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# TEST REPORT For FCC

Test Report No. : CTK-2012-01037  
Date of Issue : October 05, 2012  
FCC ID : AK8DRBTN200  
Model/Type No. : DR-BTN200  
Kind of Product : Wireless Stereo Headset  
Applicant : Sony Corporation  
Applicant Address : 1-7-1 Konan, Minato-ku, Tokyo 108-0075, Japan  
Manufacturer : Cresyn Co., Ltd.  
Manufacturer Address : 8-22, Jamwon-dong, Seocho-gu, Seoul , Korea  
Contact Person : Kazunaga Kinjo / Senior Product Safety Manager  
Telephone : +81-3-5769-5640  
Received Date : September 20, 2012  
Test period : Start : September 24, 2012 End : October 05, 2012

The test results presented in this report relate only to the object tested.

Tested by

Won-Jae, Hwang  
Test Engineer  
Date: October 05, 2012

Reviewed by

Young-Joon, Park  
Technical Manager  
Date: October 05, 2012



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## REPORT REVISION HISTORY

Date	Revision	Page No
October 05, 2012	Issued (CTK-2012-01037)	All

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## 1.0 General Product Description

Equipment model name	DR-BTN200
Serial number	Prototype
EUT condition	Pre-production, not damaged
Antenna type	Chip antenna      Gain   -0.164 dBi
Frequency Range	2402 MHz - 2480 MHz
RF power	1.361 dBm Peak Conducted (GFSK) 1.837 dBm Peak Conducted (DQPSK)
Number of channels	79
Channel Spacing	1 MHz
Channel Access Protocol	Frequency Hopping
Type of Modulation	GFSK(1 Mbps), DQPSK(2 Mbps)
Power Source	DC 3.7 V (Lithium Ion Rechargeable Battery)

### 1.1 Tested Frequency

	<b>LOW</b>	<b>MID</b>	<b>HIGH</b>
<b>Frequency (MHz)</b>	2402	2441	2480

### 1.2 Tested Mode

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

<b>Tested Ch</b>	<b>Modulation Technology</b>	<b>Modulation Type</b>	<b>Packet Type</b>
Low, Mid, High	FHSS	GFSK	DH 5
Low, Mid, High	FHSS	DQPSK	2DH 5



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### 1.3 Device Modifications

The following modifications was applied by the applicant:

Not applicable

### 1.4 Peripheral Devices

Device	Manufacturer	Model No.	Serial No.
Note Computer	DELL INC.	Inspiron 6400	-

### 1.5 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

### 1.6 Test Facility

The measurement facility is located at 386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea.



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## 1.7 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 m & 10 m OATS, 3 m & 10 m SAC and Conducted Test Site to perform FCC Part 15/18 measurements	 805871
JAPAN	VCCI	10 m OATS, 3 m & 10 m SAC and Conducted Test Site	 R-948, C-986, T-1843
KOREA	KCC	EMI (10 m OATS, 10 m SAC and Conducted Test Site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and Interruptions)	 No. 51, KR0025
International	KOLAS	EMC	



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## 2.0 Summary of tests

FCC Part Section(s)	Parameter	Limit	Test Condition	Status (note 1)
15.247(a)	Carrier Frequency Separation	> 25 kHz	Conducted	C
15.247(a)	Number of Hopping Frequencies	> 15 hops		C
15.247(a)	20 dB Bandwidth	NA		C
15.247	Dwell Time	< 0.4 seconds		C
15.247(b)	Transmitter Output Power	< 0.125 Watts		C
15.247(d)	Conducted Spurious emission	> 20 dBc		C
15.247(d)	Band Edge	> 20 dBc		C
15.209	Field Strength of Harmonics	15.209(a)	Radiated	C
15.207	AC Conducted Emissions	15.207(a)	Line Conducted	NA

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

The sample was tested according to the following specification:  
- FCC Part 15.247, ANSI C63.4-2003

## 2.1 Transmitter Requirements

### 2.1.1 Carrier Frequency Separation

#### Test Location

RF Test Room

#### Test Procedures

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna terminal, while EUT has its hopping function enabled. After the trace being stable, the reading value between the peaks of the adjacent channels using the marker-delta function was recorded as the measurement results.

The spectrum analyzer is set to:

Span = 3 MHz (wide enough to capture the peaks of two adjacent channels)

RBW = 30 kHz ( $\geq$  1% of the span) Sweep = auto

VBW = 30 kHz ( $\geq$  RBW) Detector function = peak

Trace = max hold

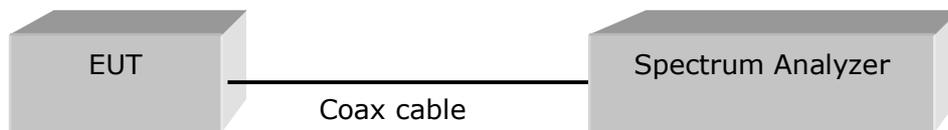


Figure 1 : Measurement setup for the carrier frequency separation

#### Limit

§15.247(a)(1) Frequency hopping system operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-third of 20dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

#### Test Results

##### Test mode : GFSK, CFG PKT Packet Type : 15 Packet Size : 339(DH5)

Channel	Adjacent Hopping Channel Separation (kHz)	Two-third of 20dB bandwidth (kHz)	Minimum Bandwidth (kHz)	Result
2441MHz	1015	628.7	25	Complies

##### Test mode : DQPSK, CFG PKT Packet Type : 30 Packet Size : 679(2DH5)

Channel	Adjacent Hopping Channel Separation (kHz)	Two-third of 20dB bandwidth (kHz)	Minimum Bandwidth (kHz)	Result
2441MHz	1010	871.3	25	Complies

See next pages for actual measured spectrum plots.



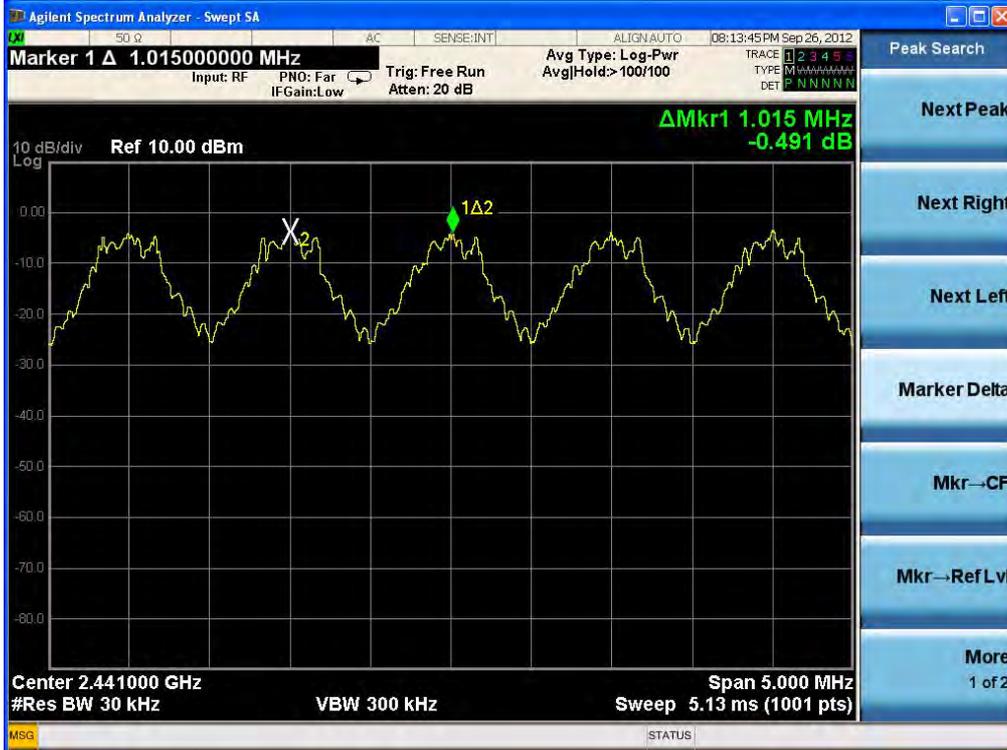
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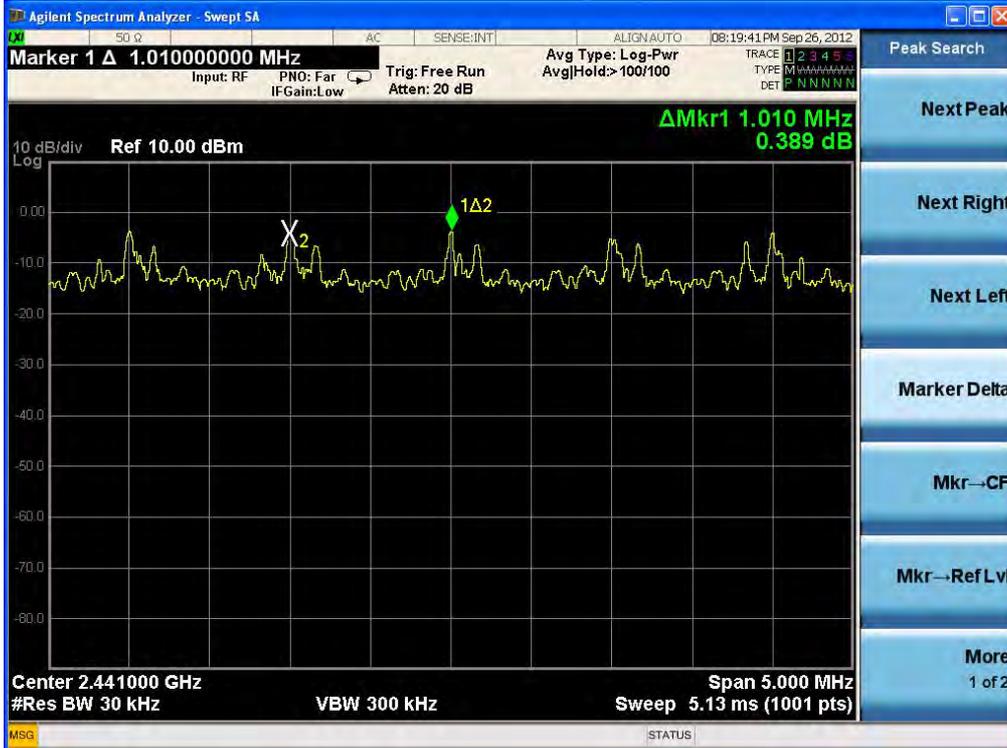
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## Carrier Frequency Separation

Data Rate : GFSK



Data Rate : DQPSK





## 2.1.2 Number of Hopping Frequencies

### Test Location

RF Test Room

### Test Procedures

The number of hopping frequencies was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

The spectrum analyzer is set to:

Frequency range      1: Start = 2389.5 MHz, Stop = 2439.5 MHz  
                                 2: Start = 2439.5 MHz, Stop = 2489.5 MHz

Span = 50 MHz  
RBW = 300 kHz (≥ 1% of the span)      Sweep = auto  
VBW = 300 kHz (≥ RBW)                    Detector function = peak  
Trace = max hold



### Limit

§15.247(a)(1)(iii) For frequency hopping system operating in the 2400-2483.5 MHz band shall use at least 15 hopping frequencies.

### Test Results

**Test mode : GFSK, CFG PKT Packet Type : 15 Packet Size : 339(DH5)**

Total number of Hopping Channels	Result
79	Complies

**Test mode : DQPSK, CFG PKT Packet Type : 30 Packet Size : 679(2DH5)**

Total number of Hopping Channels	Result
79	Complies

See next pages for actual measured spectrum plots.

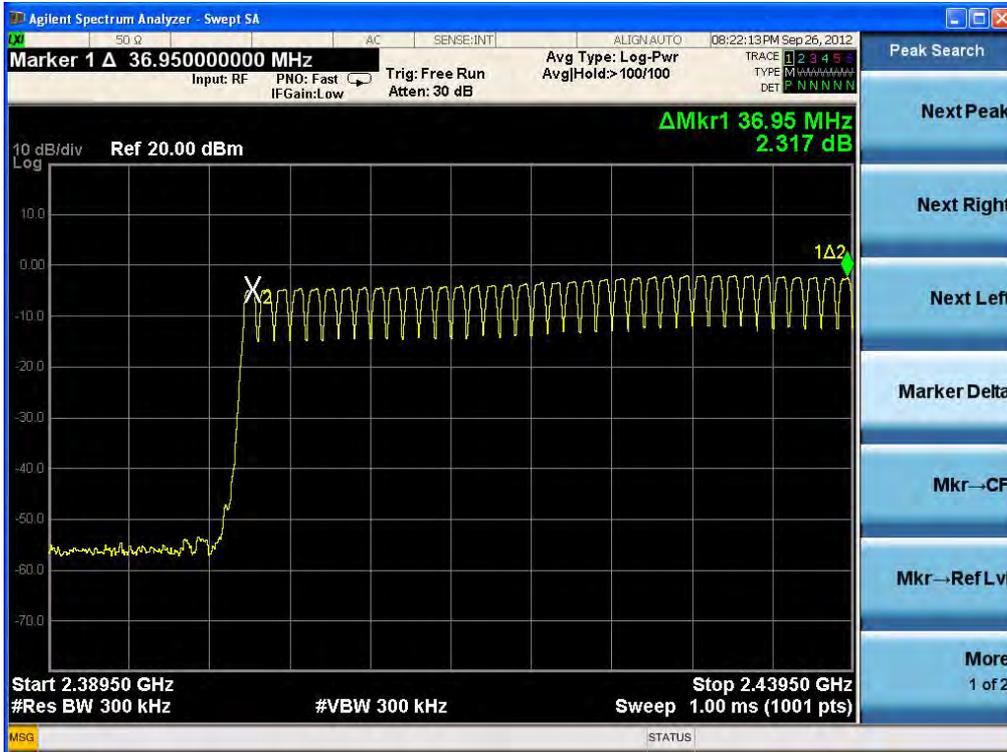


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## Number of Hopping Frequencies(GFSK)





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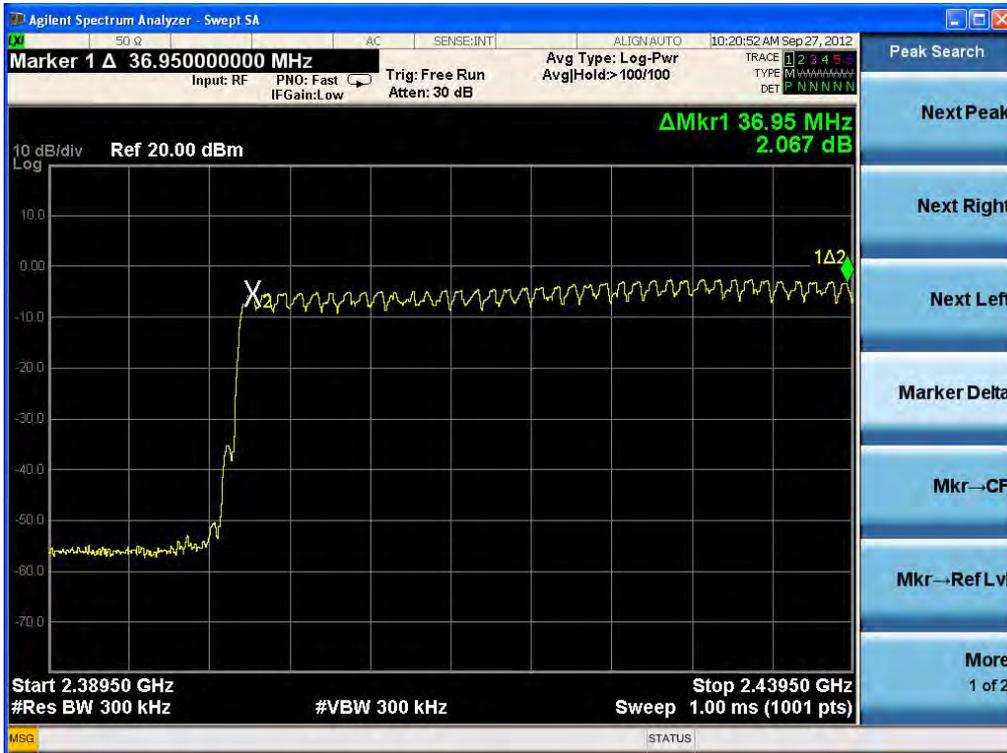
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## Number of Hopping Frequencies(DQPSK)





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### 2.1.3 20 dB bandwidth

#### Test Location

RF Test Room

#### Test Procedures

The bandwidth at 20 dB below the highest inband spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels. After the trace being stable, Use the marker-to peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

#### The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

Span = 2 MHz (approximately 2 or 3 times of the 20 dB bandwidth)

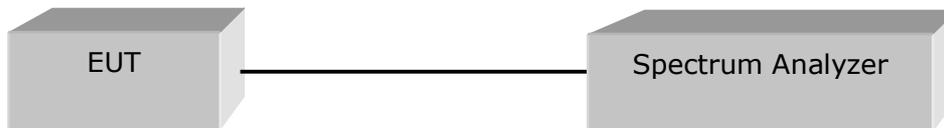
RBW = 30 kHz ( $\geq 1\%$  of the span)

Sweep = auto

VBW = 30 kHz ( $\geq$  RBW)

Detector function = peak

Trace = max hold



#### Limit

Limit : N/A

**Test Results (20 dB bandwidth)****Test mode : GFSK, CFG PKT Packet Type : 15 Packet Size : 339(DH5)**

Frequency (MHz)	Channel Number.	Measured Bandwidth (MHz)	Result
2402	0	0.943	Complies
2441	39	0.939	Complies
2480	78	0.939	Complies

**Test mode : DQPSK, CFG PKT Packet Type : 30 Packet Size : 679(2DH5)**

Frequency (MHz)	Channel Number.	Measured Bandwidth (MHz)	Result
2402	0	1.296	Complies
2441	39	1.307	Complies
2480	78	1.295	Complies

**Test Results (Occupied Bandwidth)****Test mode : GFSK, CFG PKT Packet Type : 15 Packet Size : 339(DH5)**

Frequency (MHz)	Channel Number.	Measured Bandwidth (MHz)	Result
2402	0	0.861	Complies
2441	39	0.856	Complies
2480	78	0.856	Complies

**Test mode : DQPSK, CFG PKT Packet Type : 30 Packet Size : 679(2DH5)**

Frequency (MHz)	Channel Number.	Measured Bandwidth (MHz)	Result
2402	0	1.193	Complies
2441	39	1.201	Complies
2480	78	1.199	Complies

See next pages for actual measured spectrum plots.



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## 20 dB Bandwidth, Occupied Bandwidth - GFSK





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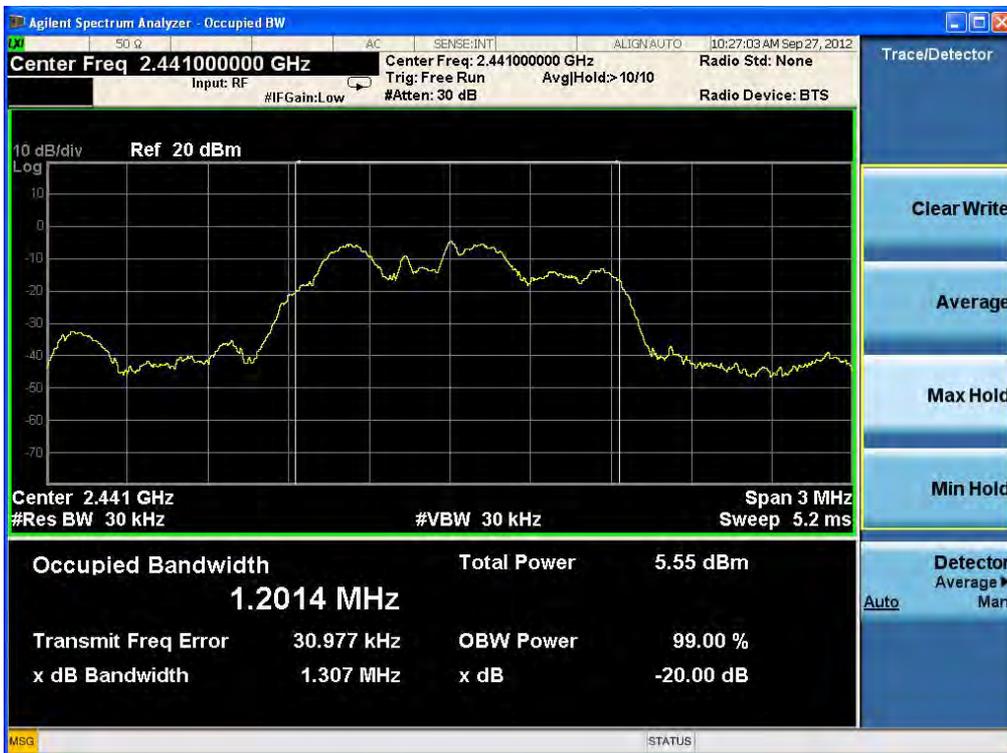
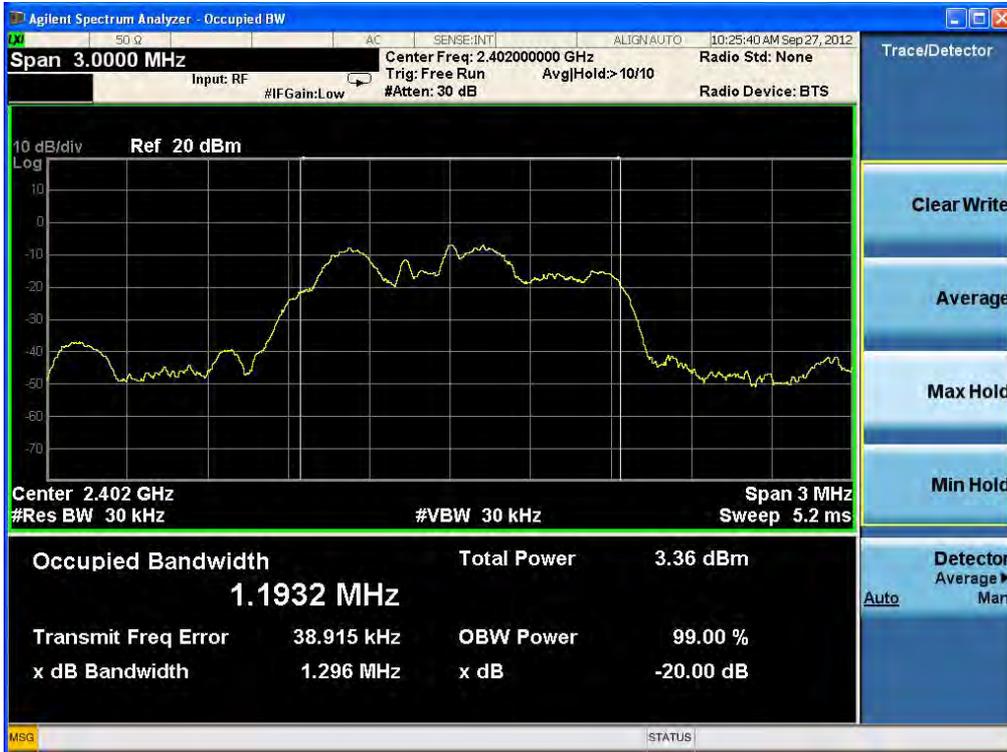
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## 20 dB Bandwidth – DQPSK





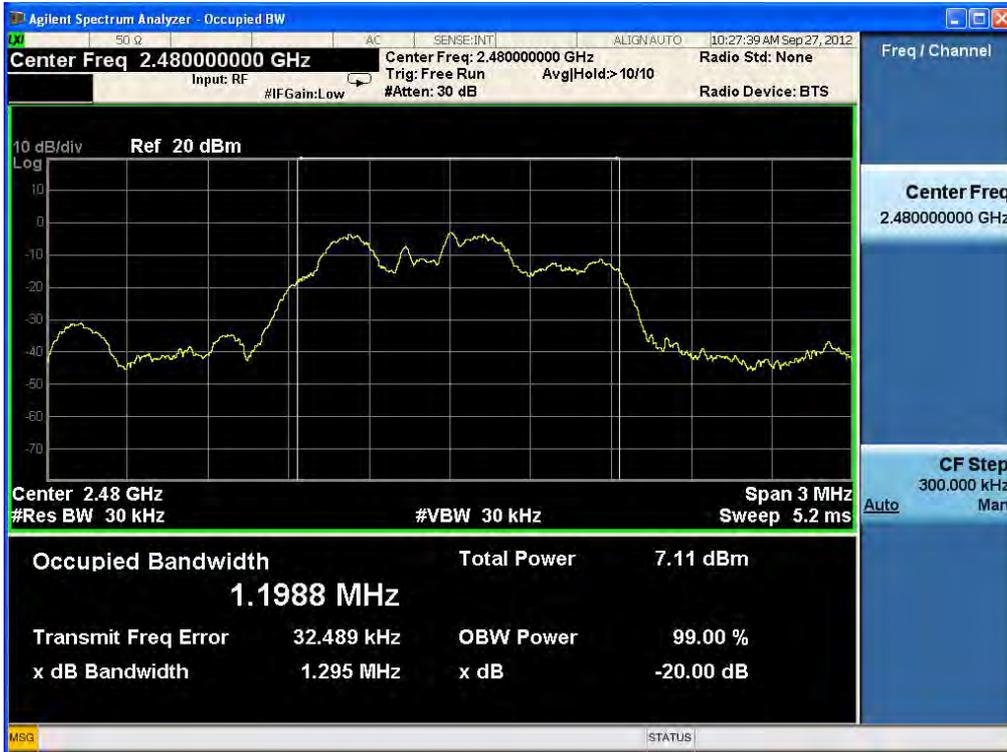
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## 2.1.4 Time of Occupancy (Dwell Time)

### Test Location

RF Test Room

### Test Procedures

The dwell time was measured with a spectrum analyzer connected to the antenna terminal, while EUT has its hopping function enabled.

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in test setup without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of spectrum analyzer on any frequency be measured and set spectrum analyzer to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
4. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
5. Repeat above procedures until all frequencies measured were complete.
6. The DR-BTN200 has 3 type of payload, DH1, DH3, DH5. The hopping rate is 1600 per second.

The spectrum analyzer is set to:

Center frequency = the highest, middle, and the lowest channels

Span = zero

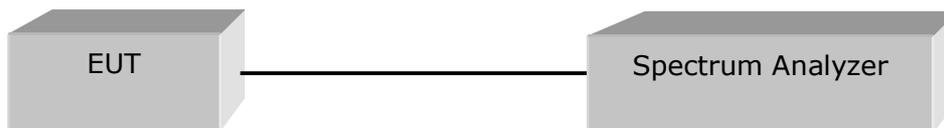
RBW = 1 MHz

Trace = max hold

VBW = 1 MHz ( $\geq$  RBW)

Detector function = peak

Sweep = as necessary to capture the entire dwell time per hopping channel



### Limit

§15.247(a)(1)(iii) For frequency hopping system operating in 2400-2483.5 MHz band, 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.

**Test Results**

Time of occupancy on the TX channel in 31.6 sec = time domain slot length × hop rate ÷  
number of hop per channel × 31.6

**Test mode : GFSK**

Channel Frequency (MHz)	Packet Type	Dwell Time (ms)	Test Results	
			Time of occupancy on the TX channel in 31.6sec (ms)	Result
2441	DH 1	0.380	121.60	Complies
	DH 3	1.640	262.40	Complies
	DH 5	2.885	307.73	Complies

DH1 Dwell time =  $0.380 \text{ ms} \times (1600 \div 2) \div 79 \times 31.6 = 121.20 \text{ ms}$

DH3 Dwell time =  $1.640 \text{ ms} \times (1600 \div 4) \div 79 \times 31.6 = 262.40 \text{ ms}$

DH5 Dwell time =  $2.885 \text{ ms} \times (1600 \div 6) \div 79 \times 31.6 = 307.73 \text{ ms}$

**Test mode : DQPSK**

Channel Frequency (MHz)	Packet Type	Dwell Time (ms)	Test Results	
			Time of occupancy on the TX channel in 31.6sec (ms)	Result
2441	3DH 1	0.390	124.80	Complies
	3DH 3	1.640	262.40	Complies
	3DH 5	2.890	308.27	Complies

2DH1 Dwell time =  $0.390 \text{ ms} \times (1600 \div 2) \div 79 \times 31.6 = 124.80 \text{ ms}$

2DH3 Dwell time =  $1.640 \text{ ms} \times (1600 \div 4) \div 79 \times 31.6 = 262.40 \text{ ms}$

2DH5 Dwell time =  $2.890 \text{ ms} \times (1600 \div 6) \div 79 \times 31.6 = 308.27 \text{ ms}$

See next pages for actual measured spectrum plots.

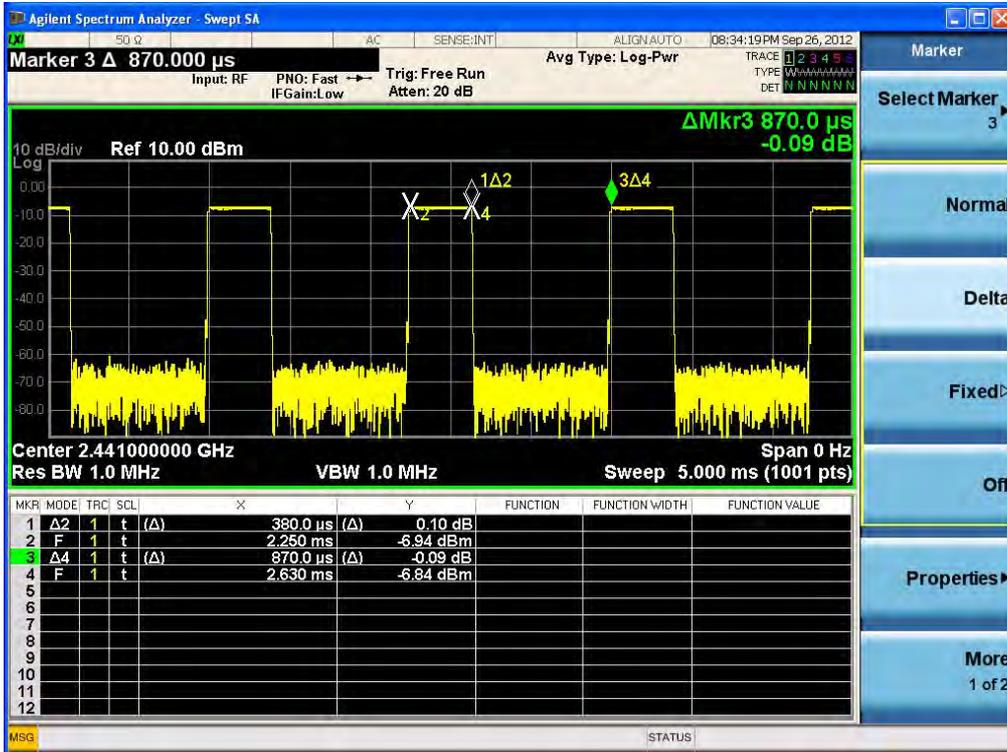


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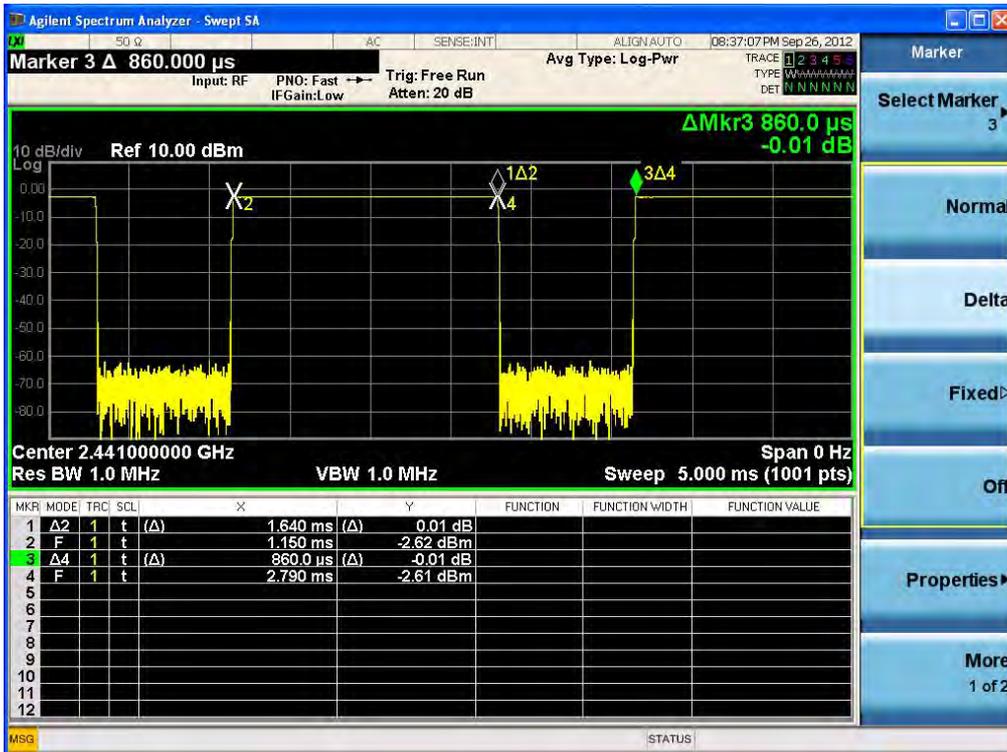
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## Time of Occupancy for PACKET Type DH1(GFSK)



## Time of Occupancy for PACKET Type DH3(GFSK)



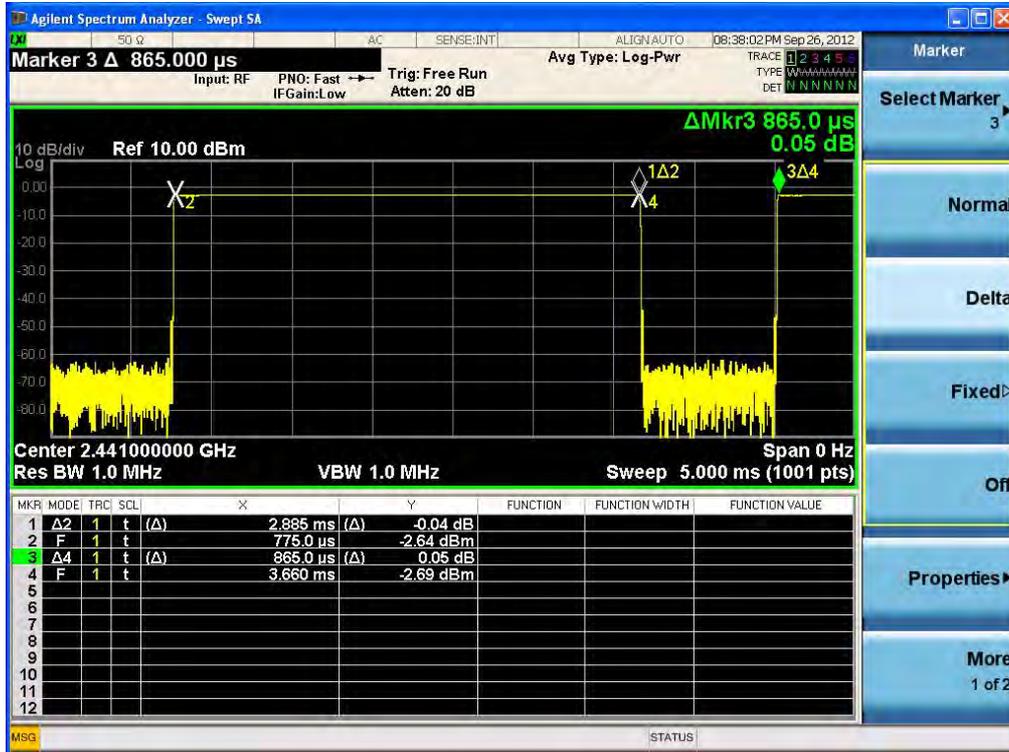


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## Time of Occupancy for PACKET Type DH5(GFSK)



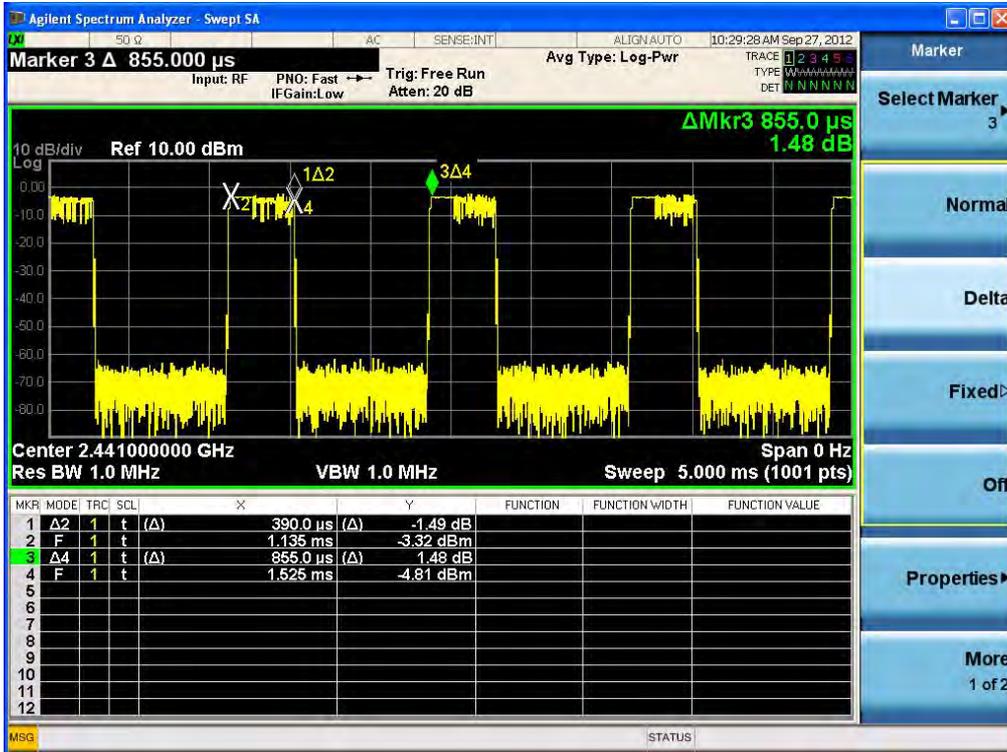


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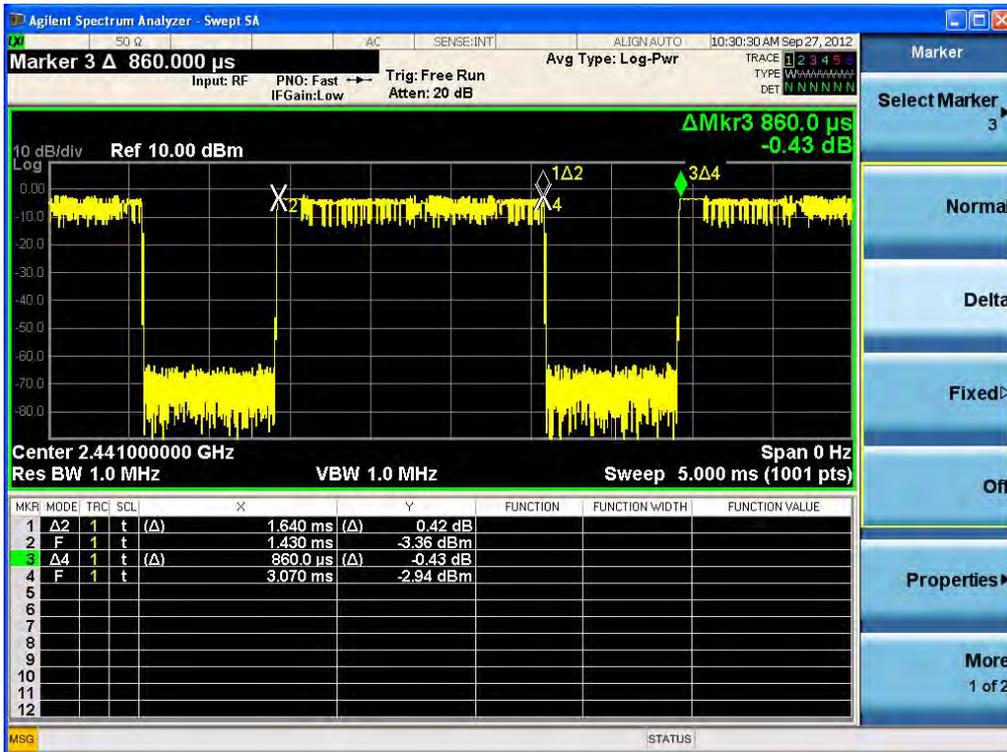
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## Time of Occupancy for PACKET Type 2DH1(DQPSK)



## Time of Occupancy for PACKET Type 2DH3(DQPSK)



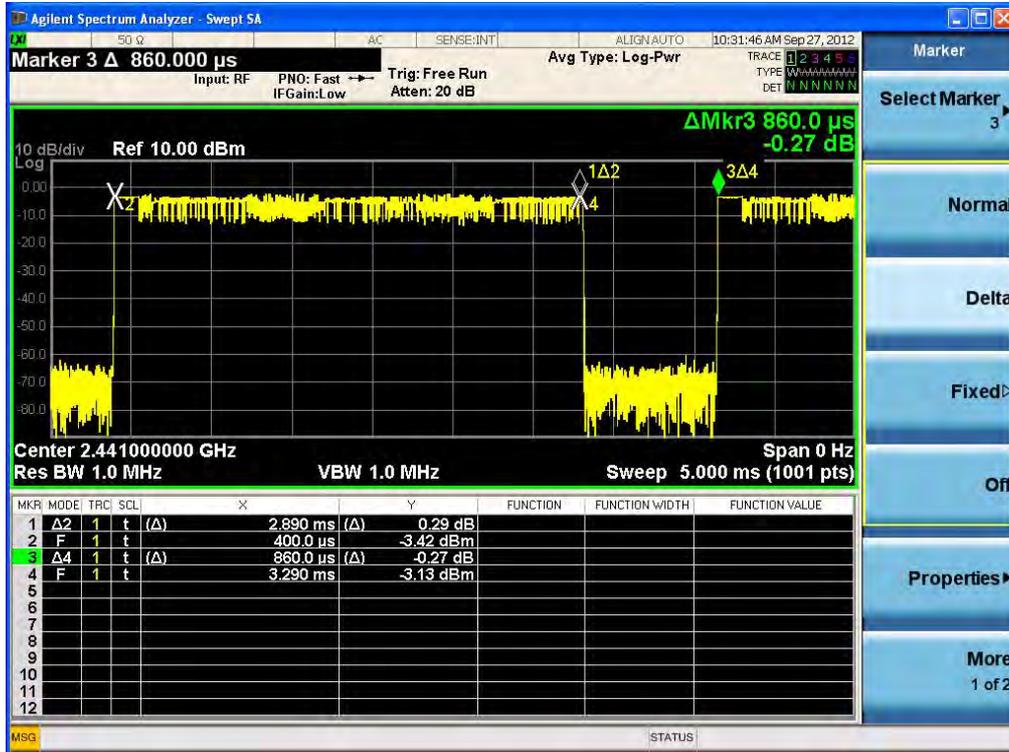


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## Time of Occupancy for PACKET Type 2DH5(DQPSK)



## 2.1.5 Maximum peak Conducted Output Power

### Test Location

RF Test Room

### Test Procedures

The maximum peak conducted output power was measured with a spectrum analyzer connected to the antenna terminal, while EUT has its hopping function disabled at the highest, middle and the lowest available channels.

The spectrum analyzer is set to:

Center frequency = the highest, middle, and the lowest channels

Span = 5 MHz (approximately 5 times of the 20 dB bandwidth)

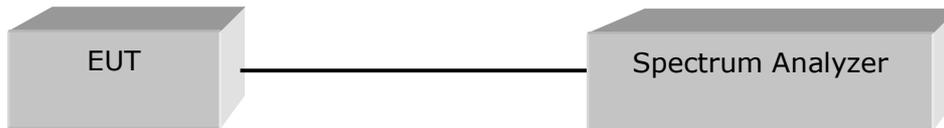
RBW = 1 MHz (greater than the 20 dB bandwidth of the emission being measured)

VBW = 1 MHz ( $\geq$  RBW)

Detector function = peak

Trace = max hold

Sweep = auto



### Limit

§5.247(b)(1) The Maximum Peak Output Power Measurement is 0.125 Watts for frequency hopping system operating in 2400-2483.5 MHz employing at least 15 Hopping channels.

### Test Results

#### Test mode : GPSK, CFG PKT Packet Type : 4 Packet Size : 27(DH1)

Frequency (MHz)	Channel No.	Peak output power(dBm)	Peak output power(mW)	Result
2402	0	-2.386	0.577	Complies
2441	39	-0.177	0.960	Complies
2480	78	1.361	1.368	Complies

#### Test mode : DQPSK, CFG PKT Packet Type : 30 Packet Size : 679(2DH5)

Frequency (MHz)	Channel No.	Peak output power(dBm)	Peak output power(mW)	Result
2402	0	-1.975	0.635	Complies
2441	39	0.144	1.034	Complies
2480	78	1.837	1.527	Complies

See next pages for actual measured spectrum plots.



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## Maximum peak Conducted Output Power - GFSK





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Tel: +82-31-339-9970 Fax: +82-31-339-9855  
www.e-ctk.com

## Maximum peak Conducted Output Power - DQPSK





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## 2.1.6 Band-edge

### Test Location

RF Test Room

### Test Procedures

The bandwidth at 20 dB down from the highest inband spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT has its hopping function disabled at the highest, middle and the lowest available channels.

The spectrum analyzer is set to:

Center frequency = the highest, middle, and the lowest channels

RBW = 100 kHz

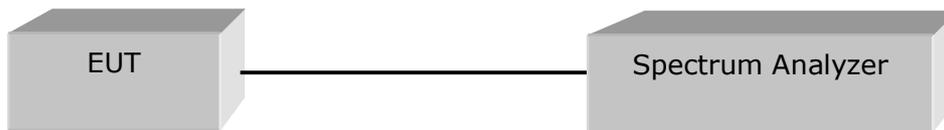
VBW = 100 kHz ( $\geq$  RBW)

Span = 10 MHz

Trace = max hold

Detector function = peak

Sweep = auto



### Limit

> 20 dBc

### Test Results

All conducted emission in any 100 kHz bandwidth outside of the spectrum band was at least 20 dB lower than the highest level of the inband spectral density. Therefore the applying equipment meets the requirement.

See next pages for actual measured spectrum plots.





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## Band - edge (with Hopping) - DQPSK







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Tel: +82-31-339-9970 Fax: +82-31-339-9855  
www.e-ctk.com

## Band - edge (without Hopping) - DQPSK





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386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea  
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## Band – edge (at 20 dB blow) – Low channel Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic (GFSK : Worst-Case)



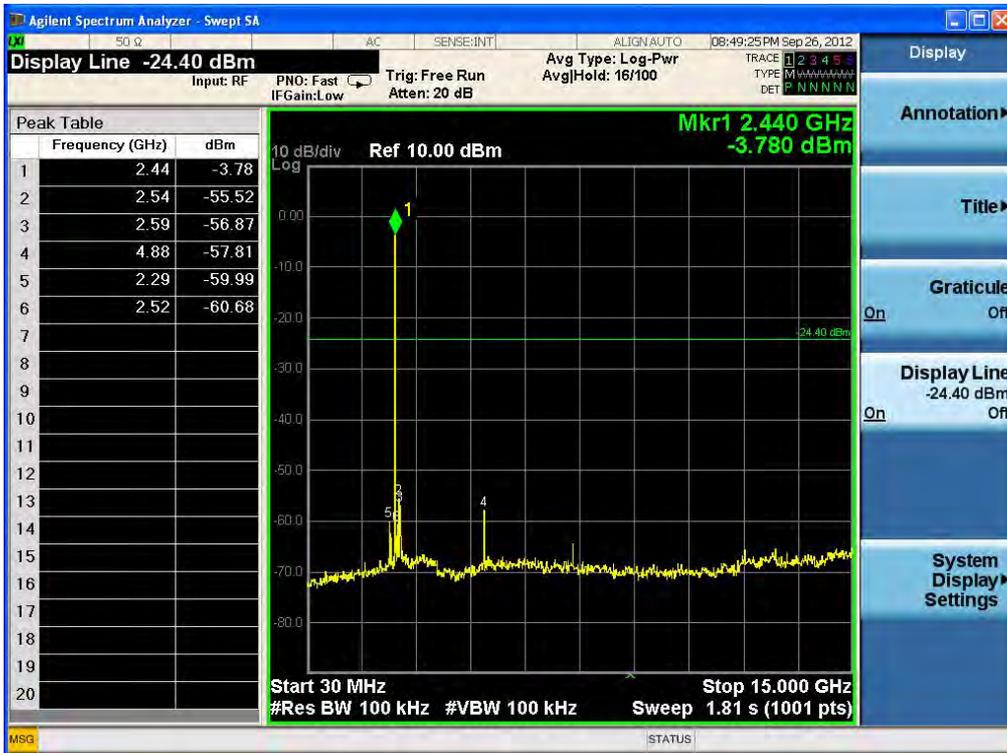


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## Band - edge (at 20 dB blow) - Mid channel Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic (GFSK : Worst-Case)





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## Band – edge (at 20 dB blow) – High channel Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic (GFSK : Worst-Case)









## 2.1.7 Field Strength of Emissions

### Test Location

Testing was performed at a test distance of 3 meter SAC

### Test Procedures

The height of the measuring antenna was varied between 1 to 4 m and the table was rotated a full revolution in order to obtain maximum values of the electric field intensity. The measurement was made in both the vertical and horizontal polarization, and the maximum value is presented in the report.

The spectrum analyzer is set to:

Center frequency = the worst channel

Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic

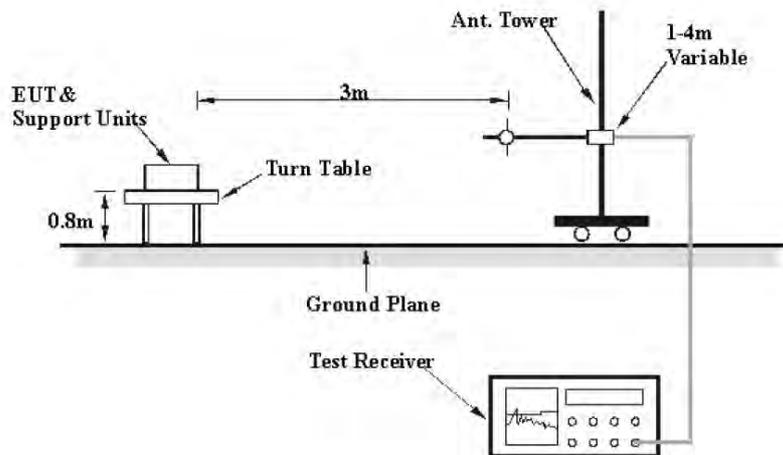
RBW = 120 kHz (30 MHz ~ 1 GHz) VBW ≥ RBW

= 1 MHz (1 GHz ~ 10<sup>th</sup> harmonic)

Span = 100 MHz

Detector function = Quasi-peak

Trace = max hold



### Limit

#### - 15.209(a)

Frequency(MHz)	Field Strength uV/m@3m	Field Strength dBuV/m@3m
30-88	100**	40
88-216	150**	43.5
216-960	200**	46
Above 960	500	54

\*\* Except as provided in 15.209(g).fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72MHz, 76-88MHz, 174-216MHz, 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g.15.231 and 15.241.



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## Test Results

**Test mode : Hopping(DQPSK), CFG PKT Packet Type : 30 Packet Size : 679(2DH5)**

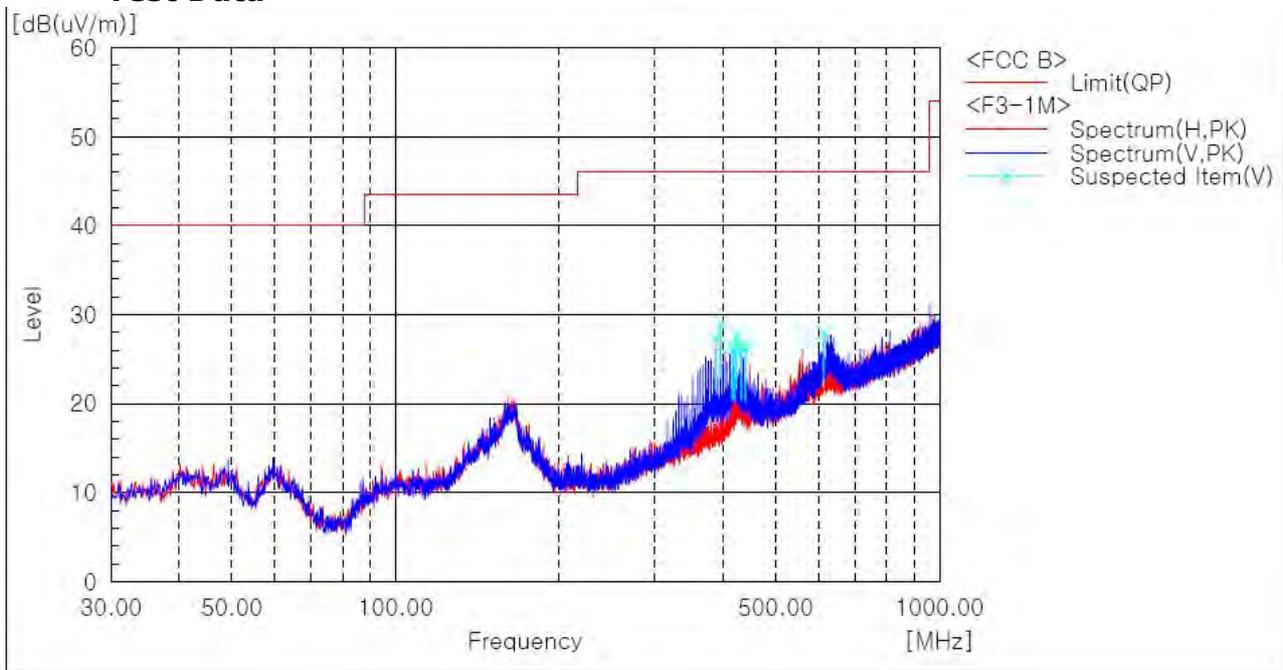
EUT	Bluetooth stereo Headset	Measurement Detail	
Model	DR-BTN200	Frequency Range	Below 1000MHz
Test mode	DQPSK (Worst case)	Detector function	Quasi-Peak / Peak

The requirements are:

Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
396.054	28.9	17.1	Quasi-Peak

## Test Data



### Spectrum Selection

No.	Frequency (P) [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	387.930	V 34.8	-7.3	27.5	46.0	18.5	100.0	0.0
2	396.054	V 36.1	-7.2	28.9	46.0	17.1	100.0	0.0
3	416.060	V 33.1	-6.6	26.5	46.0	19.5	100.0	290.0
4	420.061	V 32.7	-6.5	26.2	46.0	19.8	100.0	29.0
5	424.063	V 34.0	-6.3	27.7	46.0	18.3	100.0	0.0
6	432.065	V 32.3	-6.0	26.3	46.0	19.7	100.0	178.0
7	440.068	V 32.0	-5.8	26.2	46.0	19.8	100.0	0.0
8	612.000	V 29.9	-1.9	28.0	46.0	18.0	100.0	0.0

### Remark :

1. The field strength of spurious 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(X axis) and the worst case was recorded.



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## Test Results

**Test mode : Hopping(DQPSK), CFG PKT Packet Type : 30 Packet Size : 679(2DH5)**

EUT	Bluetooth stereo Headset	Measurement Detail	
Model	DR-BTN200	Frequency Range	1-25GHz
Test Mode	DQPSK (Worst case)	Detector function	Average / Peak

## Remarks

We have tested three mode (X, Y, Z). The worst mode (X axis) for final test.

The requirements are:

Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
2483.5	48.1 / 52.5	5.9 / 21.5	Average / Peak

## Test Data

Frequency [MHz]	Reading [dBuV/m]	Pol.	Height [m]	Correction Factor			Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
				Antenna	Amp. Gain	Cable			
No emissions were detected at a level greater than 20dB below limit.									

## Restricted band edge test data

Measured frequency range : 2310-2390 MHz, 2483.5-2500 MHz

Frequency [MHz]	Reading [dBuV/m]		Pol.	Height [m]	Correction Factor		Limits [dBuV/m]	Result [dBuV/m]		Margin [dB]	
	AV	Peak			Antenna	Amp. Gain + Cable		AV	Peak	AV	Peak
2316.00	36.3	42.8	V	1.0	28.5	24.8	54.0 ; 74.0	40.0	46.5	14.0	27.5
2483.50	44.4	48.8	V	1.0	28.5	24.8	54.0 ; 74.0	48.1	52.5	5.9	21.5



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## Test Results

### Test mode : Receiver

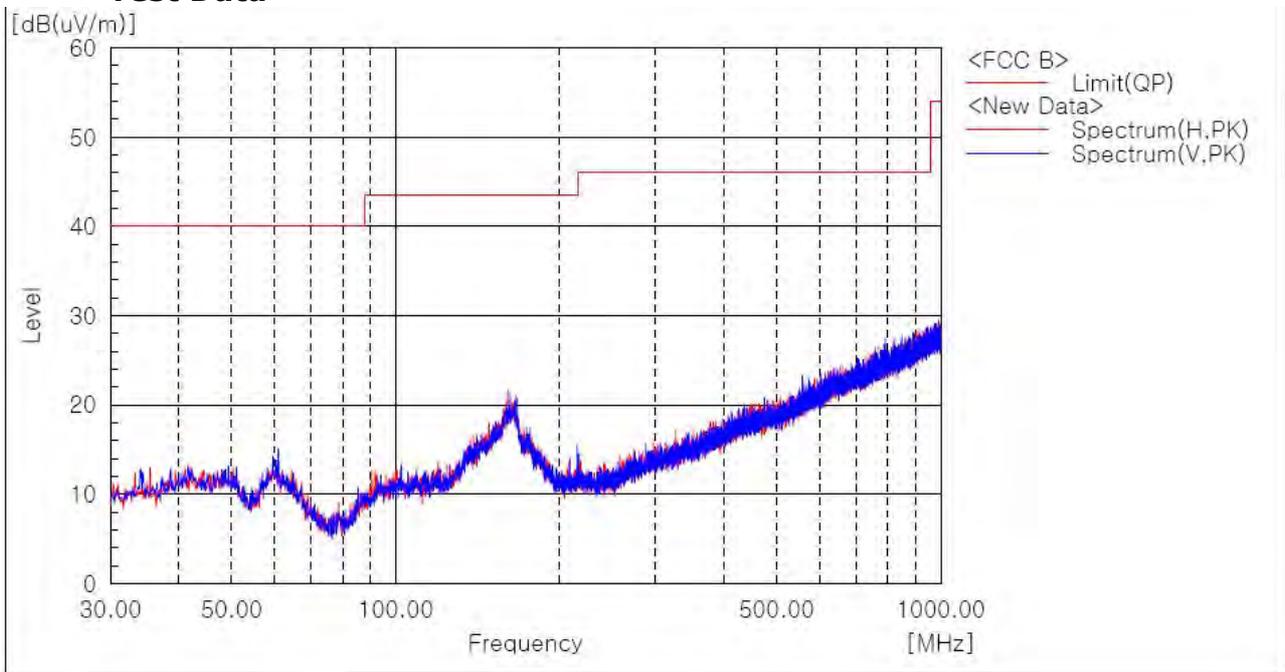
EUT	Bluetooth stereo Headset	Measurement Detail	
Model	DR-BTN200	Frequency Range	Below 1000MHz
Test mode	DQPSK (Worst case)	Detector function	Quasi-Peak / Peak

The requirements are:

Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
No emissions were detected at a level greater than 20dB below limit.			

### Test Data



Spectrum Selection

No.	Frequency (P)	Reading	c.f	Height	Angle
	[MHz]	[dB(uV)]	[dB(1/m)]	[cm]	[deg]

### Remark :

1. The field strength of spurious 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(X axis) and the worst case was recorded.



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## Test Results

### Test mode : Receiver

EUT	Bluetooth stereo Headset	Measurement Detail	
Model	DR-BTN200	Frequency Range	1-25GHz
Test Mode	DQPSK (Worst case)	Detector function	Average / Peak

### Remarks

We have tested three mode (X, Y, Z). The worst mode (X axis) for final test.

The requirements are:

Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
No emissions were detected at a level greater than 20dB below limit.			

### Test Data

Frequency [MHz]	Reading [dBuV/m] AV / Peak	Pol.	Height [m]	Correction Factor			Limits [dBuV/m] AV / Peak	Result [dBuV/m] AV / Peak	Margin [dB] AV / Peak
				Antenna	Amp. Gain	Cable			
No emissions were detected at a level greater than 20dB below limit.									



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## 2.1.8 AC Conducted Emissions

### Test Location

Shielded Room

### Frequency Range of Measurement

150 kHz to 30 MHz

### Instrument Settings

IF Band Width: 9 kHz

### Test Procedures

The EUT was placed on a non-metallic table 0.8m above the metallic, grounded floor and 0.4m from the reference ground plane wall. The distance to other metallic surfaces was at least 0.8m.

Amplitude measurements were performed with a quasi-peak detector and an average detector.

### Limit

#### - 15.207(a)

Frequency (MHz)	Conducted Limit (dBuV)	
	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.

### Test Results

The requirements are:

**Not Applicable**

#### Test mode :

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
-	-	-	-



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# CTK Co., Ltd.

386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea

Tel: +82-31-339-9970 Fax: +82-31-339-9855

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Test Data

[HOT]

NA

NA



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386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea

Tel: +82-31-339-9970 Fax: +82-31-339-9855

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[NEUTRAL]

NA

NA



# CTK Co., Ltd.

386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea

Tel: +82-31-339-9970 Fax: +82-31-339-9855

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## APPENDIX A – Test Equipment Used For Tests

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
1	Signal Analyzer	Agilent	N9020A	MY48011598	2012-11-10
2	Spectrum Analyzer	Rohde & Schwarz	FSP-30	100994	2012-11-10
3	Trilog Broadband Antenna	SCHWARZBECK	VULB 9161 SE	9161-4133	2014-06-11
4	LOOP ANTENNA	EMCO	6502	9107-2652	2012-10-29
5	Attenuator	HP	8498A	1801A06913	2012-11-14
6	EPM Series Power Meter	HP	E4418A	GB38272734	2012-11-10
7	Power Sensor	HP	8487A	3318A03524	2013-07-10
8	Audio Analyzer	HP	8903B	2747A03432	2012-11-10
9	ESG-D Series Signal Generator	Agilent	E4432B	US40054094	2012-11-21
10	SYNTHESIZED SWEEPER	HP	8341B	2819A01563	2012-11-10
11	Modulation Analyzer	HP	8901B	3438A05228	2012-11-18
12	Attenuator	HP	8494A	3308A33351	2012-11-14
13	Temp&Humi Chamber	Kunpoong	JT-TH-556-1	9QE5-002	2013-01-12
14	DC POWER SUPPLY	Agilent	E3632A	MY40011638	2012-11-10
15	EMC Analyzer	Agilent	E7405A	MY45110859	2013-02-13
16	Horn Antenna	ETS-Lindgren	3115	00078894	2013-03-22
17	Horn Antenna	ETS-Lindgren	3115	00078895	2013-03-22
18	Horn Antenna	ETS-Lindgren	3116	00062916	2013-03-22
19	Horn Antenna	ETS-Lindgren	3116	00062504	2013-03-22
20	OPT H64 AMPLIFIER	HP	8447F	3113A06814	2013-03-27
21	PREAMPLIFIER	Agilent	8449B	3008A02307	2012-11-17
22	Radio Communication Tester	Rohde & Schwarz	CMU200	106765	2013-02-09
23	LISN	Rohde & Schwarz	ENV216	101235	2013-08-06
24	LISN	Rohde & Schwarz	ENV216	101236	2013-08-06
25	DC POWER SUPPLY	Agilent	E3632A	MY40011638	2012-11-10
26	EMI Test Receiver	Rohde & Schwarz	ESCI3	100032	2013-02-09
27	EMI Test Receiver	Rohde & Schwarz	ESCI7	100816	2012-12-16



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