RADIO TEST REPORT

Test Report No. : 27GE0214-YK-A

Applicant	:	**Kenwood Corporation**
Type of Equipment	:	**Audio Visual Navigation**
Model No.	:	**FXDD07KF2**
FCC ID	:	**IOM39553**
Test Standard	:	**FCC Part15 Subpart C: 2007**
	:	**FCC Part15 Subpart B: 2007**
Test Result	:	**Complied**

1. This test report shall not be reproduced except in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.

* Our company name was changed from "UL Apex Co., Ltd." To "UL Japan, Inc." on April 26, 2007.

Date of test: February 20 and 26, 2007

Tested by: Makoto Hosaka & Go Ishiwata

Approved by: Osamu Watatani
Manager of Yamakita EMC Lab.

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1 Applicant Information

Company Name	:	Kenwood Corporation
Address	:	2967-3, Ishikawa-machi, Hachioji-shi, Tokyo-to,192-8525 JAPAN
Telephone Number	:	+81-42-646-5079
Facsimile Number	:	+81-42-645-7023
Contact Person	:	Masahiro Ito

2 Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment	:	Audio Visual Navigation
Model No.	:	FXDD07KF2
Serial No.	:	TA209
Rating	:	DC13.2V
Country of Manufacture	:	Japan
Receipt Date of Sample	:	February 19, 2007
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No modification by the test lab.

2.2 Product Description

Model: FXDD07KF2 (referred to as the EUT in this report) is an Audio Visual Navigation.

Equipment type	:	Transceiver
Frequency of operation	:	2402-2480MHz
Clock frequency	:	26.00MHz
Bandwidth & channel spacing	:	79MHz & 1MHz
Type of modulation	:	FHSS, GFSK
Antenna type	:	Reverse F
Antenna connector type	:	N/A
Antenna gain	:	3.86dBi max
ITU code	:	F1D
Operation temperature range	:	-10 ~ +65 deg.C.

FCC Part15.31 (e)
FXDD07KF2 provides the Bluetooth module with stable power supply (DC 3.3 V), therefore, the equipment complies power supply regulation.

FCC Part15.203 Antenna requirement
The equipment and its antenna comply with this requirement since this antenna is built in the equipment and it cannot be replaced by end users.

3 Test Specification, Procedures and Results

3.1 Test specification

Test Specification : FCC Part 15 Subpart B: 2007
Title : FCC 47CFR Part 15 Radio Frequency Device
Subpart B Unintentional Radiators
Test specification : FCC Part15 Subpart C: 2007
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.209 Radiated emission limits, general requirements
Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz

3.2 Procedures & Results

Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results
Conducted emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	FCC 15.107(a) & 207	-	N/A *1)	N/A	N/A
Carrier Frequency Separation	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC 15.247 (a)(1)	Conducted	N/A	*See data.	Complied
20dB Bandwidth	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC 15.247 (a)(1)	Conducted	N/A		Complied
Number of Hopping Frequency	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC 15.247 (a)(1)(iii)	Conducted	N/A		Complied
Dwell time	ANSI C63.4:2003 13.Measurement of intentional radiators	FCC 15.247 (a)(1)(iii)	Conducted	N/A		Complied
Maximum Peak Output Power	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC 15.247 (b)(1)	Conducted	N/A		Complied
Spurious Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC 15.109, 15.247 (d) & 15.209	Conducted / Radiated	N/A	*Tx:* 3.4dB (2483.50MHz, AV, Horizontal, Tx 2480MHz) *Rx:* 5.7dB (2441.00MHz, AV, Horizontal, Rx 2441MHz)	Complied
Antenna power conduction for receivers	ANSI C63.4: 2003 12.1.5 Antenna-conducted power measurements	FCC 15.111 (a)	-	N/A *2)	-	N/A

*1) The test is not applicable since the EUT has no AC mains.
*2) The test is not applicable since the EUT does not tune in the frequency range 30 to 960MHz.
The measurements also referred to FCC Public Notice DA 00-705 "Guidance on Measurement for Frequency Hopping Spread Spectrum Systems".

* Other than mentioned in 3.3, no addition, exclusion nor deviation has been made from the standard.

3.3 Addition to standard

Item	Test Procedure	Specification	Remarks	Worst Margin	Results
Occupied Bandwidth (99%)	ANSI C63.4:2003 13. Measurement of intentional radiators RSS-Gen 4.4.1	RSS-Gen 4.4.1	Conducted	-	Complied

3.4 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

	No.1 open site	No.2 open site	No.1 anechoic chamber
Radiated emission (3m)			
30-300MHz	4.5 dB	4.4 dB	4.5 dB
300-1000MHz	4.3 dB	4.3 dB	4.3 dB
1GHz<	5.7 dB	5.7 dB	5.7 dB

Antenna port conducted test	
Below 1GHz	±0.4dB
1GHz and above	±0.7dB

Spurious emission test (Radiated)

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

3.5 Test Location

UL Japan, Inc. Yamakita EMC Lab.
907, Kawanishi, Yamakita-machi, Ashigarakami-gun, Kanagawa-ken 258-0124 JAPAN
Telephone number : +81 465 77 1011
Facsimile number : +81 465 77 2112
NVLAP Lab. code : 200441-0

No. 1 test site has been fully described in a report submitted to FCC office, and accepted on August 26, 2005 (Registration No.: 95486).
IC Registration No. : 2973B-1

No. 2 test site has been fully described in a report submitted to FCC office, and accepted on April 4, 2005 (Registration No.: 466226).
IC Registration No. : 2973B-3

No. 1 anechoic chamber has been fully described in a report submitted to FCC office, and accepted on November 2, 2005 (Registration No.: 95967).
IC Registration No. : 2973B-2

Test room	Width x Depth x Height (m)	Test room	Width x Depth x Height (m)
No.1 shielded room	8.0 x 5.0 x 2.5	No.1 Semi-anechoic chamber	10.0 x 7.5 x 5.7
No.2 shielded room	5.0 x 4.0 x 2.5		
No.3 shielded room	4.0 x 5.0 x 2.7		

* Our company name was changed from "UL Apex Co., Ltd." To "UL Japan, Inc." on April 26, 2007.

4 System Test Configuration

4.1 Justification

The system was configured in typical fashion (as a customer would normally use it) for testing.

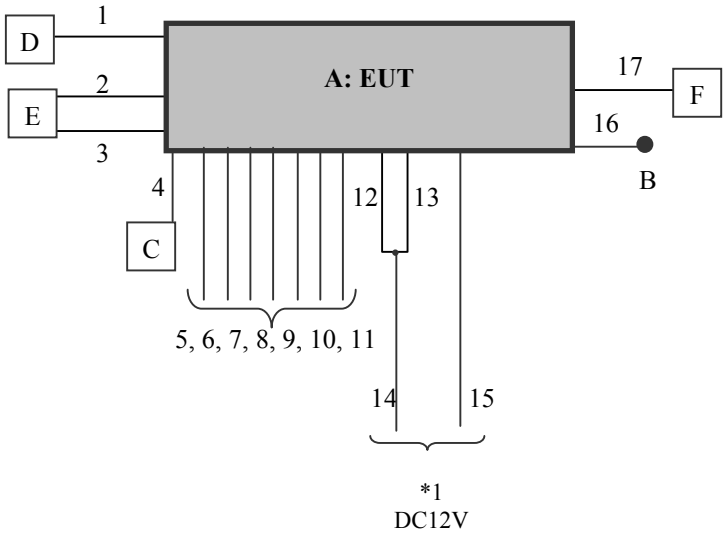
Test mode: Transmitting (Packet size: DH5)
- Low channel : 2402MHz
- Middle channel : 2441MHz
- High channel : 2480MHz
- Hopping

Receiving
- Middle channel : 2441MHz

* The EUT has no operation of Inquiry mode and Page mode since it is used as the slave device. The master device is a cellular phone with Bluetooth.

*Remarks: Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not influence on the output power and bandwidth of the EUT.
However, the limit level 125mWof AFH mode was used for the test.

4.2 Configuration of Tested System



* Test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID (Remark)
A	Audio Visual Navigation	FXDD07KF2	TA209	KENWOOD	IOM39553 (EUT)
B	Hands free Microphone	W03-1622-05	No.5	KENWOOD	-
C	GPS antenna	86277XA00A	08640001	KENWOOD	-
D-F	Test jig	-	-	-	-

*1) DC power supply (Model No.: PAN35-10A) was used for DC 12V input, car battery voltage.

List of cables used *2)

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	Radio antenna	1.0	Shielded	Shielded	-
2	CAN (Controller Area Network) cable	0.3	Unshielded	Unshielded	x3 (+:1, -:2)
3	Auxiliary control cable	0.3	Unshielded	Unshielded	x24
4	GPS antenna cable	0.7	Shielded	Unshielded	-
5	Illumination cable	0.4	Unshielded	Unshielded	-
6	Antenna cable	0.4	Unshielded	Unshielded	-
7	Dimmer cable	0.4	Unshielded	Unshielded	-
8	Speaker cable (Front-R)	0.4	Unshielded	Unshielded	-
9	Speaker cable (Front-L)	0.4	Unshielded	Unshielded	-
10	Speaker cable (Rear-R)	0.4	Unshielded	Unshielded	-
11	Speaker cable (Rear-L)	0.4	Unshielded	Unshielded	-
12	Back up cable	0.4	Unshielded	Unshielded	-
13	Accessory cable	0.4	Unshielded	Unshielded	-
14	Battery cable	0.65	Unshielded	Unshielded	-
15	Ground cable	1.05	Unshielded	Unshielded	-
16	Microphone cable	1.9	Unshielded	Unshielded	-
17	Rear Camera cable	0.45	Unshielded	Unshielded	-

*2) All cables used for the measurement are exclusive use or marketed.

5 Carrier Frequency Separation

Test Procedure
The carrier frequency separation was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass
Date: February 20, 2007 Test engineer : Makoto Hosaka

6 20dB Bandwidth & Occupied Bandwidth (99%)

Test Procedure
The bandwidth was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass
Date: February 20, 2007 Test engineer : Makoto Hosaka

7 Number of Hopping Frequency

Test Procedure
The Number of Hopping Frequency was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass
Date: February 20, 2007 Test engineer : Makoto Hosaka

8 Dwell time

Test Procedure
The Dwell time was measured with a spectrum analyzer connected to the antenna port.
Measurement was performed with the packet type of DH1, DH3 and DH5.

Summary of the test results: Pass
Date: February 20, 2007 Test engineer : Makoto Hosaka

9 Maximum Peak Output Power

Test Procedure
The Maximum Peak Output Power was measured with a power meter connected to the antenna port.

Summary of the test results: Pass
Date: February 20, 2007 Test engineer : Makoto Hosaka

10 Out of Band Emissions (Antenna Port Conducted)

Test Procedure
The Out of Band Emissions was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass
Date: February 20, 2007 Test engineer : Makoto Hosaka

11 Out of Band Emissions (Radiated)

11.1 Operating environment

The test was carried out in No.1 anechoic chamber.

11.2 Test configuration

EUT was placed on a urethane platform of nominal size, 0.5m by 0.5m, raised 80cm above the conducting ground plane. A drawing of the set up is shown in the photos of Appendix 1.

11.3 Test conditions

Frequency range : 30MHz - 26.5GHz
Test distance : 3m
EUT operation mode : Transmitting, Receiving

11.4 Test procedure

The Radiated Electric Field Strength intensity has been measured with a ground plane and at a distance of 3m and 1m. The measuring antenna height was varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.
The measurements were performed for both vertical and horizontal antenna polarization.

In any 100kHz 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 confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

Measurements were performed with QP, PK, and AV detector.
The radiated emission measurements were made with the following detector function of the test receiver.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Spectrum Analyzer
Detector IF Bandwidth	QP: BW 120kHz	PK: RBW: 1MHz/VBW: 1MHz, AV: RBW: 1MHz/VBW: 10Hz
Measuring antenna	Biconical (30-300MHz) Logperiodic (300MHz-1GHz)	Horn

The EUT was tested in the direction normally used.

11.5 Band edge

Band edge level at 2400MHz is less than 20dB of peak point of the carrier. Refer to the data of Out of Band Emissions (Antenna Port Conducted).
Band edge level at 2390MHz and 2483.5MHz is below the limits of FCC 15.209. Refer to the data of Radiated emission.

11.6 Results

Summary of the test results : Pass
No noise was detected above the 5th order harmonics.

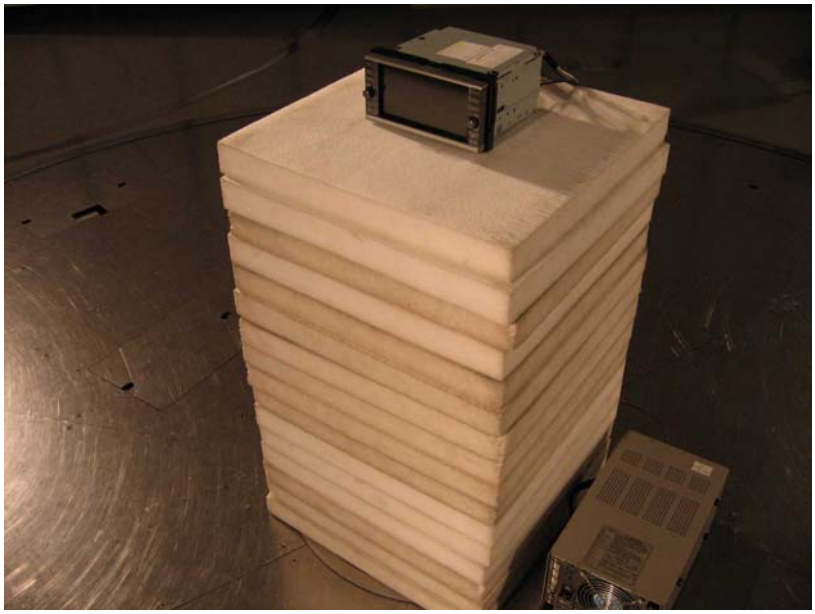
Date: February 20 and 26, 2007 Test engineer : Makoto Hosaka and Go Ishiwata

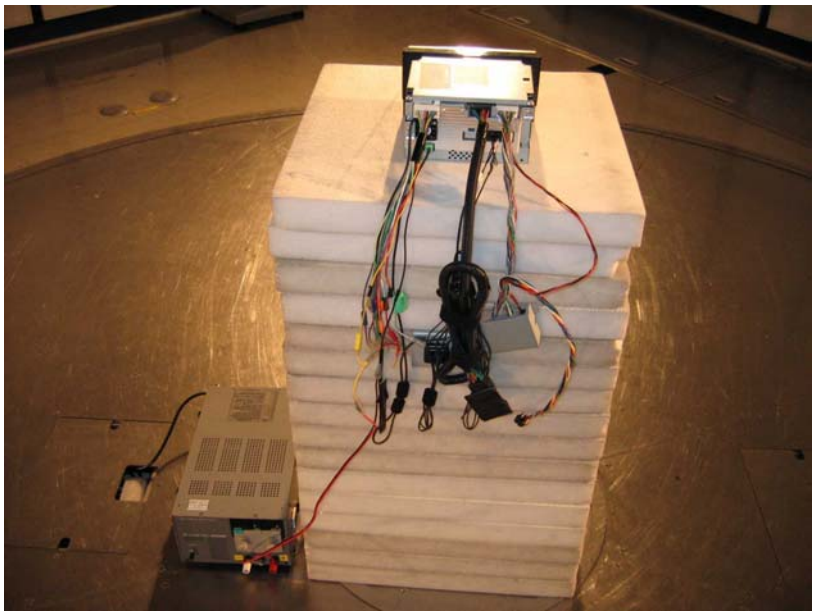
APPENDIX 1: Photographs of test setup

APPENDIX 2: Test Data

APPENDIX 3: Test instruments

Radiated emission



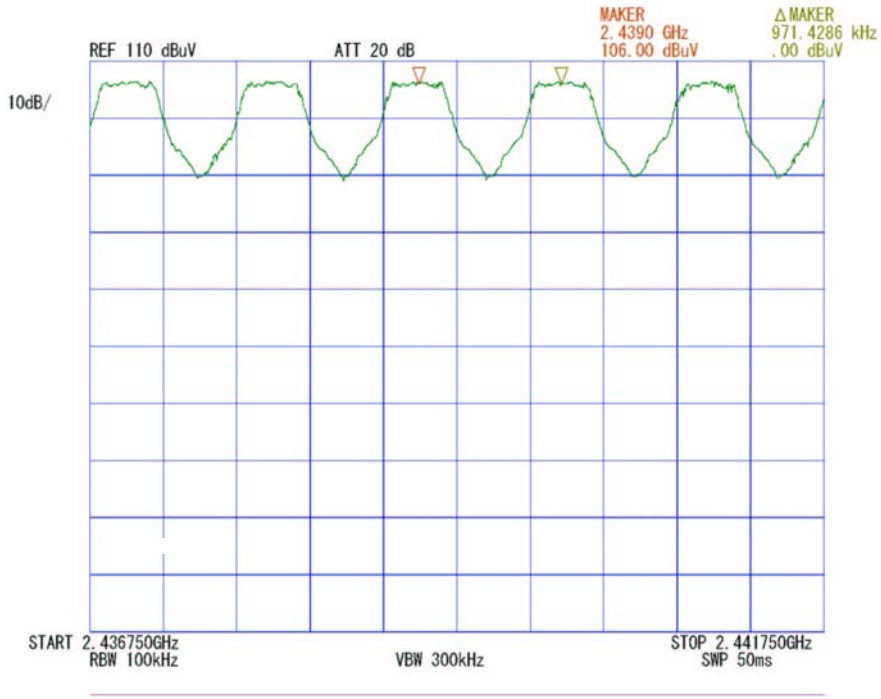


Channel Separation: FCC 15.247(a)(1)

UL Apex Co.,Ltd. Yamakita No.2 Shielded Room

COMPANY	: Kenwood Corporation	REPORT NO	: 27GE0214-YK-A
EQUIPMENT	: AUDIO/VISUAL/NAVIGATION	REGULATION	: Fcc Part15SubpartC 247(a)(1)
MODEL NUMBER	: FXDD07KF2	DATE	: 2007/02/20
SERIAL NUMBER	: TA209	TEMP./HUMI	: 23deg.C./31%
FCC ID	: IOM39553	TEST MODE	: Transmitting
POWER	: DC12.0V	ENGINEER	: Makoto Hosaka

1. Hopping:971.43kHz

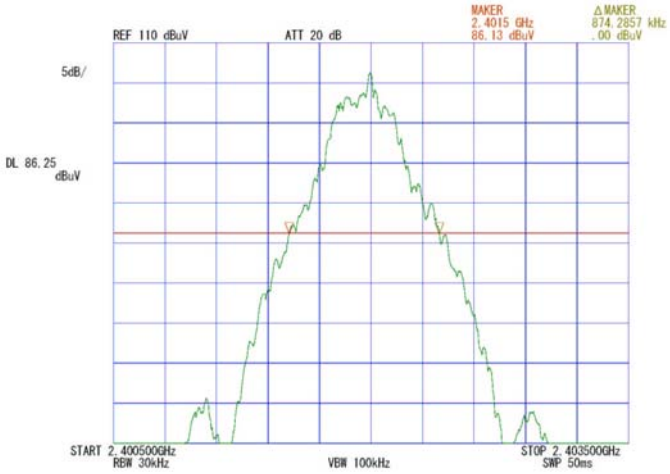


20dB Bandwidth: FCC 15.247(a)(1)

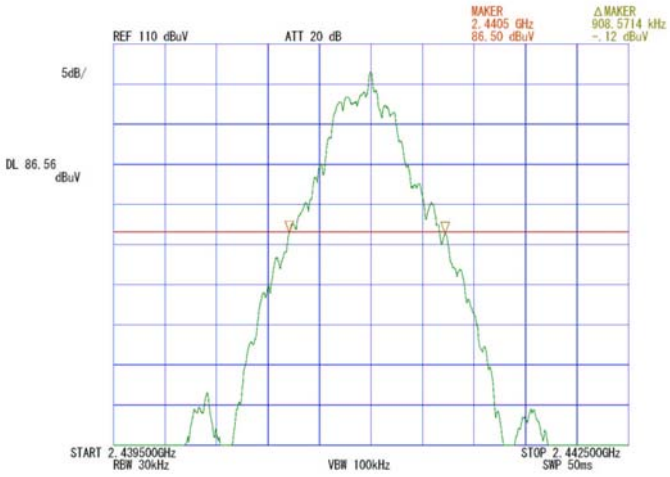
UL Apex Co.,Ltd. Yamakita No.2 Shielded Room

COMPANY	: Kenwood Corporation	REPORT NO	: 27GE0214-YK-A
EQUIPMENT	: AUDIO/VISUAL/NAVIGATION	REGULATION	: Fcc Part15SubpartC 247(a)(1)
MODEL NUMBER	: FXDD07KF2	DATE	: 2007/02/20
SERIAL NUMBER	: TA209	TEMP./HUMI	: 23deg.C./31%
FCC ID	: IOM39553	TEST MODE	: Transmitting(Hopping off)
POWER	: DC12.0V	ENGINEER	: Makoto Hosaka

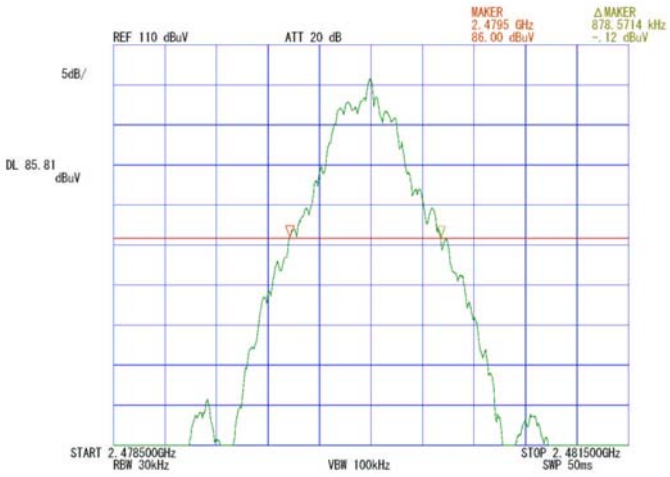
1. ch : 2402MHz/20dB Bandwidth:874.29kHz



2. ch : 2441MHz/20dB Bandwidth:908.57kHz



3. ch : 2480MHz/20dB Bandwidth:878.57kHz



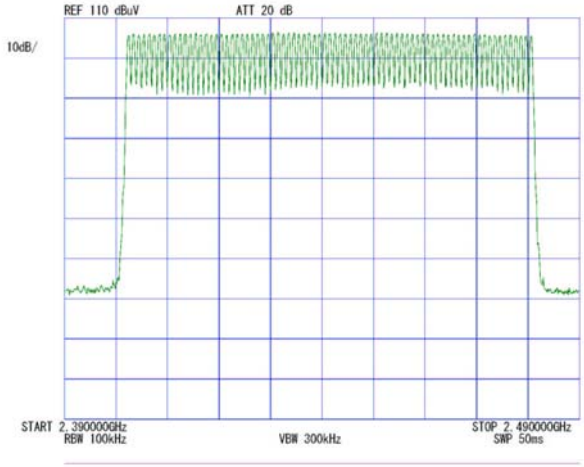
Channel Utilization: FCC 15.247(a)(1)(iii)

UL Apex Co.,Ltd. Yamakita No.2 Shielded Room

COMPANY	: Kenwood Corporation	REPORT NO	: 27GE0214-YK-A
EQUIPMENT	: AUDIO/VISUAL/NAVIGATION	REGULATION	: Fcc Part15SubpartC 247(a)(1)(iii)
MODEL NUMBER	: FXDD07KF2	DATE	: 2007/02/20
SERIAL NUMBER	: TA209	TEMP./HUMI	: 23deg.C./31%
FCC ID	: IOM39553	TEST MODE	: Transmitting
POWER	: DC12.0V	ENGINEER	: Makoto Hosaka

Hopping: 79ch

1.



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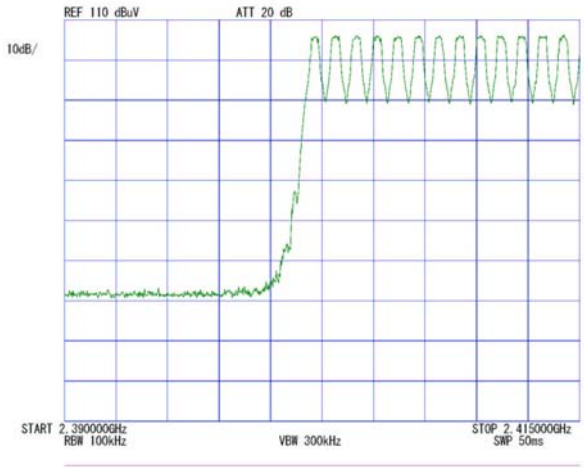

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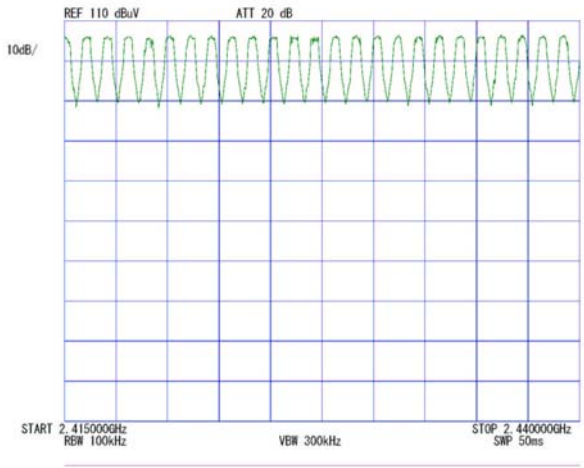

Channel Utilization: FCC 15.247(a)(1)(iii)

UL Apex Co.,Ltd. Yamakita No.2 Shielded Room

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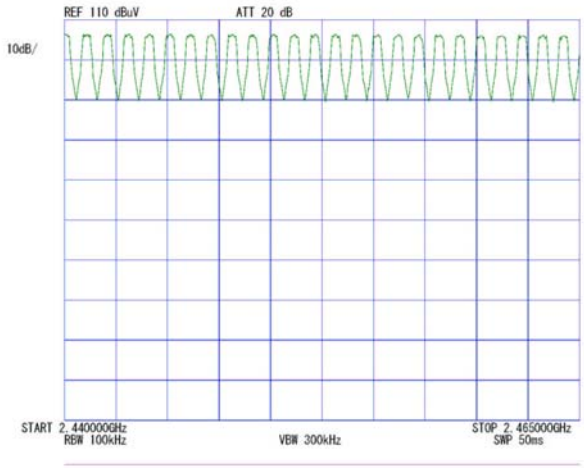
EQUIPMENT	: AUDIO/VISUAL/NAVIGATION	REGULATION	: Fcc Part15SubpartC 247(a)(1)(iii)
MODEL NUMBER	: FXDD07KF2	DATE	: 2007/02/20
SERIAL NUMBER	: TA209	TEMP./HUMI	: 23deg.C./31%
FCC ID	: IOM39553	TEST MODE	: Transmitting
POWER	: DC12.0V	ENGINEER	: Makoto Hosaka

4.



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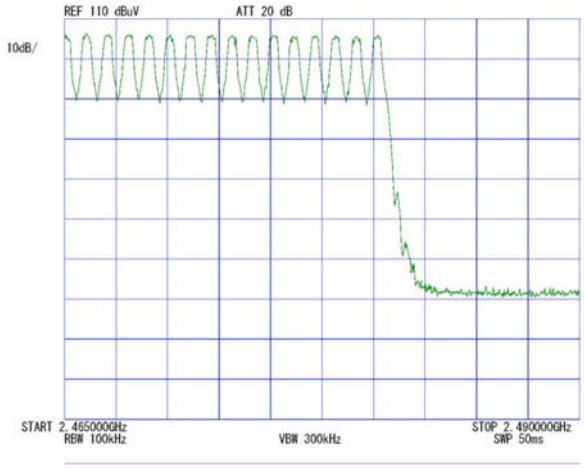

Dwell Time: FCC 15.247(a)(1)(iii)

UL Apex Co.,Ltd. Yamakita No.2 Shielded Room

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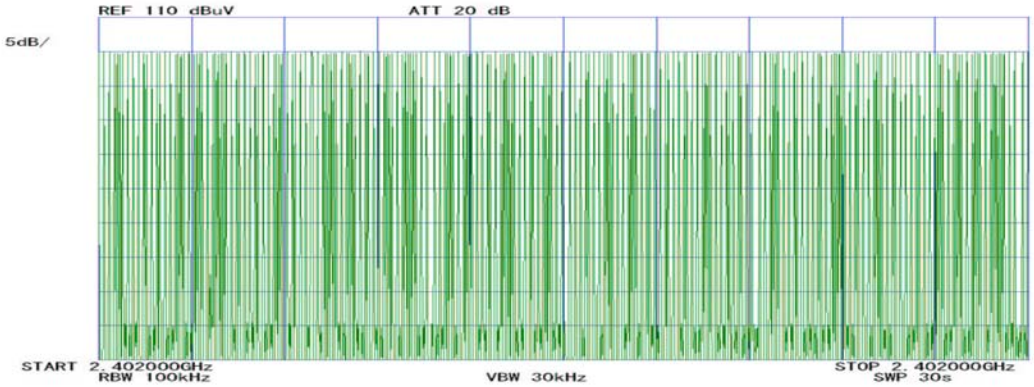
EQUIPMENT	: AUDIO/VISUAL/NAVIGATION	REGULATION	: Fcc Part15SubpartC 247(a)(1)(iii)
MODEL NUMBER	: FXDD07KF2	DATE	: 2007/02/20
SERIAL NUMBER	: TA209	TEMP./HUMI	: 23deg.C./31%
FCC ID	: IOM39553	TEST MODE	: Transmitting
POWER	: DC12.0V	ENGINEER	: Makoto Hosaka

Hopping(DH1):

Count 1



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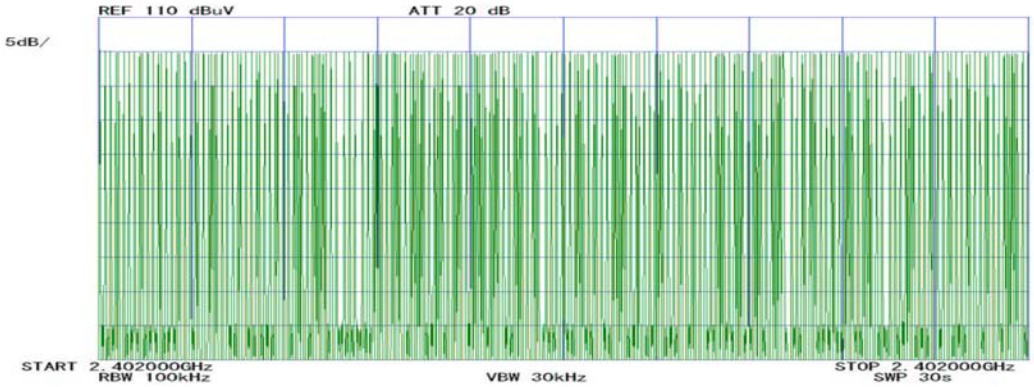

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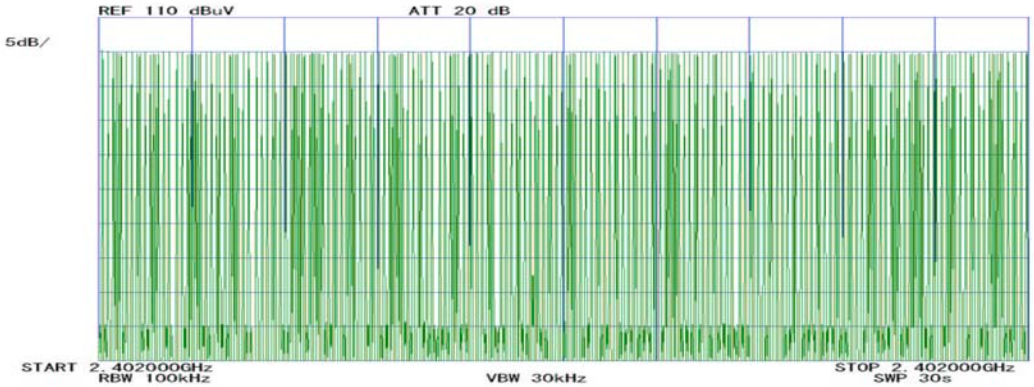

Dwell Time: FCC 15.247(a)(1)(iii)

UL Apex Co.,Ltd. Yamakita No.2 Shielded Room

COMPANY	: Kenwood Corporation	REPORT NO	: 27GE0214-YK-A
EQUIPMENT	: AUDIO/VISUAL/NAVIGATION	REGULATION	: Fcc Part15SubpartC 247(a)(1)(iii)
MODEL NUMBER	: FXDD07KF2	DATE	: 2007/02/20
SERIAL NUMBER	: TA209	TEMP./HUMI	: 23deg.C./31%
FCC ID	: IOM39553	TEST MODE	: Transmitting
POWER	: DC12.0V	ENGINEER	: Makoto Hosaka

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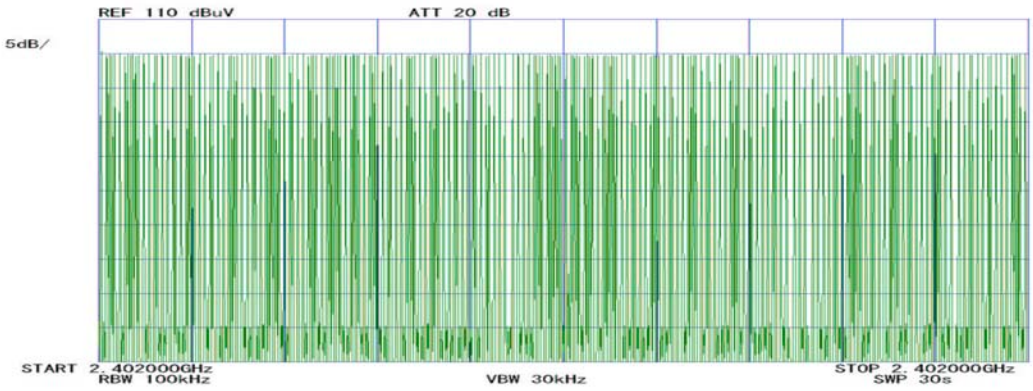

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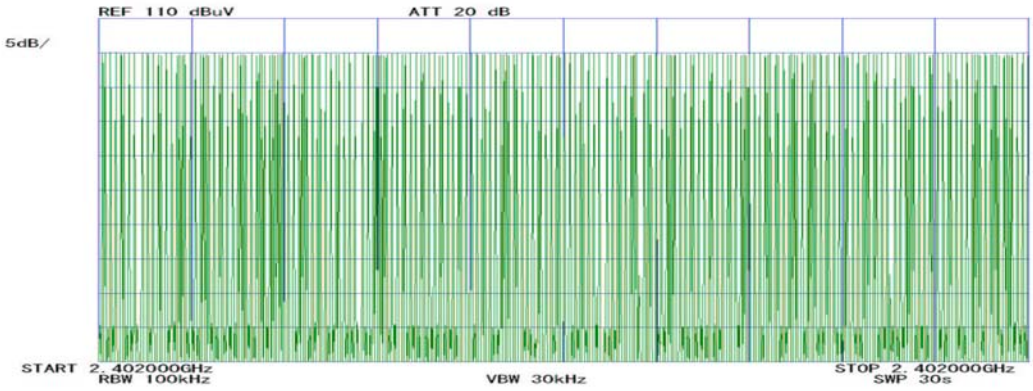
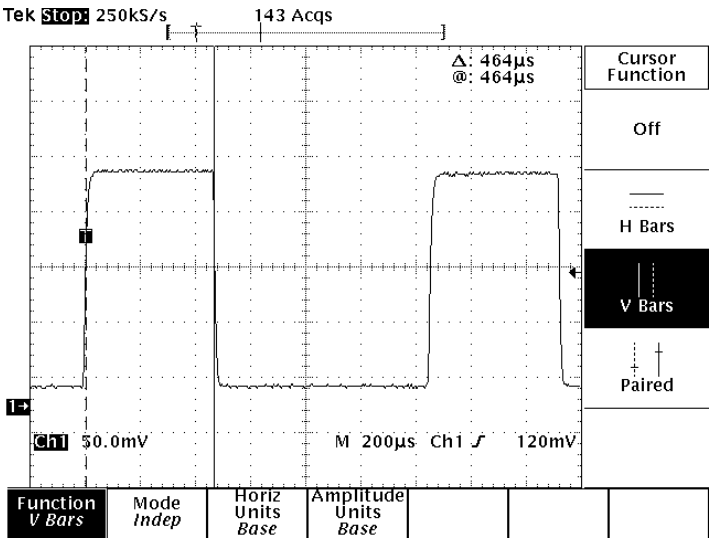


Duty cycle(Hopping DH1)



Average times of rising in 30 sec. of sweep = (222 + 222 + 217 + 223 + 215) / 5 = 219.8
Average times of rising in 1 sec. = 219.8 / 30s = 7.33
Average times of rising in 0.4x = 0.4 * 79ch * 7.33 = 231.63
Dwell time = 231.63 * 0.464 = 107.48 [ms]
Limit : Dwell Time < 0.4[s]

Dwell Time: FCC 15.247(a)(1)(iii)

UL Apex Co.,Ltd. Yamakita No.2 Shielded Room

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EQUIPMENT	: AUDIO/VISUAL/NAVIGATION	REGULATION	: Fcc Part15SubpartC 247(a)(1)(iii)
MODEL NUMBER	: FXDD07KF2	DATE	: 2007/02/20
SERIAL NUMBER	: TA209	TEMP./HUMI	: 23deg.C./31%
FCC ID	: IOM39553	TEST MODE	: Transmitting
POWER	: DC12.0V	ENGINEER	: Makoto Hosaka

Hopping(DH3):

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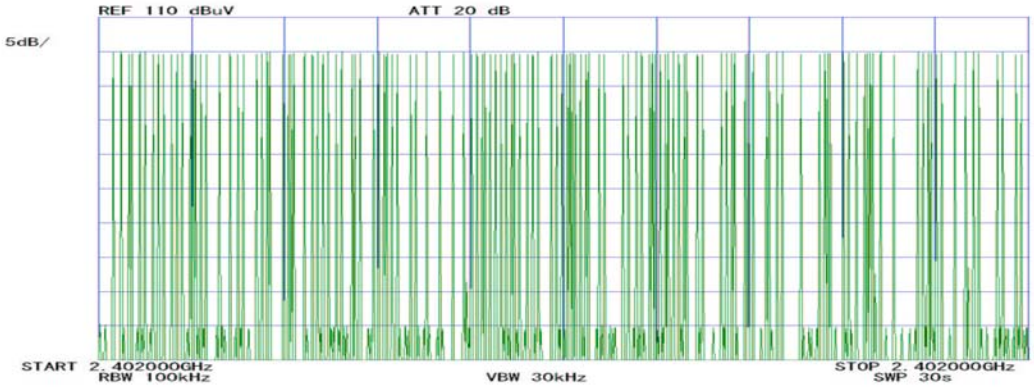

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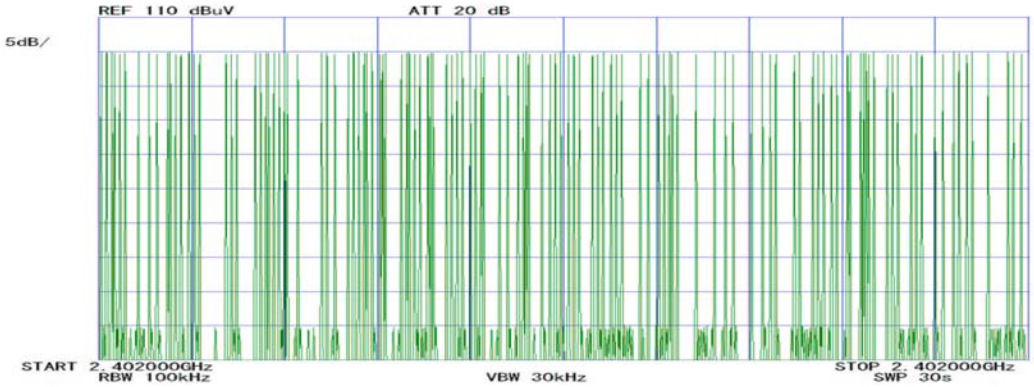
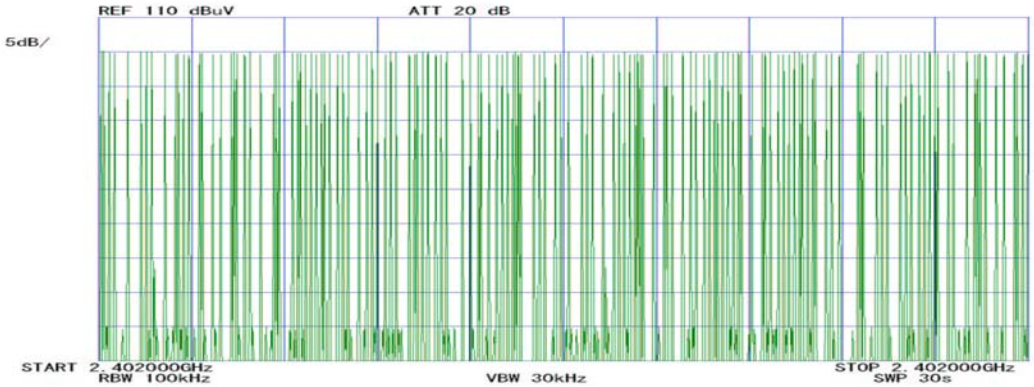


Count 3

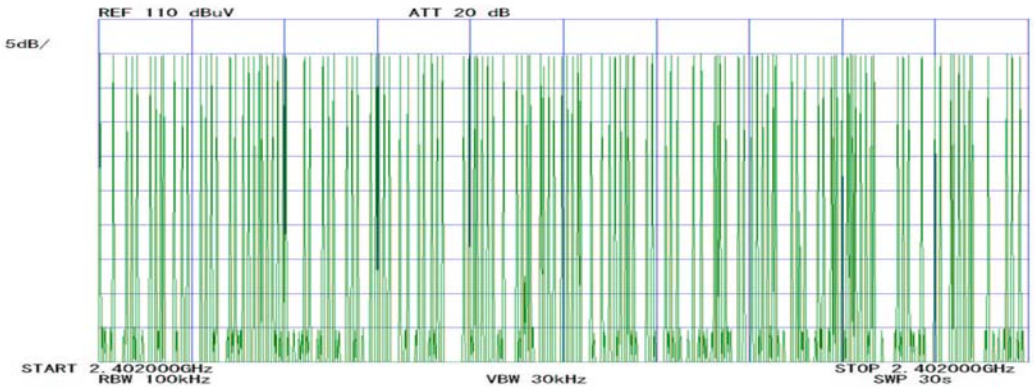


Dwell Time: FCC 15.247(a)(1)(iii)

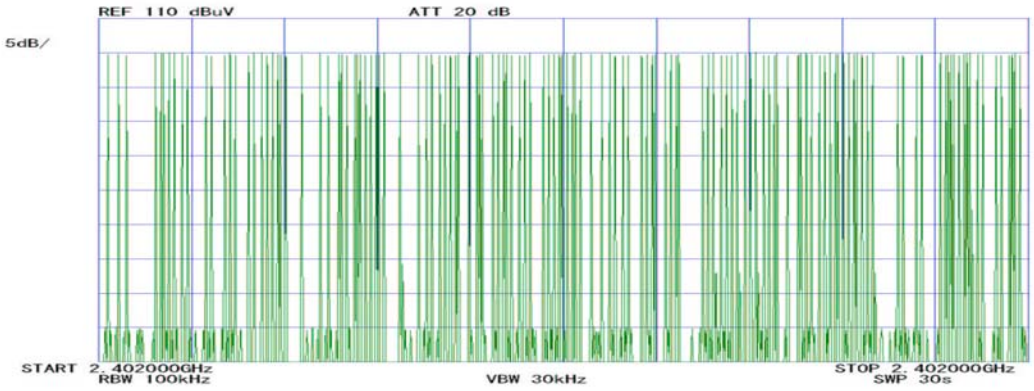
UL Apex Co.,Ltd. Yamakita No.2 Shielded Room

COMPANY	: Kenwood Corporation	REPORT NO	: 27GE0214-YK-A
EQUIPMENT	: AUDIO/VISUAL/NAVIGATION	REGULATION	: Fcc Part15SubpartC 247(a)(1)(iii)
MODEL NUMBER	: FXDD07KF2	DATE	: 2007/02/20
SERIAL NUMBER	: TA209	TEMP./HUMI	: 23deg.C./31%
FCC ID	: IOM39553	TEST MODE	: Transmitting
POWER	: DC12.0V	ENGINEER	: Makoto Hosaka

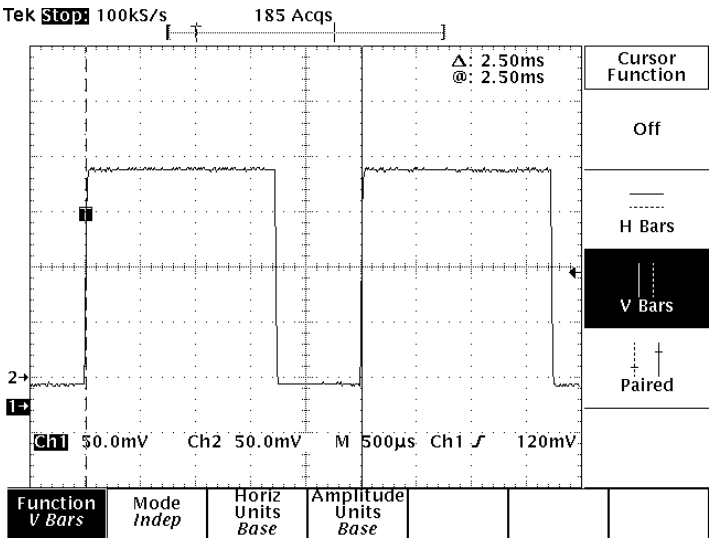
Count 4



Count 5



Duty cycle(Hopping DH3)



Average times of rising in 30 sec. of sweep = (131+120+142+129+133) / 5 = 131.0
Average times of rising in 1 sec. = 131.0 / 30s = 4.37
Average times of rising in 0.4x = 0.4 * 79ch * 4.37 = 138.09
Dwell time = 138.09 * 1.73 = 238.90 [ms]
Limit : Dwell Time < 0.4[s]

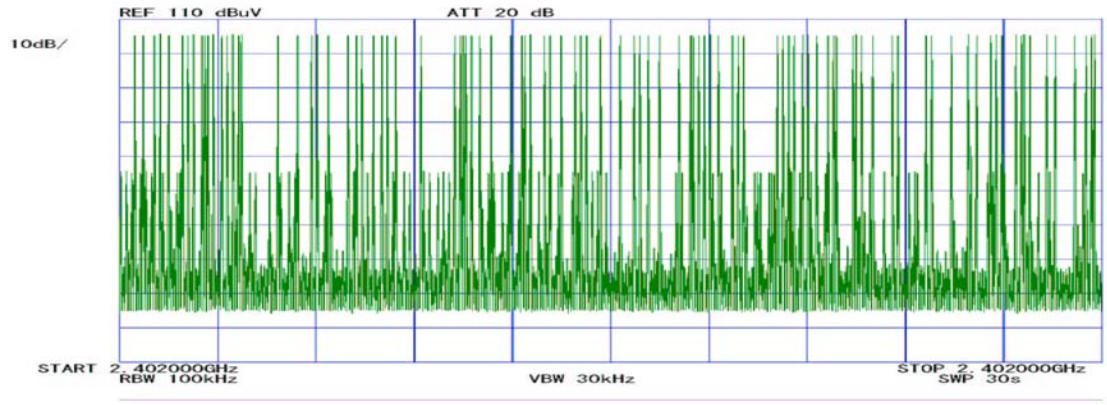
Dwell Time: FCC 15.247(a)(1)(iii)

UL Apex Co.,Ltd. Yamakita No.2 Shielded Room

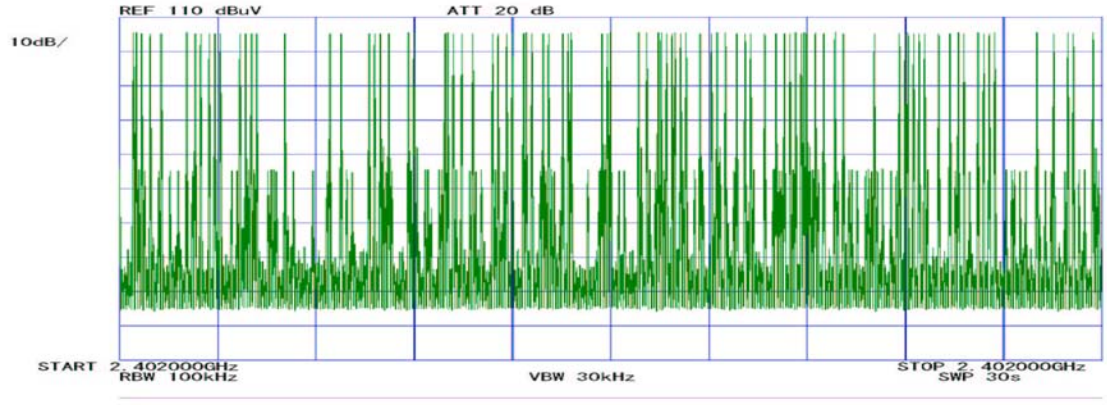
COMPANY	: Kenwood Corporation	REPORT NO	: 27GE0214-YK-A
EQUIPMENT	: AUDIO/VISUAL/NAVIGATION	REGULATION	: Fcc Part15SubpartC 247(a)(1)(iii)
MODEL NUMBER	: FXDD07KF2	DATE	: 2007/02/20
SERIAL NUMBER	: TA209	TEMP./HUMI	: 23deg.C./31%
FCC ID	: IOM39553	TEST MODE	: Transmitting
POWER	: DC12.0V	ENGINEER	: Makoto Hosaka

Hopping(DH5):

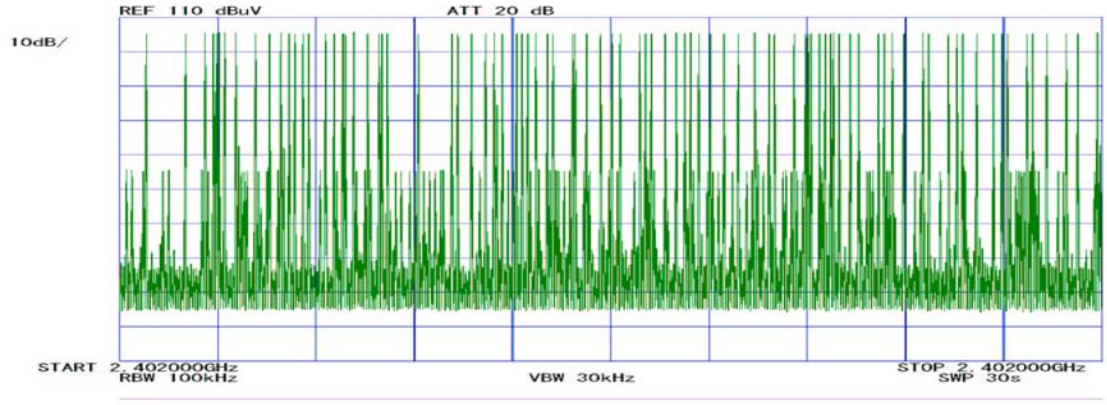
Count 1



Count 2



Count 3

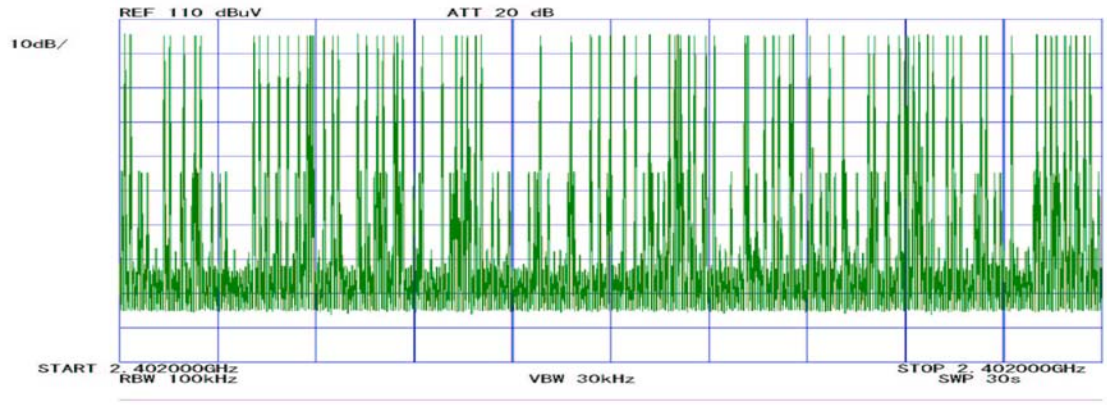


Dwell Time: FCC 15.247(a)(1)(iii)

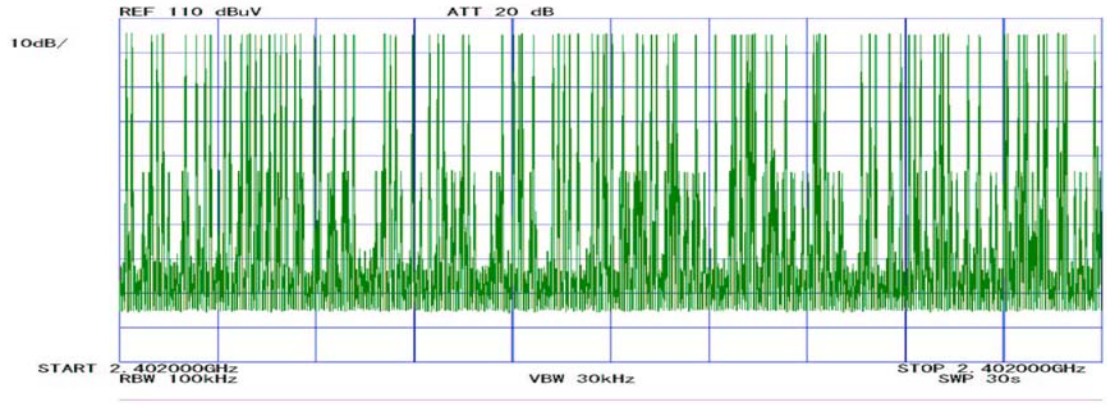
UL Apex Co.,Ltd. Yamakita No.2 Shielded Room

COMPANY	: Kenwood Corporation	REPORT NO	: 27GE0214-YK-A
EQUIPMENT	: AUDIO/VISUAL/NAVIGATION	REGULATION	: Fcc Part15SubpartC 247(a)(1)(iii)
MODEL NUMBER	: FXDD07KF2	DATE	: 2007/02/20
SERIAL NUMBER	: TA209	TEMP./HUMI	: 23deg.C./31%
FCC ID	: IOM39553	TEST MODE	: Transmitting
POWER	: DC12.0V	ENGINEER	: Makoto Hosaka

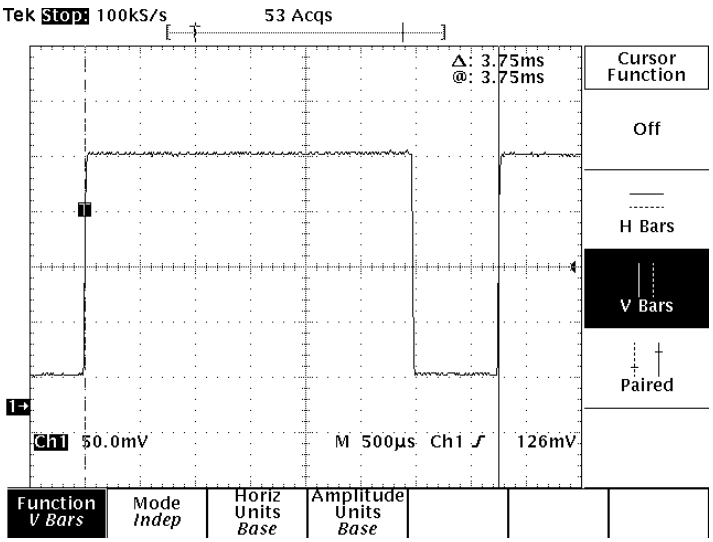
Count 4



Count 5



Duty cycle(Hopping DH5)



Average times of rising in 30 sec. of sweep = (97 + 90 + 85 + 83 + 100) / 5 = 91.0

Average times of rising in 1 sec. = 91.0 / 30s = 3.03

Average times of rising in 0.4x = 0.4 * 79ch * 3.03 = 95.75

Dwell time = 95.75 * 2.98 = 285.34 [ms]

Limit : Dwell Time < 0.4[s]