TEST REPORT

1. Applicant

Name	: YoungShin Electronics Co.,Ltd.
Address	: C-7F, Bupyung Woolim Lion' s Vally 425, Cheongcheon-dong, Bupyeong-gu, Inchen,

2. Products

Name	: Car alarm
Model/Type	: O44JMR600SS / Car alarm
Manufacturer	: YoungShin Electronics Co.,Ltd.
FCC ID	: O44JMR600SS

3. Test Standard/Method	: FCC Part 15, Subpart B and C / ANSI C63.4-2003
4. Test Results	: Positive
5. Use of Report	: -
6. Date of Application	: Dec 14, 2006
7. Date of Issue	: Mar 13, 2007

Tested by

Bum-Jong KIM
Telecommunication Team
Senior Engineer

Approved by

Seok-Jin Kim
Telecommunication Team
Manager

Korea Testing Laboratory

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Ⅰ. GENERAL INFORMATIONS

1.1 Applicant (Client)

Name	YoungShin Electronics Co., Ltd.
Address	C-7F, Bupyung Woolim Lion's Vally 425, Cheongcheon-dong, Bupyeong-gu, Inchen, Korea(403-030
Contact Person	Eui-Seok, Chung
Telephone No.	+ 82-32-623-5550 (EXT. 434)
Facsimile No.	+ 82-32-623-6668
E-mail address	euiseok@magicar.com

1.2 Equipment (EUT)

Type of equipment	Car alarm
Model Name	O44JMR600SS
Power Source	DC 1.5V
Dimension	63 mm(W) x 40 mm(H) x 13 mm(D)
Ant. Gain	-3.083 dBi
Using Oscillator	32.78 kHz
Power Consumption	-
Standard	FCC Part 15, Subpart B and C
Measuring Procedure	ANSI C63.4-2003
Manufacturer Name	YoungShin Electronics Co., Ltd.
Manufacturer Address	C-7F, Bupyung Woolim Lion's Vally 425, Cheongcheon-dong, Bupyeong-gu, Inchen, Korea(403-030

1.3 Testing Laboratory

Testing Place	Korea Testing Labortory (KTL) 222-13 Guro-dong, Guro-Gu, Seoul 152-848 Korea
Test Engineer	Bum-Jong KIM
Telephone number	+82 2 860 1464
Facsimile number	+82 2 860 1468
E-mail address	temple@ktl.re.kr
Other Comments	-

Ⅱ. GENERAL REQUIREMENTS OF THE EUT

1. Labelling Requirement (Section 15.19)

> This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

1.1 Location of Label : User' guide manual
1.2 How Applied : Printed

2. Information to User (Section 15.21)

The following or similar statements were provided in the manual for user instruction.
Please refer page 1 of the attached manual for details.

> CAUTION : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

3. Special Accessories (Section 15.27)

3.1 Were the special Accessories provided?
[ ] yes, [■] no

3.2 If yes, details for the special accessories are as follows :

3.3 If yes, were the appropriate instructions provided on the first page of the text concerned with the device?
[ ] yes, [ ] no

3.4 Are these accessories provided of the type which can be readily obtained from multiple retail outlets?
[ ] yes, [ ] no

And therefore does the manual specify what additional components or accessories are required to used in order to comply with the Rules?
[ ] yes, [ ] no

Ⅲ. RADIATED EMISSION MEASUREMENT (Section 15.109)

1. Test Procedure

1.1 Preliminary Testing for Reference

Preliminary testing was performed in a KTL absorber-lined room to determine the emission characteristics of the EUT. The EUT was placed on the wooden table which has dimensions of 0.8 meters in height, 1 meter in length and 1.5 meters in width. Receiving antenna (Biconi-Log antenna : 30 to 1000 MHz or Horn Antenna : 1 to 18 GHz) was placed at the distance of 3 meter from the EUT.

An attempt was made to maximize the emission level with the various configurations of the EUT while rotating the table and varying antenna height.

Emissions level from the EUT with various configurations were examined on a Spectrum Analyzer connected with an RF amplifier and graphed by a plotter.

1.2 Final Radiated Emission Test at an Absorber-Lined Room

The final measurement of radiated field strength was carried out in a KTL Absorber-Lined Room that was listed up at FCC according to the "Radiated Emissions Testing" procedure specified by ANSI C63.4.

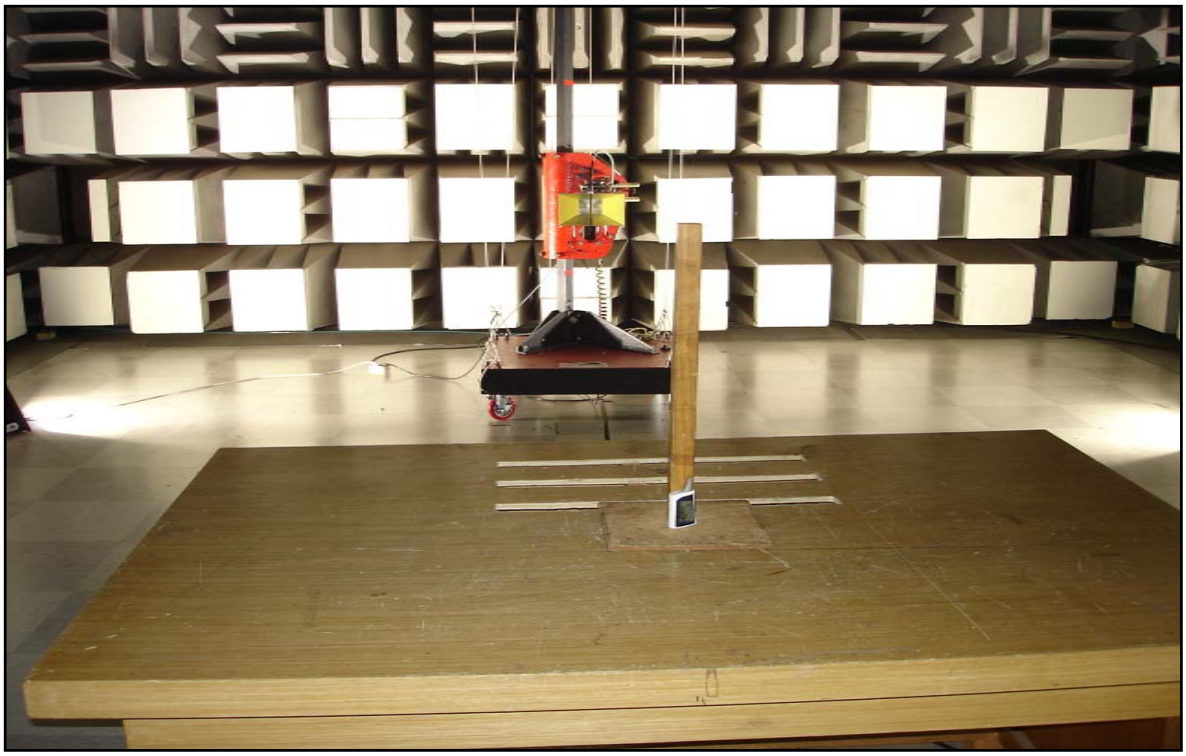
Based on the test results in preliminary test, measurement was made in same test set up and configuration which produced maximum emission level. Receiving antenna was installed at 3-meter distance from the EUT, and was connected to an EMI receiver.

Turntable was rotated through 360 degrees and receiving antenna height was varied from 1 to 4 meters above the ground plane to read maximum emission level.

If necessary, the radiated emission measurements could be performed at a closer distance than specified distance to ensure higher accuracy and their results were extrapolated to the specified distance using an inverse linear distance extrapolation factor (20 dB/decade) as per Section 15.31(f).

The maximum emission level from the EUT occurred in such configuration as shown in the following photograph.

2. Photograph for the test configuration



3. Sample Calculation

The emission level measured in decibels above one microvolt (dB μV) was converted into microvolt per meter (μV/m) as shown in following sample calculation.

For example :

	Measured Value at 106.12 MHz	33.6 dB μV
+	Antenna Factor / Cable Loss	10.7 dB/m
−	Preamplifier	30.0 dB
−	Distance Correction Factor *	0.0 dB
=	Radiated Emission	14.3 dB μV/m

* Extrapolated from the measured distance to the specified distance by an inverse linear distance extrapolation.

4. Measurement Data

4.1 Intentional Spurious Emission

- Resolution Bandwidth: _x_ CISPR Quasi-Peak (6dB Bandwidth : 120kHz for below 1GHz)
  Peak (3dB Bandwidth : 1MHz for above 1GHz)
- Measurement channel : Ch1, Ch 25, Ch 50
- Measurement Distance : 3 Meter

Frequency (MHz)	* D.M.	* A.P.	Measured Value (dBμV)	* A.F. + C.L (dB/m)	* A.G. (dB)	* D.C.F. (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	** Margin (dB)
106.12	Q	V	33.6	10.7	-30	0	14.3	43.5	-29.2
107.76	Q	V	32.9	10.8	-30	0	13.7	43.5	-29.8
454.08	Q	V	47.7	19.2	-30	0	36.9	46.0	-9.1
467.04	Q	V	49.1	19.4	-30	0	38.5	46.0	-7.5
504.96	Q	V	53.6	20.1	-30	0	43.7	46.0	-2.3
506.04	Q	V	53.9	20.1	-30	0	44.0	46.0	-2.0
831.36	Q	V	47.1	26.0	-30	0	43.1	46.0	-2.9
832.44	Q	V	46.8	26.0	-30	0	42.8	46.0	-3.2
888.96	Q	V	39.0	26.8	-30	0	35.8	46.0	-10.2
890.04	Q	V	35.5	26.9	-30	0	32.4	46.0	-13.6
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Note

The observed EMI receiver(ESVS30) noise floor level was 2.0 dBμV. And all other emissions not reported on data were more than 25 dB below the permitted level.

* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)
A.P. : Antenna Polarization (H : Horizontal, V : Vertical)
A.F. : Antenna Factor
C.L. : Cable Loss
A.G. : Amplifier Gain
D.C.F. : Distance Correction Factor
< : Less than

** Margin (dB) = Emission Level (dB) - Limit (dB)

4.2 Intentional Spurious Emission (above 1GHz)

- Resolution Bandwidth: __x__ CISPR Quasi-Peak (6dB Bandwidth : 120kHz for below 1GHz)
  Peak (3dB Bandwidth : 1MHz for above 1GHz)
- Measurement channel : Ch1, Ch 25, Ch 50
- Measurement Distance : 3 Meter

Frequency (MHz)		* D.M.	* A.P.	Measured Value (dBμV)	* A.F. + C.L (dB/m)	* A.G. (dB)	* D.C.F. (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	** Margin (dB)
CH 1	1816.7	P	V	15.0	30.1	0	0	45.1	74	-28.9
	1816.7	A	V	11.1	30.1	0	0	41.2	54	-12.8
	2707.8	P	V	17.2	33.3	0	0	50.5	74	-23.5
	2707.8	A	V	13.1	33.3	0	0	46.4	54	-7.6
CH 25	1819.0	P	V	14.6	30.1	0	0	44.7	74	-29.3
	1819.0	A	V	11.0	30.1	0	0	41.1	54	-12.9
	2728.0	P	V	16.5	33.3	0	0	49.8	74	-24.2
	2728.0	A	V	11.7	33.3	0	0	45.0	54	-9.0
CH 50	1829.2	P	V	14.8	30.1	0	0	44.9	74	-29.1
	1829.2	A	V	11.3	30.1	0	0	41.4	54	-12.6
	2743.8	P	V	16.9	33.3	0	0	50.2	74	-23.8
	2743.8	A	V	12.0	33.3	0	0	45.3	54	-8.7

Note

The observed Spectrum Analyer(E4448A) noise floor level was 2.0 dBμV. And all other emissions not reported on data were more than 25 dB below the permitted level.

* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)
A.P. : Antenna Polarization (H : Horizontal, V : Vertical)
A.F. : Antenna Factor
C.L. : Cable Loss
A.G. : Amplifier Gain
D.C.F. : Distance Correction Factor
< : Less than

** Margin (dB) = Emission Level (dB) - Limit (dB)

4.3 Radiated Emission (Receiving mode)

- Resolution Bandwidth: __x__ CISPR Quasi-Peak (6dB Bandwidth : 120kHz for below 1GHz)
  Peak (3dB Bandwidth : 1MHz for above 1GHz)
- Measurement channel : Ch1, Ch 25, Ch 50
- Measurement Distance : 3 Meter

Frequency (MHz)	* D.M.	* A.P.	Measured Value (dBμV)	* A.F. + C.L (dB/m)	* A.G. (dB)	* D.C.F. (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	** Margin (dB)
106.8	Q	V	8.4	10.7	0	0	19.1	43.5	-24.4
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Note

The observed EMI receiver(ESVS30) noise floor level was 2.0 dBμV. And all other emissions not reported on data were more than 25 dB below the permitted level.

* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)
A.P. : Antenna Polarization (H : Horizontal, V : Vertical)
A.F. : Antenna Factor
C.L. : Cable Loss
A.G. : Amplifier Gain
D.C.F. : Distance Correction Factor
< : Less than

** Margin (dB) = Emission Level (dB) - Limit (dB)

Ⅳ. 20dB BANDWIDTH & HOPPING CHANNEL SEPARATION (Section 15.247(a)(1))

1. Test Standards

Frequency hopping systems shall have hopping channel carrier frequencies separated by minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudorandomly ordered list of hopping frequencies.

2. Measurement Data

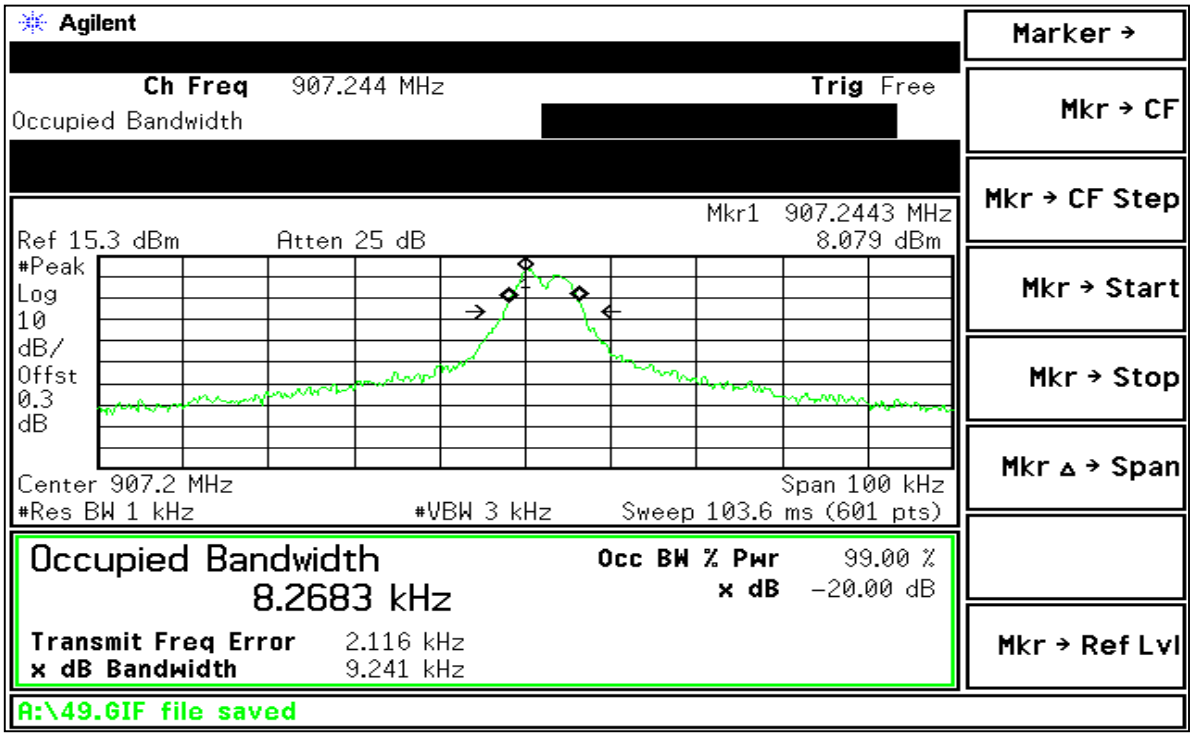
2.1 20dB Bandwidth

Channel	Frequency (MHz)	Measured Value (kHz)	Limit (kHz)	Result
Low	907.2	9.24	500	Pass
Middle	908.4	9.51	500	Pass
High	909.7	9.29	500	Pass

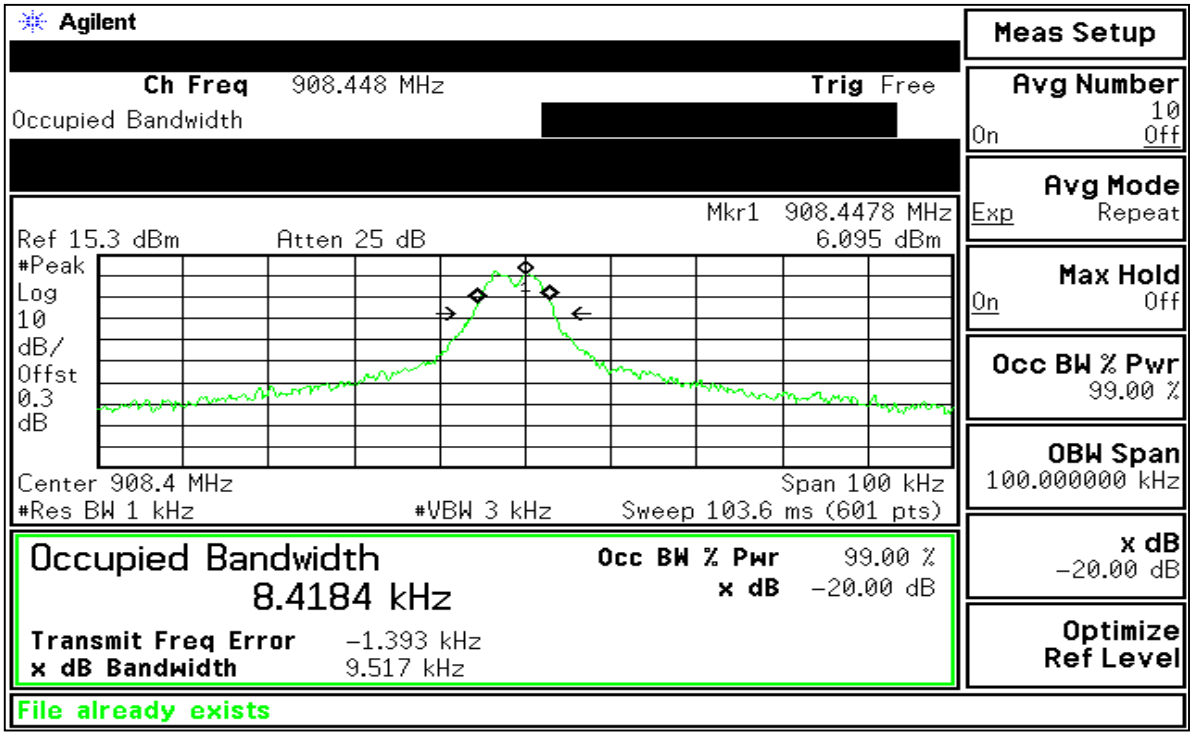
2.2 Channel Separation

Measured Value (kHz)	Limit (kHz)	Result
51.1	> 25.0	Pass

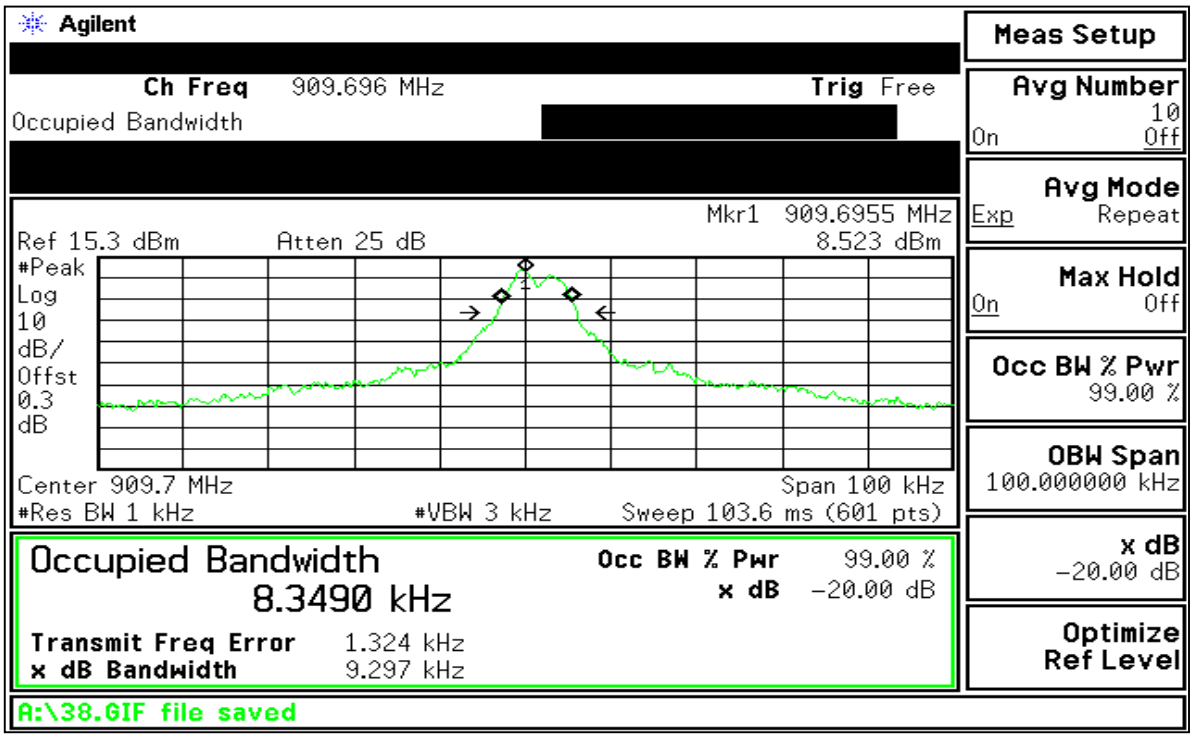
3. Measurement Plot



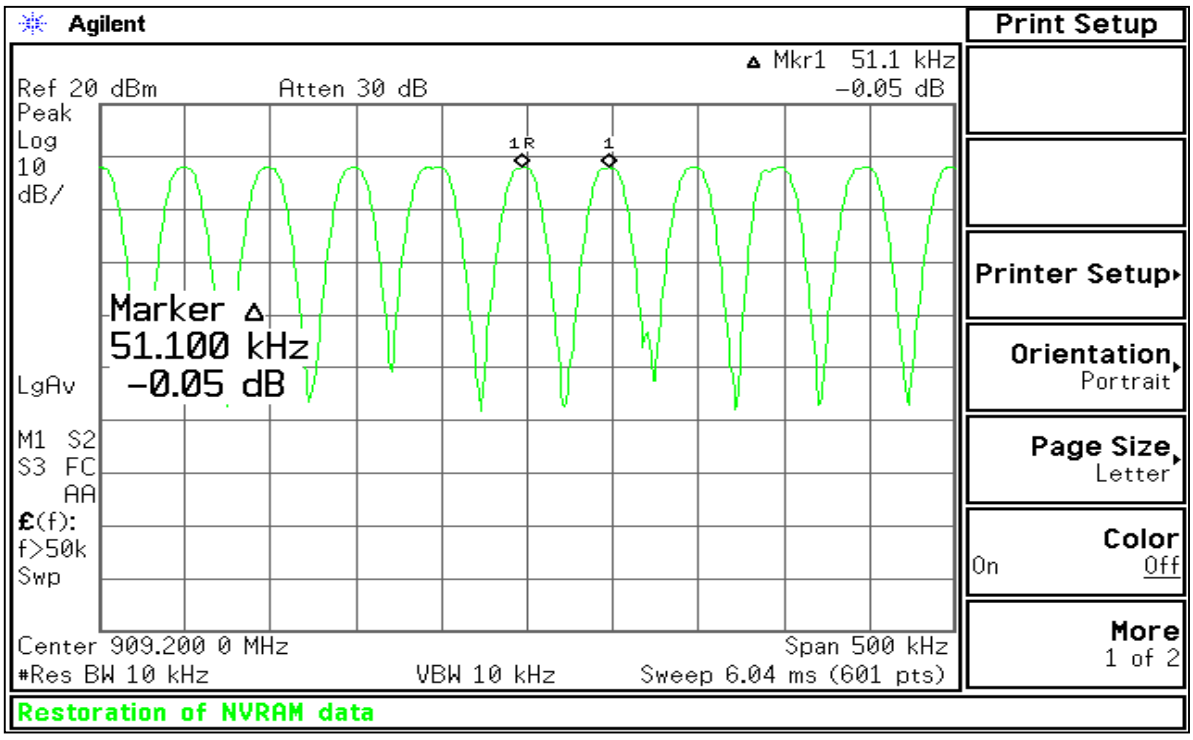
(20dB Bandwidth, Channel Low)



(20dB Bandwidth, Channel Middle)



(20dB Bandwidth, Channel High)



(Channel Separation)

Ⅴ. NUMBER OF HOPPING FREQUENCY (Section 15.247(a)(1))

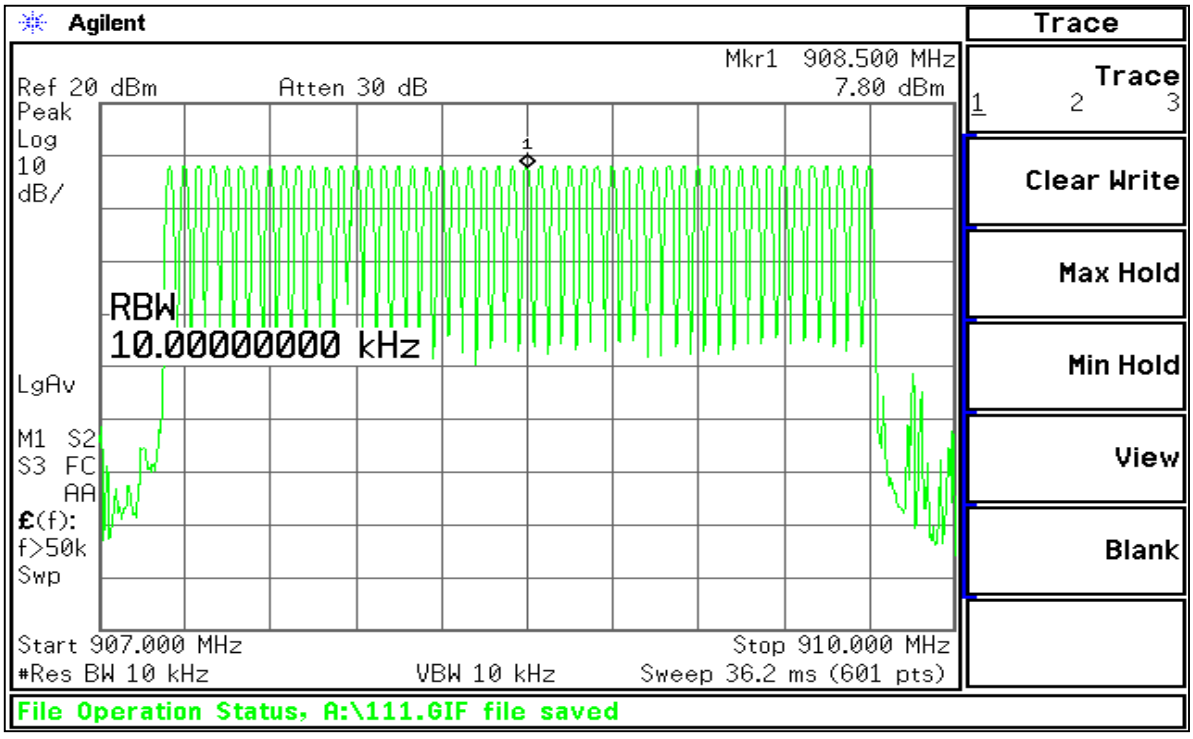
1. Test Standards

For frequency hopping systems operating in the 902~928 MHz band, if the 20dB Bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies.

2. Measurement Data

Measured Value (No. of channel)	Limit (No. of channel)	Result
50	50	Pass

3. Measurement Plot



(Number of Hopping Frequency)

Ⅵ. DWELL TIME (Section 15.247(a)(1))

1. Test Standards

For Frequency hopping systems operating in the 902~928 MHz band, if the 20dB Bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period.

2. Measurement Data

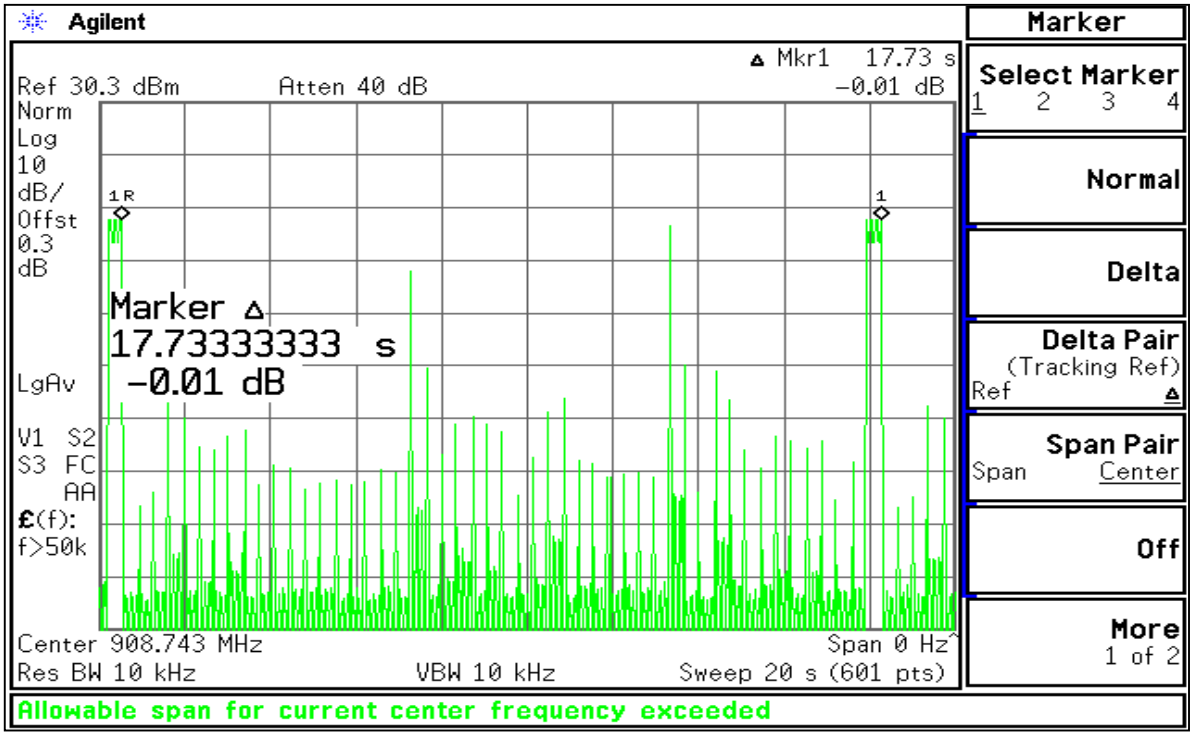
Measured Value (ms)	Limit (ms)	Result
394.81	400	Pass

For a frequency hopping system utilizing 50 channels (N), with a channel occupancy time(Tocc)of 350 ms and a repetition time (Trep) of 17.73 s.

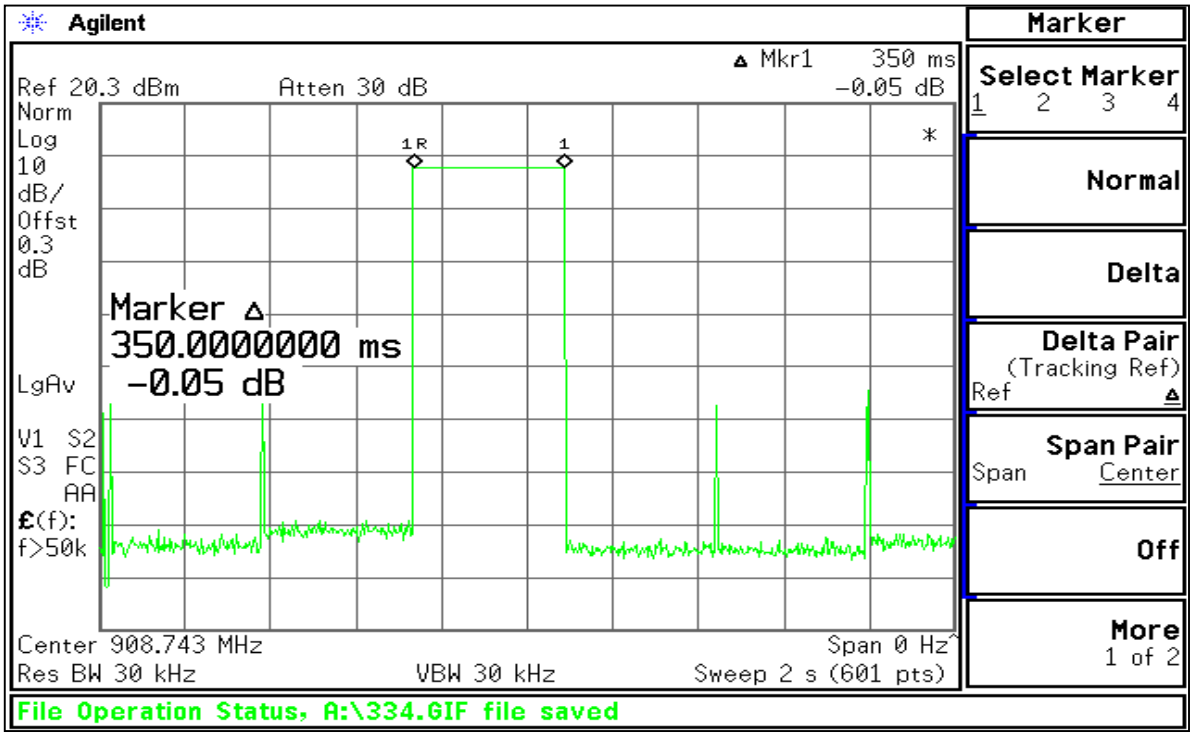
specified averaging period (400 x N ms)
= (0.4 x N) / Trep
= (0.4 x 50) / 17.73 s
= 1.128
Total activation time = Tocc x 1.128 ms
= 350 x 1.128 ms
= 394.81 ms

Limit = 400 ms
Result : Pass

3. Measurement Plot



(Repetition Time)



(Channel Occupancy Time)

Ⅶ. MAXIMUM PEAK OUTPUT POWER (Section 15.247(b))

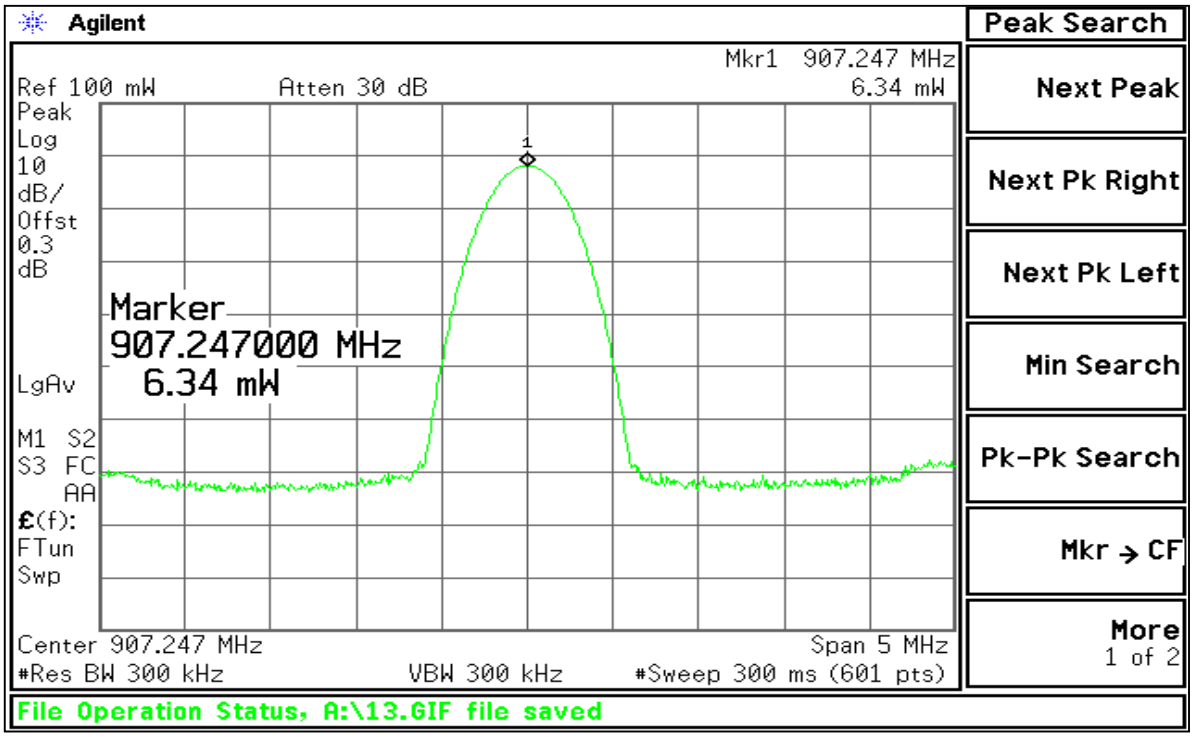
1. Test Standards

For Frequency hopping systems operating in the 902~928 MHz band: 1 watt for systems employing at least 50 hopping channels; and 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.

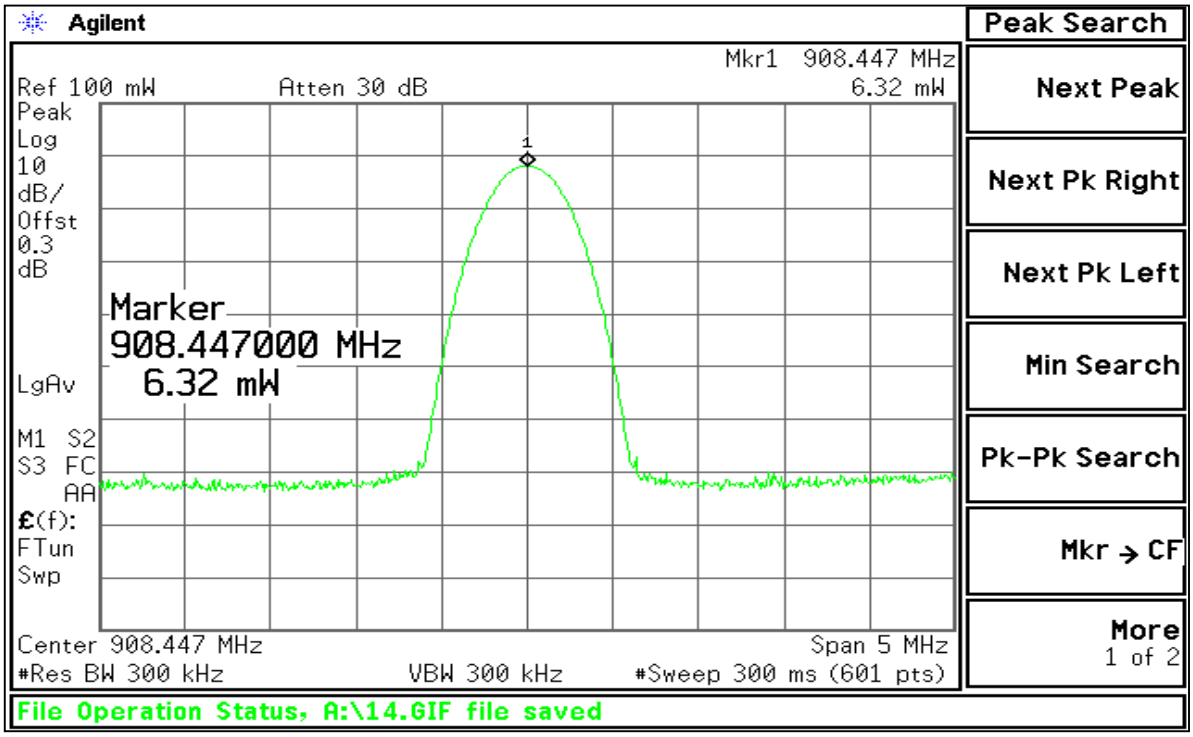
2. Measurement Data

Channel	Frequency (MHz)	Measured Value (Watt)	Limit (Watt)	Result
Low	907.2	0.00634	1	Pass
Middle	908.4	0.00632	1	Pass
High	909.7	0.00635	1	Pass

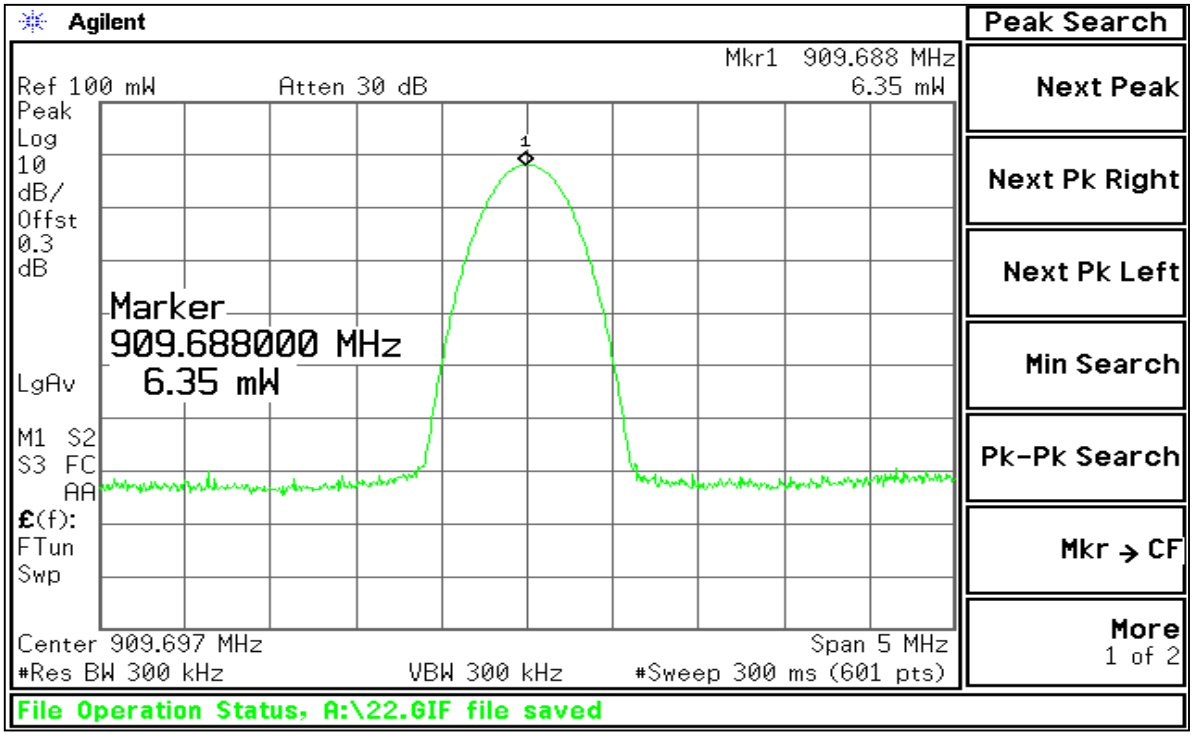
3. Measurement Plot



(Channel Low)



(Channel Middle)



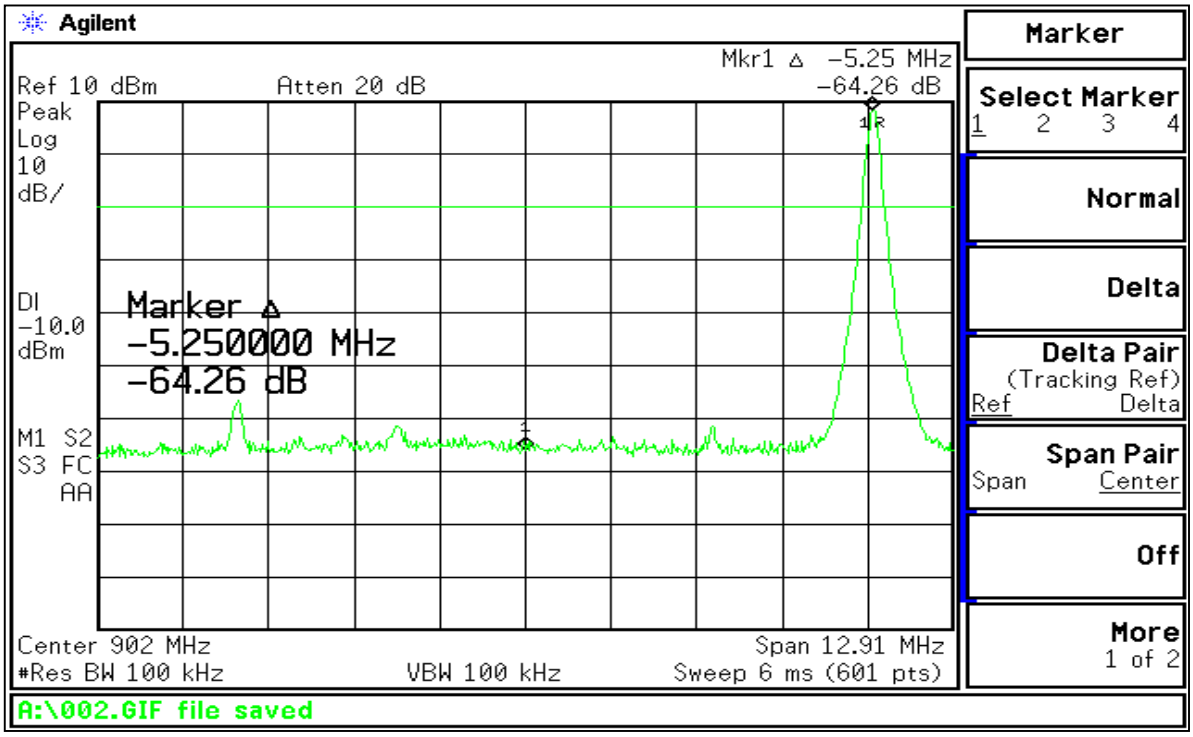
(Channel High)

Ⅷ. 100 kHz BANDWIDTH OF BAND EDGES (Section 15.247(d))

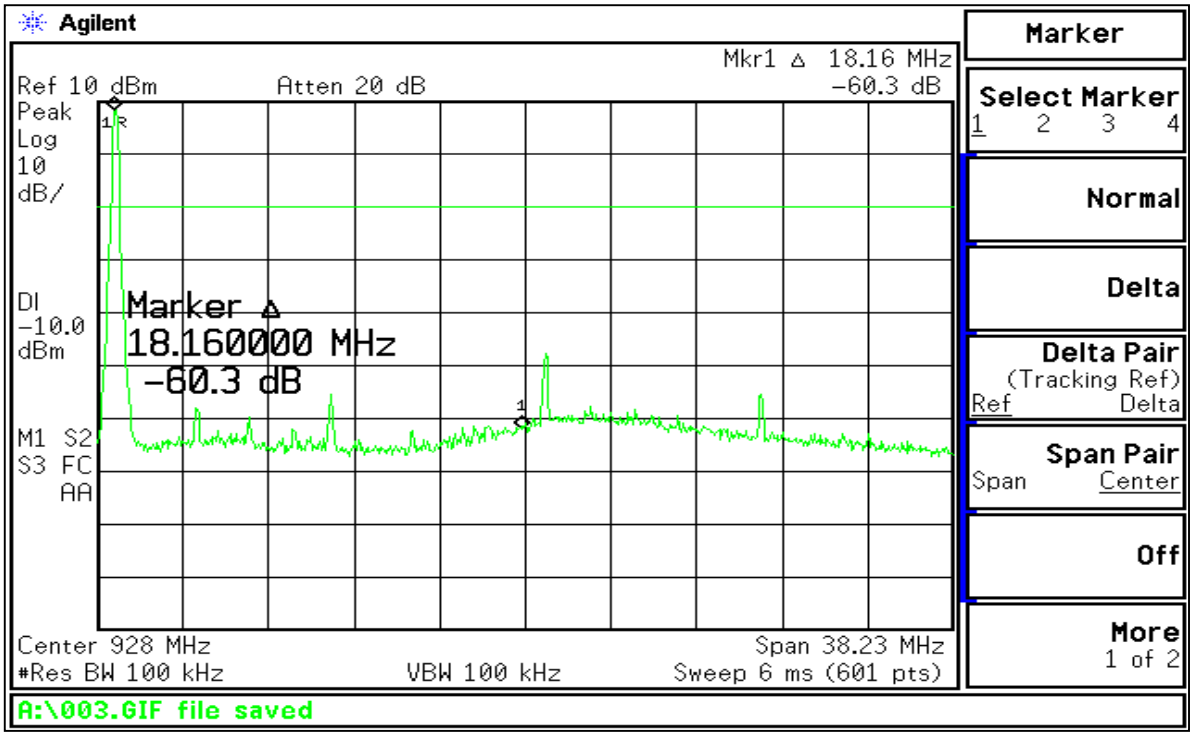
1. Test Standards

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum of digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in section 15.209(a) is not required.

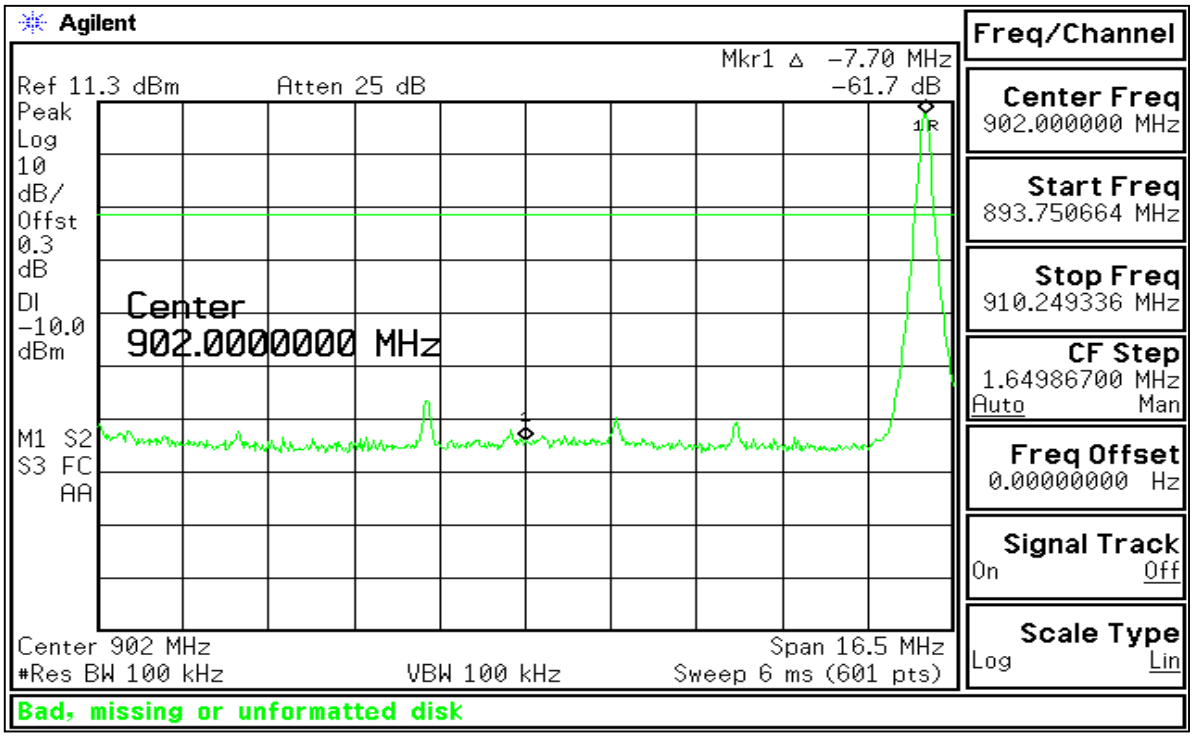
2. Measurement Plot



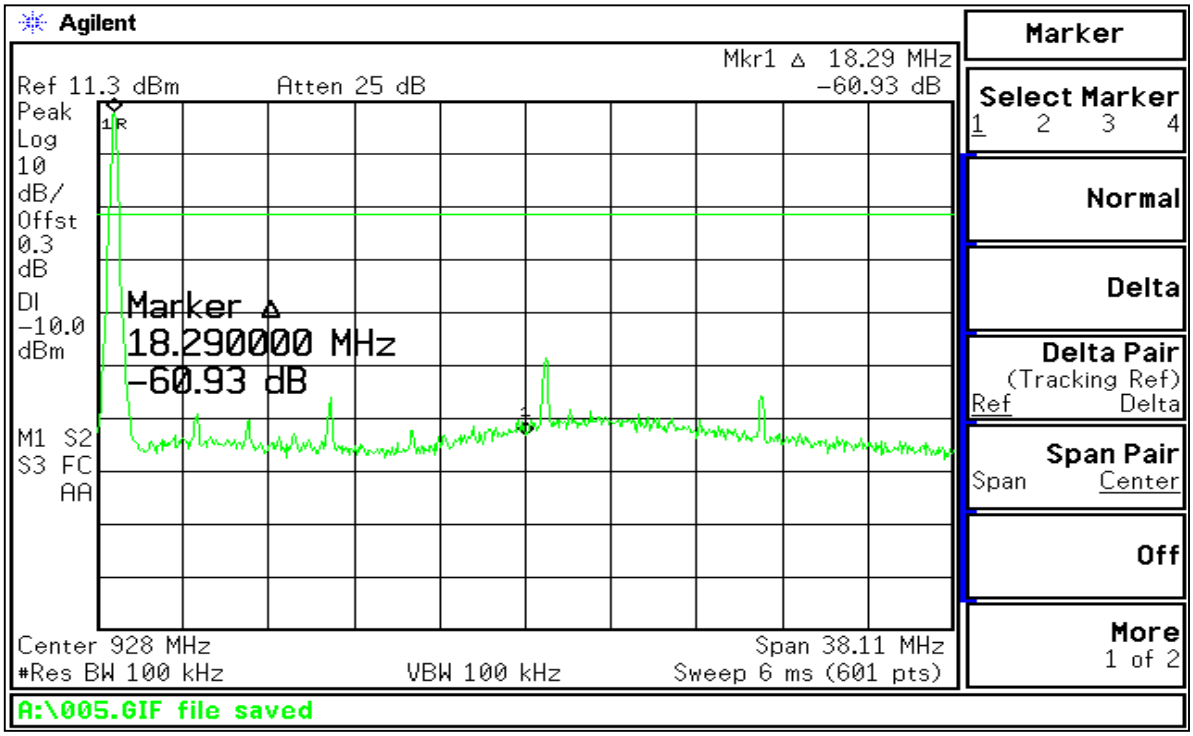
(Channel Low)



(Channel Low)



(Channel High)



(Channel High)

Ⅸ. CONDUCTED SPURIOUS EMISSION AT ANTENNA TERMINALS (Section 2.1051)

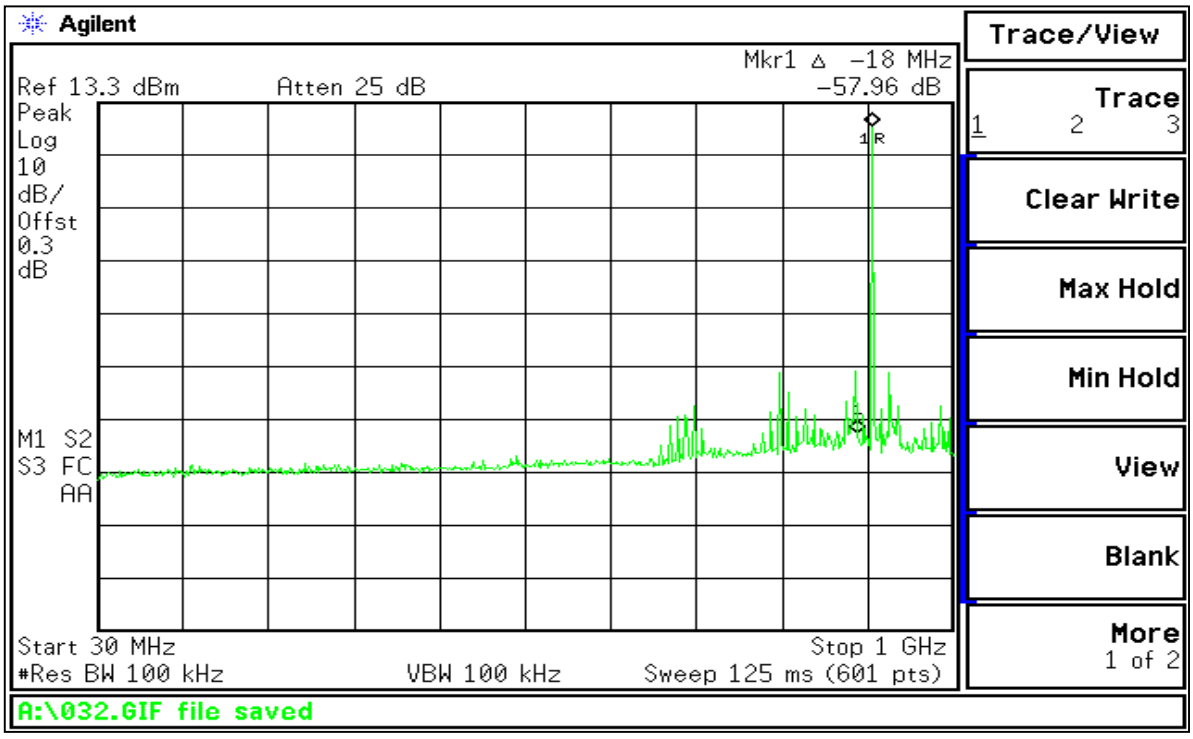
1. Test Standard

The EUT must comply with requirements for spurious emissions at antenna terminals. Per §15.247(c) all spurious emissions in any 100 kHz bandwidth outside the frequency band in which the spread spectrum device is operating shall be attenuated 20 dB below the highest power level in a 100 kHz bandwidth within the band containing the highest level of the desired power.

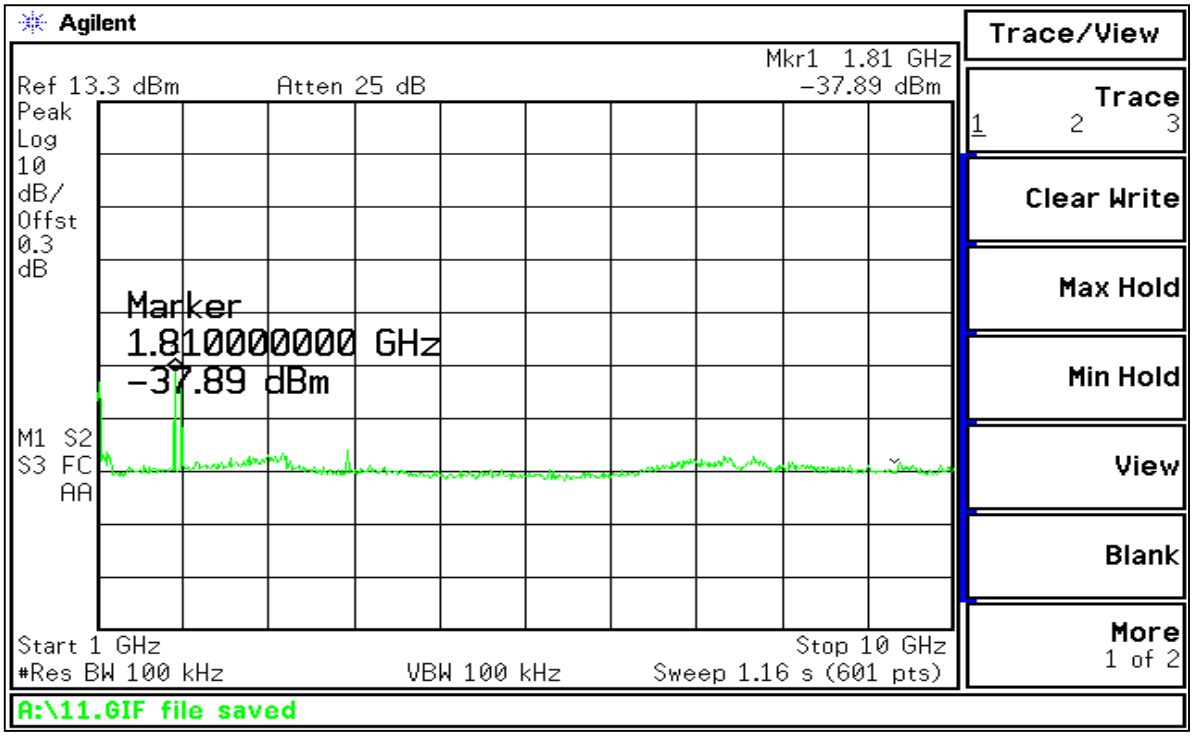
2. Test procedure

The EUT antenna was removed and the cable was connected directly into a spectrum analyzer through a 30 dB attenuator. An offset was programmed into the spectrum analyzer to compensate for the loss of the external attenuator. The spectrum analyzer resolution bandwidth was set to 100 kHz and the video bandwidth was set to 100 kHz. The amplitude of the EUT carrier frequency was measured to determine the emissions limit(20 dB below the carrier frequency amplitude). The emissions outside of the allocated frequency band were then scanned from 30 MHz up to the tenth harmonic of the carrier. Spurious emissions were measured at high power setting.

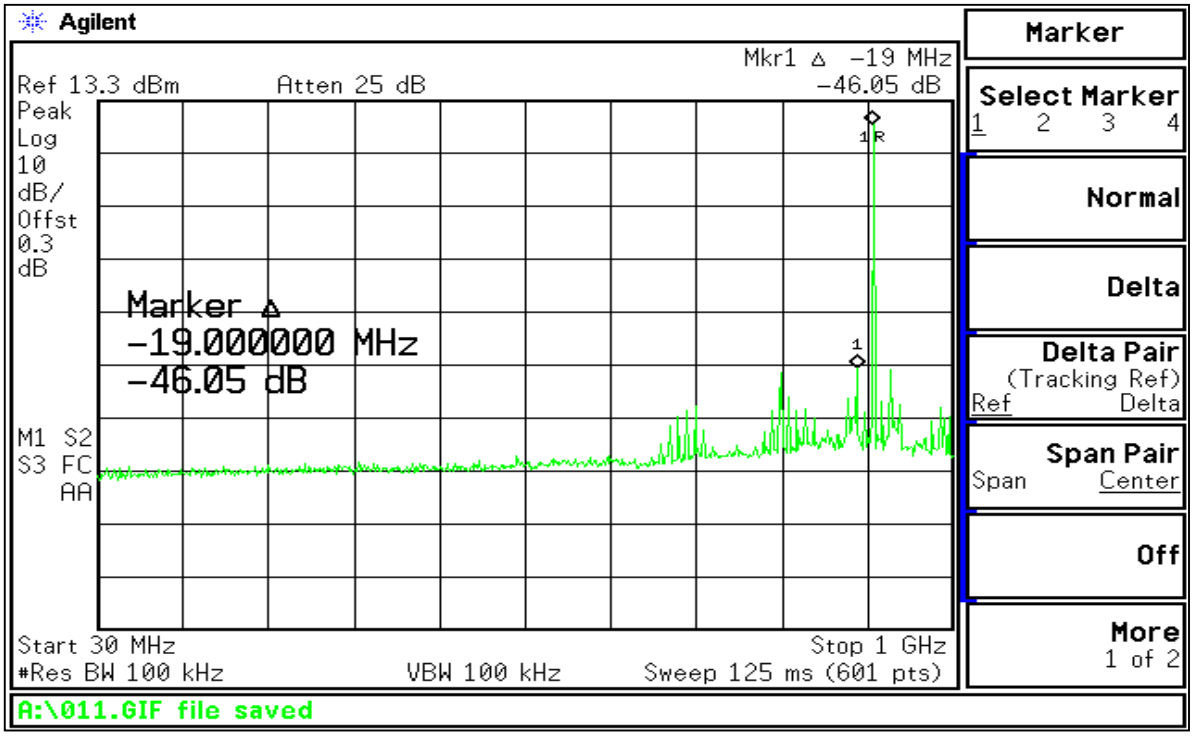
3. Measurement Plot



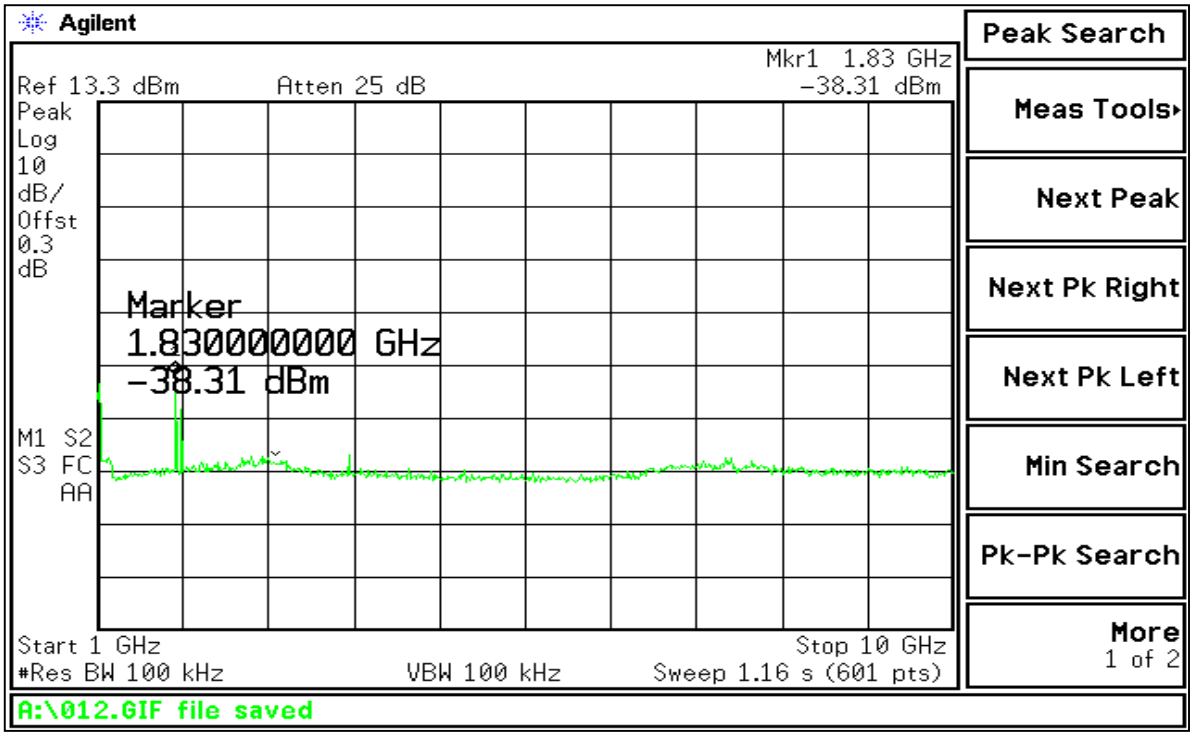
(Channel Low, 30 MHz ~ 1 GHz)



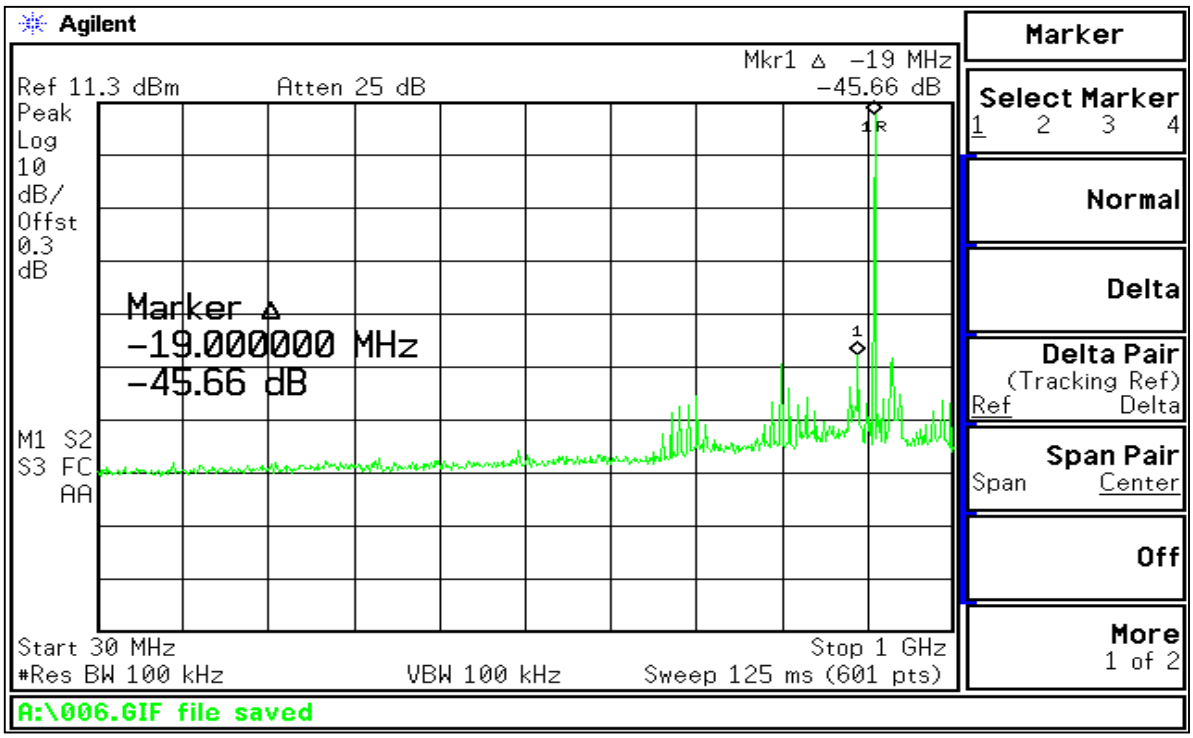
(Channel Low, 1 GHz ~ 10 GHz)



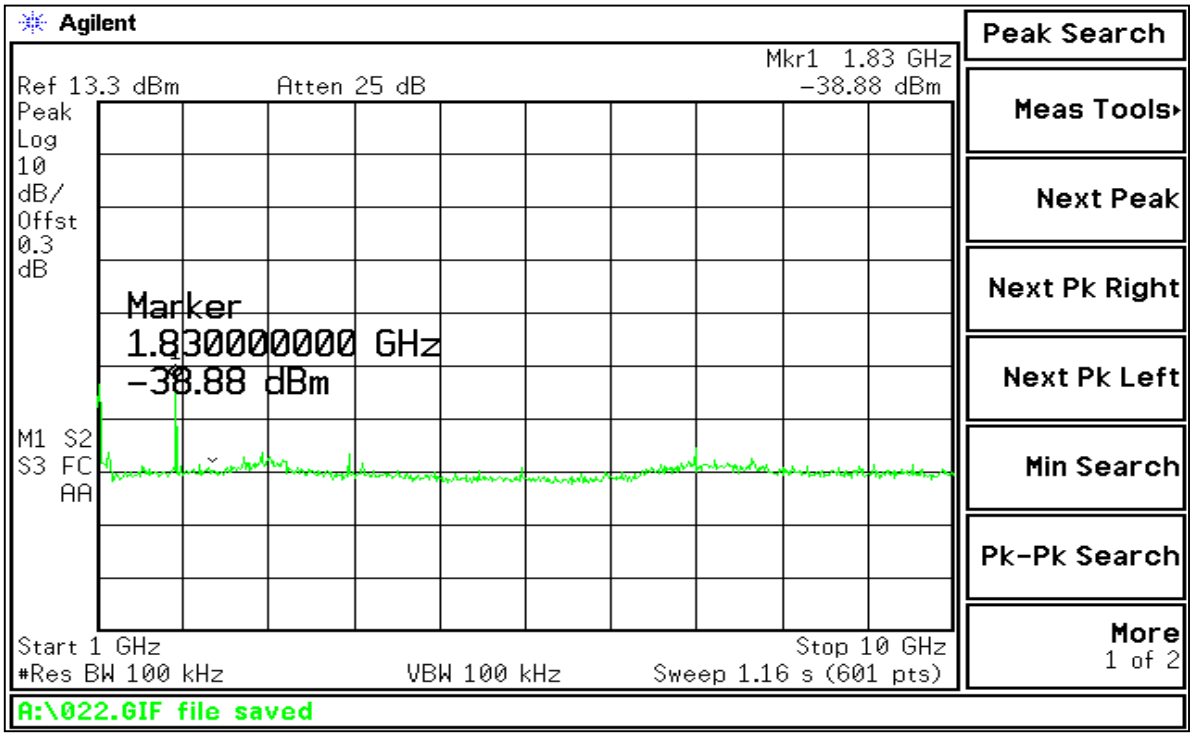
(Channel Middle, 30 MHz ~ 1 GHz)



(Channel Middle, 1 GHz ~ 10 GHz)



(Channel High, 30 MHz ~ 1 GHz)



(Channel High, 1 GHz ~ 10 GHz)

XI. TEST EQUIPMENTS USED FOR MEASUREMENTS

No.	Equipment	Manufacturer	Model	S/N	Effective Cal.Duration
1	EMI Receiver (20 MHz ~ 1 GHz)	R&S	ESVS30	830516002	03/15/2006 ~ 03/15/2007
2	EMI Receiver (9 kHz ~ 3 GHz)	R&S	ESCI	100076	03/28/2006 ~ 03/28/2007
3	Spectrum Analyzer (100 Hz ~ 26.5 GHz)	Agilent	E4407B	US41443316	12/01/2006 ~ 12/01/2007
4	Spectrum Analyzer (3 Hz ~ 50 GHz)	Agilent	E4448A	MY43360322	02/26/2007 ~ 02/26/2008
5	Test Receicer (9 kHz ~ 30 MHz)	R&S	ESH3	860905001	06/18/2006 ~ 06/18/2007
6	Pre-Amplifier (100 kHz ~ 3 GHz)	H.P.	8347A	2834A00543	05/19/2006 ~ 05/19/2007
7	Pre-Amplifier (1 GHz ~ 26.5 GHz)	H.P.	8449B	3008A00302	06/14/2006 ~ 06/14/2007
8	LISN(50 Ω , 50 μH) (10 kHz ~ 100 MHz)	R&S	ESH3-Z5	826789009	07/05/2006 ~ 07/05/2007
9	Biconi-Log Ant. (30 MHz ~ 1000 MHz)	Schwarzbeck	VULB9168	9168-168	08/16/2006 ~ 08/16/2007
10	Horn Ant. (1 GHz ~ 18 GHz)	EMCO	3115	--	05/09/2006 ~ 05/09/2007
11	Active Loop Ant. (9 kHz ~ 30 MHz)	EMCO	6502	2532	06/08/2006 ~ 06/08/2007
12	Shielded Room (5.0 m x 4.5 m)	SIN-MYUNG	--	--	--
13	Signal Generator (250 kHz ~ 20 GHz)	Agilent	E8257D	MY44320379	01/02/2007 ~ 01/02/2008
14	DC Power Supply	Agilent	E4356A	MY41000296	09/28/2006 ~ 09/28/2007
15	Power Splitter	H.P.	11667A	21063	10/09/2006 ~ 10/09/2007
16	Power Meter	Agilent	E4417A	GB4129075	09/17/2006 ~ 09/17/2007
17	Attenuator	Weinschel	56-20	N8257	01/13/2007 ~ 01/13/2008
18	Oscillator	Kenwood	AG-203D	10040568	10/23/2006 ~ 10/23/2007