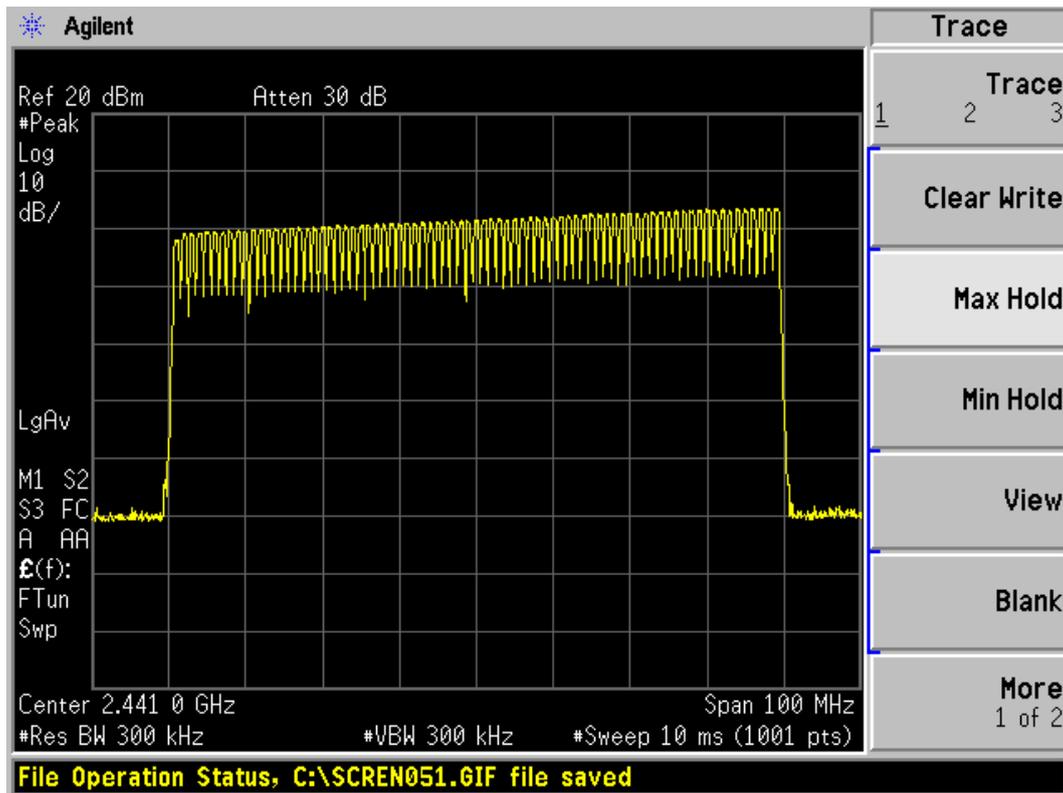
Report No.: RHA1503-0018RF03R3

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Test Results:

DH5

Number of hopping channels	conclusion
79	PASS



2400 MHz – 2483.5 MHz

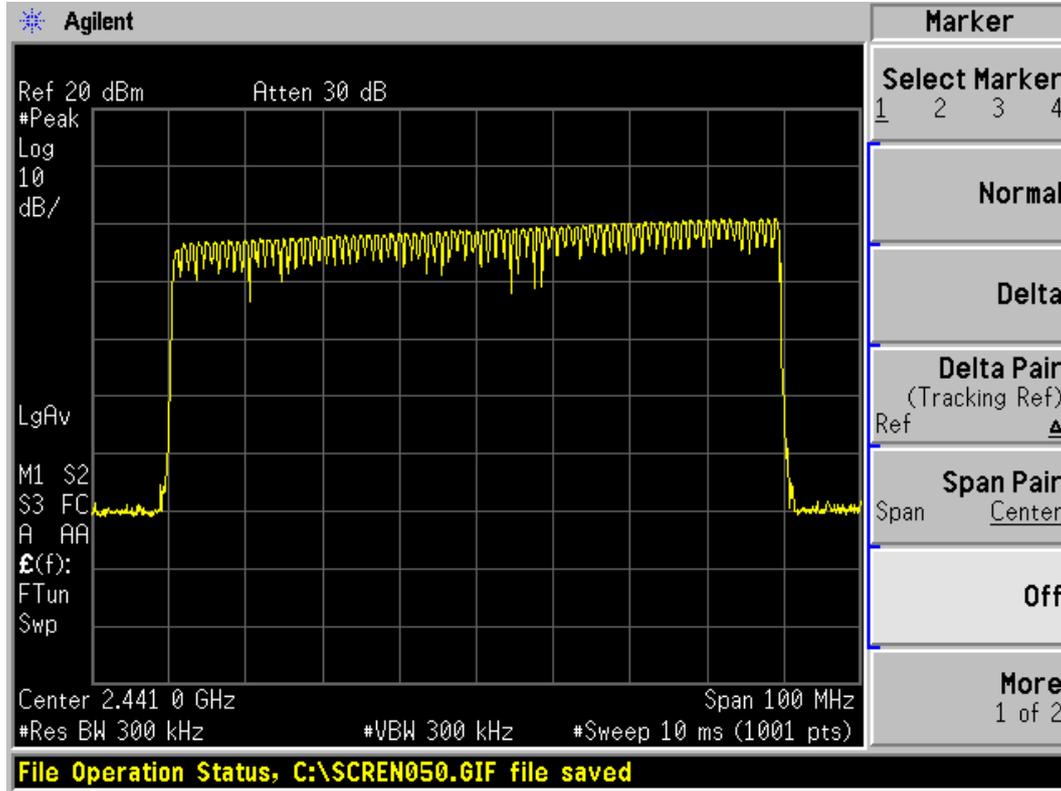
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2DH5

Number of hopping channels	conclusion
79	PASS



2400 MHz – 2483.5 MHz

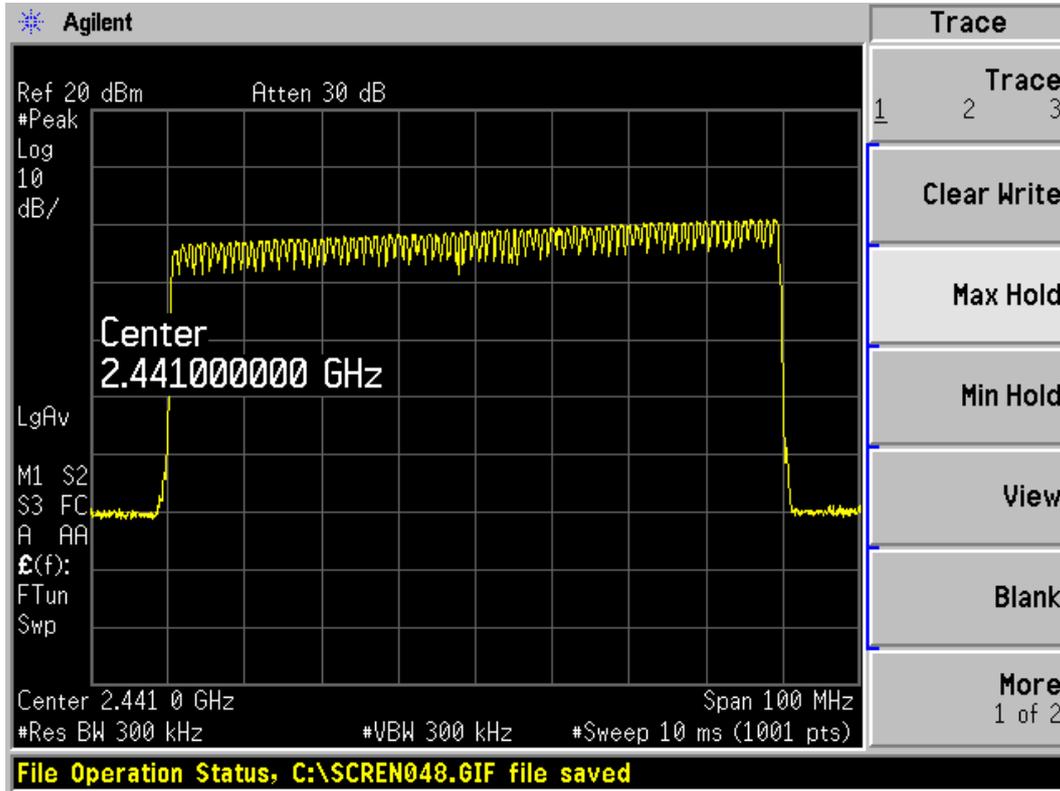
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3DH5

Number of hopping channels	conclusion
79	PASS



2400 MHz – 2483.5 MHz

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3.10. Spurious RF Conducted Emissions

Ambient condition

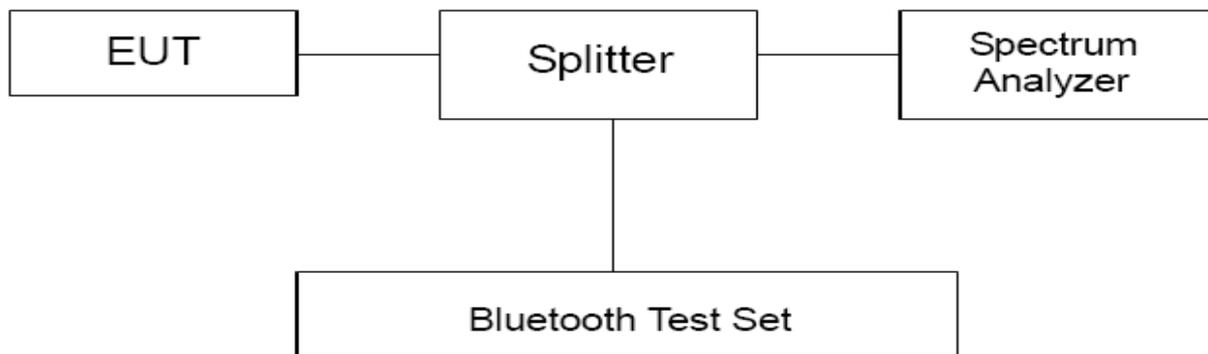
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. RBW and VBW are set to 100 kHz, Sweep is set to ATUO.

The test is in transmitting mode.

Test setup



Limits

Rule Part 15.247(d) specifies that "In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power."

Mode	Carrier frequency (MHz)	Reference value (dBm)	Limit
DH5	2402	-1.76	≤-21.8
	2441	1.55	≤-18.5
	2480	3.57	≤-16.4
EDR	2402	-3.43	≤-23.4
	2441	-0.03	≤-20.0
	2480	2.09	≤-17.9

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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26GHz	1.407 dB

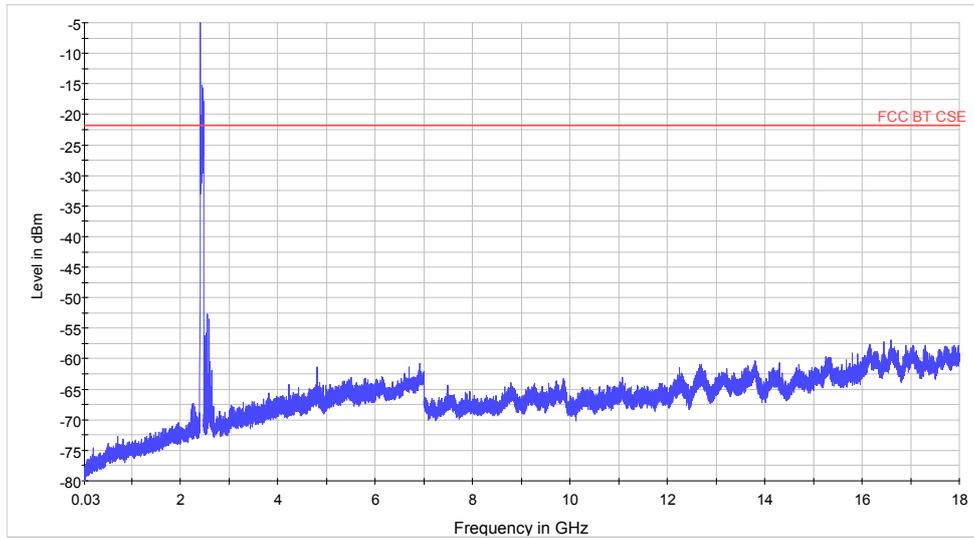
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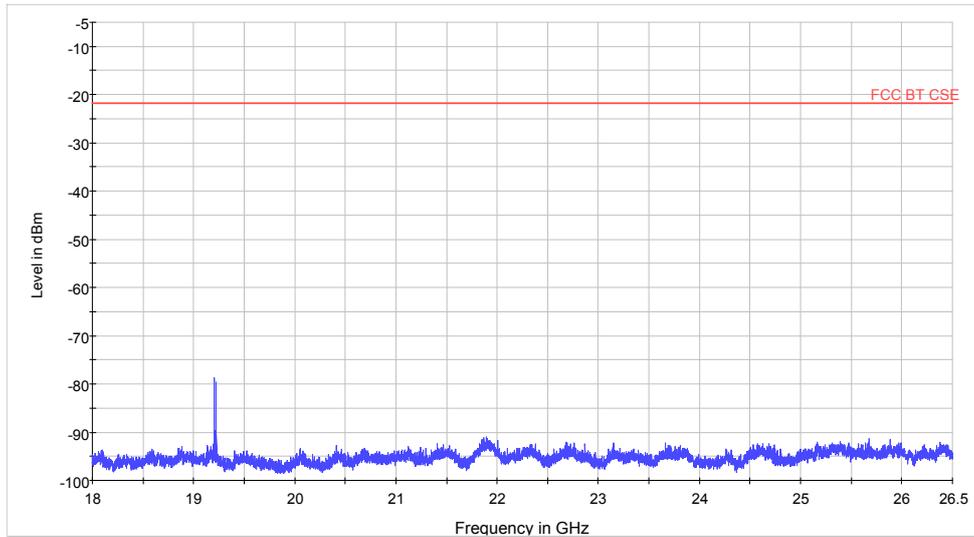
Test Results:

DH5-CH0:



MaxPeak-MaxHold-PK+ FCC BT CSE

Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2402
Spurious RF conducted emissions from 30MHz to 18GHz



MaxPeak-MaxHold-PK+ FCC BT CSE

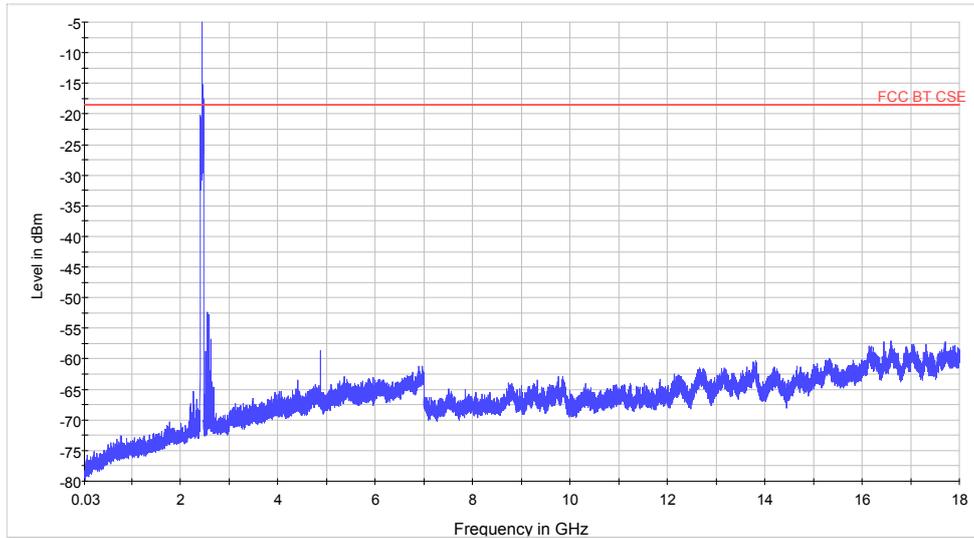
Spurious RF conducted emissions from 18GHz to 26.5GHz

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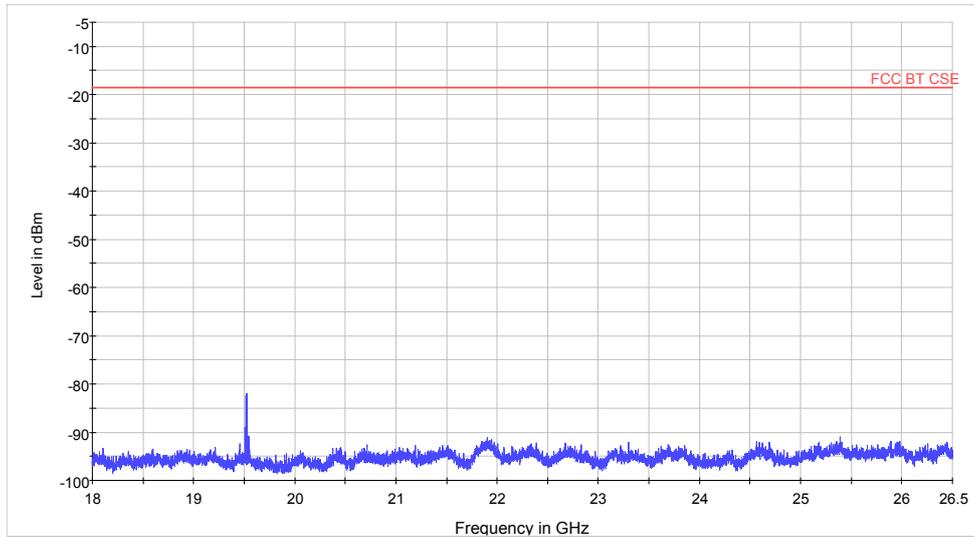
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DH5-CH39:



MaxPeak-MaxHold-PK+ FCC BT CSE

Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2441
Spurious RF conducted emissions from 30MHz to 18GHz

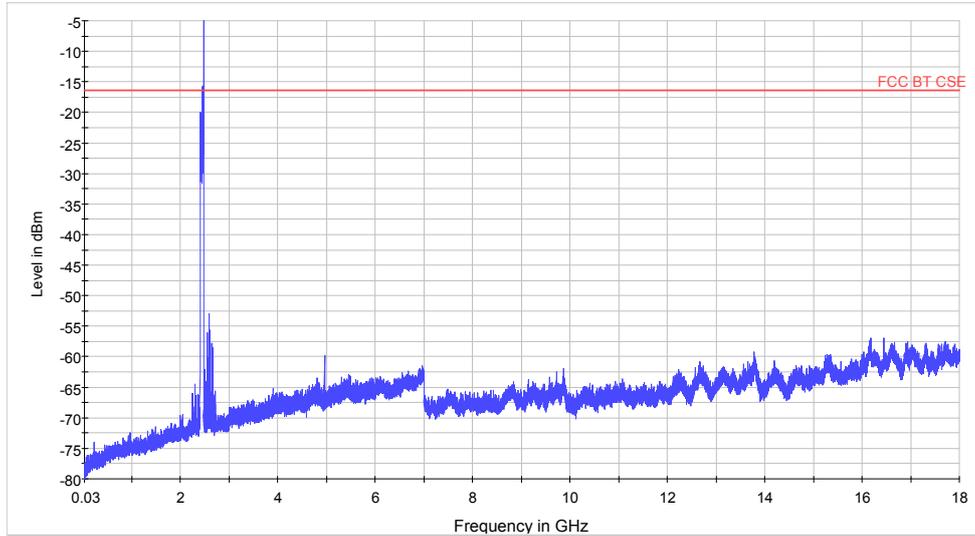


MaxPeak-MaxHold-PK+ FCC BT CSE

Spurious RF conducted emissions from 18GHz to 26.5GHz

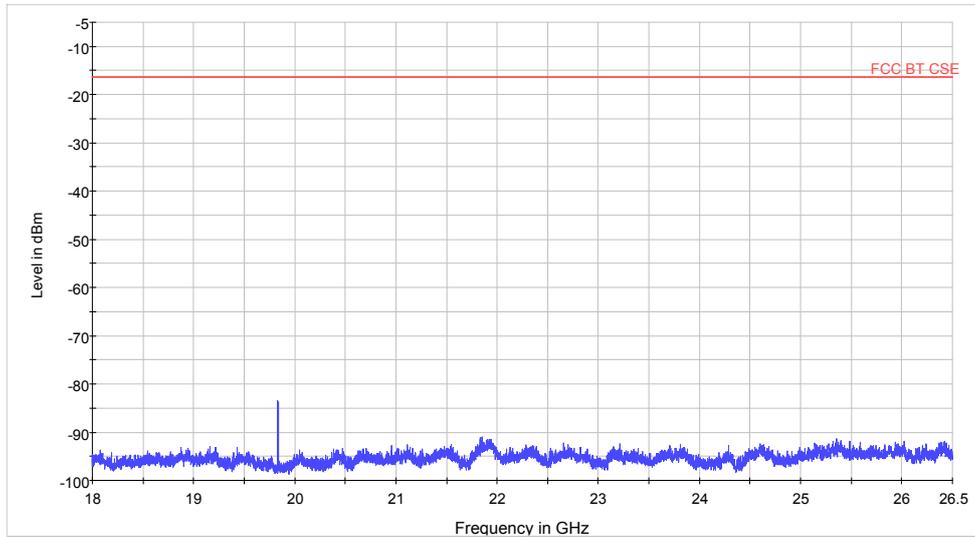
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DH5-CH78:



MaxPeak-MaxHold-PK+ FCC BT CSE

Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2480
Spurious RF conducted emissions from 30MHz to 18GHz

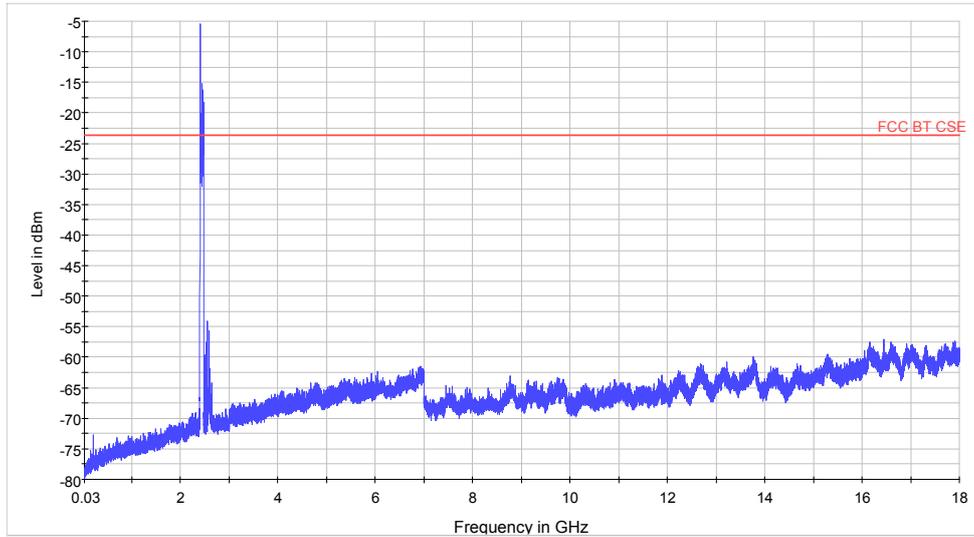


MaxPeak-MaxHold-PK+ FCC BT CSE

Spurious RF conducted emissions from 18GHz to 26.5GHz

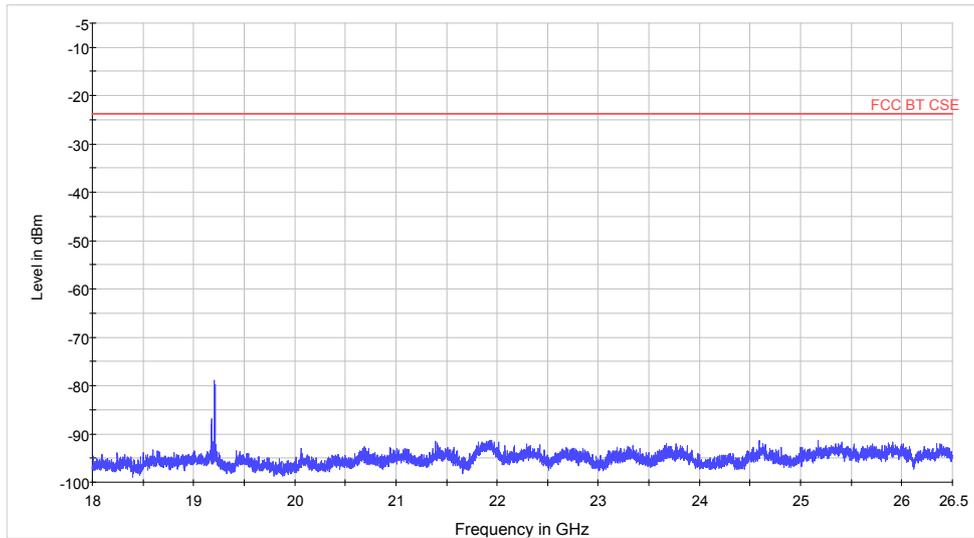
TA Technology (Shanghai) Co., Ltd. Test Report

EDR-CH0:



MaxPeak-MaxHold-PK+ FCC BT CSE

Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2402
Spurious RF conducted emissions from 30MHz to 18GHz



MaxPeak-MaxHold-PK+ FCC BT CSE

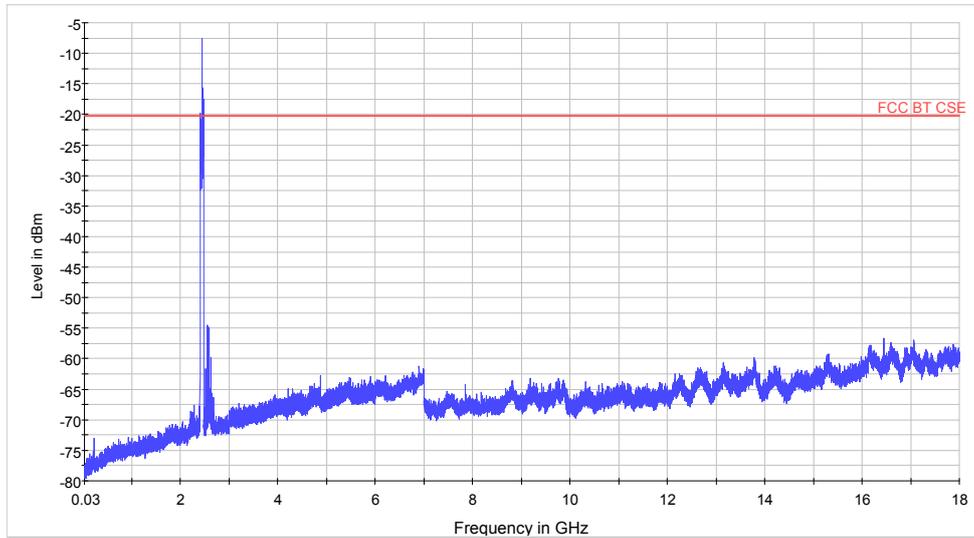
Spurious RF conducted emissions from 18GHz to 26.5GHz

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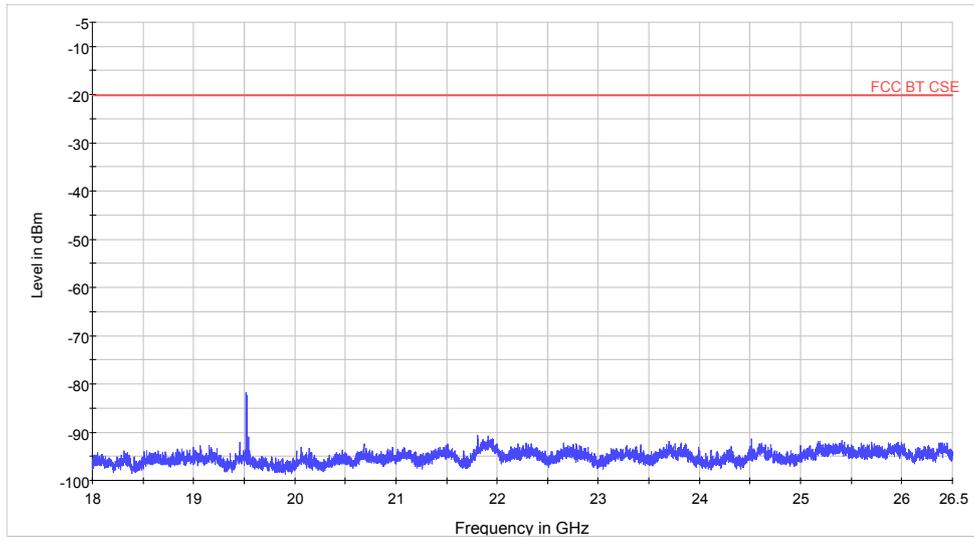
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EDR -CH39:



MaxPeak-MaxHold-PK+ FCC BT CSE

Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2441
Spurious RF conducted emissions from 30MHz to 18GHz



MaxPeak-MaxHold-PK+ FCC BT CSE

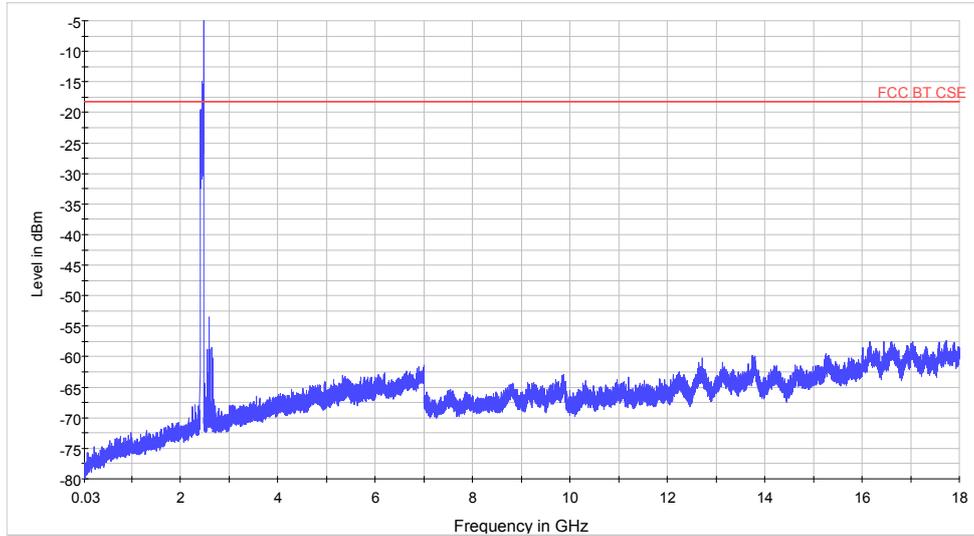
Spurious RF conducted emissions from 18GHz to 26.5GHz

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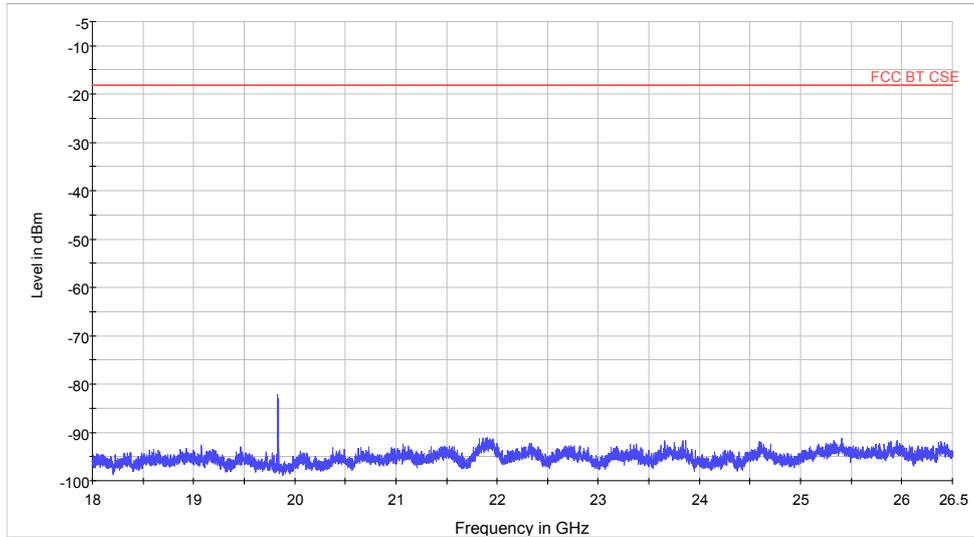
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EDR -CH78:



MaxPeak-MaxHold-PK+ FCC BT CSE

Note: The signal beyond the limit is carrier. Carrier frequency (MHz): 2480
Spurious RF conducted emissions from 30MHz to 18GHz



MaxPeak-MaxHold-PK+ FCC BT CSE

Spurious RF conducted emissions from 18GHz to 26.5GHz

TA Technology (Shanghai) Co., Ltd.

Test Report

3.11. Radiates Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	102.5kPa

Method of Measurement

The test set-up was made in accordance to the general provisions of ANSI C63.4-2009. The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The radiated emissions measurements were made in a typical installation configuration.

Sweep the whole frequency band through the range from 9 kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.

During the test, below 30MHz, the center of the loop shall be 1 meters; above 30MHz, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.

Set the spectrum analyzer in the following:

Below 1GHz (detector: Peak and Quasi-Peak)

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz(detector: Peak):

(a) PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

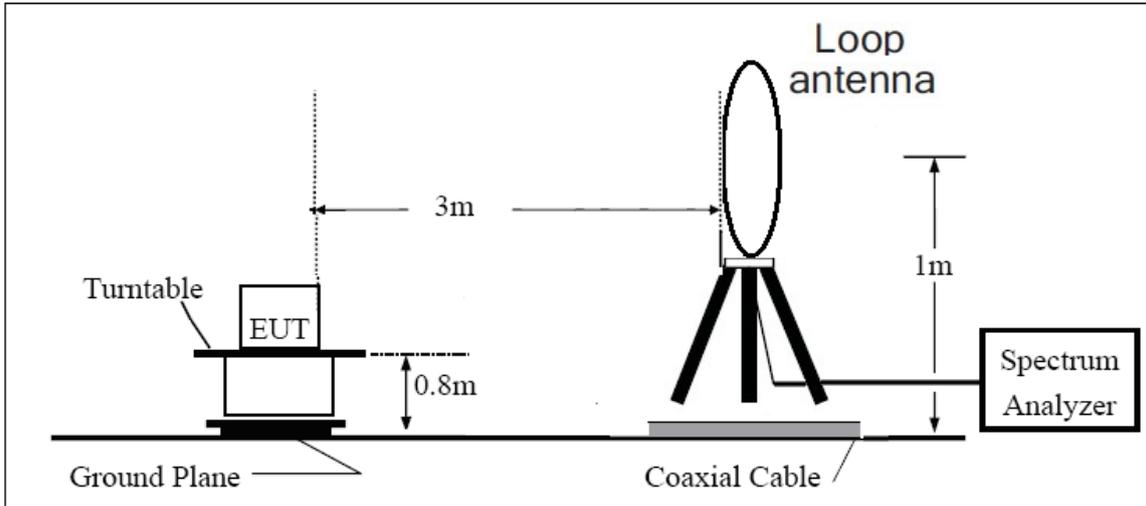
The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded. Then this mode was measured in the following mode: EUT with cradle and EUT without cradle. The worst emission was found in EUT with cradle mode and the worst case was recorded.

The test is in transmitting mode.

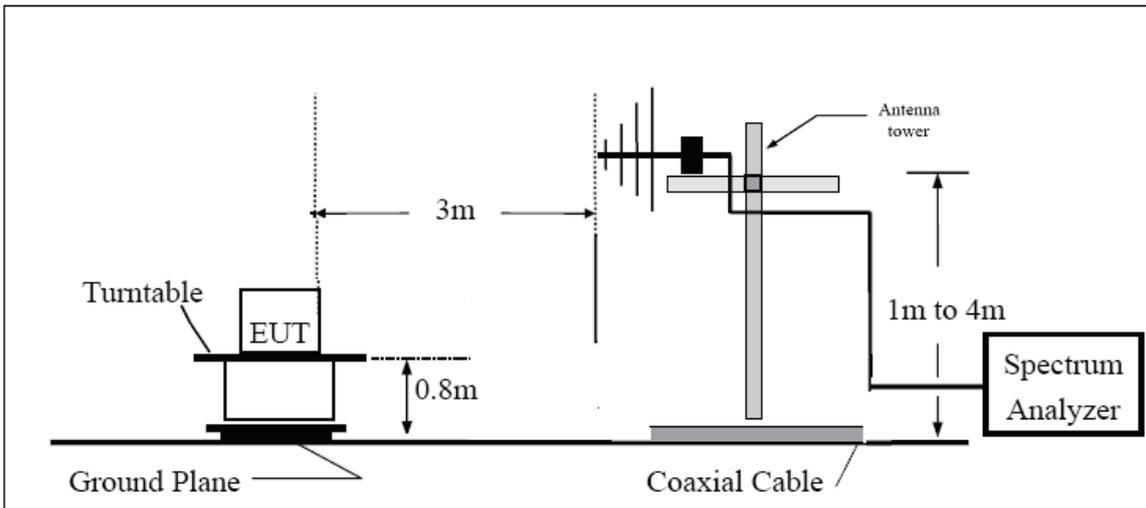
TA Technology (Shanghai) Co., Ltd. Test Report

Test setup

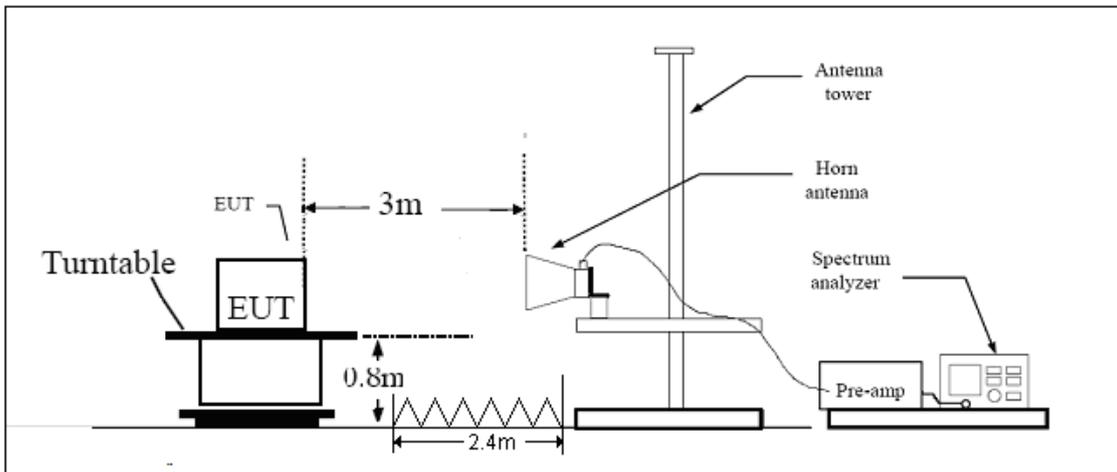
9KHz~~~ 30MHz



30MHz~~~ 1GHz



Above 1GHz



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Limits

Rule Part 15.247(d) specifies that “In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).”

Limit in restricted band

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
0.009–0.490	2400/F(kHz)	/
0.490–1.705	24000/F(kHz)	/
1.705–30.0	30	/
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54

§15.35(b)

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.19 dB
200MHz-1GHz	3.63 dB
Above 1GHz	3.68 dB

TA Technology (Shanghai) Co., Ltd. Test Report

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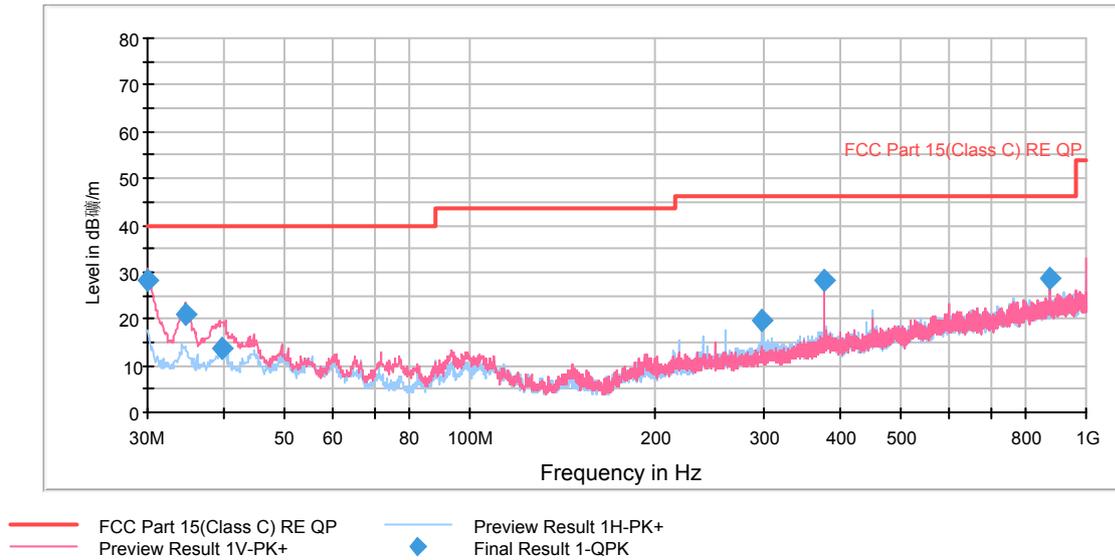
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Test result

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, and 9KHz-30MHz, 18GHz-26GHz, the emissions more than 20 dB below the permissible value are not reported.

EDR-Channel 0

RE 30M-1GHz (PART15 C) QP



Note: This graph displays the maximum values of horizontal and vertical by software

Note: a font (Level in dBuV/m) in the test plot =(level in dBuV/m)

Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
30.000000	28.0	100.0	V	6.0	45.0	-17.0	12.0	40.0
34.506250	20.9	100.0	V	311.0	39.9	-19.0	19.1	40.0
39.560000	13.7	103.0	V	113.0	33.0	-19.3	26.3	40.0
297.012500	19.8	129.0	H	0.0	42.8	-23.0	26.2	46.0
375.016250	28.1	100.0	H	261.0	49.2	-21.1	17.9	46.0
875.012500	28.9	100.0	H	285.0	41.2	-12.3	17.1	46.0

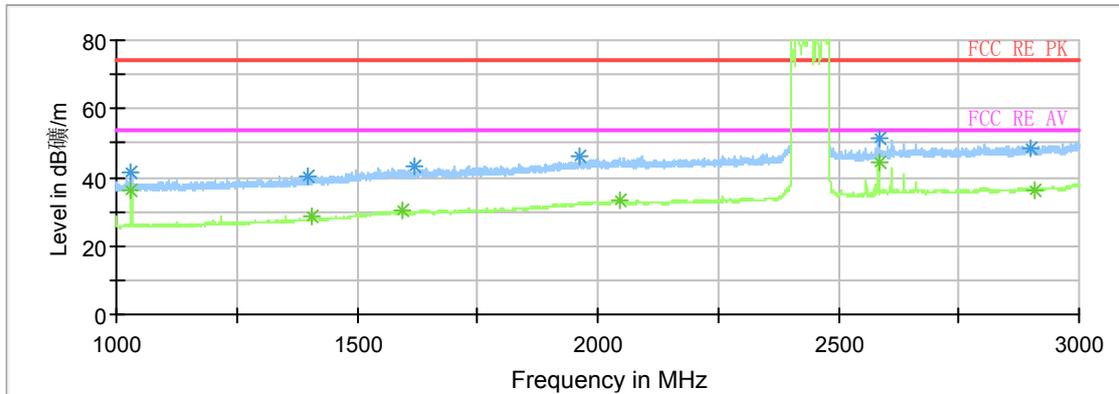
Remark: 1. Quasi-Peak = Reading value + Correction factor

2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

3. Margin = Limit – Quasi-Peak

TA Technology (Shanghai) Co., Ltd. Test Report

RE 1G-3GHz PK+AV



- FCC RE PK
- FCC RE AV
- Preview Result 1-PK+
- Preview Result 2-AVG
- * Data Reduction Result 1 [2]-PK+
- * Data Reduction Result 2 [2]-AVG

Radiates Emission from 1GHz to 3GHz

Note: This graph displays the maximum values of horizontal and vertical by software

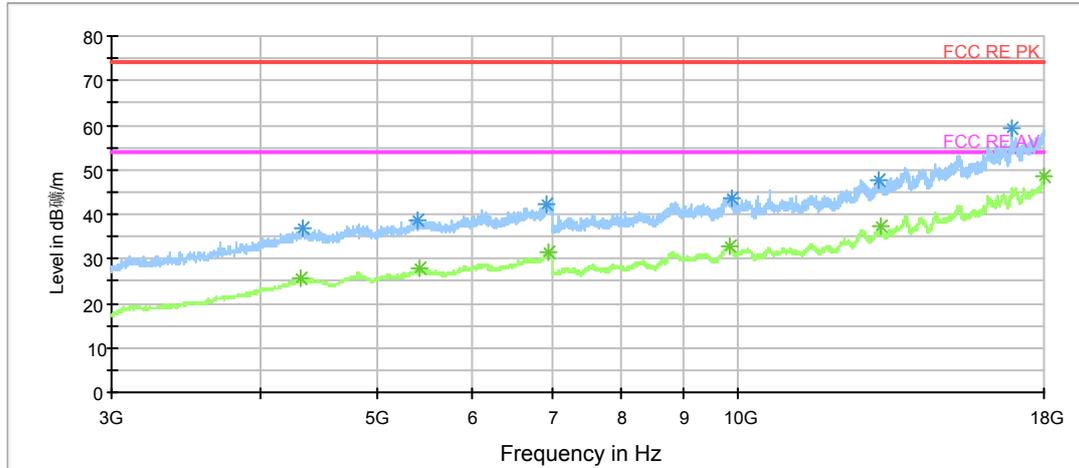
Note: The signal beyond the limit is carrier. a font (Level in dB/m) in the test plot =(level in dBuV/m)

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1031.250000	41.3	101.0	V	66.0	50.4	-9.1	32.7	74
1406.250000	39.1	101.0	V	0.0	46.8	-7.7	34.9	74
1594.000000	41.1	101.0	V	66.0	46.5	-5.4	32.9	74
2046.000000	43.8	101.0	H	184.0	45.7	-1.9	30.2	74
2584.000000	51.2	101.0	V	0.0	51.8	0.6	22.8	74
2909.250000	47.5	101.0	H	275.0	49.5	2.0	26.5	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1031.250000	36.0	101.0	V	66.0	45.1	-9.1	18.0	54
1406.250000	28.8	101.0	V	0.0	36.5	-7.7	25.2	54
1594.000000	30.6	101.0	V	66.0	36.0	-5.4	23.4	54
2046.000000	33.2	101.0	H	184.0	35.1	-1.9	20.8	54
2584.000000	44.6	101.0	V	0.0	45.2	0.6	9.4	54
2909.250000	36.5	101.0	H	275.0	38.5	2.0	17.5	54

TA Technology (Shanghai) Co., Ltd. Test Report

RE 3-18GHz PK+AV



- FCC RE PK
- FCC RE AV
- Preview Result 1-PK+
- Preview Result 2-AVG
- * Data Reduction Result 1 [1]-PK+
- * Data Reduction Result 2 [1]-AVG

Radiates Emission from 3GHz to 18GHz

Note: This graph displays the maximum values of horizontal and vertical by software

Note: a font (Level in dB_{μV/m}) in the test plot =(level in dBuV/m)

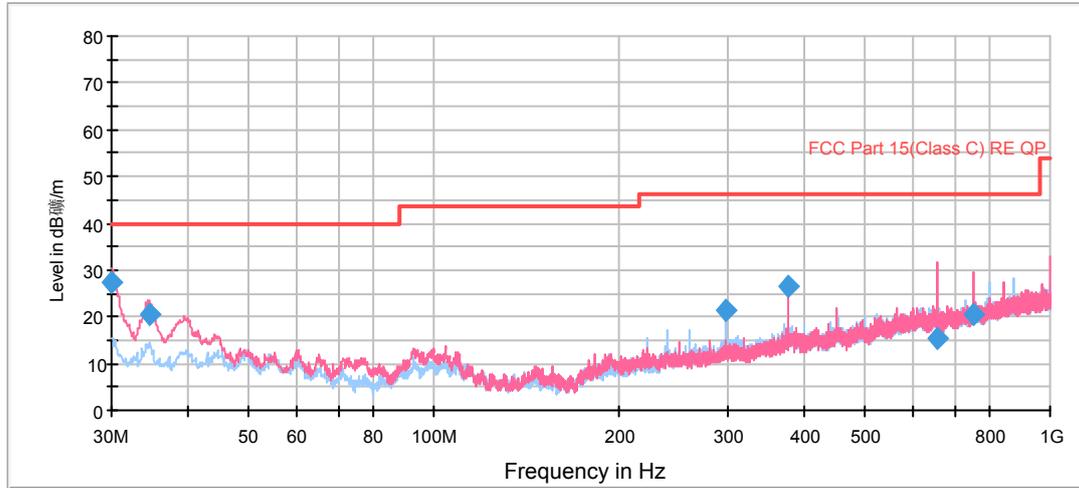
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4314.375000	34.7	101.0	V	108.0	37.6	2.9	39.3	74
5415.000000	37.1	101.0	H	0.0	40.2	3.1	36.9	74
6948.750000	41.2	101.0	V	221.0	46.8	5.6	32.8	74
9841.875000	42.8	101.0	H	0.0	53.8	11.0	31.2	74
13145.625000	46.0	101.0	V	177.0	60.0	14.0	28.0	74
18000.000000	57.5	101.0	H	0.0	82.2	24.7	16.5	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4314.375000	25.8	101.0	V	108.0	28.7	2.9	28.2	54
5415.000000	27.7	101.0	H	0.0	30.8	3.1	26.3	54
6948.750000	31.6	101.0	V	221.0	37.2	5.6	22.4	54
9841.875000	32.8	101.0	H	0.0	43.8	11.0	21.2	54
13145.625000	37.1	101.0	V	177.0	51.1	14.0	16.9	54
18000.000000	48.5	101.0	H	0.0	73.2	24.7	5.5	54

TA Technology (Shanghai) Co., Ltd. Test Report

EDR-Channel 39

RE 30M-1GHz (PART15 C) QP



— FCC Part 15(Class C) RE QP — Preview Result 1H-PK+
— Preview Result 1V-PK+ ◆ Final Result 1-QPK

Radiates Emission from 30MHz to 1GHz

Note: This graph displays the maximum values of horizontal and vertical by software

Note: a font (Level in dBµV/m) in the test plot =(level in dBuV/m)

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
30.000000	27.3	100.0	V	8.0	44.3	-17.0	12.7	40.0
34.546250	20.6	100.0	V	295.0	39.6	-19.0	19.4	40.0
297.013750	21.4	127.0	H	239.0	44.4	-23.0	24.6	46.0
375.016250	26.5	100.0	H	257.0	47.6	-21.1	19.5	46.0
655.996250	15.4	100.0	V	173.0	31.1	-15.7	30.6	46.0
750.003750	20.4	100.0	V	225.0	34.9	-14.5	25.6	46.0

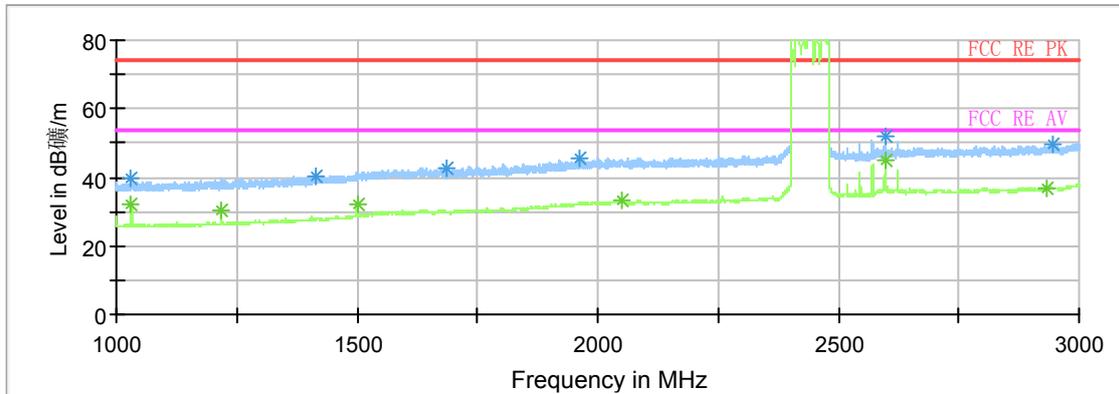
Remark: 1. Quasi-Peak = Reading value + Correction factor

2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

3. Margin = Limit – Quasi-Peak

TA Technology (Shanghai) Co., Ltd. Test Report

RE 1G-3GHz PK+AV



- FCC RE PK
- FCC RE AV
- Preview Result 1-PK+
- Preview Result 2-AVG
- * Data Reduction Result 1 [2]-PK+
- * Data Reduction Result 2 [2]-AVG

Radiates Emission from 1GHz to 3GHz

Note: This graph displays the maximum values of horizontal and vertical by software

Note: The signal beyond the limit is carrier. a font (Level in dB_{磁/m})in the test plot =(level in dBuV/m)

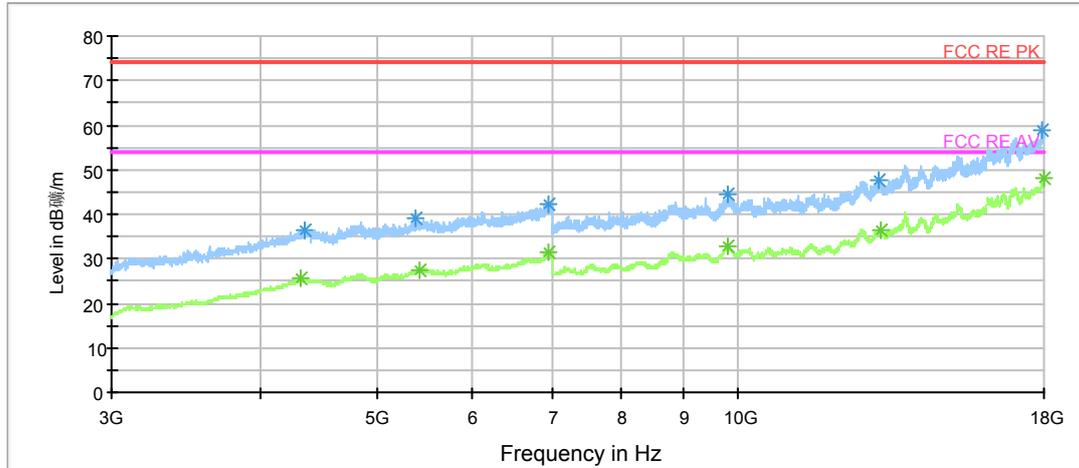
Note: a font (Level in dB_{磁/m})in the test plot =(level in dBuV/m)

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1031.250000	38.9	101.0	V	158.0	48.0	-9.1	35.1	74
1218.750000	38.7	101.0	V	122.0	47.1	-8.4	35.3	74
1500.000000	40.7	101.0	V	195.0	47.0	-6.3	33.3	74
2051.000000	44.7	101.0	V	84.0	46.4	-1.7	29.3	74
2597.000000	51.3	101.0	V	0.0	52.3	1.0	22.7	74
2931.000000	47.6	101.0	H	96.0	49.7	2.1	26.4	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1031.250000	32.0	101.0	V	158.0	41.1	-9.1	22.0	54
1218.750000	30.6	101.0	V	122.0	39.0	-8.4	23.4	54
1500.000000	32.1	101.0	V	195.0	38.4	-6.3	21.9	54
2051.000000	33.1	101.0	V	84.0	34.8	-1.7	20.9	54
2597.000000	45.0	101.0	V	0.0	46.0	1.0	9.0	54
2931.000000	36.8	101.0	H	96.0	38.9	2.1	17.2	54

TA Technology (Shanghai) Co., Ltd. Test Report

RE 3-18GHz PK+AV



- FCC RE PK
— Preview Result 1-PK+
* Data Reduction Result 1 [1]-PK+
- FCC RE AV
— Preview Result 2-AVG
* Data Reduction Result 2 [1]-AVG

Radiates Emission from 3GHz to 18GHz

Note: This graph displays the maximum values of horizontal and vertical by software

Note: a font (Level in dBµV/m) in the test plot =(level in dBuV/m)

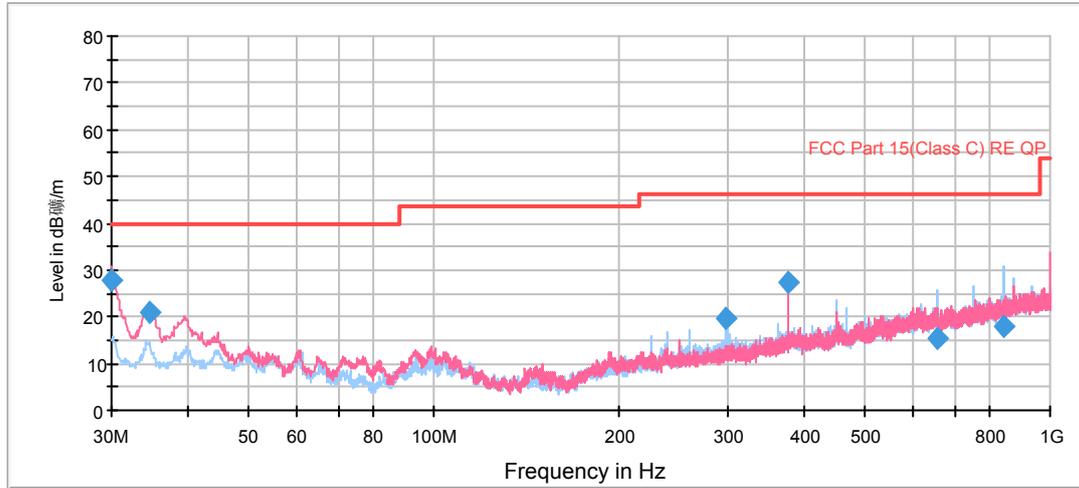
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4321.875000	34.5	101.0	V	129.0	37.4	2.9	39.5	74
5431.875000	37.2	101.0	H	173.0	40.3	3.1	36.8	74
6935.625000	41.0	101.0	V	212.0	46.6	5.6	33.0	74
9793.125000	44.5	101.0	H	248.0	55.8	11.3	29.5	74
13140.000000	46.3	101.0	H	173.0	60.3	14.0	27.7	74
17998.125000	58.1	101.0	H	0.0	82.8	24.7	15.9	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4321.875000	25.6	101.0	V	129.0	28.5	2.9	28.4	54
5431.875000	27.6	101.0	H	173.0	30.7	3.1	26.4	54
6935.625000	31.4	101.0	V	212.0	37.0	5.6	22.6	54
9793.125000	32.9	101.0	H	248.0	44.2	11.3	21.1	54
13140.000000	36.5	101.0	H	173.0	50.5	14.0	17.5	54
17998.125000	48.3	101.0	H	0.0	73.0	24.7	5.7	54

TA Technology (Shanghai) Co., Ltd. Test Report

EDR-Channel 78

RE 30M-1GHz (PART15 C) QP



— FCC Part 15(Class C) RE QP — Preview Result 1H-PK+
— Preview Result 1V-PK+ ◆ Final Result 1-QPK

Note: This graph displays the maximum values of horizontal and vertical by software

Note: a font (Level in dBµV/m)in the test plot =(level in dBuV/m)

Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
30.000000	27.8	100.0	V	0.0	44.8	-17.0	12.2	40.0
34.503750	20.9	100.0	V	306.0	39.9	-19.0	19.1	40.0
297.012500	19.8	129.0	H	0.0	42.8	-23.0	26.2	46.0
375.017500	27.3	100.0	H	264.0	48.4	-21.1	18.7	46.0
656.036250	15.3	100.0	H	243.0	31.0	-15.7	30.7	46.0
843.850000	17.8	129.0	H	251.0	30.6	-12.8	28.2	46.0

Remark: 1. Quasi-Peak = Reading value + Correction factor

2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

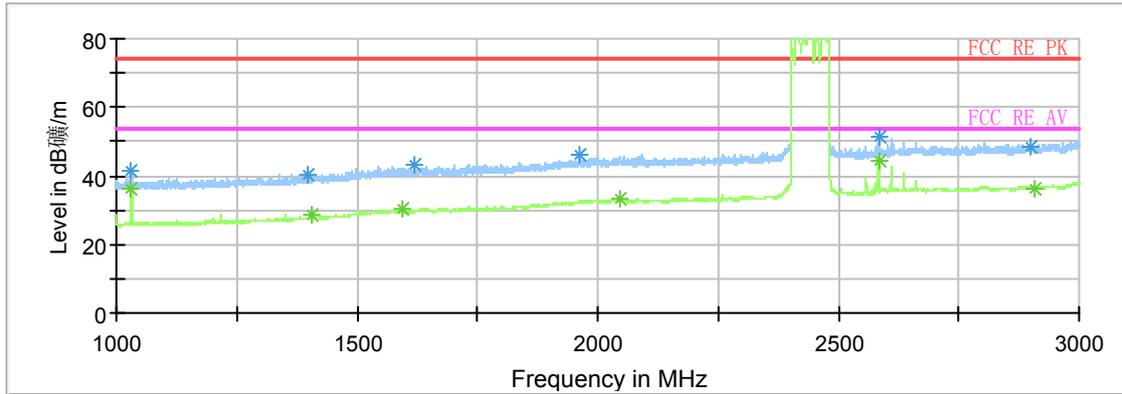
3. Margin = Limit – Quasi-Peak

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RE 1G-3GHz PK+AV



- FCC RE PK
- FCC RE AV
- Preview Result 1-PK+
- Preview Result 2-AVG
- * Data Reduction Result 1 [2]-PK+
- * Data Reduction Result 2 [2]-AVG

Radiates Emission from 1GHz to 3GHz

Note: This graph displays the maximum values of horizontal and vertical by software

Note: The signal beyond the limit is carrier. a font (Level in dB/m) in the test plot =(level in dBuV/m)

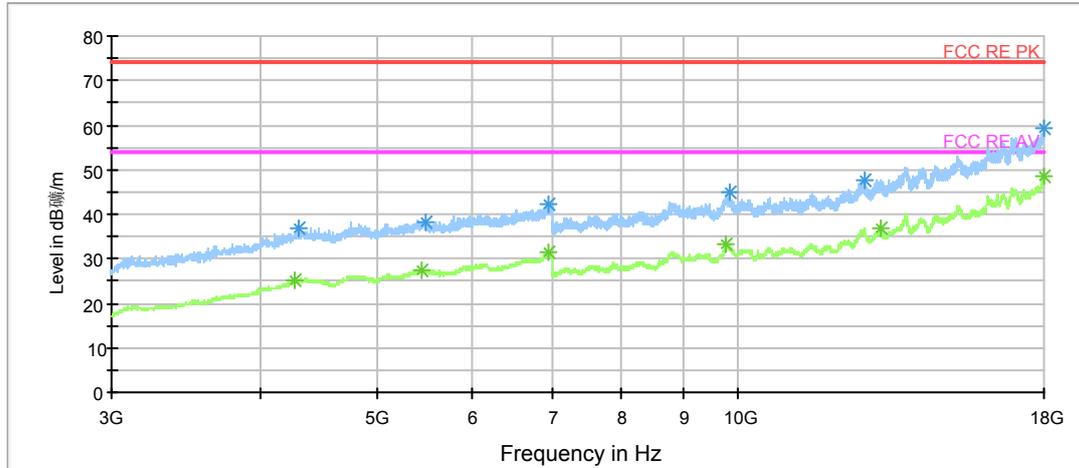
Note: a font (Level in dB/m) in the test plot =(level in dBuV/m)

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1031.250000	41.3	101.0	V	66.0	50.4	-9.1	32.7	74
1406.250000	39.1	101.0	V	0.0	46.8	-7.7	34.9	74
1594.000000	41.1	101.0	V	66.0	46.5	-5.4	32.9	74
2046.000000	43.8	101.0	H	184.0	45.7	-1.9	30.2	74
2584.000000	51.2	101.0	V	0.0	51.8	0.6	22.8	74
2909.250000	47.5	101.0	H	275.0	49.5	2.0	26.5	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1031.250000	36.0	101.0	V	66.0	45.1	-9.1	18.0	54
1406.250000	28.8	101.0	V	0.0	36.5	-7.7	25.2	54
1594.000000	30.6	101.0	V	66.0	36.0	-5.4	23.4	54
2046.000000	33.2	101.0	H	184.0	35.1	-1.9	20.8	54
2584.000000	44.6	101.0	V	0.0	45.2	0.6	9.4	54
2909.250000	36.5	101.0	H	275.0	38.5	2.0	17.5	54

TA Technology (Shanghai) Co., Ltd. Test Report

RE 3-18GHz PK+AV



- FCC RE PK
— Preview Result 1-PK+
* Data Reduction Result 1 [1]-PK+
- FCC RE AV
— Preview Result 2-AVG
* Data Reduction Result 2 [1]-AVG

Radiates Emission from 3GHz to 18GHz

Note: This graph displays the maximum values of horizontal and vertical by software

Note: a font (Level in dB μ V/m) in the test plot =(level in dBuV/m)

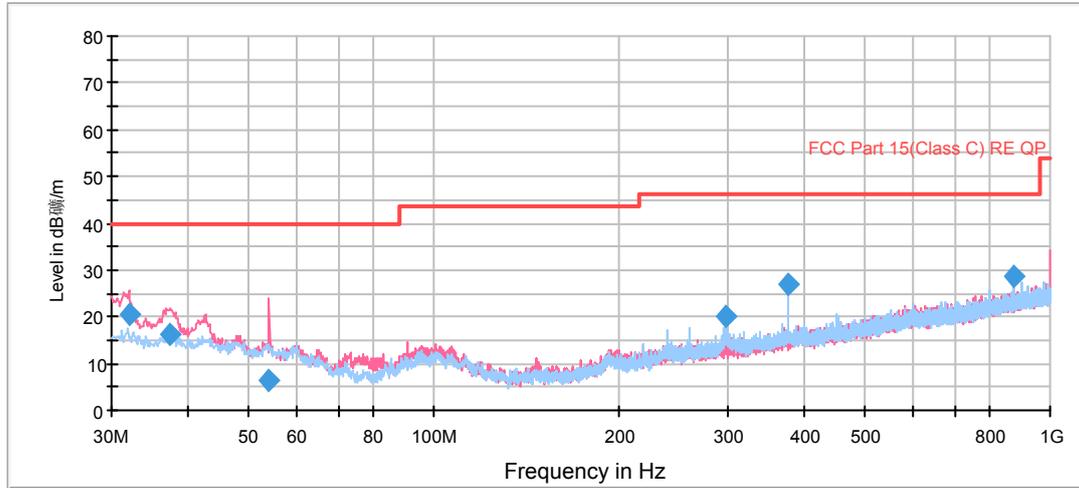
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4269.375000	35.2	101.0	V	175.0	38.0	2.8	38.8	74
5446.875000	37.3	101.0	V	116.0	40.5	3.2	36.7	74
6939.375000	39.9	101.0	V	201.0	45.5	5.6	34.1	74
9783.750000	42.1	101.0	H	313.0	53.2	11.1	31.9	74
13147.500000	45.9	101.0	H	220.0	59.8	13.9	28.1	74
17992.500000	58.4	101.0	V	141.0	83.0	24.6	15.6	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4269.375000	25.2	101.0	V	175.0	28.0	2.8	28.8	54
5446.875000	27.6	101.0	V	116.0	30.8	3.2	26.4	54
6939.375000	31.3	101.0	V	201.0	36.9	5.6	22.7	54
9783.750000	33.1	101.0	H	313.0	44.2	11.1	20.9	54
13147.500000	37.0	101.0	H	220.0	50.9	13.9	17.0	54
17992.500000	48.7	101.0	V	141.0	73.3	24.6	5.3	54

TA Technology (Shanghai) Co., Ltd. Test Report

GFSK-Channel 0

RE 30M-1GHz QP



— FCC Part 15(Class C) RE QP — Preview Result 1V-PK+
— Preview Result 1H-PK+ ◆ Final Result 1-QPK

Radiates Emission from 30MHz to 1GHz

Note: This graph displays the maximum values of horizontal and vertical by software

Note: a font (Level in dBµV/m) in the test plot =(level in dBuV/m)

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
32.061097	20.4	100.0	V	316.0	38.6	-18.2	19.6	40.0
37.220866	16.2	100.0	V	0.0	35.5	-19.3	23.8	40.0
54.073428	6.5	128.0	V	303.0	28.8	-22.3	33.5	40.0
297.010000	20.2	128.0	H	109.0	43.6	-23.4	25.8	46.0
375.018750	27.0	100.0	H	265.0	48.5	-21.5	19.0	46.0
875.003750	28.7	100.0	H	291.0	41.9	-13.2	17.3	46.0

Remark: 1. Quasi-Peak = Reading value + Correction factor

2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

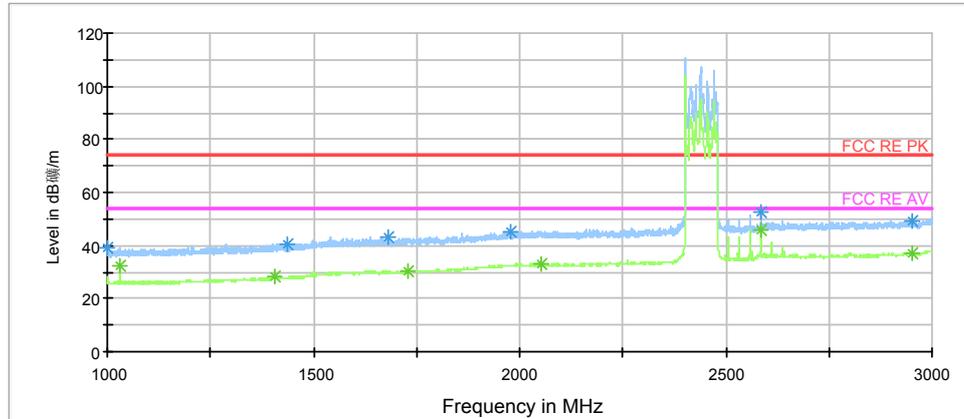
3. Margin = Limit – Quasi-Peak

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RE 1G-3GHz PK+AV



— FCC RE PK
— FCC RE AV
— Preview Result 1-PK+
— Preview Result 2-AVG
* Data Reduction Result 1 [2]-PK+
* Data Reduction Result 2 [2]-AVG

Radiates Emission from 1GHz to 3GHz

Note: This graph displays the maximum values of horizontal and vertical by software

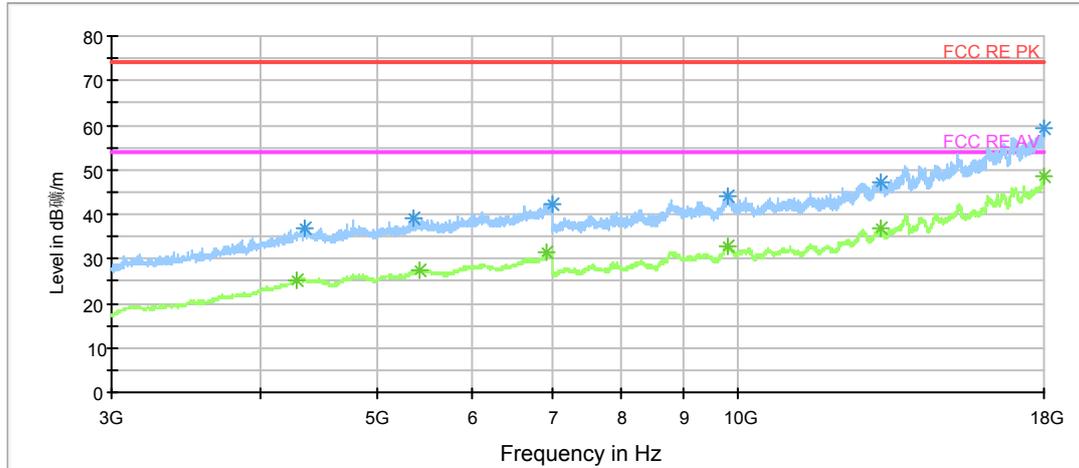
Note: The signal beyond the limit is carrier. a font (Level in dB/m) in the test plot =(level in dBuV/m)

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1031.250000	39.1	101.0	V	0.0	48.2	-9.1	34.9	74
1406.250000	38.9	101.0	V	0.0	46.6	-7.7	35.1	74
1729.500000	41.3	101.0	V	0.0	45.1	-3.8	32.7	74
2052.250000	43.4	101.0	H	0.0	45.0	-1.6	30.6	74
2584.250000	51.2	101.0	V	0.0	51.8	0.6	22.8	74
2951.750000	47.6	101.0	H	0.0	50.0	2.4	26.4	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1031.250000	32.1	101.0	V	0.0	41.2	-9.1	21.9	54
1406.250000	28.3	101.0	V	0.0	36.0	-7.7	25.7	54
1729.500000	30.7	101.0	V	0.0	34.5	-3.8	23.3	54
2052.250000	33.1	101.0	H	0.0	34.7	-1.6	20.9	54
2584.250000	46.1	101.0	V	0.0	46.7	0.6	7.9	54
2951.750000	37.0	101.0	H	0.0	39.4	2.4	17.0	54

TA Technology (Shanghai) Co., Ltd. Test Report

RE 3-18GHz PK+AV



- FCC RE PK
— Preview Result 1-PK+
* Data Reduction Result 1 [1]-PK+
- FCC RE AV
— Preview Result 2-AVG
* Data Reduction Result 2 [1]-AVG

Radiates Emission from 3GHz to 18GHz

Note: This graph displays the maximum values of horizontal and vertical by software

Note: a font (Level in dB_{μV/m}) in the test plot =(level in dBuV/m)

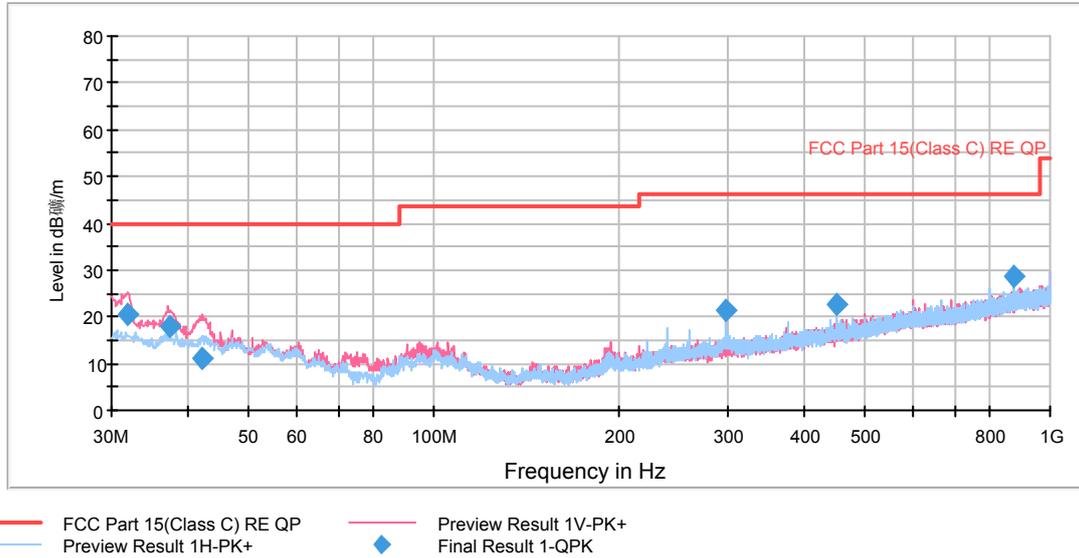
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4276.875000	34.3	101.0	H	200.0	37.2	2.9	39.7	74
5416.875000	37.4	101.0	V	60.0	40.5	3.1	36.6	74
6916.875000	40.5	101.0	H	303.0	46.2	5.7	33.5	74
9804.375000	43.1	101.0	V	248.0	54.4	11.3	30.9	74
13138.125000	46.2	101.0	H	0.0	60.3	14.1	27.8	74
18000.000000	57.2	101.0	H	216.0	81.9	24.7	16.8	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4276.875000	25.3	101.0	H	200.0	28.2	2.9	28.7	54
5416.875000	27.5	101.0	V	60.0	30.6	3.1	26.5	54
6916.875000	31.4	101.0	H	303.0	37.1	5.7	22.6	54
9804.375000	32.8	101.0	V	248.0	44.1	11.3	21.2	54
13138.125000	36.7	101.0	H	0.0	50.8	14.1	17.3	54
18000.000000	48.3	101.0	H	216.0	73.0	24.7	5.7	54

TA Technology (Shanghai) Co., Ltd. Test Report

GFSK-Channel 39

RE 30M-1GHz QP



Note: This graph displays the maximum values of horizontal and vertical by software

Note: a font (Level in dB μ V/m)in the test plot =(level in dB μ V/m)

Radiates Emission from 30MHz to 1GHz

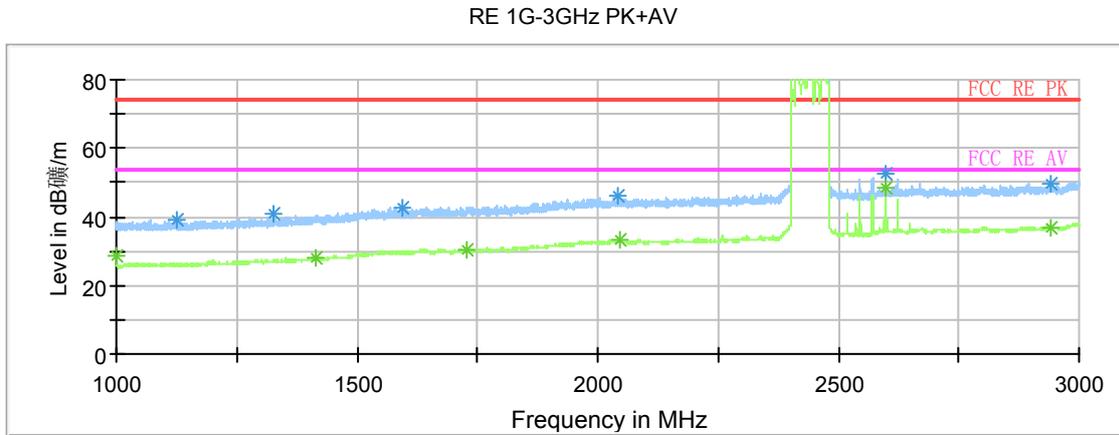
Frequency (MHz)	Quasi-Peak (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dB μ V/m)	Correct Factor (dB)	Margin (dB)	Limit (dB μ V/m)
31.860150	20.4	100.0	V	253.0	38.5	-18.1	19.6	40.0
37.302760	17.9	100.0	V	303.0	37.2	-19.3	22.1	40.0
42.140634	11.1	100.0	V	0.0	31.0	-19.9	28.9	40.0
297.010000	21.4	126.0	H	240.0	44.8	-23.4	24.6	46.0
450.005000	22.5	100.0	H	30.0	42.3	-19.8	23.5	46.0
875.004500	28.6	100.0	H	290.0	41.8	-13.2	17.4	46.0

Remark: 1. Quasi-Peak = Reading value + Correction factor

2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

3. Margin = Limit – Quasi-Peak

TA Technology (Shanghai) Co., Ltd. Test Report



- FCC RE PK
- FCC RE AV
- Preview Result 1-PK+
- Preview Result 2-AVG
- * Data Reduction Result 1 [2]-PK+
- * Data Reduction Result 2 [2]-AVG

Radiates Emission from 1GHz to 3GHz

Note: This graph displays the maximum values of horizontal and vertical by software

Note: The signal beyond the limit is carrier. a font (Level in dBμV/m) in the test plot =(level in dBuV/m)

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1000.000000	38.4	101.0	V	0.0	47.9	-9.5	35.6	74
1416.250000	38.2	101.0	V	0.0	45.4	-7.2	35.8	74
1728.750000	40.6	101.0	V	249.0	44.4	-3.8	33.4	74
2045.250000	43.0	101.0	V	0.0	44.9	-1.9	31.0	74
2597.250000	52.4	101.0	V	0.0	53.5	1.1	21.6	74
2939.750000	47.7	101.0	V	268.0	49.9	2.2	26.3	74

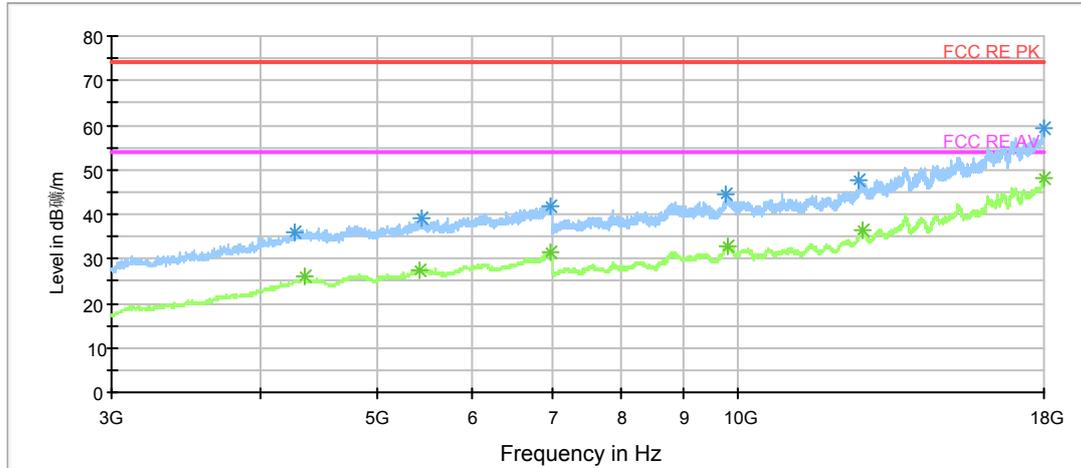
Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1000.000000	28.4	101.0	V	0.0	37.9	-9.5	25.6	54
1416.250000	28.1	101.0	V	0.0	35.3	-7.2	25.9	54
1728.750000	30.5	101.0	V	249.0	34.3	-3.8	23.5	54
2045.250000	33.1	101.0	V	0.0	35.0	-1.9	20.9	54
2597.250000	48.2	101.0	V	0.0	49.3	1.1	5.8	54
2939.750000	37.0	101.0	V	268.0	39.2	2.2	17.0	54

TA Technology (Shanghai) Co., Ltd. Test Report

Report No.: RHA1503-0018RF03R3

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RE 3-18GHz PK+AV



- FCC RE PK
- FCC RE AV
- Preview Result 1-PK+
- Preview Result 2-AVG
- * Data Reduction Result 1 [1]-PK+
- * Data Reduction Result 2 [1]-AVG

Radiates Emission from 3GHz to 18GHz

Note: This graph displays the maximum values of horizontal and vertical by software

Note: a font (Level in dB μ V/m) in the test plot =(level in dBuV/m)

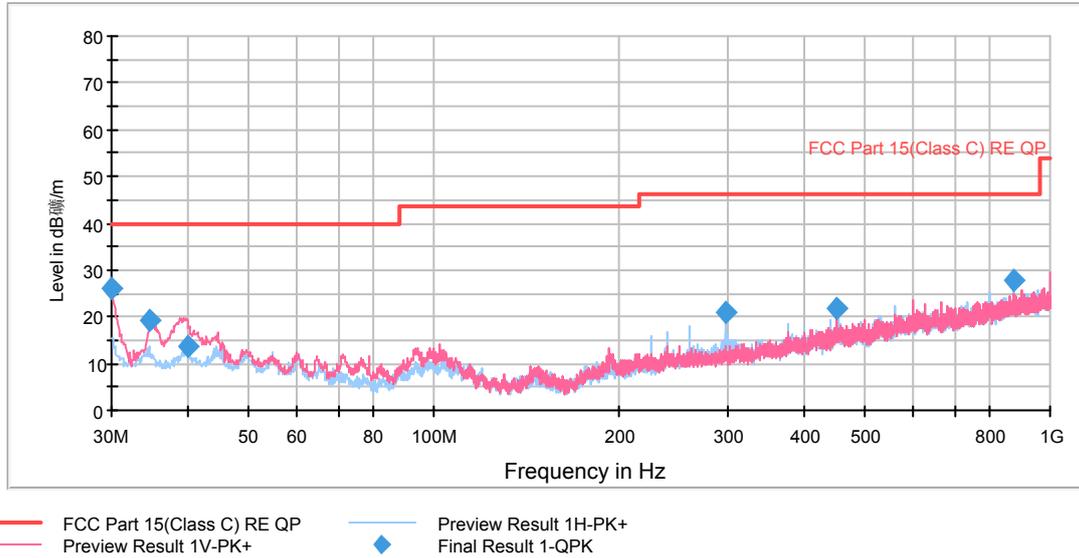
Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4357.500000	34.8	101.0	V	75.0	37.6	2.8	39.2	74
5426.250000	37.4	101.0	H	248.0	40.5	3.1	36.6	74
6982.500000	40.9	101.0	H	176.0	46.3	5.4	33.1	74
9808.125000	43.1	101.0	V	0.0	54.4	11.3	30.9	74
12699.375000	45.4	101.0	V	58.0	58.8	13.4	28.6	74
17994.375000	59.2	101.0	V	142.0	83.8	24.6	14.8	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4357.500000	25.9	101.0	V	75.0	28.7	2.8	28.1	54
5426.250000	27.4	101.0	H	248.0	30.5	3.1	26.6	54
6982.500000	31.3	101.0	H	176.0	36.7	5.4	22.7	54
9808.125000	32.8	101.0	V	0.0	44.1	11.3	21.2	54
12699.375000	36.6	101.0	V	58.0	50.0	13.4	17.4	54
17994.375000	48.3	101.0	V	142.0	72.9	24.6	5.7	54

TA Technology (Shanghai) Co., Ltd. Test Report

GFSK -Channel 78

RE 30M-1GHz (PART15 C) QP



Radiates Emission from 30MHz to 1GHz

Note: This graph displays the maximum values of horizontal and vertical by software

Note: a font (Level in dBµV/m) in the test plot =(level in dBuV/m)

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
30.040000	26.3	101.0	V	56.0	43.4	-17.1	13.7	40.0
34.508750	19.4	100.0	V	2.0	38.4	-19.0	20.6	40.0
39.997500	13.7	100.0	V	28.0	33.0	-19.3	26.3	40.0
297.012500	21.1	127.0	H	241.0	44.1	-23.0	24.9	46.0
449.990000	21.8	100.0	H	38.0	41.1	-19.3	24.2	46.0
875.012500	27.9	100.0	H	29.0	40.2	-12.3	18.1	46.0

Remark: 1. Quasi-Peak = Reading value + Correction factor

2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

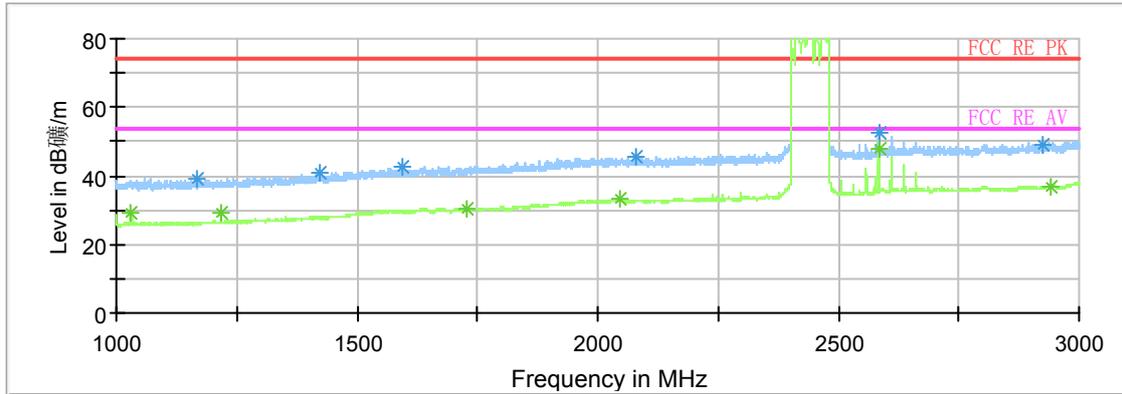
3. Margin = Limit – Quasi-Peak

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RE 1G-3GHz PK+AV



- FCC RE PK
- FCC RE AV
- Preview Result 1-PK+
- Preview Result 2-AVG
- * Data Reduction Result 1 [2]-PK+
- * Data Reduction Result 2 [2]-AVG

Radiates Emission from 1GHz to 3GHz

Note: This graph displays the maximum values of horizontal and vertical by software

Note: The signal beyond the limit is carrier. a font (Level in dB/m) in the test plot =(level in dBuV/m)

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1031.250000	36.9	101.0	H	36.0	46.0	-9.1	37.1	74
1218.750000	37.8	101.0	H	111.0	46.2	-8.4	36.2	74
1729.750000	42.2	101.0	V	0.0	45.9	-3.7	31.8	74
2044.500000	43.6	101.0	H	56.0	45.5	-1.9	30.4	74
2584.250000	52.4	101.0	V	0.0	53.0	0.6	21.6	74
2943.250000	47.5	101.0	H	129.0	49.8	2.3	26.5	74

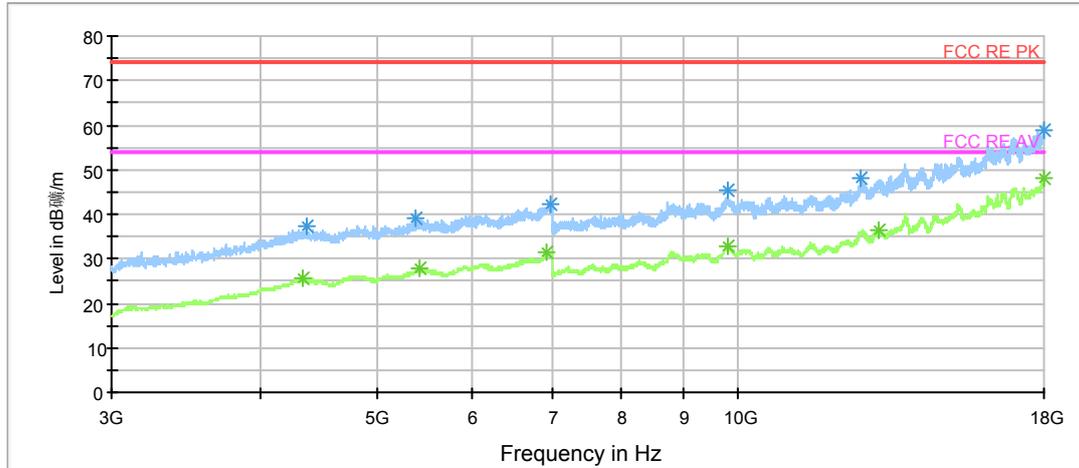
Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1031.250000	29.3	101.0	H	36.0	38.4	-9.1	24.7	54
1218.750000	29.0	101.0	H	111.0	37.4	-8.4	25.0	54
1729.750000	30.6	101.0	V	0.0	34.3	-3.7	23.4	54
2044.500000	33.0	101.0	H	56.0	34.9	-1.9	21.0	54
2584.250000	48.1	101.0	V	0.0	48.7	0.6	5.9	54
2943.250000	37.0	101.0	H	129.0	39.3	2.3	17.0	54

TA Technology (Shanghai) Co., Ltd. Test Report

Report No.: RHA1503-0018RF03R3

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RE 3-18GHz PK+AV



— FCC RE PK
— FCC RE AV
—* Preview Result 1-PK+
—* Preview Result 2-AVG
* Data Reduction Result 1 [1]-PK+
* Data Reduction Result 2 [1]-AVG

Radiates Emission from 3GHz to 18GHz

Note: This graph displays the maximum values of horizontal and vertical by software

Note: a font (Level in dB_{μV/m}) in the test plot =(level in dBuV/m)

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4333.125000	35.4	101.0	H	336.0	38.3	2.9	38.6	74
5431.875000	37.2	101.0	V	271.0	40.3	3.1	36.8	74
6931.875000	40.7	101.0	H	168.0	46.4	5.7	33.3	74
9802.500000	42.7	101.0	V	105.0	54.0	11.3	31.3	74
13126.875000	46.6	101.0	V	0.0	60.8	14.2	27.4	74
18000.000000	57.8	101.0	V	2.0	82.5	24.7	16.2	74

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4333.125000	25.7	101.0	H	336.0	28.6	2.9	28.3	54
5431.875000	27.7	101.0	V	271.0	30.8	3.1	26.3	54
6931.875000	31.3	101.0	H	168.0	37.0	5.7	22.7	54
9802.500000	32.9	101.0	V	105.0	44.2	11.3	21.1	54
13126.875000	36.5	101.0	V	0.0	50.7	14.2	17.5	54
18000.000000	48.3	101.0	V	2.0	73.0	24.7	5.7	54

TA Technology (Shanghai) Co., Ltd.

Test Report

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3.12. Conducted Emission

Ambient condition

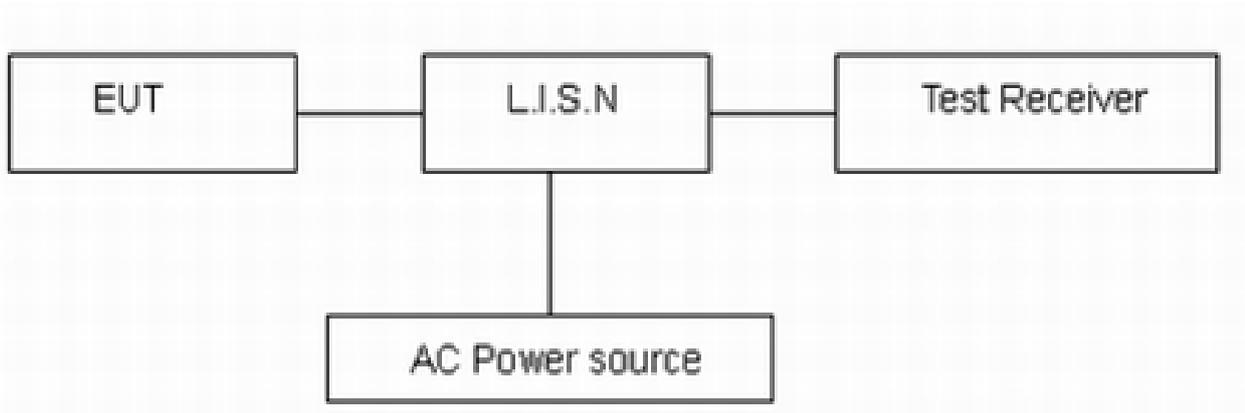
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2009. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line.

The test is in transmitting mode.

Test Setup



Note: AC Power source is used to change the voltage 110V/60Hz.

Limits

Frequency (MHz)	Conducted Limits(dB μ V)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5	56	46
5 - 30	60	50

*: Decreases with the logarithm of the frequency.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U = 2.69$ dB.

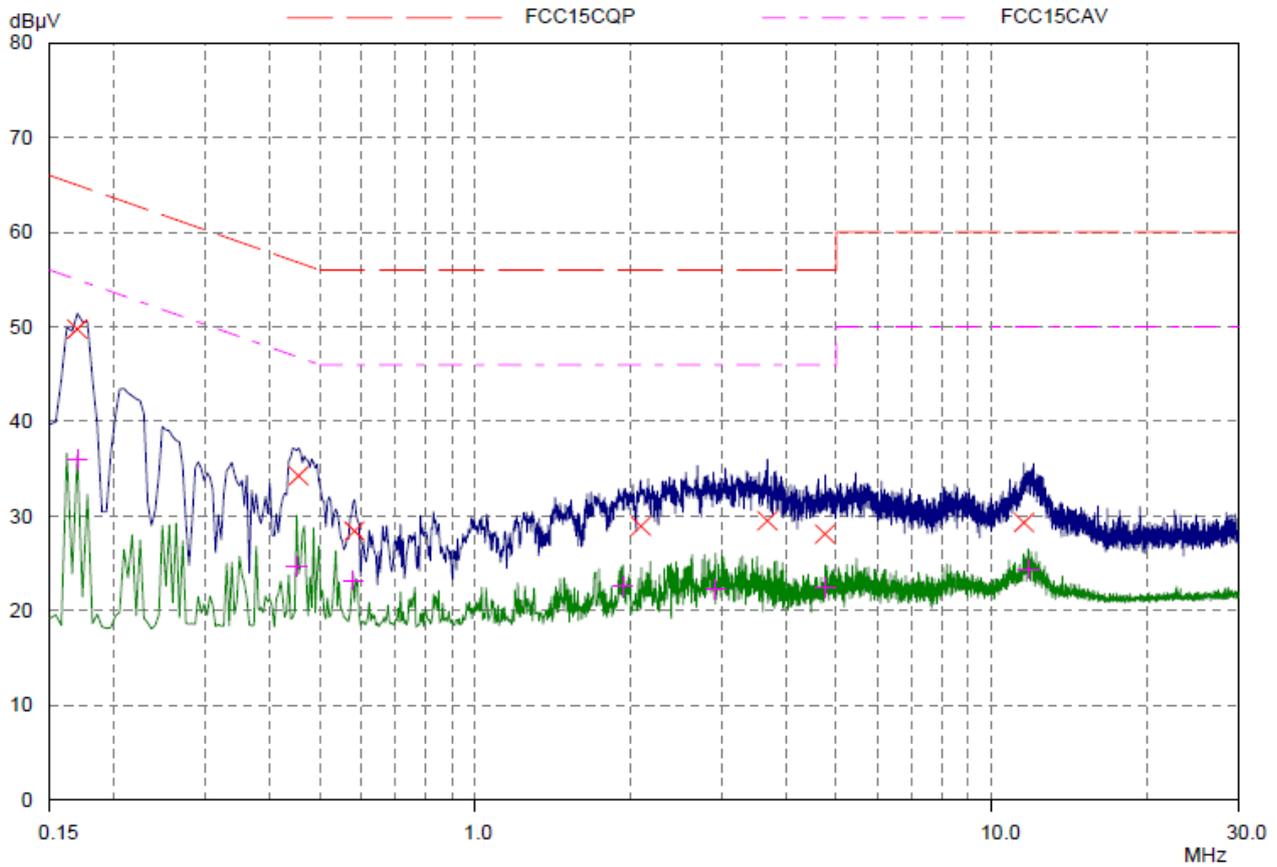
TA Technology (Shanghai) Co., Ltd. Test Report

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Test Results:

EDR-CH0



Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.16953	49.76	64.98	15.22	L1	gnd
0.45468	34.25	56.79	22.54	L1	gnd
0.58359	28.42	56.00	27.58	L1	gnd
2.0914	28.94	56.00	27.06	L1	gnd
3.67734	29.51	56.00	26.49	L1	gnd
4.75937	28.10	56.00	27.90	L1	gnd
11.54453	29.31	60.00	30.69	L1	gnd

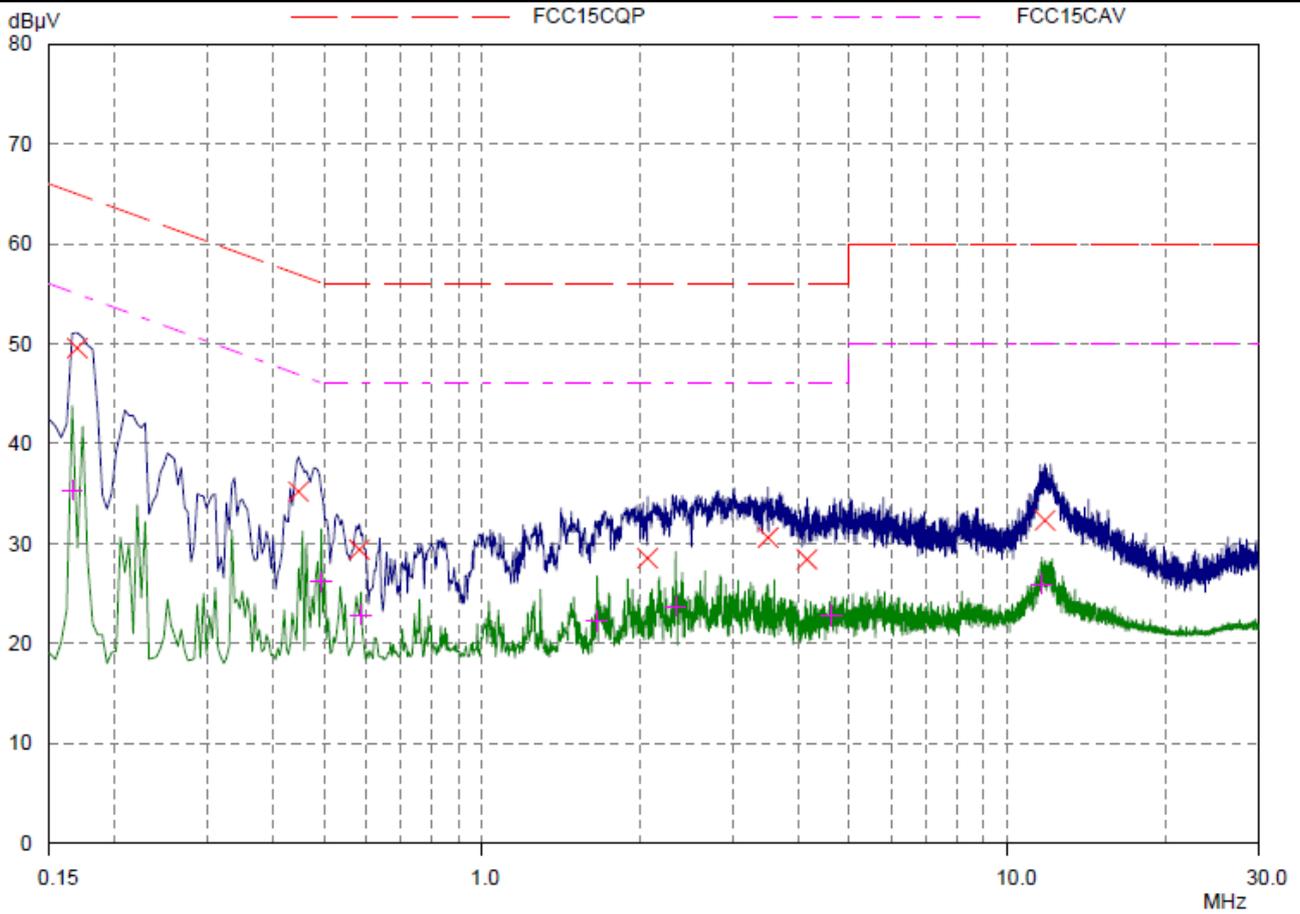
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.16953	35.99	54.98	18.99	L1	gnd
0.45078	24.71	46.86	22.15	L1	gnd
0.57968	23.19	46.00	22.81	L1	gnd
1.93125	22.67	46.00	23.33	L1	gnd
2.91953	22.31	46.00	23.69	L1	gnd
4.75937	22.48	46.00	23.52	L1	gnd
11.775	24.39	50.00	25.61	L1	gnd

L Line

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Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.16953	49.56	64.98	15.42	N	gnd
0.44687	35.21	56.93	21.72	N	gnd
0.58359	29.40	56.00	26.60	N	gnd
2.06406	28.55	56.00	27.45	N	gnd
3.49765	30.60	56.00	25.40	N	gnd
4.1539	28.42	56.00	27.58	N	gnd
11.78671	32.30	60.00	27.70	N	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.16562	35.36	55.18	19.82	N	gnd
0.49375	26.17	46.10	19.93	N	gnd
0.5875	22.89	46.00	23.11	N	gnd
1.6539	22.27	46.00	23.73	N	gnd
2.33359	23.71	46.00	22.29	N	gnd
4.62656	22.77	46.00	23.23	N	gnd
11.63046	25.95	50.00	24.05	N	gnd

N Line

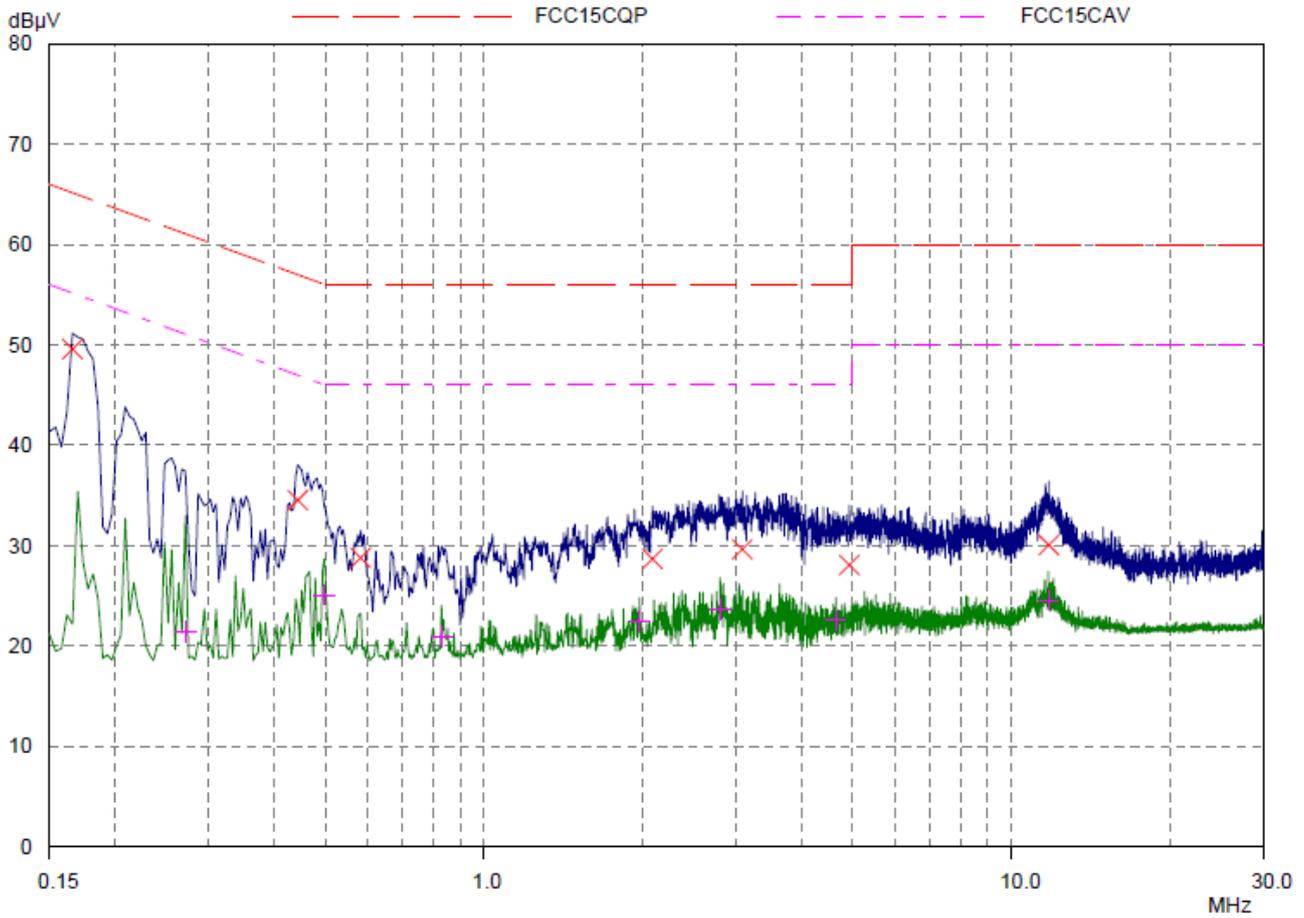
Conducted Emission from 150 KHz to 30 MHz

TA Technology (Shanghai) Co., Ltd. Test Report

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EDR-CH39



Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.16562	49.60	65.18	15.58	L1	gnd
0.44296	34.53	57.01	22.48	L1	gnd
0.58359	28.80	56.00	27.20	L1	gnd
2.08359	28.70	56.00	27.30	L1	gnd
3.0875	29.63	56.00	26.37	L1	gnd
4.92734	28.07	56.00	27.93	L1	gnd
11.76328	30.06	60.00	29.94	L1	gnd

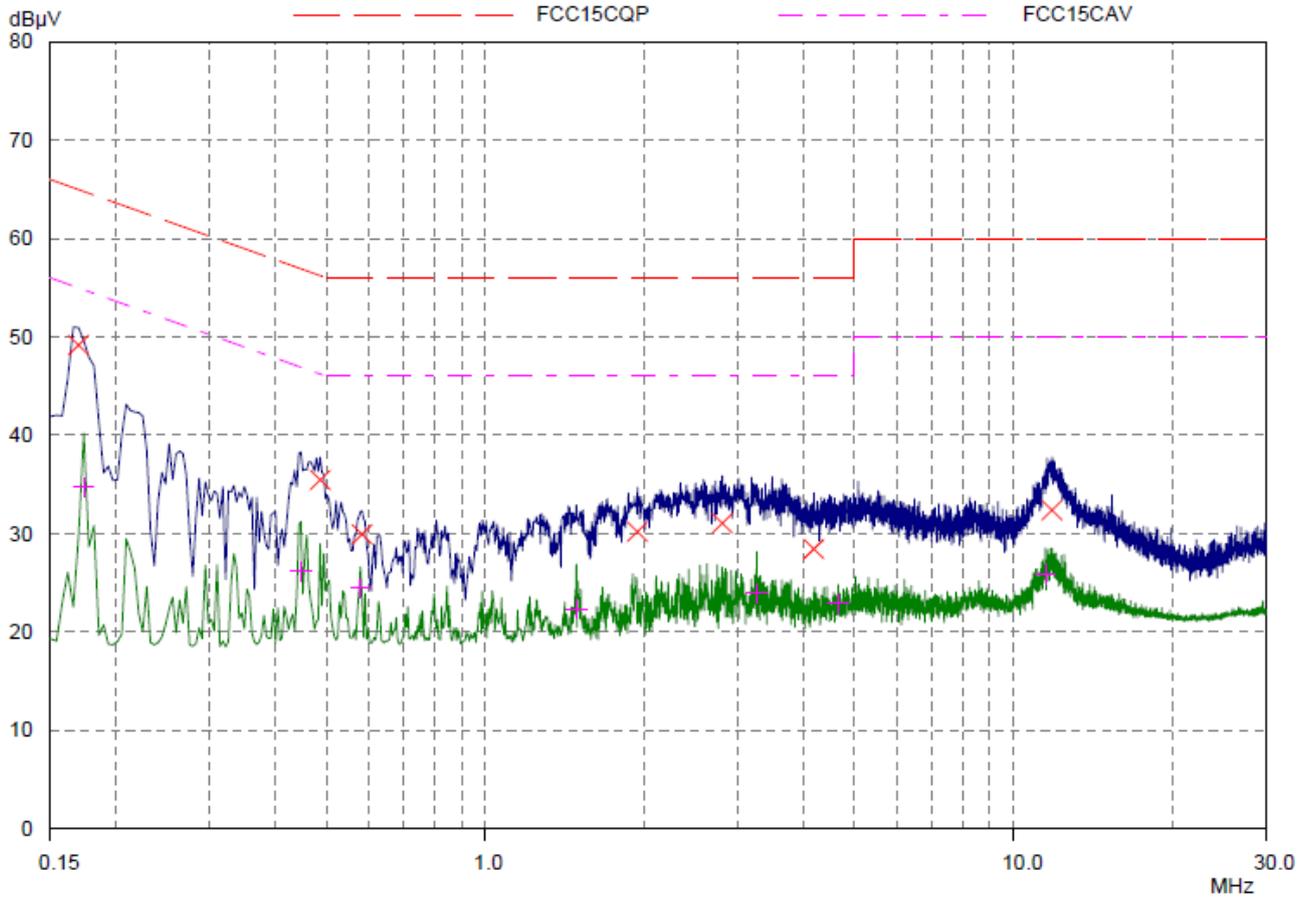
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.27109	21.47	51.08	29.61	L1	gnd
0.49765	25.07	46.04	20.97	L1	gnd
0.82968	20.89	46.00	25.11	L1	gnd
1.97031	22.45	46.00	23.55	L1	gnd
2.80234	23.69	46.00	22.31	L1	gnd
4.64218	22.59	46.00	23.41	L1	gnd
11.74375	24.60	50.00	25.40	L1	gnd

L Line

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Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.16953	49.16	64.98	15.82	N	gnd
0.48593	35.47	56.24	20.77	N	gnd
0.58359	29.94	56.00	26.06	N	gnd
1.93906	30.19	56.00	25.81	N	gnd
2.80625	31.04	56.00	24.96	N	gnd
4.18515	28.45	56.00	27.55	N	gnd
11.82187	32.36	60.00	27.64	N	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.17343	34.69	54.79	20.10	N	gnd
0.44687	26.15	46.93	20.78	N	gnd
0.57968	24.45	46.00	21.55	N	gnd
1.48593	22.36	46.00	23.64	N	gnd
3.25937	23.92	46.00	22.08	N	gnd
4.6539	22.90	46.00	23.10	N	gnd
11.48203	25.89	50.00	24.11	N	gnd

N Line

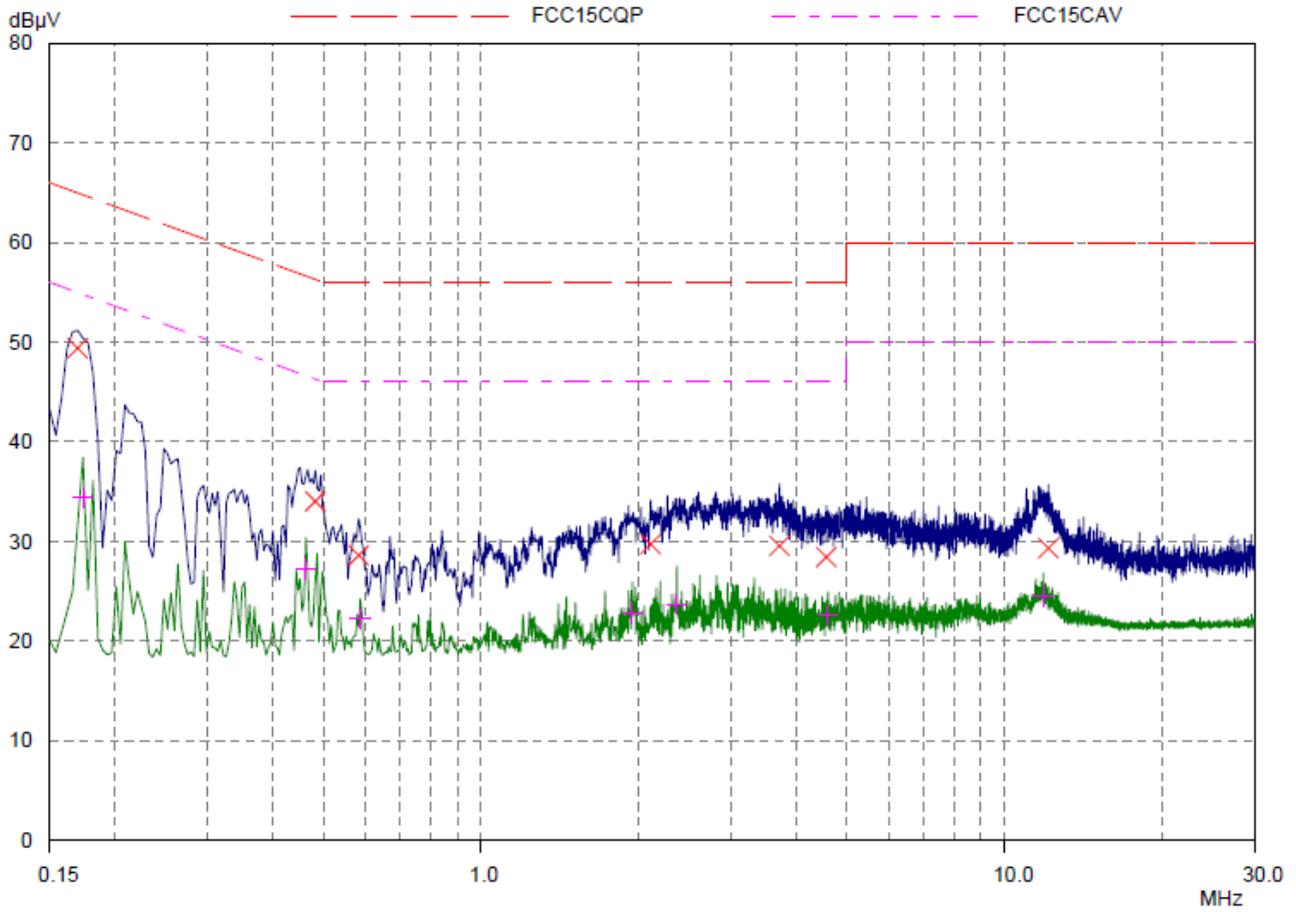
Conducted Emission from 150 KHz to 30 MHz

TA Technology (Shanghai) Co., Ltd. Test Report

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EDR-CH78



Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.16953	49.38	64.98	15.60	L1	gnd
0.48203	34.04	56.30	22.26	L1	gnd
0.58359	28.60	56.00	27.40	L1	gnd
2.10703	29.72	56.00	26.28	L1	gnd
3.7125	29.55	56.00	26.45	L1	gnd
4.56406	28.43	56.00	27.57	L1	gnd
12.11875	29.33	60.00	30.67	L1	gnd

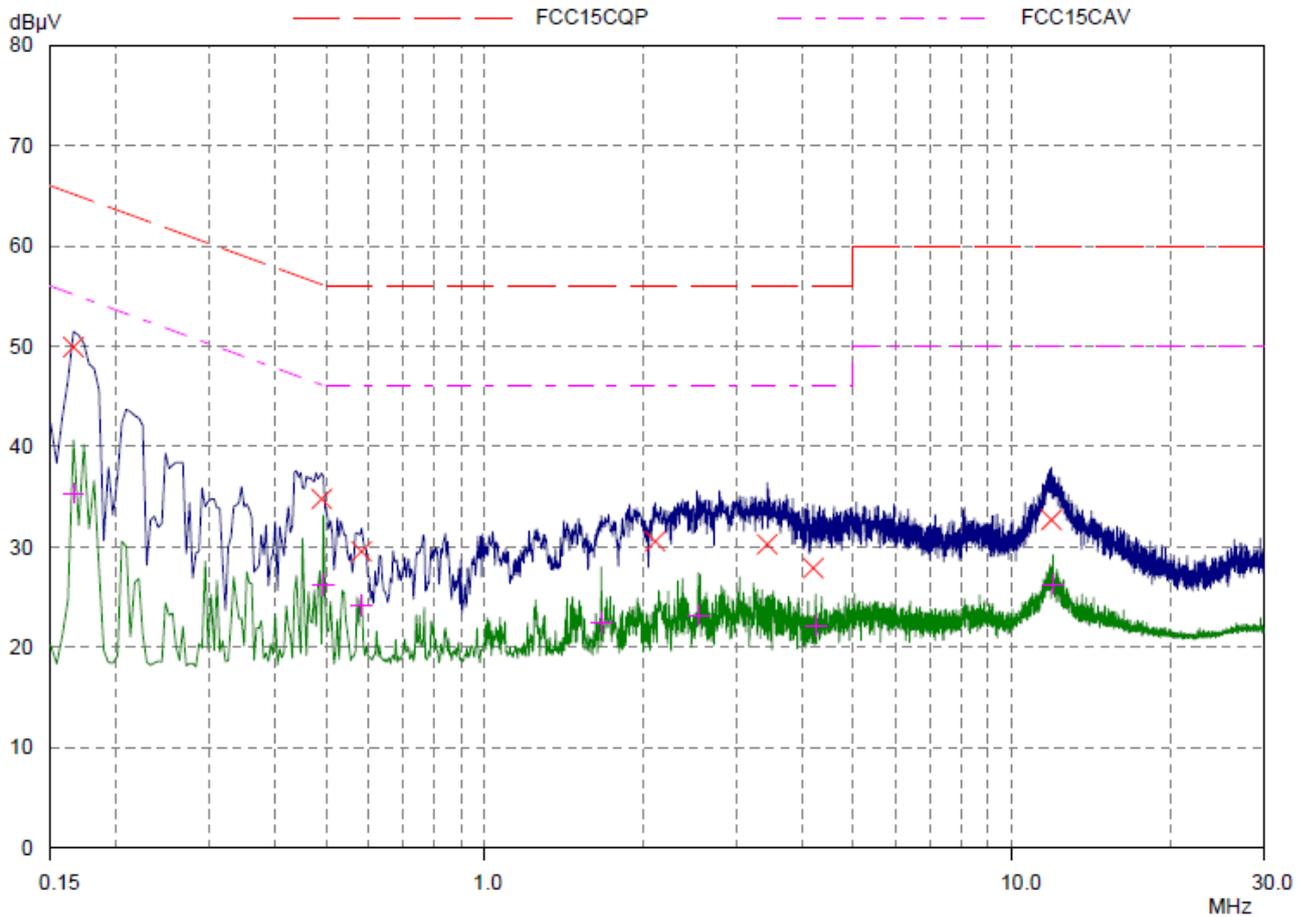
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.17343	34.37	54.79	20.42	L1	gnd
0.4625	27.26	46.65	19.39	L1	gnd
0.5875	22.21	46.00	23.79	L1	gnd
1.94296	22.78	46.00	23.22	L1	gnd
2.36484	23.72	46.00	22.28	L1	gnd
4.59531	22.59	46.00	23.41	L1	gnd
11.84531	24.55	50.00	25.45	L1	gnd

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Final Measurement Results

Frequency MHz	QP Level dBμV	QP Limit dBμV	QP Delta dB	Phase -	PE -
0.16562	49.94	65.18	15.24	N	gnd
0.48984	34.79	56.17	21.38	N	gnd
0.58359	29.56	56.00	26.44	N	gnd
2.10312	30.56	56.00	25.44	N	gnd
3.43515	30.25	56.00	25.75	N	gnd
4.19687	27.89	56.00	28.11	N	gnd
11.88046	32.69	60.00	27.31	N	gnd

Frequency MHz	AV Level dBμV	AV Limit dBμV	AV Delta dB	Phase -	PE -
0.16562	35.36	55.18	19.82	N	gnd
0.49375	26.24	46.10	19.86	N	gnd
0.58359	24.18	46.00	21.82	N	gnd
1.66171	22.44	46.00	23.56	N	gnd
2.53671	23.21	46.00	22.79	N	gnd
4.24375	22.15	46.00	23.85	N	gnd
11.95859	26.26	50.00	23.74	N	gnd

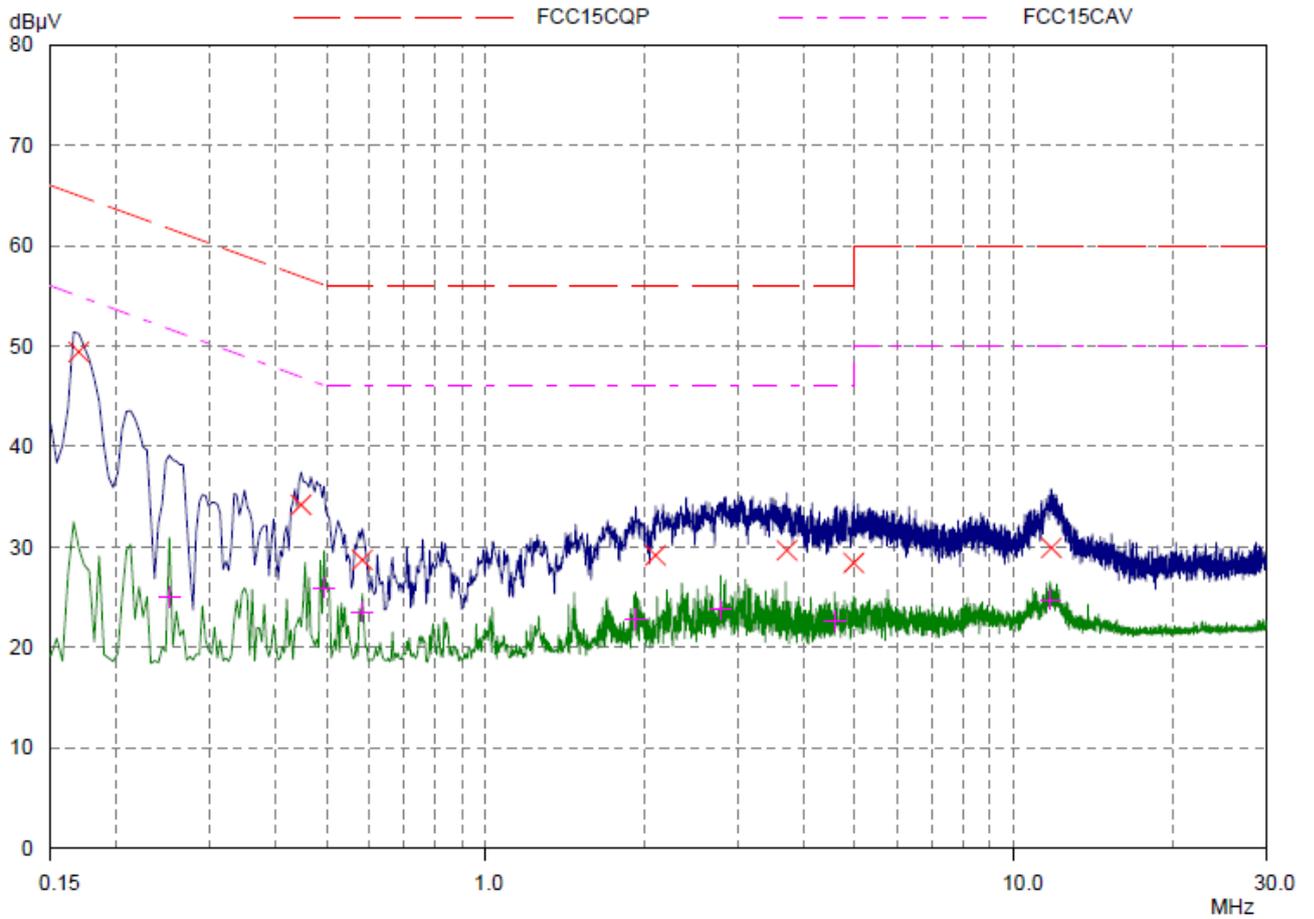
N Line

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Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.16953	49.44	64.98	15.54	L1	gnd
0.44687	34.21	56.93	22.72	L1	gnd
0.58359	28.72	56.00	27.28	L1	gnd
2.09531	29.18	56.00	26.82	L1	gnd
3.7164	29.67	56.00	26.33	L1	gnd
4.97421	28.42	56.00	27.58	L1	gnd
11.7789	29.92	60.00	30.08	L1	gnd

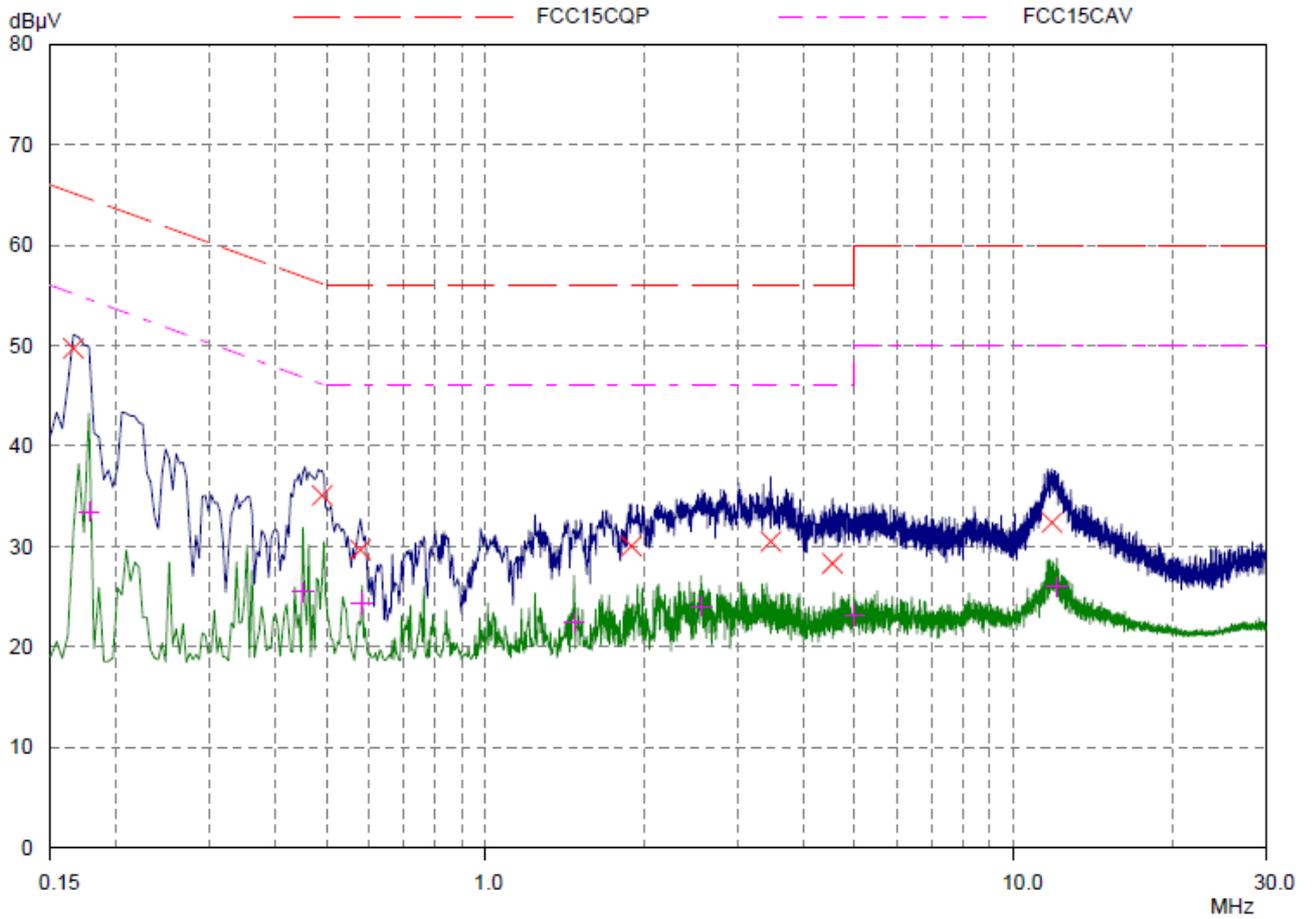
Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.25156	25.05	51.71	26.66	L1	gnd
0.49375	25.94	46.10	20.16	L1	gnd
0.58359	23.55	46.00	22.45	L1	gnd
1.92343	22.78	46.00	23.22	L1	gnd
2.78281	23.79	46.00	22.21	L1	gnd
4.57578	22.64	46.00	23.36	L1	gnd
11.7164	24.76	50.00	25.24	L1	gnd

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Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.16562	49.72	65.18	15.46	N	gnd
0.48984	35.09	56.17	21.08	N	gnd
0.57968	29.66	56.00	26.34	N	gnd
1.88828	30.04	56.00	25.96	N	gnd
3.4664	30.49	56.00	25.51	N	gnd
4.53671	28.31	56.00	27.69	N	gnd
11.81796	32.38	60.00	27.62	N	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.17734	33.47	54.61	21.14	N	gnd
0.45078	25.46	46.86	21.40	N	gnd
0.58359	24.32	46.00	21.68	N	gnd
1.47031	22.41	46.00	23.59	N	gnd
2.55625	24.05	46.00	21.95	N	gnd
4.98984	23.12	46.00	22.88	N	gnd
12.07187	25.99	50.00	24.01	N	gnd

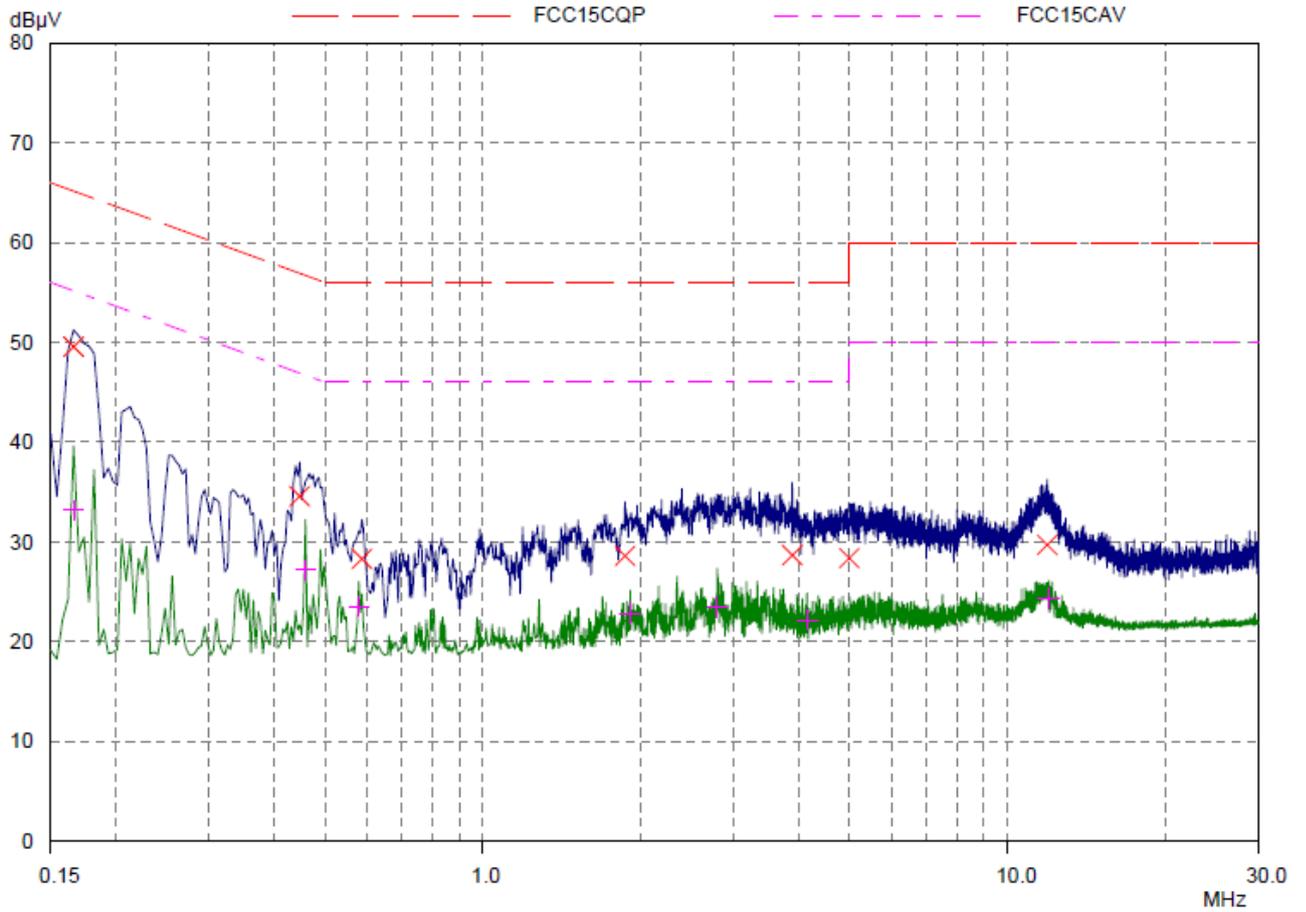
N Line

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Final Measurement Results

Frequency MHz	QP Level dBμV	QP Limit dBμV	QP Delta dB	Phase -	PE -
0.16562	49.56	65.18	15.62	L1	gnd
0.44687	34.59	56.93	22.34	L1	gnd
0.5875	28.31	56.00	27.69	L1	gnd
1.86484	28.60	56.00	27.40	L1	gnd
3.88437	28.68	56.00	27.32	L1	gnd
4.98984	28.36	56.00	27.64	L1	gnd
11.90781	29.71	60.00	30.29	L1	gnd

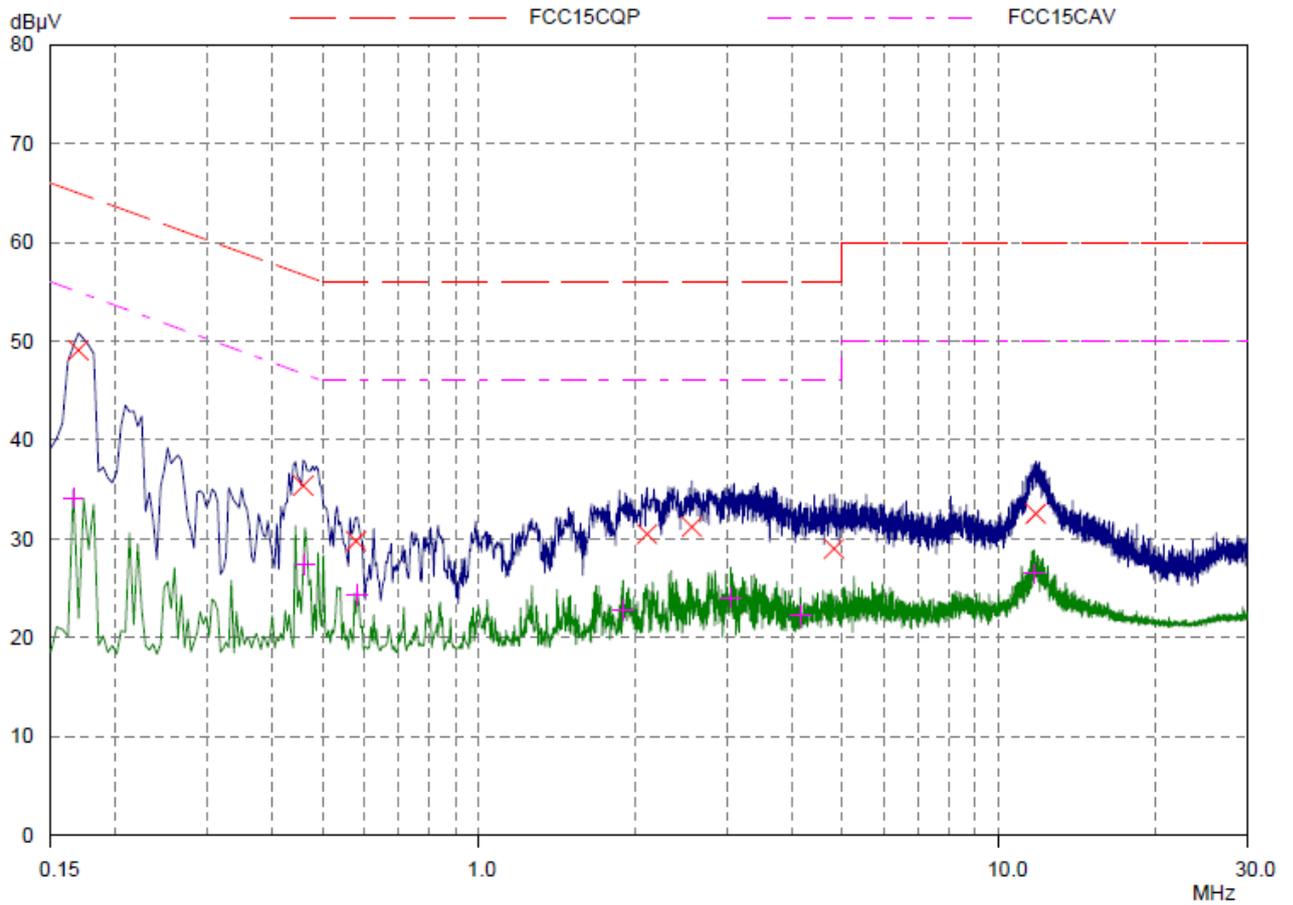
Frequency MHz	AV Level dBμV	AV Limit dBμV	AV Delta dB	Phase -	PE -
0.16562	33.16	55.18	22.02	L1	gnd
0.45859	27.19	46.72	19.53	L1	gnd
0.57968	23.55	46.00	22.45	L1	gnd
1.90781	22.84	46.00	23.16	L1	gnd
2.79453	23.48	46.00	22.52	L1	gnd
4.14609	22.20	46.00	23.80	L1	gnd
11.98593	24.35	50.00	25.65	L1	gnd

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Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.16953	49.08	64.98	15.90	N	gnd
0.45859	35.39	56.72	21.33	N	gnd
0.57968	29.78	56.00	26.22	N	gnd
2.10312	30.48	56.00	25.52	N	gnd
2.56796	31.20	56.00	24.80	N	gnd
4.81796	28.99	56.00	27.01	N	gnd
11.775	32.54	60.00	27.46	N	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.16562	34.16	55.18	21.02	N	gnd
0.4625	27.45	46.65	19.20	N	gnd
0.58359	24.36	46.00	21.64	N	gnd
1.89218	22.77	46.00	23.23	N	gnd
3.04843	24.08	46.00	21.92	N	gnd
4.15	22.32	46.00	23.68	N	gnd
11.70078	26.50	50.00	23.50	N	gnd

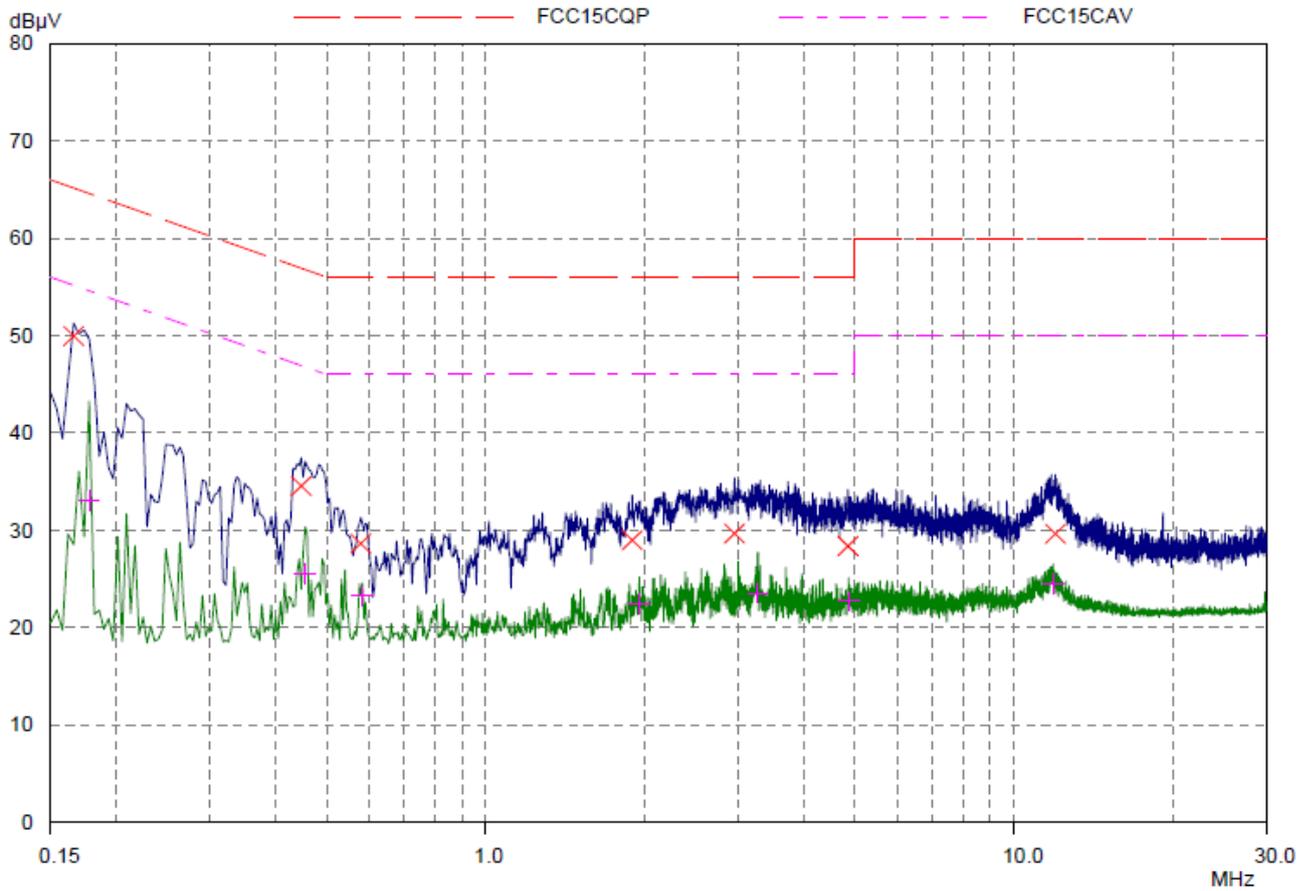
N Line

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Final Measurement Results

Frequency MHz	QP Level dBμV	QP Limit dBμV	QP Delta dB	Phase -	PE -
0.16562	49.96	65.18	15.22	L1	gnd
0.44687	34.55	56.93	22.38	L1	gnd
0.57968	28.64	56.00	27.36	L1	gnd
1.89218	29.00	56.00	27.00	L1	gnd
2.95468	29.69	56.00	26.31	L1	gnd
4.84531	28.38	56.00	27.62	L1	gnd
11.97421	29.64	60.00	30.36	L1	gnd

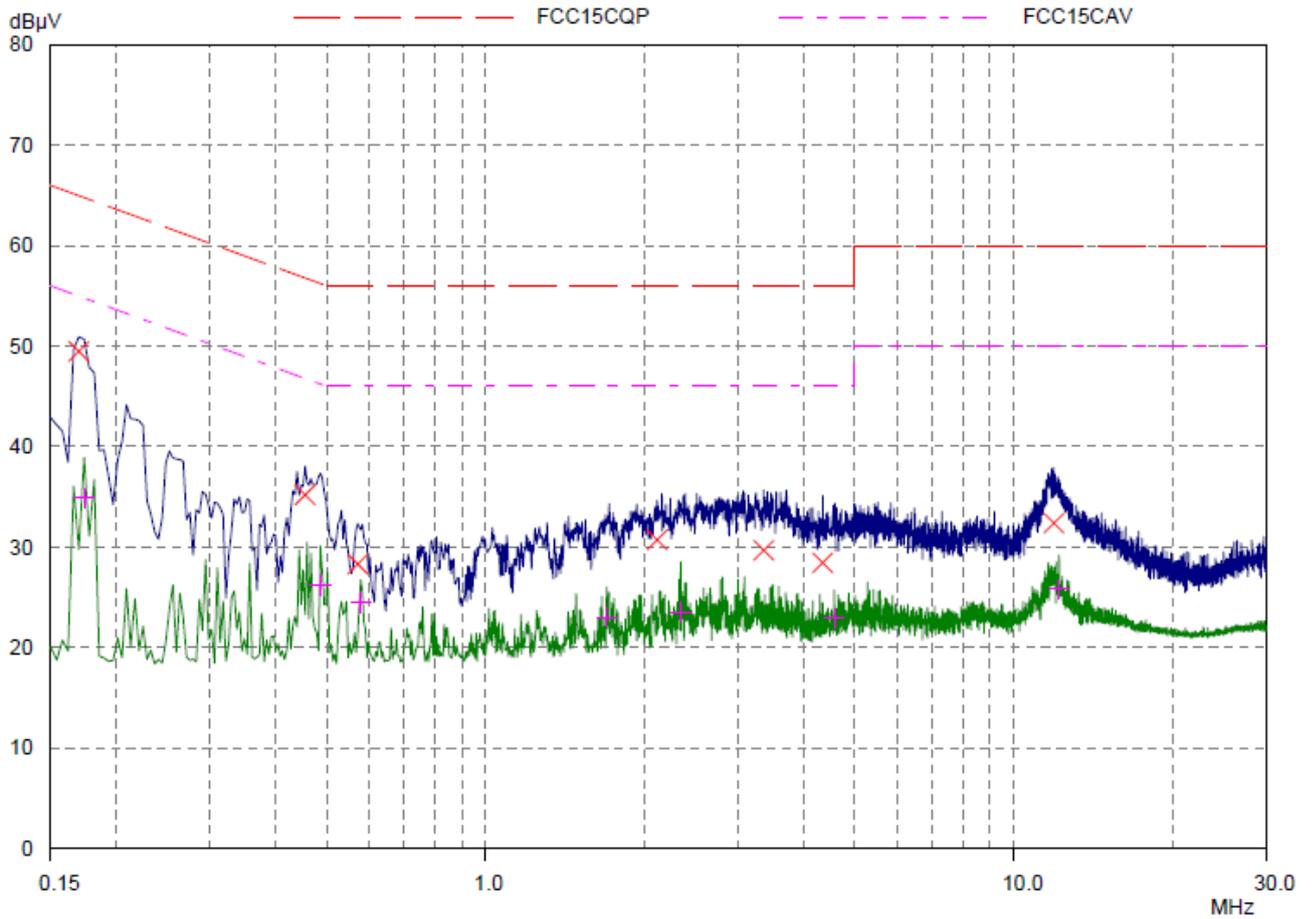
Frequency MHz	AV Level dBμV	AV Limit dBμV	AV Delta dB	Phase -	PE -
0.17734	33.09	54.61	21.52	L1	gnd
0.45468	25.54	46.79	21.25	L1	gnd
0.58359	23.25	46.00	22.75	L1	gnd
1.95078	22.49	46.00	23.51	L1	gnd
3.27109	23.56	46.00	22.44	L1	gnd
4.86093	22.75	46.00	23.25	L1	gnd
11.85703	24.55	50.00	25.45	L1	gnd

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Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.16953	49.48	64.98	15.50	N	gnd
0.45468	35.19	56.79	21.60	N	gnd
0.57187	28.30	56.00	27.70	N	gnd
2.11093	30.72	56.00	25.28	N	gnd
3.35703	29.69	56.00	26.31	N	gnd
4.34531	28.44	56.00	27.56	N	gnd
11.9	32.39	60.00	27.61	N	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.17343	34.90	54.79	19.89	N	gnd
0.48593	26.24	46.24	20.00	N	gnd
0.57968	24.50	46.00	21.50	N	gnd
1.69296	23.02	46.00	22.98	N	gnd
2.3375	23.55	46.00	22.45	N	gnd
4.56796	22.93	46.00	23.07	N	gnd
12.18125	25.81	50.00	24.19	N	gnd

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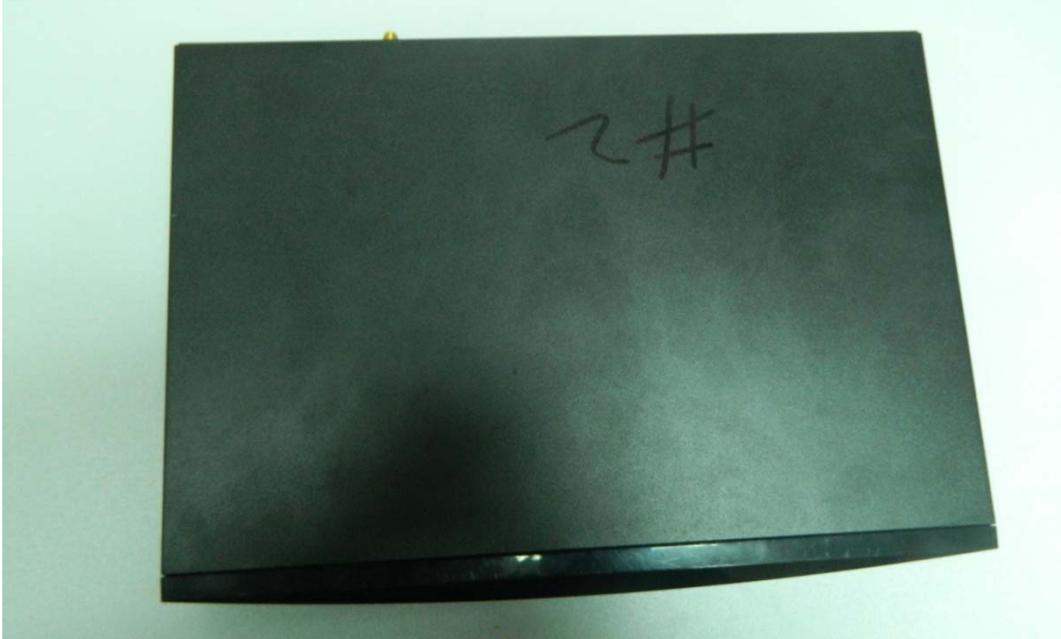
4. Main Test Instruments

No	Name	Type	Manufacturer	Serial Number	Calibration Date	Expiration Time	Valid Period
01	BT Base Station Simulator	CBT	R&S	100271	2014-05-26	2015-05-25	1 year
02	Loop Antenna	FMZB1516	SCHWARZBECK	237	2014-06-29	2016-06-28	2 years
03	EMI Test Receiver	ESCS30	R&S	100138	2014-12-17	2015-12-16	1 year
04	LISN	ENV216	R&S	101171	2014-12-17	2015-12-16	1 year
05	EMI Test Receiver	ESCI	R&S	100948	2014-05-26	2015-05-25	1 year
06	TRILOG Broadband Antenna	VULB 9163	Schwarzbeck	9163-201	2013-11-25	2016-11-24	3 years
07	Double Ridged Waveguide Horn Antenna	HF907	R&S	100126	2012-07-02	2015-07-01	3 years
08	PSG Analog Signal Generator	E8257D	Agilent	MY49281101	2014-05-26	2015-05-25	1 year
09	ESG Vector Signal Generator	E4438C	Agilent	MY49070900	2014-05-26	2015-05-25	1 year
10	Spectrum Analyzer	E4445A	Agilent	MY46181146	2014-05-26	2015-05-25	1 year
11	Power Splitter	SHX-GF2-2-13	Hua Xiang	10120101	NA	NA	NA
12	MOB COMMS DC SUPPLY	66319D	Agilent	MY43004105	2014-05-26	2015-05-25	1 year
13	Power Sensor	E9304A	Agilent	MY50220022	2014-05-26	2015-05-25	1 year
14	Power Meter	E4418B	Agilent	MY50000623	2014-05-26	2015-05-25	1 year
15	Vibration table	ESS-050-120	dongling	D1007126	2013-08-21	2016-08-20	3 years
16	Spectrum Analyzer	FSV30	R&S	100815	2014-12-18	2015-12-17	1 year
17	Standard Gain Horn	3160-09	ETS-Lindgren	00102644	2012-05-20	2015-05-20	3 years
18	RF Cable	SMA 15cm	Agilent	0001	2015-02-09	2015-04-08	2 Months

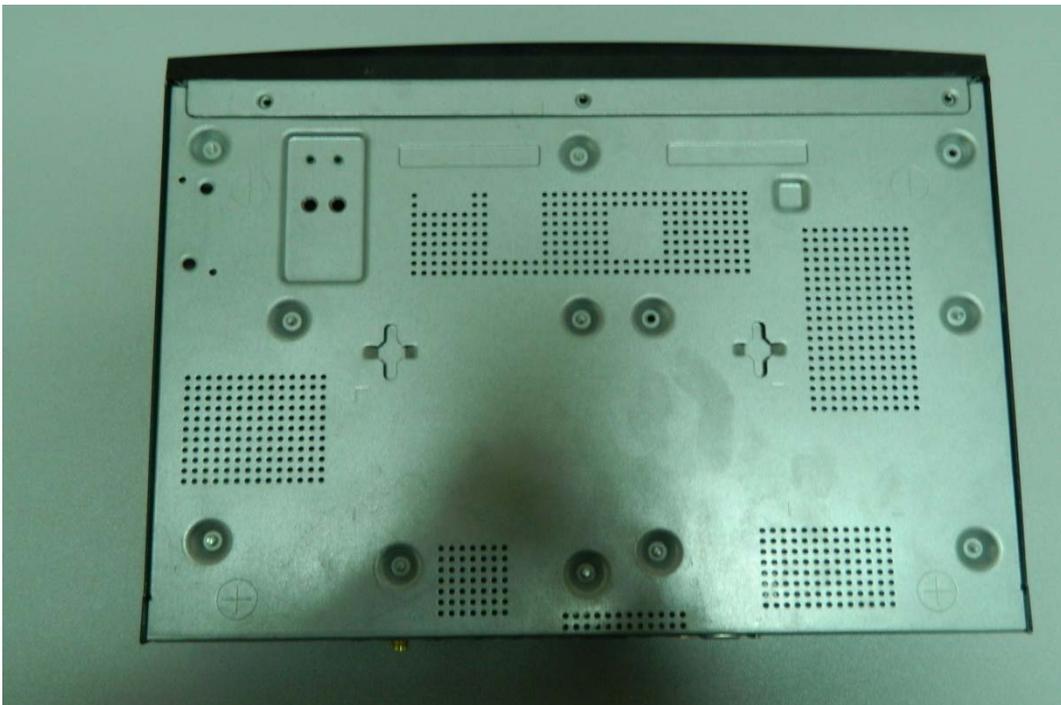
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ANNEX A: EUT Appearance and Test Setup

A.1 EUT Appearance



Picture 1-1: EUT



Picture 1-2: EUT

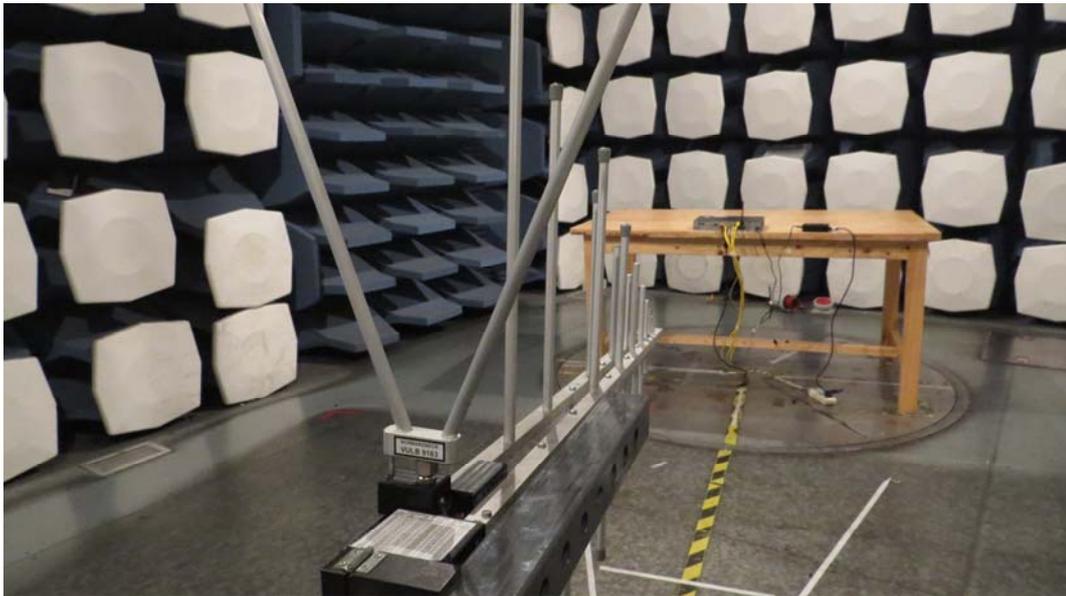
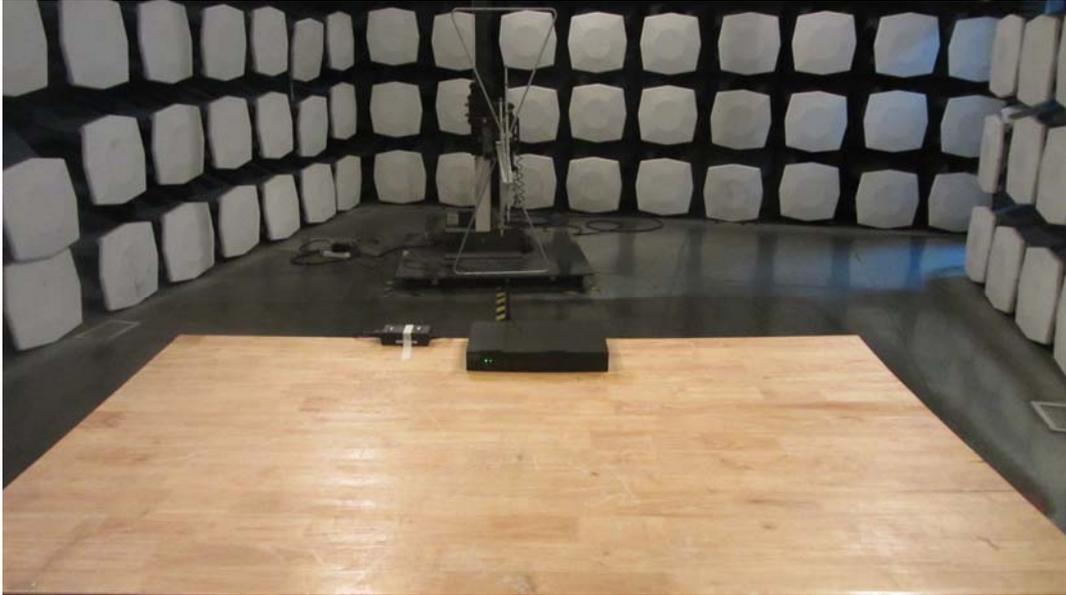
Picture 1 EUT

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A.2 Test Setup

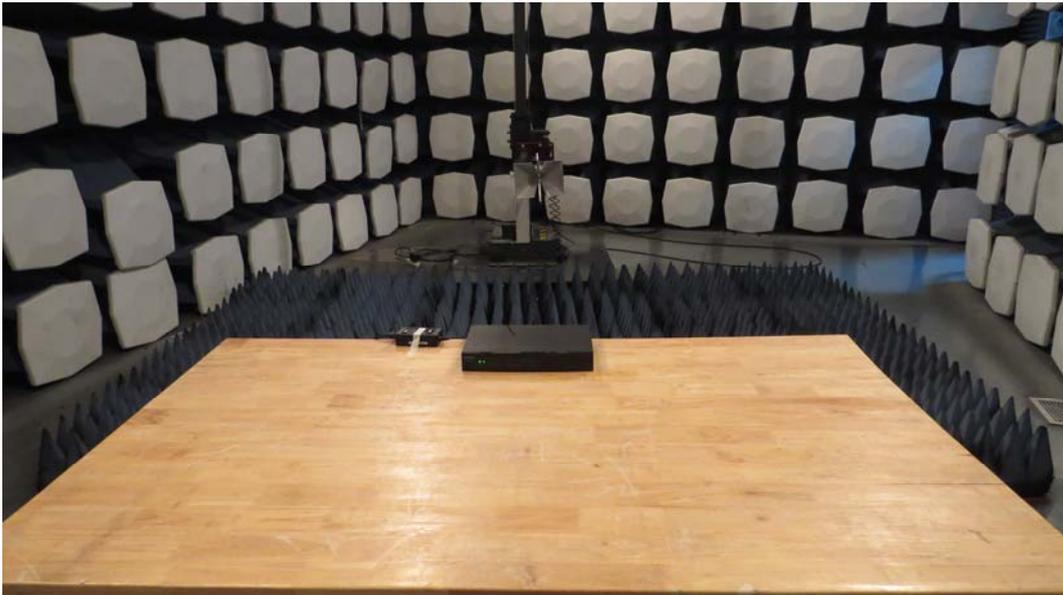


30M Hz-1GHz

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Above 1GHz

Picture 2 Radiated Emission Test Setup

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Picture 3 Conducted Emission Test Setup