477-6, Hager-Ri, Yoju-Up, Yoju-Gun Kyunggi-Do,469-803, Korea T820318835092F820318835169 email thrukang@kornet.net

### Test Report

Product Name: Digital Transmission System

FCC ID: WF2DA-911WH

## Applicant: DASAN ELECTRON

606, Godowhadong, Kyunggi Techno Park, 1271-7, Sa-dong, Ansan-si, Kyunggi-Do, Korea

Date Receipt: 06/20/2008
Date Tested: 06/27/2008
Date Issued: 06/27/2008

Tested by Kyoung M. Choi

Kyouf Your Chai

Approved by K.T. Kang

KT. Kanf

APPLICANT: DASAN ELECTRON

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APPLICANT: DASAN ELECTRON.

FCC ID: WF2DA-911WH

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#### EXHIBITS INCLUDING:

REQUEST FOR CONFIDENTIALITY LETTER
BLOCK DIAGRAM
SCHEMATIC
USERS MANUAL
LABEL SAMPLE
LABEL LOCATION
EXTERNAL PHOTOGRAPHS
INTERNAL PHOTOGRAPHS
OPERATIONAL DESCRIPTION
TEST SET UP PHOTOGRAPH

APPLICANT: DASAN ELECTRON

477-6, Hager-Ri, Yoju-Up, Yoju-Gun Kyunggi-Do,469-803, Korea T820318835092F820318835169 email thrukang@kornet.net

#### TEST PROCEDURE

BANDWIDTH 20 dB: The measurements were made with the spectrum analyzer's resolution bandwidth and the span set as shown on plot.

POWER OUTPUT: The RF power output was measured conducted.

ANTENNA CONDUCTED EMISSIONS: The RBW = 100 kHz, VBW = 300 kHz and the span set to 10 MHz and the spectrum was scanned from 30 MHz to the 10 th Harmonic of the fundamental. Above 1GHz the resolution bandwidth was 1 MHz and the VBW = 3 MHz and the span to 50 MHz.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-2003 using an Agilent spectrum receiver with pre-selector. The bandwidth (RBW) of the spectrum receiver was 100kHz up to 1 GHz and 1 MHz above 1 GHz with an appropriate sweep speed. The VBW above 1 GHz was 3 MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

APPLICANT: DASAN ELECTRON

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WH

NAME OF TEST: RADIATION INTERFERENCE (Below 1G)

Rules Part No.: 15.209

REQUIREMENTS: 30 to 88 MHz: 40.0 dBuV/M @ 3 METERS

88 to 216 MHz: 43.5 dBuV/M 216 to 960 MHz: 46.0 dBuV/M ABOVE 960 MHz: 54.0 dBuV/M

TEST RESULTS: A search was made of the spectrum from 30 to 1000 MHz and the measurements indicate that the unit DOES meet the FCC requirements.

#### TEST DATA:

\* Tuning Frequency: 2401.056MHz

No	Emission Frequency (MHz)	Meter Reading dBuV/m	Ant. Polaritry	Correction Factor dB	Cable Loss dB	Field Strength (dBuv/m)	Margin (dBuv)	Limit (dBuv/m)
1	69.03	11.4	V	5.7	1.2	18.3	-21.7	40.0
2	83.48	12.5	Н	8.9	1.4	22.8	-17.2	40.0
3	131.83	10.0	V	13.1	1.9	25.1	-18.4	43.5
4	246.20	9.5	H	11.7	3.1	24.2	-21.8	46.0
5	289.40	9.5	V	17.7	3.3	30.6	-15.4	46.0
6	470.00	6.3	V	20.2	4.7	31.2	-14.8	46.0
7	506.00	8.2	Н	18.0	5.0	31.2	-14.8	46.0
8	573.50	6.5	V	18.5	5.4	30.4	-15.6	46.0
9	627.50	7.3	Н	20.6	5.7	33.6	-12.4	46.0
10	877.00	5.2	V	23.6	7.2	36.0	-10.0	46.0
11	962.00	4.9	Н	23.5	7.4	35.8	-10.2	46.0

**SAMPLE CALCULATION:** FSdBuV/m = MR(dBuV) + ACFdB.

TEST PROCEDURE: ANSI STANDARD C63.4-2003 using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Pre-selector, a Hewlett Packard Model 85650A Quasi-Peak adapter, and an appropriate antenna - see the test equipment list. The bandwidth of spectrum analyzer was 100 kHz with an appropriate sweep speed. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported.

PERFORMED BY: Kyoung Moon Choi DATE: 06/27/08

APPLICANT: DASAN ELECTRON

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WH

NAME OF TEST: RADIATION INTERFERENCE(Below 1G)

Rules Part No.: 15.209

REQUIREMENTS: 30 to 88 MHz: 40.0 dBuV/M @ 3 METERS

88 to 216 MHz: 43.5 dBuV/M 216 to 960 MHz: 46.0 dBuV/M ABOVE 960 MHz: 54.0 dBuV/M

TEST RESULTS: A search was made of the spectrum from 30 to 1000 MHz and the measurements indicate that the unit DOES meet the FCC requirements.

#### TEST DATA:

\* Tuning Frequency: 2441.664MHz

No	Emission Frequency (MHz)	Meter Reading dBuV/m	Ant. Polaritry	Correction Factor dB	Cable Loss dB	Field Strength (dBuv/m)	Margin (dBuv)	Limit (dBuv/m)
1	65.50	14.9	Н	6.3	1.2	22.4	-17.6	40.0
2	81.85	13.9	V	8.5	1.4	23.8	-16.2	40.0
3	124.38	15.0	V	11.6	1.9	28.5	-15.0	43.5
4	148.85	7.6	V	16.5	2.1	26.3	-17.2	43.5
5	188.59	10.1	V	13.7	2.4	26.2	-17.3	43.5
6	195.22	8.3	Н	14.9	2.5	25.6	-17.9	43.5
7	212.80	10.9	Н	10.8	2.7	24.3	-19.3	43.6
8	470.40	7.2	Н	20.1	4.7	32.1	-13.9	46.0
9	512.00	7.2	V	17.9	5.0	30.1	-15.9	46.0
10	629.60	9.5	Н	20.7	5.7	35.9	-10.1	46.0
11	633.00	8.9	V	20.6	5.8	35.3	-10.7	46.0
12	873.60	5.6	V	23.6	7.2	36.3	-9.7	46.0

**SAMPLE CALCULATION:** FSdBuV/m = MR(dBuV) + ACFdB.

TEST PROCEDURE: ANSI STANDARD C63.4-2003 using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Pre-selector, a Hewlett Packard Model 85650A Quasi-Peak adapter, and an appropriate antenna - see the test equipment list. The bandwidth of spectrum analyzer was 100 kHz with an appropriate sweep speed. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported.

PERFORMED BY: Kyoung Moon Choi DATE: 06/27/08

APPLICANT: DASAN ELECTRON

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WH

NAME OF TEST: RADIATION INTERFERENCE (Below 1G)

Rules Part No.: 15.209

REQUIREMENTS: 30 to 88 MHz: 40.0 dBuV/M @ 3 METERS

> 88 to 216 MHz: 43.5 dBuV/M 216 to 960 MHz: 46.0 dBuV/M ABOVE 960 MHz: 54.0 dBuV/M

TEST RESULTS: A search was made of the spectrum from 30 to 1000 MHz and the measurements indicate that the unit DOES meet the FCC requirements.

TEST DATA:

\* Tuning Frequency: 2482.272MHz

No	Emission Frequency (MHz)	Meter Reading dBuV/m	Ant. Polaritry	Correction Factor dB	Cable Loss dB	Field Strength (dBuv/m)	Margin (dBuv)	Limit (dBuv/m)
1	44.96	10.2	Н	11.9	0.9	23.0	-17.0	40.0
2	81.85	9.8	V	8.5	1.4	19.7	-20.3	40.0
3	122.81	10.0	Н	11.3	1.9	23.2	-20.3	43.5
4	164.58	7.8	V	16.7	2.2	26.7	-16.8	43.5
5	182.15	6.9	Н	14.4	2.4	23.7	-19.8	43.5
6	388.00	8.3	V	15.2	4.1	27.6	-18.4	46.0
7	473.80	10.9	Н	19.8	4.7	35.4	-10.6	46.0
8	632.80	7.8	Н	20.6	5.8	34.1	-11.9	46.0
9	752.00	5.5	Н	21.0	6.5	32.9	-13.1	46.0
10	872.00	5.2	V	23.6	7.2	35.9	-10.1	46.0
11	886.40	4.9	Н	23.6	7.2	35.7	-10.3	46.0
12	966.40	7.0	V	23.7	7.4	38.0	-8.0	46.0

**SAMPLE CALCULATION:** FSdBuV/m = MR(dBuV) + ACFdB.

TEST PROCEDURE: ANSI STANDARD C63.4-2003 using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Pre-selector, a Hewlett Packard Model 85650A Quasi-Peak adapter, and an appropriate antenna - see the test equipment list. The bandwidth of spectrum analyzer was 100 kHz with an appropriate sweep speed. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported.

PERFORMED BY: Kyoung Moon Choi DATE: 06/27/08

APPLICANT: DASAN ELECTRON

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WH

NAME OF TEST: RADIATION INTERFERENCE(Receiver)

Rules Part No.: 15.109

REQUIREMENTS: 30 to 88 MHz: 40.0 dBuV/M @ 3 METERS

88 to 216 MHz: 43.5 dBuV/M 216 to 960 MHz: 46.0 dBuV/M ABOVE 960 MHz: 54.0 dBuV/M

TEST RESULTS: A search was made of the spectrum from 30 to 1000 MHz and the measurements indicate that the unit DOES meet the FCC requirements.

#### TEST DATA:

\* Tuning Frequency: 2401.056MHz

No	Emission Frequency (MHz)	Meter Reading dBuV/m	Ant. Polaritry	Correction Factor dB	Cable Loss dB	Field Strength (dBuv/m)	Margin (dBuv)	Limit (dBuv/m)
1	47.55	14.9	Н	11.4	1.0	27.2	-12.8	40.0
2	76.76	11.5	Н	7.2	1.3	20.0	-20.0	40.0
3	70.59	12.7	V	5.6	1.2	19.6	-20.4	40.0
4	135.54	9.8	Н	14.0	2.0	25.8	-17.7	43.5
5	191.02	6.5	V	13.8	2.4	22.7	-20.8	43.5
6	210.20	7.8	H	10.8	2.6	21.2	-22.3	43.5
7	496.00	5.5	V	18.3	4.9	28.7	-17.3	46.0
8	505.60	6.9	Н	18.0	4.9	29.9	-16.1	46.0
9	750.40	8.0	Н	21.0	6.5	35.4	-10.6	46.0
10	784.20	5.6	V	21.2	6.7	33.4	-12.6	46.0
11	893.60	4.9	Н	23.5	7.3	35.7	-10.3	46.0
12	899.60	5.3	V	23.4	7.3	36.0	-10.0	46.0

**SAMPLE CALCULATION:** FSdBuV/m = MR(dBuV) + ACFdB.

TEST PROCEDURE: ANSI STANDARD C63.4-2003 using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Pre-selector, a Hewlett Packard Model 85650A Quasi-Peak adapter, and an appropriate antenna - see the test equipment list. The bandwidth of spectrum analyzer was 100 kHz with an appropriate sweep speed. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported.

PERFORMED BY: Kyoung Moon Choi DATE: 06/27/08

APPLICANT: DASAN ELECTRON

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WH

NAME OF TEST: RADIATION INTERFERENCE(Receiver)

Rules Part No.: 15.109

REQUIREMENTS: 30 to 88 MHz: 40.0 dBuV/M @ 3 METERS

88 to 216 MHz: 43.5 dBuV/M 216 to 960 MHz: 46.0 dBuV/M ABOVE 960 MHz: 54.0 dBuV/M

TEST RESULTS: A search was made of the spectrum from 30 to 1000 MHz and the measurements indicate that the unit DOES meet the FCC requirements.

#### TEST DATA:

\* Tuning Frequency: 2441.664MHz

No	Emission Frequency (MHz)	Meter Reading dBuV/m	Ant. Polaritry	Correction Factor dB	Cable Loss dB	Field Strength (dBuv/m)	Margin (dBuv)	Limit (dBuv/m)
1	35.71	15.3	V	12.9	0.8	29.0	-11.0	40.0
2	73.37	11.8	Н	6.4	1.3	19.4	-20.6	40.0
3	79.39	10.7	V	7.9	1.3	19.9	-20.1	40.0
4	156.96	8.5	V	17.0	2.2	27.7	-15.8	43.5
5	184.11	10.2	Н	14.2	2.4	26.8	-16.7	43.5
6	210.60	12.0	Н	10.8	2.6	25.4	-18.1	43.5
7	435.60	9.5	Н	16.0	4.5	30.0	-16.0	46.0
8	489.60	7.8	V	18.6	4.8	31.2	-14.8	46.0
9	594.80	6.5	V	18.9	5.5	30.9	-15.1	46.0
10	720.40	5.4	V	21.3	6.3	33.0	-13.0	46.0
11	829.80	6.9	Н	22.5	6.9	36.3	-9.7	46.0
12	896.40	5.4	V	23.5	7.3	36.2	-9.8	46.0

**SAMPLE CALCULATION:** FSdBuV/m = MR(dBuV) + ACFdB.

TEST PROCEDURE: ANSI STANDARD C63.4-2003 using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Pre-selector, a Hewlett Packard Model 85650A Quasi-Peak adapter, and an appropriate antenna - see the test equipment list. The bandwidth of spectrum analyzer was 100 kHz with an appropriate sweep speed. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported.

PERFORMED BY: Kyoung Moon Choi DATE: 06/27/08

APPLICANT: DASAN ELECTRON

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WH

NAME OF TEST: RADIATION INTERFERENCE(Receiver)

Rules Part No.: 15.109

REQUIREMENTS: 30 to 88 MHz: 40.0 dBuV/M @ 3 METERS

88 to 216 MHz: 43.5 dBuV/M 216 to 960 MHz: 46.0 dBuV/M ABOVE 960 MHz: 54.0 dBuV/M

TEST RESULTS: A search was made of the spectrum from 30 to 1000 MHz and the measurements indicate that the unit DOES meet the FCC requirements.

#### TEST DATA:

\* Tuning Frequency: 2482.272MHz

No	Emission Frequency (MHz)	Meter Reading dBuV/m	Ant. Polaritry	Correction Factor dB	Cable Loss dB	Field Strength (dBuv/m)	Margin (dBuv)	Limit (dBuv/m)
1	58.24	14.2	V	8.0	1.1	23.3	-16.7	40.0
2	116.72	12.5	Н	10.9	1.8	25.2	-18.3	43.5
3	117.66	10.5	V	10.9	1.8	23.1	-20.4	43.5
4	199.42	9.3	V	16.0	2.5	27.8	-15.7	43.5
5	280.20	11.1	Н	17.3	3.3	31.7	-14.3	46.0
6	345.80	7.8	Н	15.2	3.8	26.8	-19.2	46.0
7	479.40	8.1	Н	19.1	4.8	32.0	-14.0	46.0
8	510.80	5.3	V	17.9	5.0	28.2	-17.8	46.0
9	689.60	9.5	V	21.3	6.1	36.9	-9.1	46.0
10	701.20	6.1	Н	21.4	6.2	33.7	-12.3	46.0
11	858.40	7.6	Н	23.3	7.1	37.9	-8.1	46.0
12	937.80	4.9	V	23.1	7.4	35.4	-10.6	46.0

**SAMPLE CALCULATION:** FSdBuV/m = MR(dBuV) + ACFdB.

TEST PROCEDURE: ANSI STANDARD C63.4-2003 using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Pre-selector, a Hewlett Packard Model 85650A Quasi-Peak adapter, and an appropriate antenna - see the test equipment list. The bandwidth of spectrum analyzer was 100 kHz with an appropriate sweep speed. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported.

PERFORMED BY: Kyoung Moon Choi DATE: 06/27/08

APPLICANT: DASAN ELECTRON

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WH

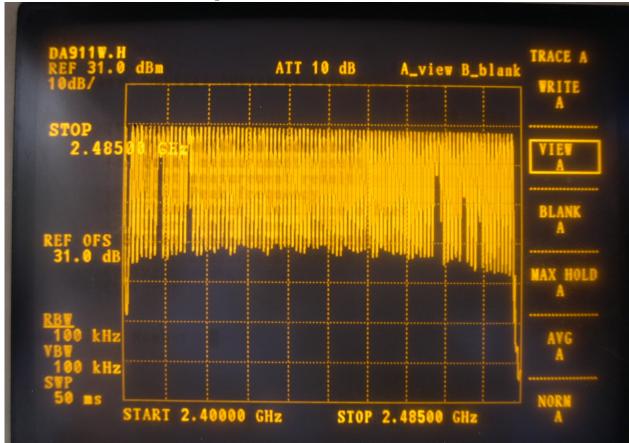
NAME OF TEST: NUMBER OF HOPPING CHANNELS

Rules Part No.: 15.247(a)(1)

#### Requirements:

902-928 MHz	If the 20 dB bandwidth is less than 250 kHz, the system
	shall use at least 50 hopping frequencies.
	If the 20 dB bandwidth is 250 kHz or greater, the system shall use at least 25 hopping frequencies.
2400-2483.5 MHz	At least 15 channels
5725-5850 MHz	At least 75 channels

Test Data: The number of hops(94)



APPLICANT: DASAN ELECTRON

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APPLICANT: DASAN ELECTRON FCC ID: WF2DA-911WH

NAME OF TEST: DWELL TIME OF A HOPPING CHANNEL

Rules Part No.: 15.247(a)(1)(i)

Requirements:

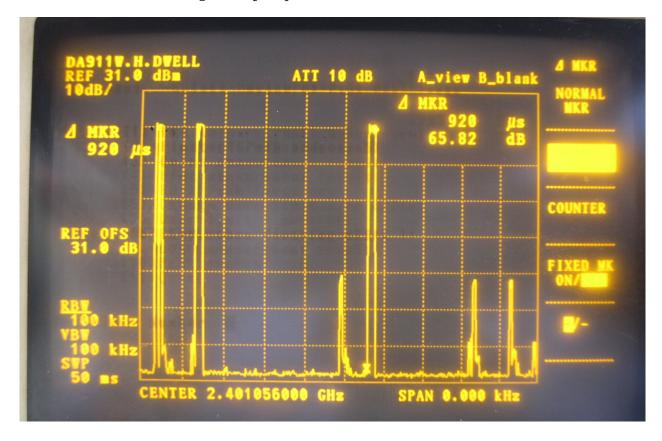
902-928 MHz	If 20 dB bandwidth is less than 250 kHz, Dwell time < = 0.4 seconds in a 20 second period.
	If 20 dB bandwidth is 250 kHz or greater, Dwell time < = 0.4 seconds n a 10 second period.
2400-2483.5 MHz	<pre>&lt; = 0.4 seconds in a 0.4 seconds multiplied the number of hopping channels employed.</pre>
5725-5850 MHz	<pre>&lt; = 0.4 seconds in a 30 second period.</pre>

#### Test Data:

OCCUPANCY Time of Frequency Hopping System
Test time Period: 0.4 X 94 = 37.6sec,
Hopping Time which in 1sec: 11 / 10sec = 1.1/sec

Hopping Time which in lsec : 11 / 10sec = 1.1/sec => The Maximmum OCCUPANCY Time within 37.6Sec : (920us X 1100) / (94 X 37.6) = 286.328msec

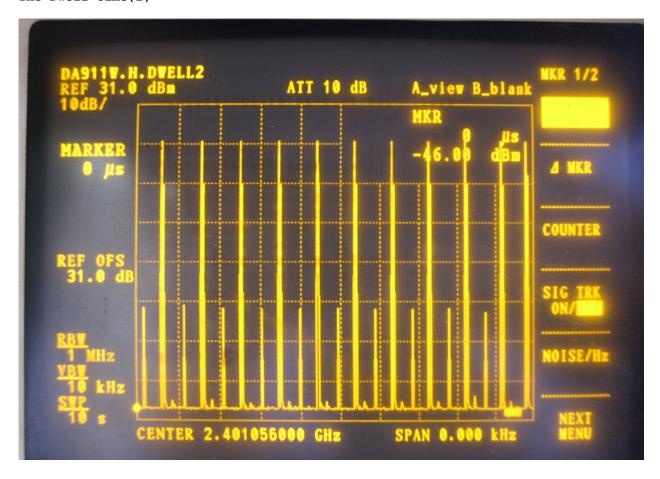
Test Result : The Average Occupancy Time is Less Then 0.4sec.



APPLICANT: DASAN ELECTRON

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The Dwell time(2)



APPLICANT: DASAN ELECTRON

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WH

NAME OF TEST: OCCUPIED BANDWIDTH

**Rules Part No.:** 15.247(a)(2)

Requirements: 20 dB bandwidth

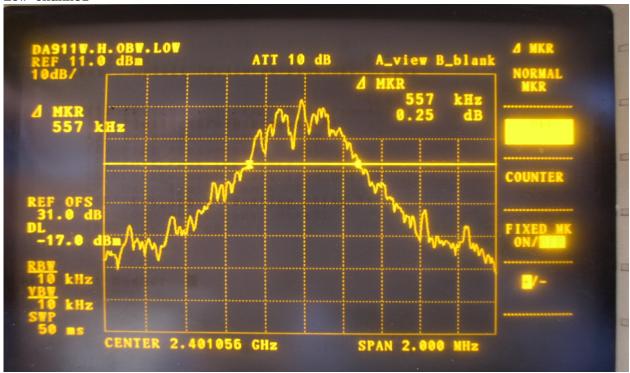
Test Data: See the following plot

Channel	Frequency(MHz)	Measurement Level(kHz)	Required Limit(kHz)	Result
0	2401.056	557	>500	PASS
47	2441.664	603	>500	PASS
94	2482.272	635	>500	PASS

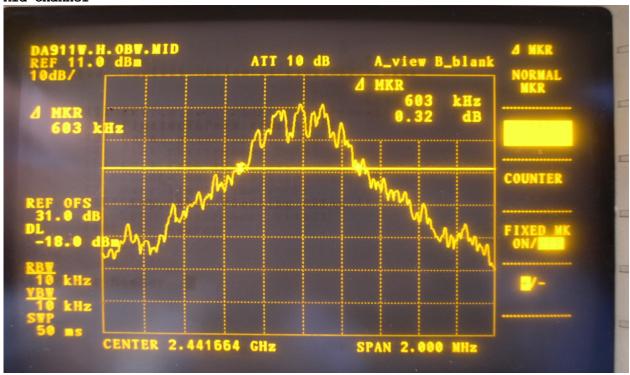
APPLICANT: DASAN ELECTRON

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Low channel



Mid channel



APPLICANT: DASAN ELECTRON FCC ID: WF2DA-911WH REPORT #: THRU-806006

477-6, Hager-Ri, Yoju-Up, Yoju-Gun Kyunggi-Do,469-803, Korea T820318835092F820318835169 email thrukang@kornet.net

High channel



APPLICANT: DASAN ELECTRON