THRU Lab & Engineering.

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Test Report

Product Name: Digital Transmission System

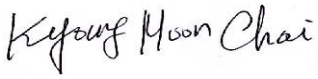
FCC ID: WF2DA-911WB

Applicant:
DASAN ELECTRON

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

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

Tested by Kyoung M. Choi



Approved by K.T. Kang

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WB

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BLOCK DIAGRAM
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INTERNAL PHOTOGRAPHS
OPERATIONAL DESCRIPTION
TEST SET UP PHOTOGRAPH

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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 10MHz 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.

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WB

NAME OF TEST: RADIATION INTERFERENCE

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	42.80	14.6	V	12.3	0.9	27.8	-12.2	40.0
2	60.61	13.5	V	7.3	1.1	21.9	-18.1	40.0
3	85.49	15.3	H	9.4	1.4	26.1	-13.9	40.0
4	139.65	15.7	H	15.0	2.0	32.7	-10.8	43.5
5	245.20	9.4	V	11.6	3.1	24.1	-21.9	46.0
6	287.20	8.6	H	17.6	3.3	29.5	-16.5	46.0
7	465.00	6.5	V	19.1	4.7	30.3	-15.7	46.0
8	570.40	8.0	V	18.5	5.4	31.8	-14.2	46.0
9	629.00	7.6	V	20.6	5.7	34.0	-12.0	46.0
10	818.00	9.0	H	22.1	6.9	38.0	-8.0	46.0
11	864.20	6.5	V	23.4	7.1	37.0	-9.0	46.0
12	964.50	5.9	H	23.6	7.4	36.9	-9.1	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**

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WB

NAME OF TEST: RADIATION INTERFERENCE

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	40.57	15.6	H	12.7	0.8	29.1	-10.9	40.0
2	128.31	13.0	V	12.4	1.9	27.3	-16.2	43.5
3	158.77	12.0	H	17.1	2.2	31.3	-12.2	43.5
4	190.30	10.8	H	13.6	2.4	26.8	-16.7	43.5
5	274.40	9.5	H	15.5	3.3	28.3	-17.7	46.0
6	335.00	8.7	V	16.2	3.7	28.6	-17.4	46.0
7	458.00	8.0	V	17.8	4.6	30.4	-15.6	46.0
8	579.60	7.5	H	18.6	5.4	31.5	-14.5	46.0
9	602.00	6.9	V	19.1	5.6	31.6	-14.4	46.0
10	654.00	5.5	H	20.3	5.9	31.7	-14.3	46.0
11	738.80	4.9	V	21.1	6.4	32.4	-13.6	46.0
12	934.00	7.0	H	23.1	7.4	37.5	-8.5	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.

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WB

NAME OF TEST: RADIATION INTERFERENCE

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	35.90	14.0	H	12.9	0.8	27.7	-12.3	40.0
2	50.66	15.0	V	10.7	1.0	26.7	-13.3	40.0
3	67.10	13.9	H	6.0	1.2	21.1	-18.9	40.0
4	129.07	11.5	H	12.5	1.9	25.9	-17.6	43.5
5	183.11	10.0	V	14.3	2.4	26.7	-16.8	43.5
6	282.80	11.5	H	17.4	3.3	32.2	-13.8	46.0
7	367.60	9.0	V	14.9	3.9	27.9	-18.1	46.0
8	596.00	8.7	H	18.9	5.5	33.1	-12.9	46.0
9	699.20	8.5	V	21.4	6.2	36.1	-9.9	46.0
10	753.60	7.4	H	21.0	6.5	34.9	-11.1	46.0
11	842.00	6.8	V	22.8	7.0	36.6	-9.4	46.0
12	924.00	6.2	H	23.2	7.4	36.7	-9.3	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.

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WB

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	47.25	15.9	H	11.4	1.0	28.3	-11.7	40.0
2	55.83	11.6	H	8.9	1.1	21.6	-18.4	40.0
3	126.57	13.0	V	12.0	1.9	26.9	-16.6	43.5
4	161.94	7.2	V	16.9	2.2	26.3	-17.2	43.5
5	202.00	8.9	H	10.9	2.6	22.3	-21.2	43.5
6	278.80	8.1	V	16.9	3.3	28.3	-17.7	46.0
7	309.50	9.2	H	15.8	3.5	28.5	-17.5	46.0
8	431.60	7.9	V	15.9	4.4	28.3	-17.7	46.0
9	526.00	7.2	H	17.8	5.1	30.0	-16.0	46.0
10	582.00	5.0	V	18.6	5.4	29.1	-16.9	46.0
11	791.50	7.1	H	21.3	6.7	35.2	-10.8	46.0
12	859.20	6.6	V	23.3	7.1	37.0	-9.0	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.

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WB

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	41.66	14.5	H	12.5	0.9	27.9	-12.1	40.0
2	66.71	13.1	H	6.1	1.2	20.4	-19.6	40.0
3	73.57	15.0	V	6.4	1.3	22.6	-17.4	40.0
4	117.13	13.1	V	10.9	1.8	25.8	-17.7	43.5
5	175.33	15.0	V	15.3	2.3	32.7	-10.8	43.5
6	210.20	6.6	H	10.8	2.6	20.0	-23.5	43.5
7	324.20	8.2	V	16.1	3.6	27.9	-18.1	46.0
8	579.40	7.2	V	18.6	5.4	31.2	-14.8	46.0
9	682.00	7.1	H	21.2	6.1	34.4	-11.6	46.0
10	838.80	4.5	V	22.7	7.0	34.2	-11.8	46.0
11	960.60	5.2	V	23.5	7.4	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.

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NAME OF TEST: RADIATION INTERFERENCE(Receiver)

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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	35.00	15.9	H	13.0	0.7	29.6	-10.4	40.0
2	59.98	13.8	H	7.4	1.1	22.3	-17.7	40.0
3	71.54	13.9	V	5.9	1.2	21.1	-18.9	40.0
4	136.80	8.0	H	14.3	2.0	24.3	-19.2	43.5
5	156.15	5.7	V	17.0	2.2	24.9	-18.6	43.5
6	223.80	7.9	V	10.8	2.8	21.5	-24.5	46.0
7	466.20	7.2	H	19.4	4.7	31.3	-14.7	46.0
8	509.50	6.0	H	18.0	5.0	29.0	-17.0	46.0
9	590.50	6.0	V	18.8	5.5	30.2	-15.8	46.0
10	642.00	7.8	H	20.4	5.8	34.0	-12.0	46.0
11	861.00	7.7	V	23.3	7.1	38.1	-7.9	46.0
12	872.00	8.0	H	23.6	7.2	38.7	-7.3	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.

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WB

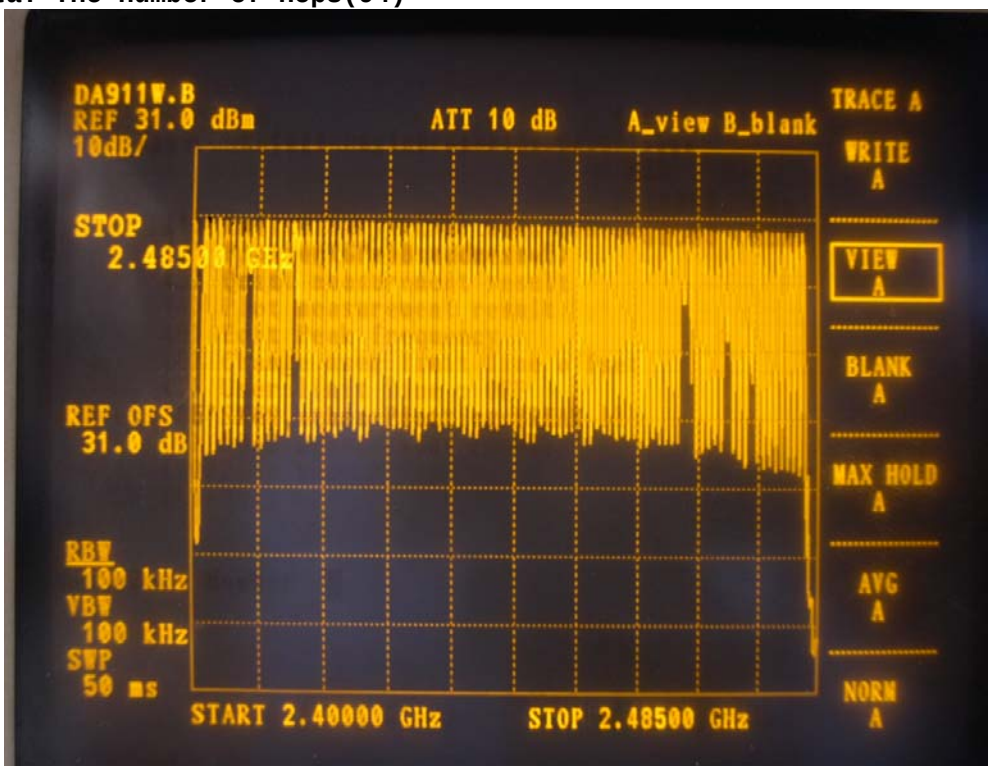
NAME OF TEST: NUMBER OF HOPPING CHANNELS

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)



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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WB

NAME OF TEST: DWELL TIME OF A HOPPING CHANNEL

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

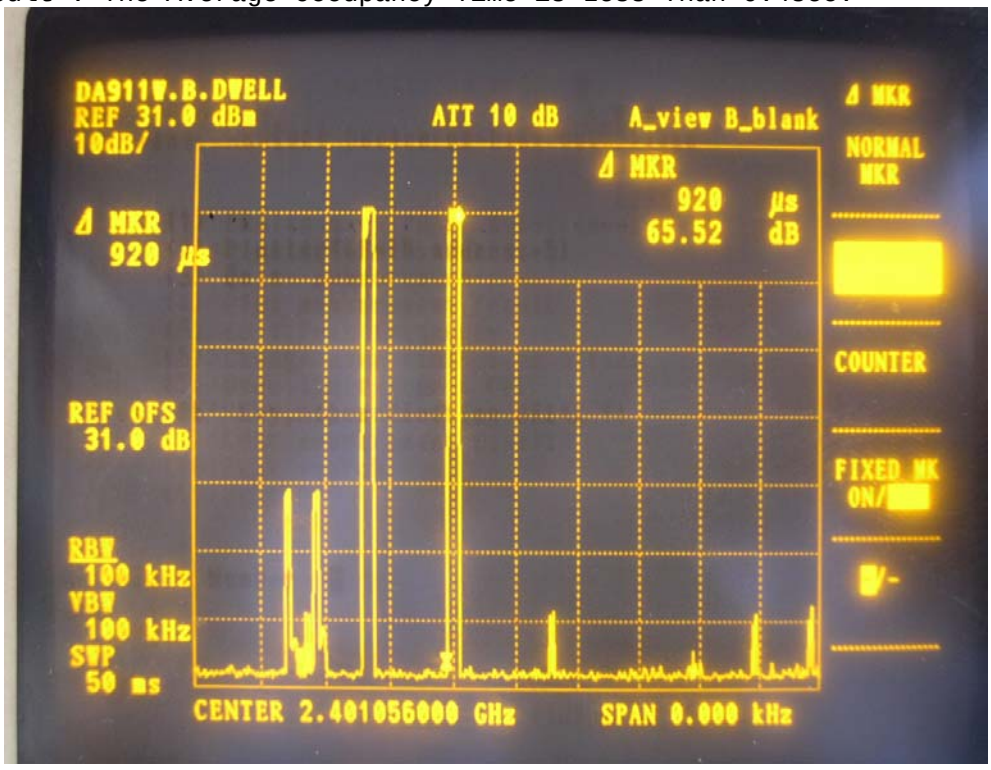
Requirements:

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	< = 0.4 seconds in a 0.4 seconds multiplied the number of hopping channels employed.
5725-5850 MHz	< = 0.4 seconds in a 30 second period.

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
=> The Maximmum OCCUPANCY Time within 37.6sec :
(920us X 1100) / (94 X 37.6) = 286.328msec

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



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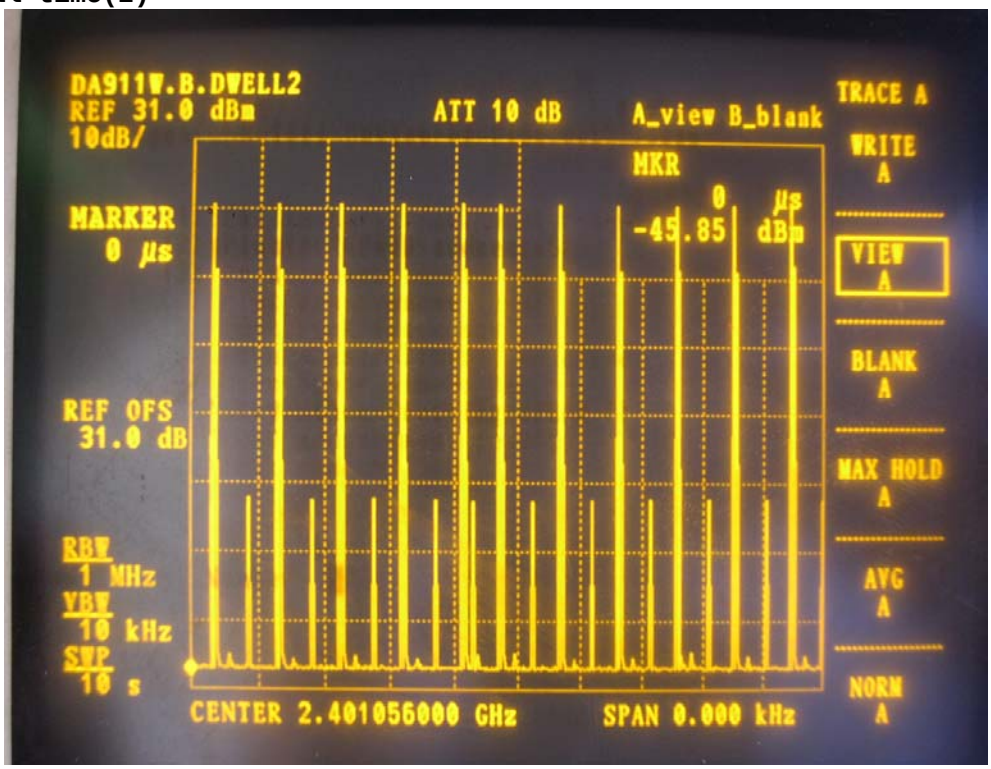
The Dwell time(2)



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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WB

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	566	>500	PASS
47	2441.664	591	>500	PASS
94	2482.272	632	>500	PASS

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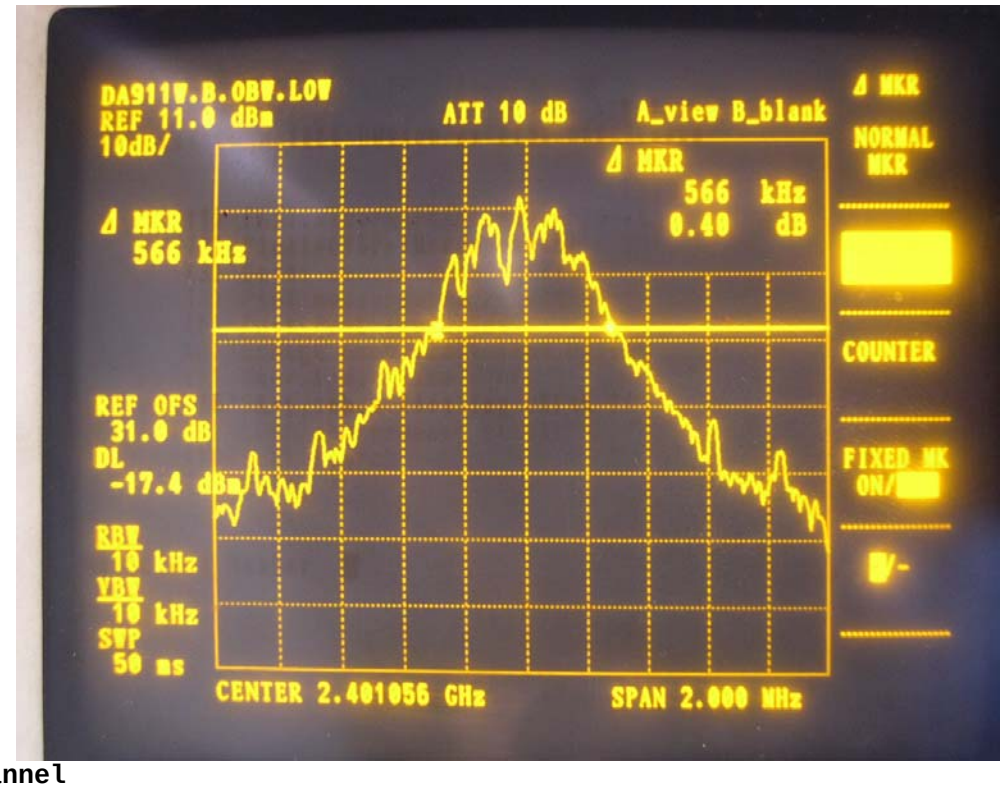
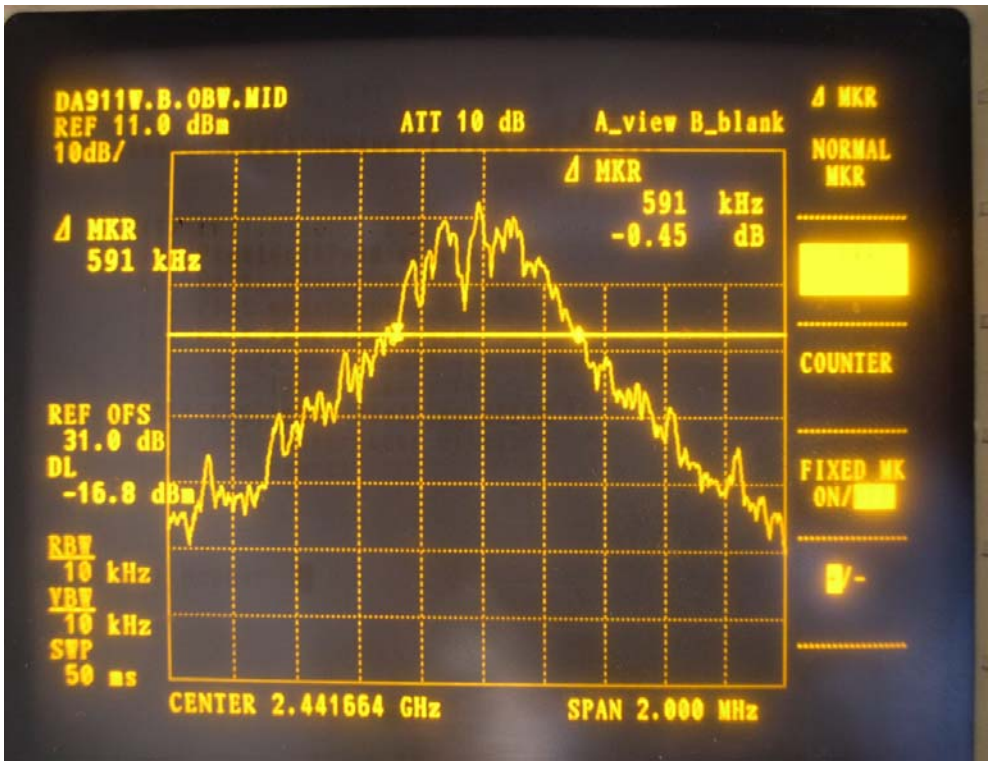
Low channel



Mid channel



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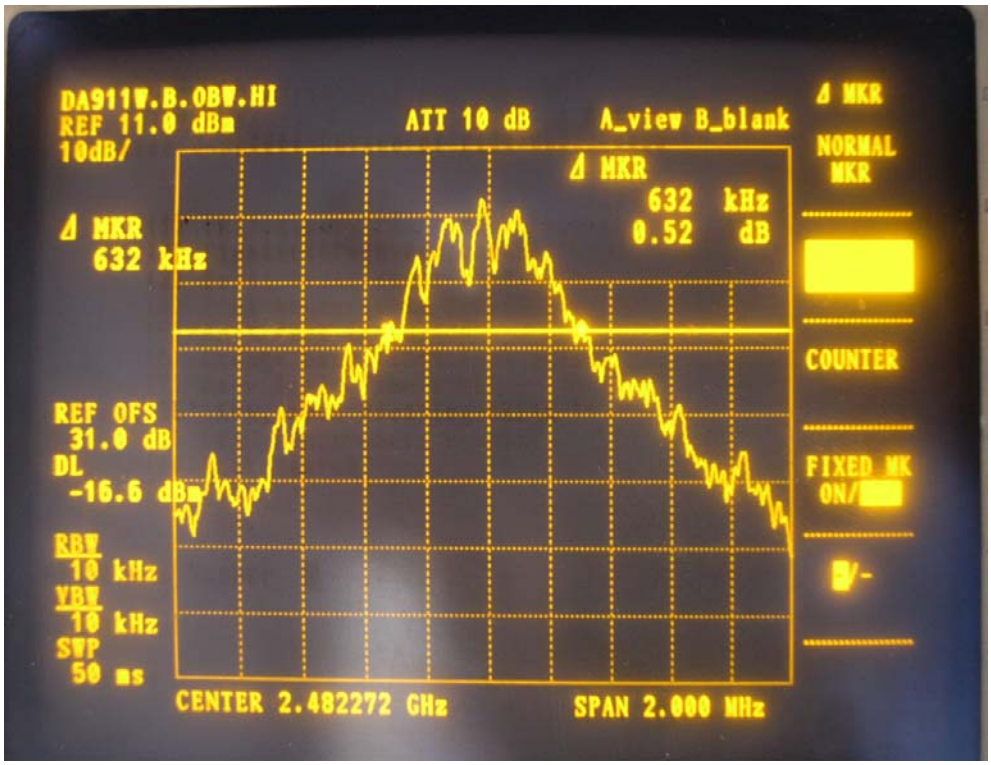
High channel



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APPLICANT: DASAN ELECTRON

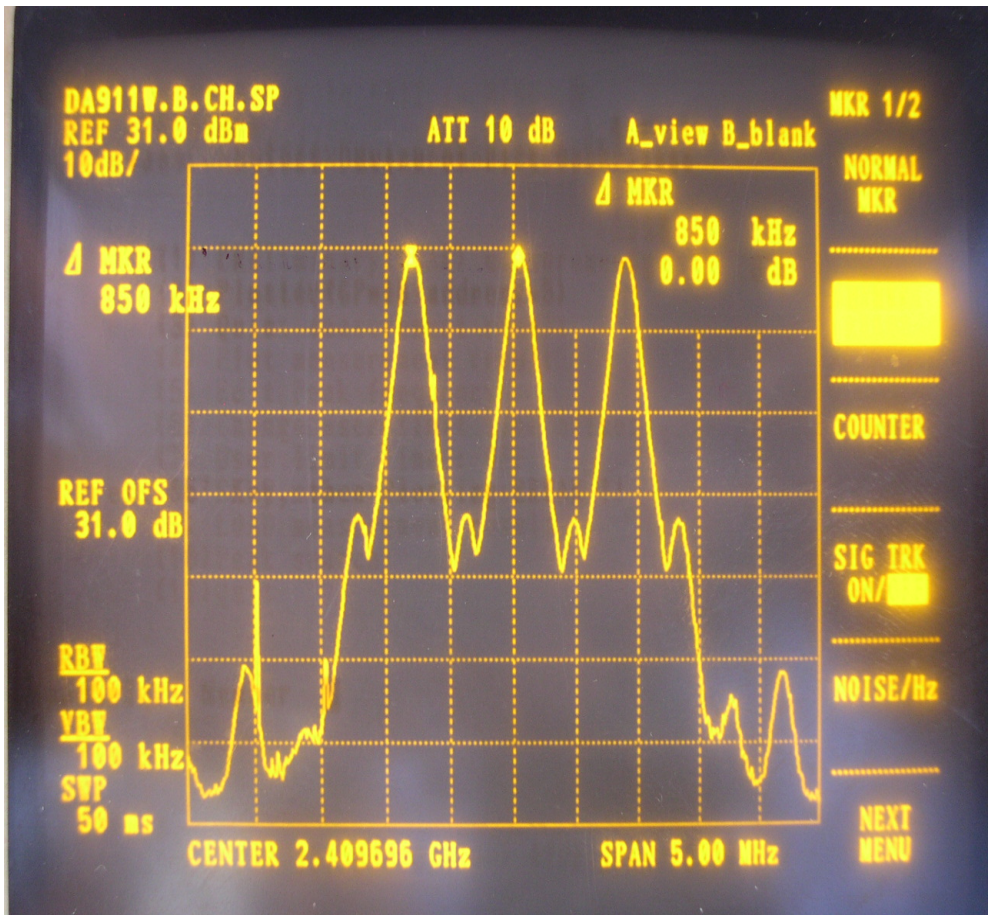
FCC ID: WF2DA-911WB

NAME OF TEST: CARRIER FREQUENCY SEPARATION

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

Requirements: The hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Test Data:
The channel frequency separation(850kHz)



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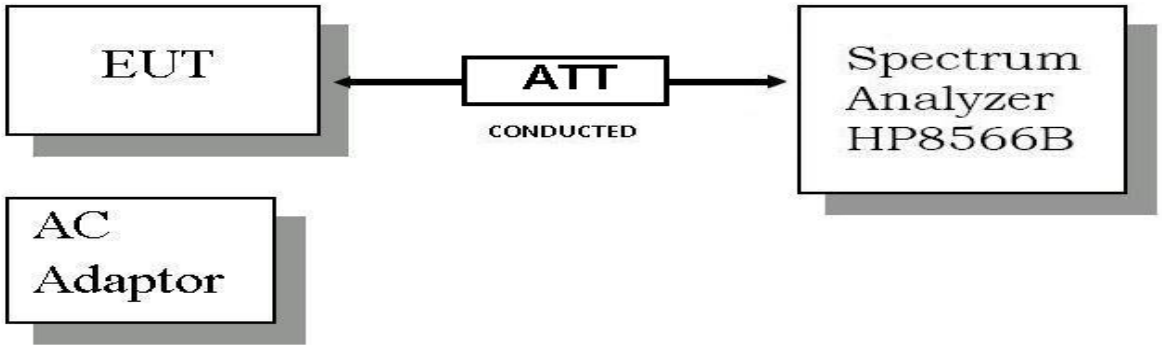
APPLICANT: DASAN ELECTRON
FCC ID: WF2DA-911WB
NAME OF TEST: CONDUCTED POWER OUTPUT
Rules Part No.: 15.247(b)(1)
Requirements: The maximum peak output power shall not exceed 1 watt (30 dBm). If directional transmitting antennas with a gain of more than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

Both the base and handset have a maximum power output of less than +30 dBm. Power was measured by disconnecting the antennas and measuring across a 50 ohm load as recommended by the manufacturer using a HP spectrum analyzer Model 8566B. The antennas are non-directional and do not exceed 6dBi gain. The power output was measured at three places in the band highest is reported below.



Test Data:

Frequency	dBm	mW
Low Channel 2401.056 MHz	1.60dBm	1.445mW
Mid Channel 2441.664 MHz	1.87dBm	1.538mW
High Channel 2482.272 MHz	2.80dBm	1.905mW

Three places in the band were measured and the highest power presented above.

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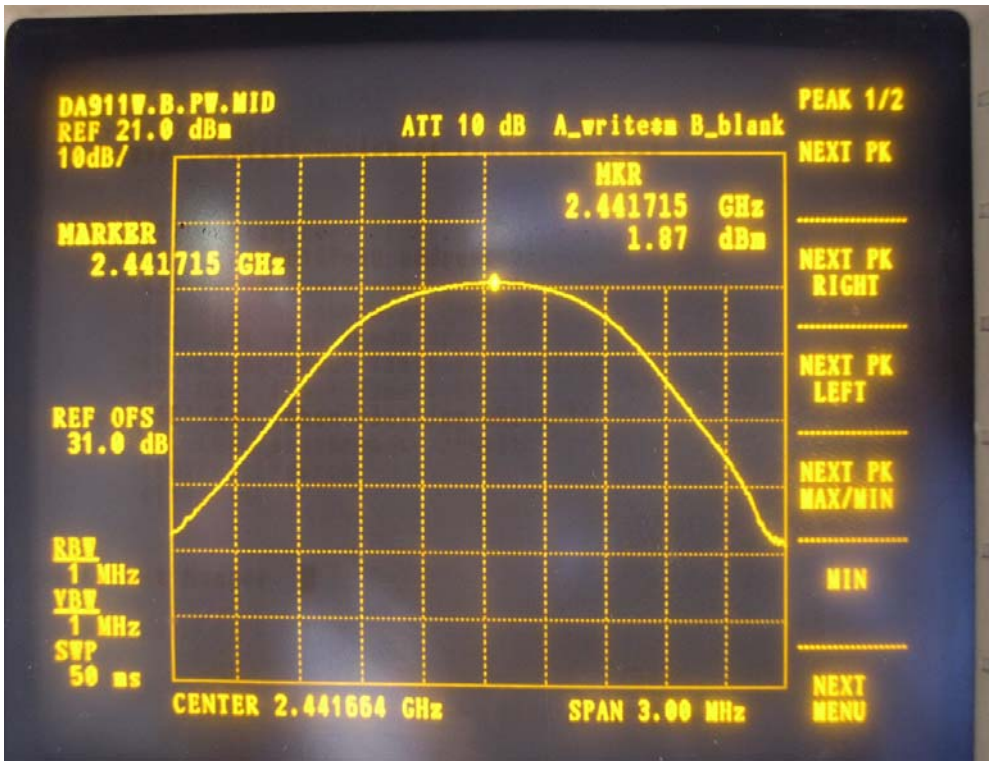
Low channel

Mid channel



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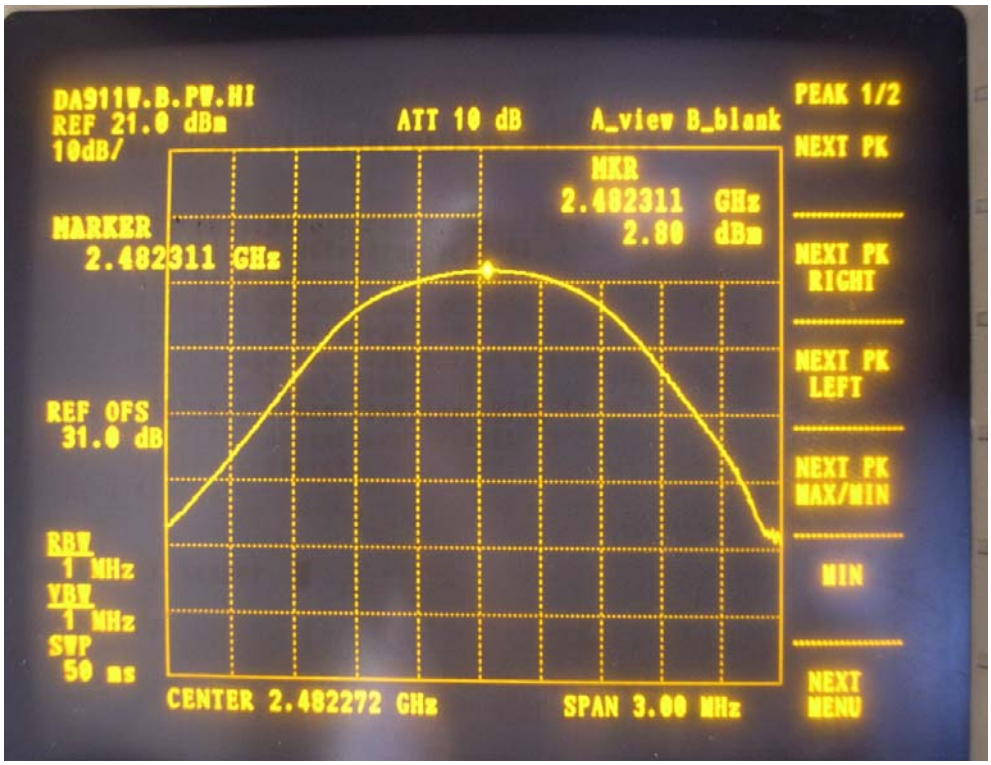
High channel



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APPLICANT: DASAN ELECTRON

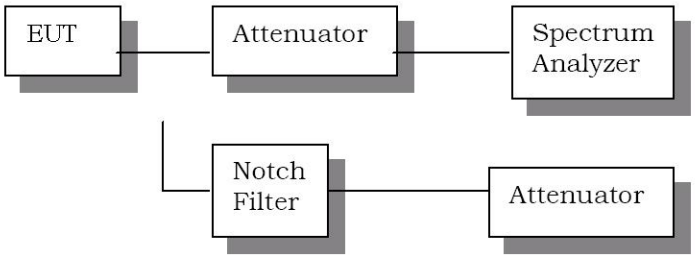
FCC ID: WF2DA-911WB

NAME OF TEST: SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Rules Part No.: 15.247(c)

Requirements: Emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

Method of Measuring:



Note: The spectrum was scanned to the tenth harmonic.

Test Data:

"Not Applicable"

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WB

NAME OF TEST: FIELD STRENGTH OF SPURIOUS EMISSIONS

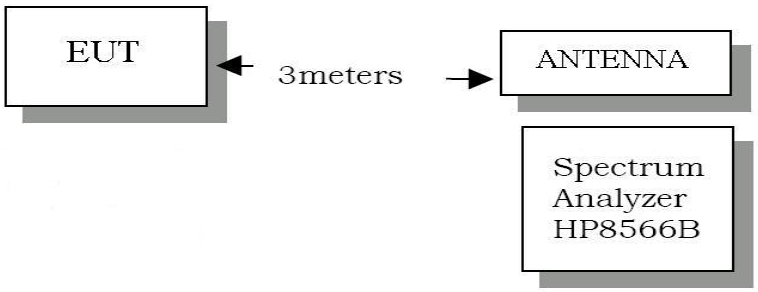
Rules Part No.: 15.247(c), 15.205 &15.209(b)

Requirements:

(Fundamental) Frequency	(Field Strength) Limits
902 – 928MHz	127.37dBuV/m
2.4 – 2.4835GHz	54 dBuV/m @3m
30 - 88 MHz	40 dBuV/m @3M
88 -216 MHz	43.5 dBuV/m @3M
216 -960 MHz	46 dBuV/m @3M
ABOVE 960 MHz	54dBuV/m

Emissions that fall in the restricted bands (15.205) must be less than or equal to 500 uV/m (54dBuV/m). Spurious not in a restricted band must be 20 dBc.

Test Setup



Equipment placed 80cm above ground on a rotatable platform.

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Test Data:

Low : 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)	Mode
1	4802.11	4.1	H	33.7	4.6	42.4	-11.6	54.0	PK
2	7203.16	11.8	H	36.1	5.7	53.7	-0.3	54.0	PK
3	4802.11	3.5	V	33.7	4.6	41.8	-12.2	54.0	PK
4	7203.16	13.1	V	36.1	5.7	55.0	1.0	54.0	PK

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)	Mode
1	7203.16	7.6	H	36.1	5.7	49.5	-4.5	54.0	AV
2	7206.16	9.0	V	36.1	5.7	50.9	-3.1	54.0	AV

Mid : 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)	Mode
1	4883.33	5.5	H	33.9	4.6	44.1	-9.9	54.0	PK
2	7325.00	11.3	H	36.2	5.8	53.3	-0.7	54.0	PK
3	4883.33	7.2	V	33.9	4.6	45.8	-8.2	54.0	PK
4	7325.00	12.0	V	36.2	5.8	54.0	0.0	54.0	PK

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)	Mode
1	7325.00	8.0	H	36.2	5.8	50.0	-4.0	54.0	AV
2	4883.33	7.2	V	33.9	4.6	45.8	-8.2	54.0	AV

High : 2480.272MHz

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)	Mode
1	4964.54	5.1	H	34.2	4.7	43.9	-10.1	54.0	PK
2	7446.81	11.2	H	36.3	5.9	53.3	-0.7	54.0	PK
3	4964.54	10.0	V	34.2	4.7	48.8	-5.2	54.0	PK
4	7446.81	13.0	V	36.3	5.9	55.1	1.1	54.0	PK

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)	Mode
1	7446.81	6.9	H	36.3	5.9	49.0	-5.0	54.0	AV
2	7446.81	8.0	V	36.3	5.9	50.1	-3.9	54.0	AV

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WB

NAME OF TEST: RADIATED SPURIOUS EMISSIONS INTO ADJACENT RESTRICTED BAND

Rule Parts No.: Part 15.205

Requirements: Emissions that fall in the restricted bands (15.205). These emissions must be less than or equal to 500 uV/m (54dBuV/m). Emissions not in the restricted band must be 20 dBc.

Test Data

Result :

1. Reading dBuV + Step Atten Value(10dB) – PAM-0118 Preamplifier Gain(46.4dB)

2. 1 + ANT Factor + Cable Loss

Low
PK : 48.10 + 10 – 46.4 = 11.7dBuV
AV : 38.60 + 10 – 46.4 = 2.2dBuV

High
PK : 50.00 + 10 – 46.4 = 13.6dBuV
AV : 38.80 + 10 – 46.4 = 2.4dBuV

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)
	Low							
PK	**2390.80**	**11.7**	**V**	**27.8**	**3.3**	**42.8**	**-11.2**	**54.0**
AV	**2390.80**	**2.2**	**V**	**27.8**	**3.3**	**33.3**	**-20.7**	**54.0**
	HIGH							
PK	**2477.85**	**13.6**	**V**	**27.9**	**3.3**	**44.8**	**-9.2**	**54.0**
AV	**2477.85**	**2.4**	**V**	**27.9**	**3.3**	**33.6**	**-20.4**	**54.0**

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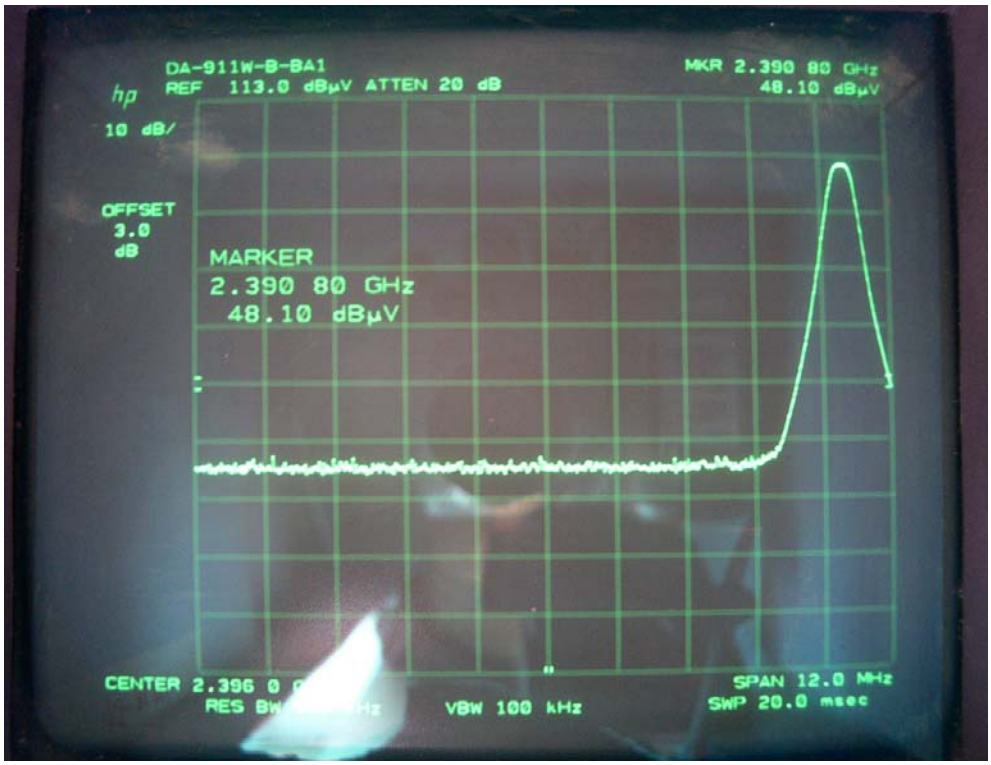
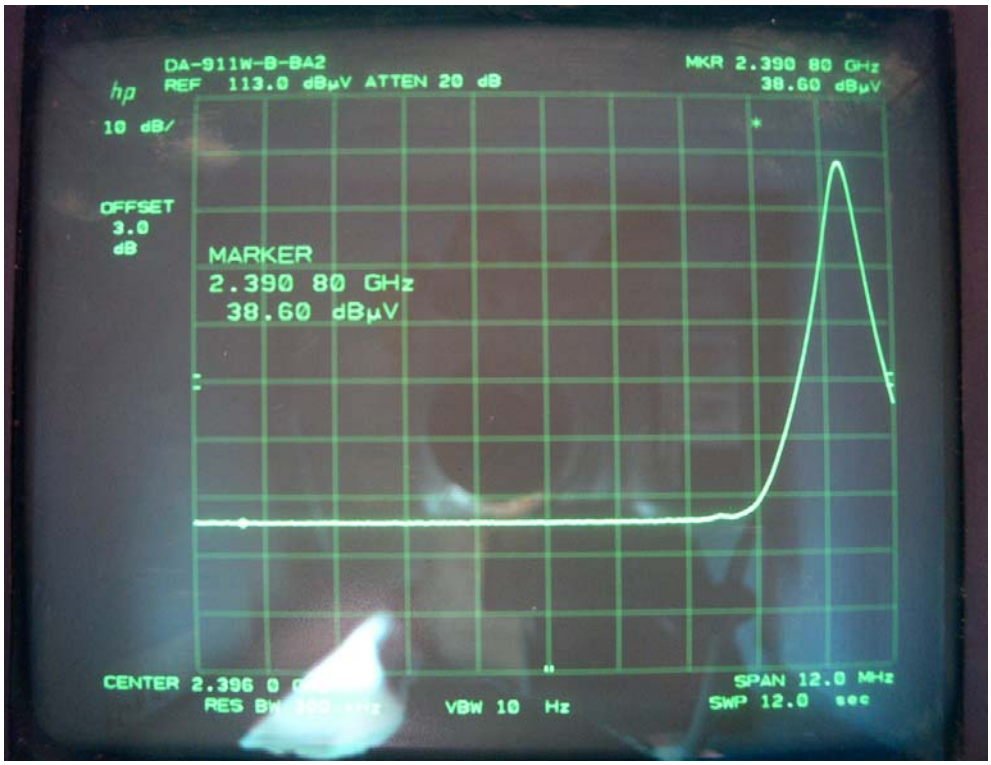
Low channel





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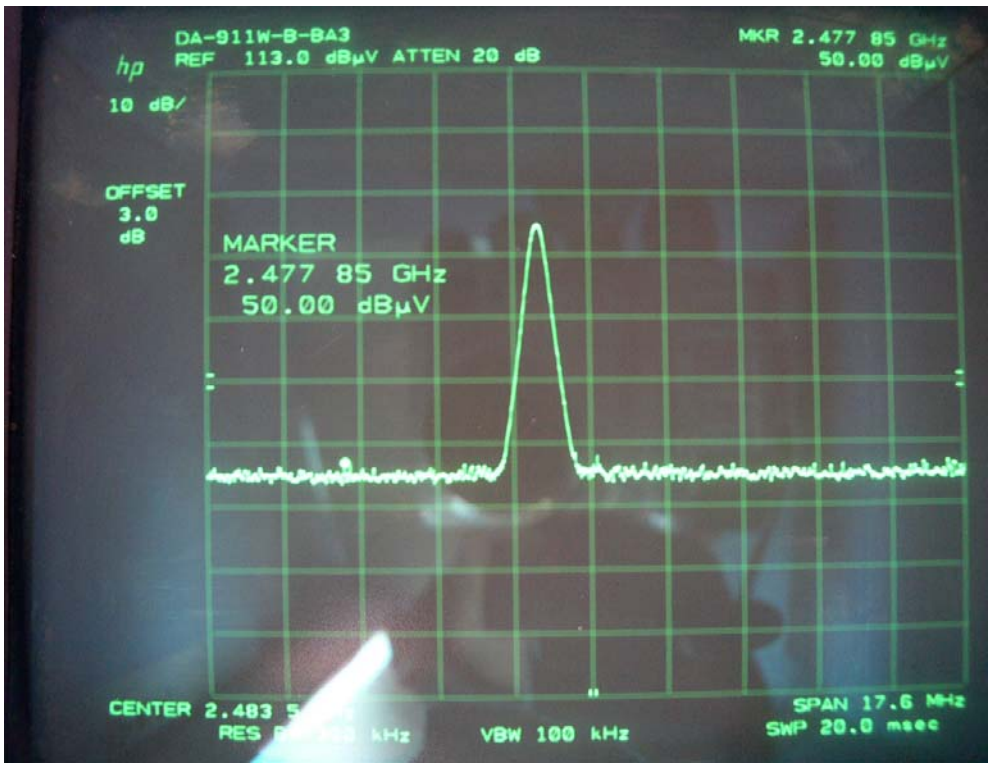
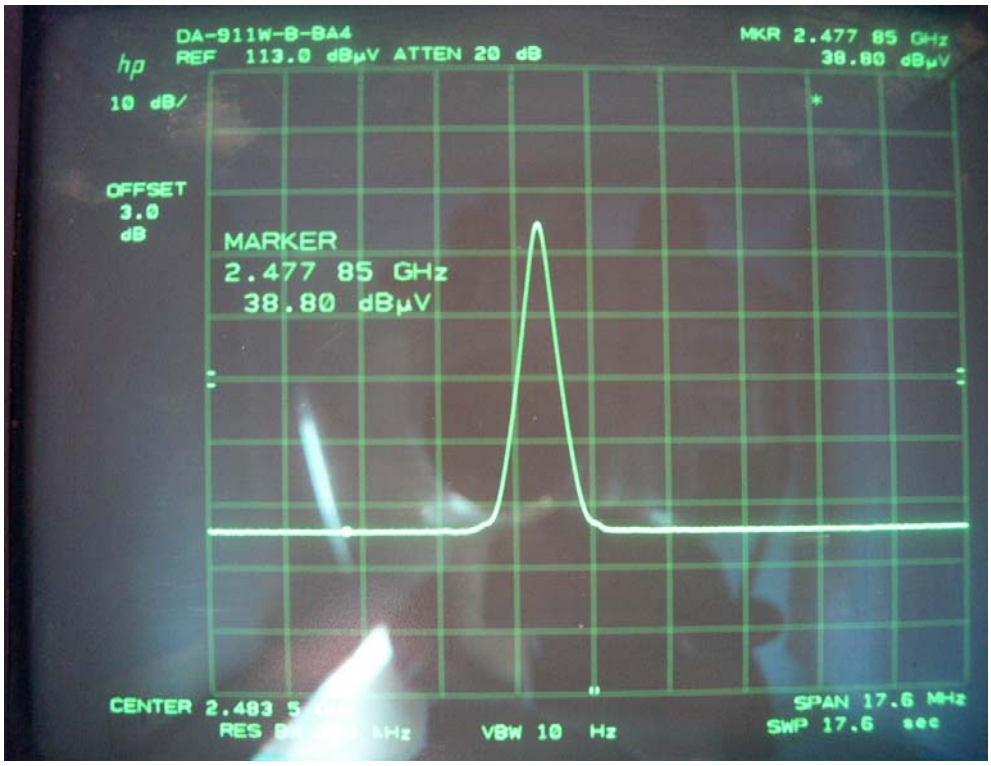
High channel





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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WB

NAME OF TEST: POWER LINE CONDUCTED INTERFERENCE

RULES PART NO.: 15.207

REQUIREMENTS:		**QUASI-PEAK**	**AVERAGE**
	.15 – 0.5 MHz	66-56 dBuV	56-46 dBuV
	0.5 – 5.0	56	46
	5.0 – 30.	60	50

TEST PROCEDURE: ANSI STANDARD C63.4-1992. The spectrum was scanned from .15 to 30 MHz.

EUT Status : TX mode

The highest emission read for Line 1 was 0.153MHz @ 41.8dBuV
The highest emission read for Line 2 was 0.150MHz @ 37.0dBuV

EUT Status : RX mode

The highest emission read for Line 1 was 0.152MHz @ 41.8dBuV
The highest emission read for Line 2 was 0.150MHz @ 39.9dBuV

EUT Status : Charging mode

The highest emission read for Line 1 was 0.150MHz @ 42.0dBuV
The highest emission read for Line 2 was 0.151MHz @ 40.0dBuV

THE GRAPHS ON THE FOLLOWING PAGES REPRESENT THE EMISSIONS READ FOR POWER LINE CONDUCTED FOR THIS DEVICE.

TEST RESULTS: Both lines were observed. The measurements indicate that the unit DOES appear to meet the FCC requirements for this class of equipment.

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Line1(H) – TX

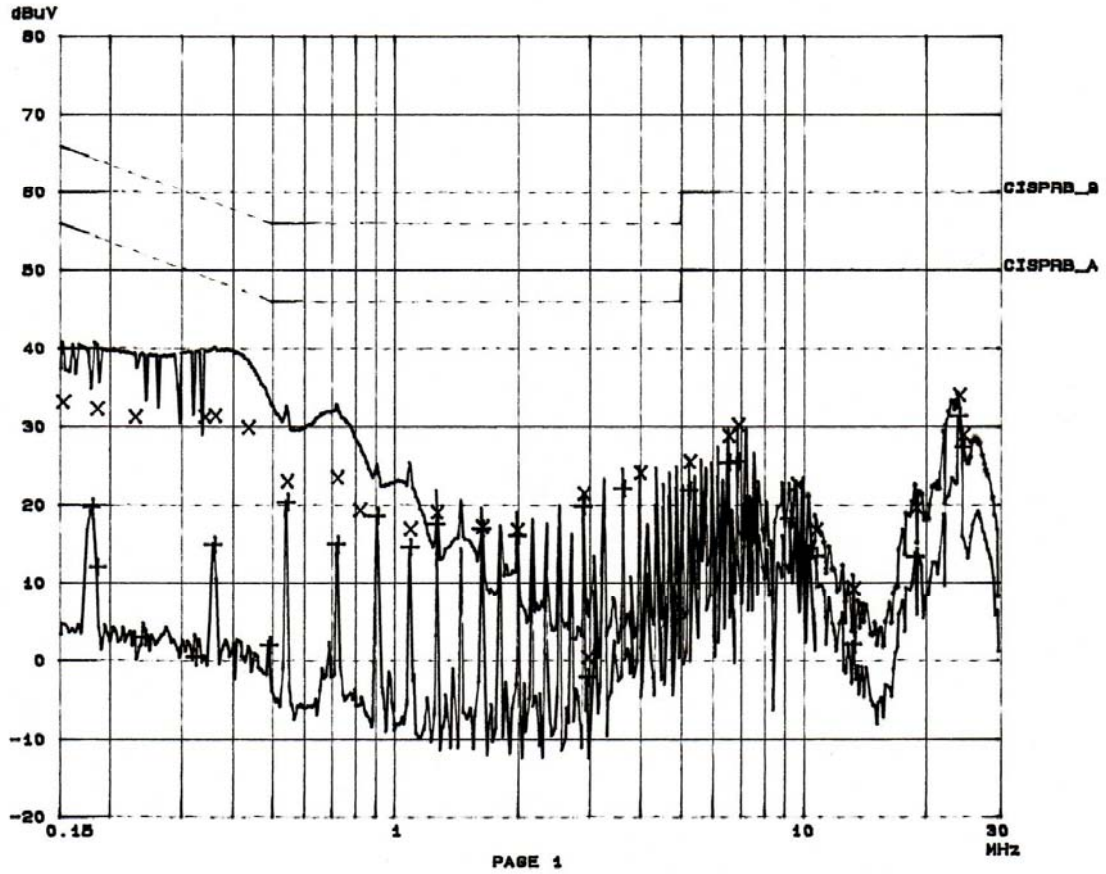
CONDUCTED EMISSION

Manuf: DASAN
Op Cond: H
Operator: THRU

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	3M	3k	10k	PK+AV	10ms	AUTO	LN ON	60dB
3M	30M	8k	10k	PK+AV	10ms	AUTO	LN ON	60dB

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 25
Acc Margin: 50dB



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Line2(N) – TX

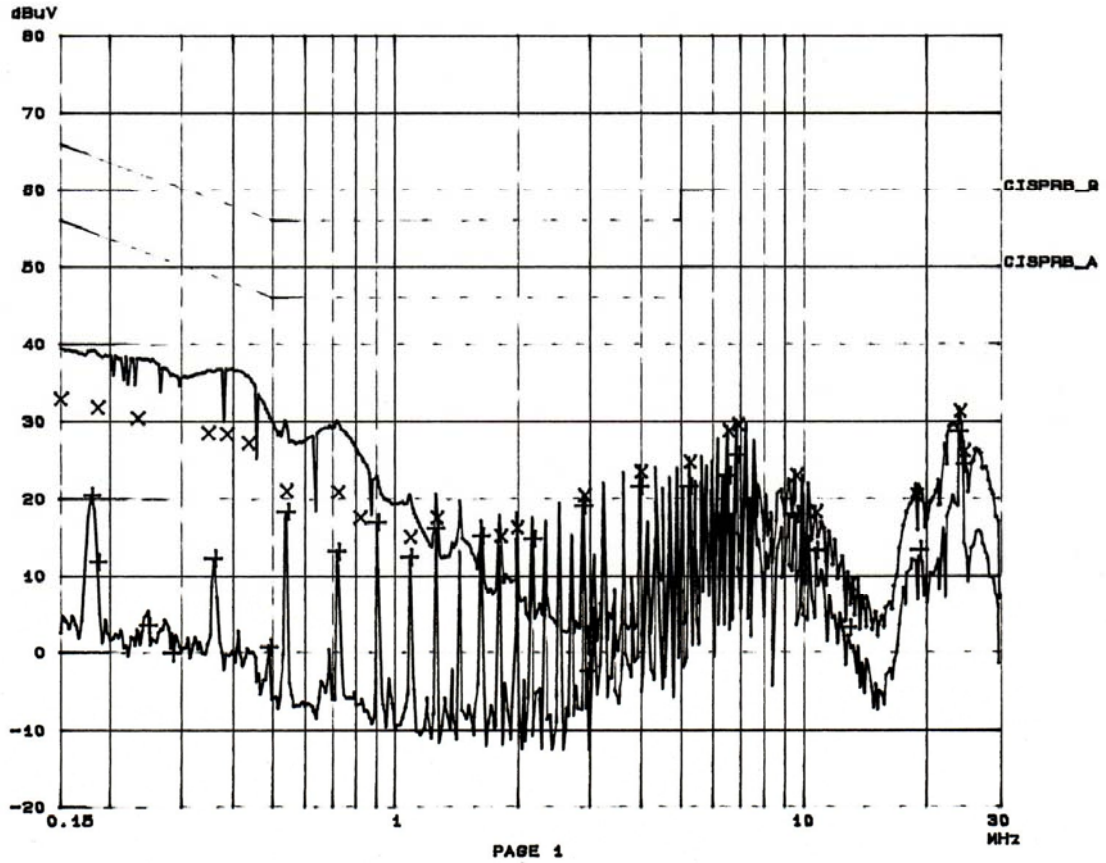
CONDUCTED EMISSION

Manuf: DASAN
Op Cond: N
Operator: THRU

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	3M	3k	10k	PK+AV	10ms	AUTO LN	ON	60dB
3M	30M	8k	10k	PK+AV	10ms	AUTO LN	ON	60dB

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 25
Acc Margin: 50dB



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Line1(H) - RX

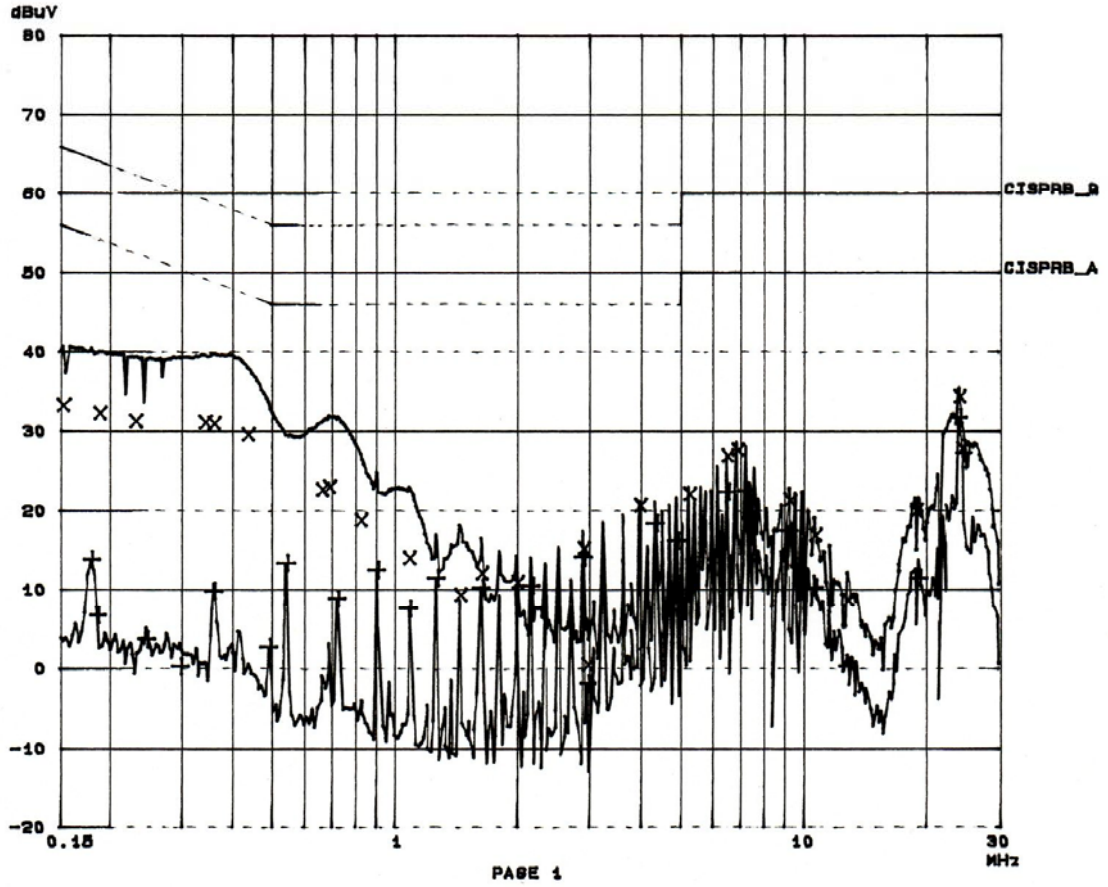
CONDUCTED EMISSION

Manuf: DASAN
Op Cond: H
Operator: THRU

Scan Settings (2 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	3M	3k	10k	PK+AV	10ms	AUTO LN	ON	80dB
3M	30M	9k	10k	PK+AV	10ms	AUTO LN	ON	80dB

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 25
Acc Margin: 50dB



APPLICANT: DASAN ELECTRON
FCC ID: WF2DA-911WB
REPORT #: THRU-806007

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Line2(N) - RX

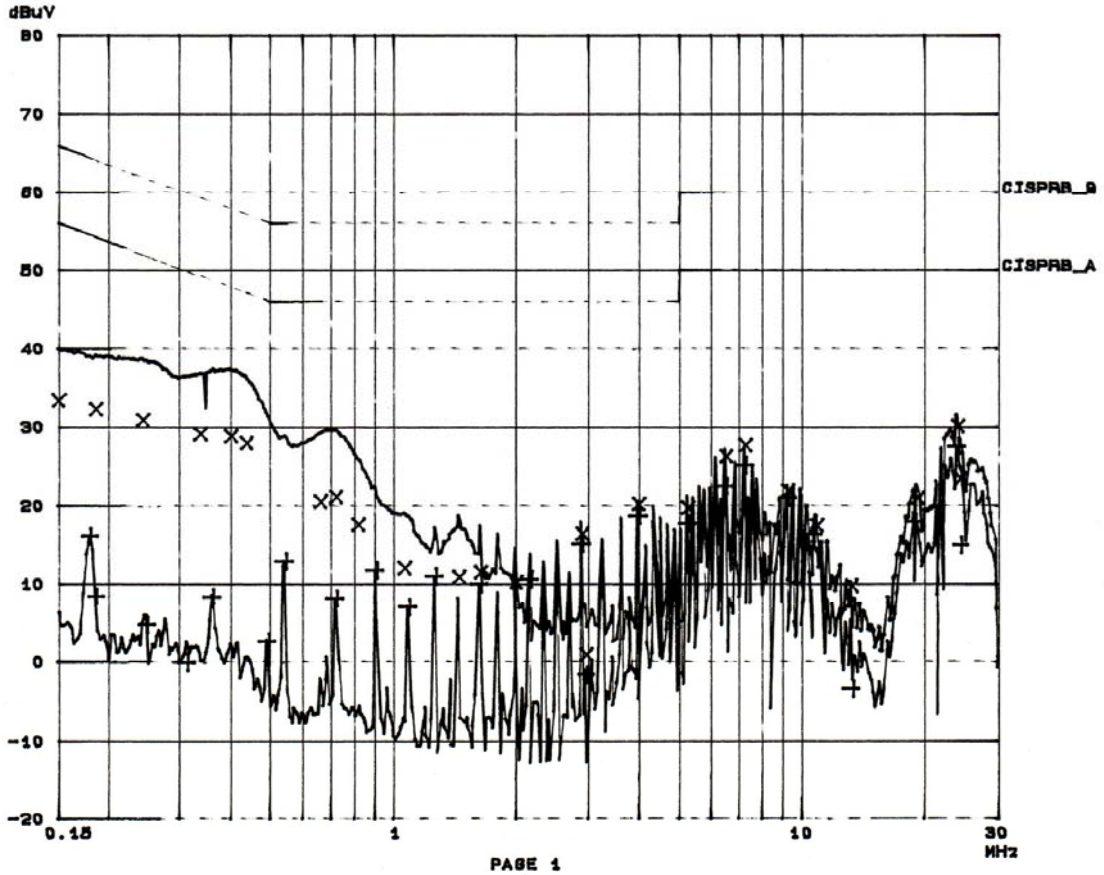
CONDUCTED EMISSION

Manuf: DASAN
Op Cond: N
Operator: THRU

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	3M	3k	10k	PK+AV	10ms	AUTO	LN ON	60dB
3M	30M	9k	10k	PK+AV	10ms	AUTO	LN ON	60dB

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 25
Acc Margin: 50dB



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Line1(H) – Charging mode

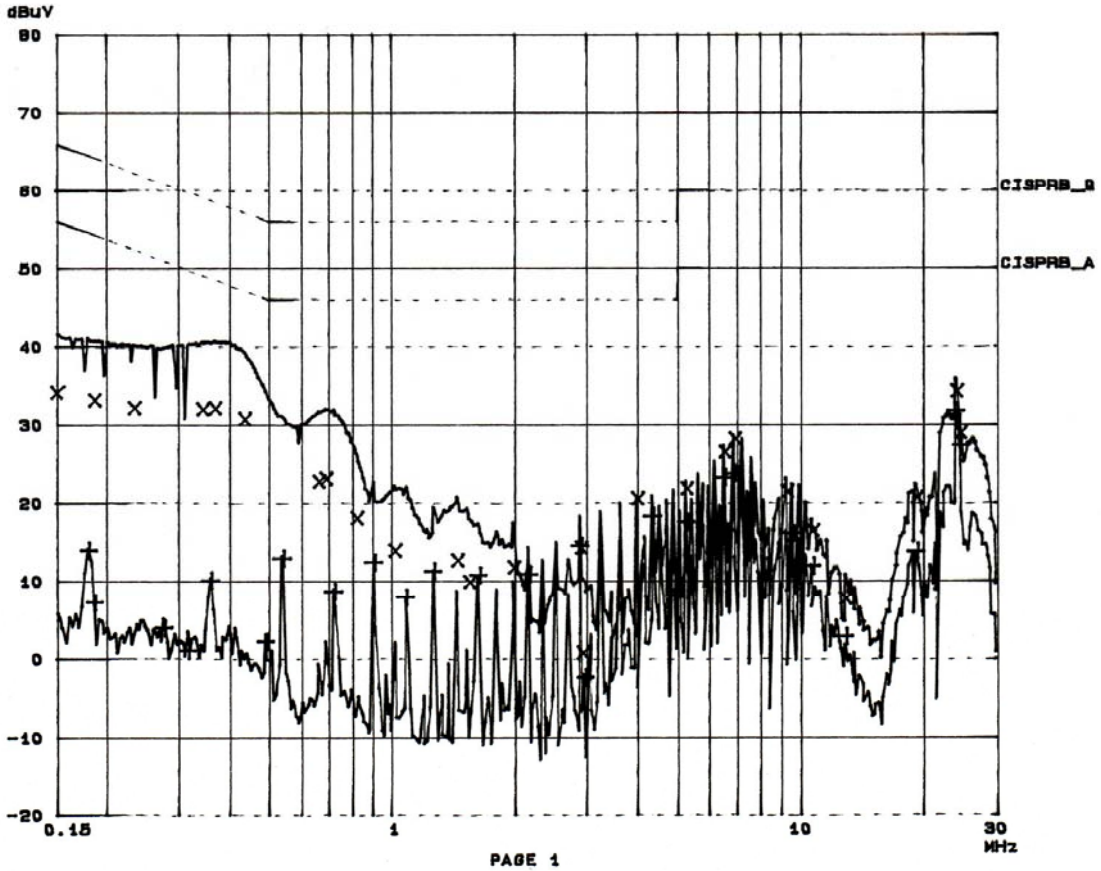
CONDUCTED EMISSION

Manuf: DASAN
Op Cond: H
Operator: THRU

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	3M	3k	10k	PK+AV	10ms	AUTO	LN ON	80dB
3M	30M	9k	10k	PK+AV	10ms	AUTO	LN ON	80dB

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 25
Acc Margin: 80dB



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Line2(N) – Charging mode

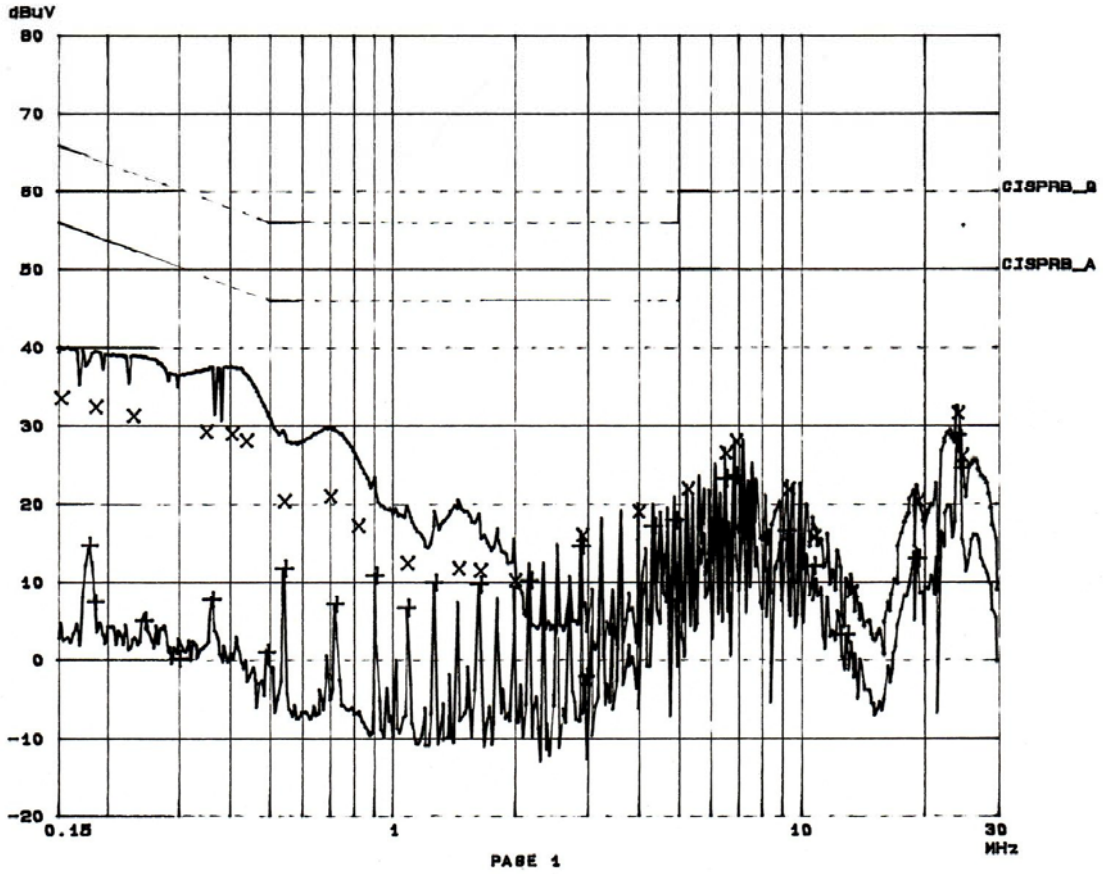
CONDUCTED EMISSION

Manuf: DASAN
Op Cond: N
Operator: THRU

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	3M	3k	10k	PK+AV	10ms	AUTO	LN ON	60dB
3M	30M	9k	10k	PK+AV	10ms	AUTO	LN ON	60dB

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 25
Acc Margin: 50dB



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TEST Equipment List

No	Description	Manufacturer	Model No.	Serial No.	Due Cal.	Used
1	Test Receiver	Rohde & Schwarz	ESHS 10	862970/018	2009.05.13	☐
2	Test Receiver	Rohde & Schwarz	ESVS 10	826008/014	2009.06.20	☐
3	Spectrum Analyzer	Hewlett Packard	8566B	2311A02394	2009.06.10	☒
4	Spectrum Display	Hewlett Packard	85662A	2542A12429	2009.06.10	☒
5	Preamplifer	Hewlett Packard	8447F	2805A02570	2009.05.26	☐
6	Preamplifer	A.H. Systems	PAM-0118	164	2009.04.28	☒
7	Biconical Antenna	Eaton Corp.	94455-1	0977	2008.07.01	☐
8	Biconical Antenna	EMCO	3104C	9111-2468	2008.07.07	☒
9	Log Periodic Antenna	EMCO	3146	2051	2010.06.05	☒
10	Horn Antenna	A.H. Systems	SAS-571	414	2008.07.17	☒
11	Loop Antenna	Rohde & Schwarz	HFH2-Z2.335.4711.52	826532/006	2009.01.31	☐
12	Dipole Antenna	Rohde & Schwarz	VHAP	574	2008.12.12	☐
13	Dipole Antenna	Rohde & Schwarz	VHAP	575	2008.12.12	☐
14	Dipole Antenna	Rohde & Schwarz	UHAP	546	2008.12.12	☐
15	Dipole Antenna	Rohde & Schwarz	UHAP	547	2008.12.12	☐
16	Signal Generator	Hewlett Packard	8673D	2708A00448	2009.06.10	☐
17	Spectrum Analyzer	Advantest Corp.	R3261C	61720208	2009.06.10	☒
18	LISN	EMCO	3825/2	9111-1912	2008.12.12	☐
19	LISN	Kyoritsu	KNW-242	8-923-2	2009.06.05	☐
20	Modulation Analyzer	Hewlett Packard	8901B	3438A05094	2009.05.29	☐
21	Waveform Generator	Hewlett Packard	33120A	US34001190	2009.05.29	☐
22	Audio analyzer	Hewlett Packard	8903B	3011A12915	2009.05.29	☐
23	Digital Oscilloscope	Tektronix	TDS 340A	B012287	2009.06.16	☐

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APPLICANT: DASAN ELECTRON

FCC ID: WF2DA-911WB

NAME OF TEST: RF EXPOSURE REQUIREMENT

§15.247 (e), §1.1307 (b)(2), §1.1310, & §2.1093	
Frequency Range (MHz)	Power Density (mW/cm^2)
Limits for Occupational/Controlled Exposures	
0.3 – 3.0	*(100)
3.0 – 30	*($900/f^2$)
30 - 300	1.0
300 - 1500	f/300
1500 – 100,000	5.0
Limits for General Population/Uncontrolled Exposure	
0.3 – 3.0	*(100)
3.0 – 30	*($180/f^2$)
30 - 300	0.2
300 - 1500	f/1500
1500 – 100,000	1.0
f = frequency in MHz * = Place-wave equivalent power density	

MPE Calculation
The calculations on the next page are based on the following:
An output power of 1.905mW
A gain of 0 dBi
A value for the general population expose limit of 1 mW/cm^2 which in the formula is designated as S=1 or as calculated from 1500/1500=1

THRU Lab & Engineering.

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Po :=1.905 mWatts dBi :=0 antenna gain f :=1500 Frequency in MHz

G :=dBd + 2.15 gain in dBi G = 2.15

$Gn := 10^{\frac{G}{10}}$ gain numeric $S := \frac{f}{1500}$

300 for controlled
1500 for uncontrolled

Gn = 1.640 S = 1

$R := \sqrt{\frac{(Po \cdot Gn)}{(4 \cdot \pi \cdot S)}}$

R :=0.499 distance in centimeters
Required for complianc