



FCC 47 CFR PART 15 SUBPART C AND ANSI C63.4 : 2003

TEST REPORT

For

RFID

Model : FS-GM201

Trade Name : FAVITE

Issued for

FAVITE Inc.

**NO.19, Lane 78, Yanhe St., Jhubei City,
Hsinchu County 30267, Taiwan**

Issued by

Compliance Certification Services Inc.

Tainan Laboratory

No. 8, Jiu Cheng Ling, Jiaokeng Village, Sinhua
Township, Tainan Hsien 712, Taiwan R.O.C.

TEL: 886-6-580-2201

FAX: 886-6-580-2202



***Note:** This report shall not be reproduced except in full, without the written approval of Compliance Certification Services Inc. This document may be altered or revised by Compliance Certification Services Inc. personnel only, and shall be noted in the revision section of the document. The client should not use it to claim product endorsement by TAF or any government agencies. The test results in the report only apply to the tested sample.*



Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	07/28/2009	Initial Issue	All Page 74	Jeter Wu



TABLE OF CONTENTS

TITLE	PAGE NO.
1. TEST REPORT CERTIFICATION.....	4
2. EUT DESCRIPTION.....	5
2.1 DESCRIPTION OF EUT & POWER.....	5
3. DESCRIPTION OF TEST MODES	5
4. TEST METHODOLOGY.....	5
5. FACILITIES AND ACCREDITATIONS.....	6
5.1 FACILITIES	6
5.2 EQUIPMENT.....	6
5.3 LABORATORY ACCREDITATIONS LISTINGS.....	6
5.4 TABLE OF ACCREDITATIONS AND LISTINGS	7
6. CALIBRATION AND UNCERTAINTY.....	8
6.1 MEASURING INSTRUMENT CALIBRATION	8
6.2 MEASUREMENT UNCERTAINTY.....	8
7. SETUP OF EQUIPMENT UNDER TEST.....	9
8. APPLICABLE LIMITS AND TEST RESULTS	10
8.1 DUTY CYCLE CORRECTION FACTOR	10-11
8.2 20dB BANDWIDTH FOR HOPPING.....	12-17
8.3 MAXIMUM PEAK OUTPUT POWER	18-23
8.4 HOPPING CHANNEL SEPARATION.....	24-26
8.5 NUMBER OF HOPPING FREQUENCY USED	27-28
8.6 AVERAGE TIME OF OCCUPANCY.....	29-32
8.7 CONDUCTED SPURIOUS EMISSION.....	33-37
8.8 RADIATED EMISSIONS	38
8.8.1 TRANSMITTER RADIATED SUPURIOUS EMSSIONS	38-41
8.8.2 WORST-CASE RADIATED EMISSION BELOW 1 GHz.....	42-47
8.8.3 TRANSMITTER RADIATED EMISSION ABOVE 1 GHz.....	48-59
8.8.4 RESTRICTED BAND EDGES	60-63
8.9 POWERLINE CONDUCTED EMISSIONS	64-67
APPENDIX I MAXIMUM PERMISSIBLE EXPOSURE.....	68-69
APPENDIX II SETUP PHOTOS.....	70-74



1. TEST REPORT CERTIFICATION

Applicant : FAVITE Inc.
Address : NO.19, Lane 78, Yanhe St., Jhubei City,
Hsinchu County 30267, Taiwan
Equipment Under Test : RFID
Model : FS-GM201
Trade Name : FAVITE
Tested Date : May 22 ~ July 24, 2009

APPLICABLE STANDARD	
STANDARD	TEST RESULT
FCC Part 15 Subpart C AND ANSI C63.4 : 2003	PASS

Approved by:

Jeter Wu
Section Manager

Reviewed by:

Eric Yang
Senior Engineer

WE HEREBY CERTIFY THAT: The measurements shown in the attachment were made in accordance with the procedures indicated, and the energy emitted by the equipment was found to be within the limits applicable. We assume full responsibility for the accuracy and completeness of these measurements and vouch for the qualifications of all persons taking them.



2. EUT DESCRIPTION

2.1 DESCRIPTION OF EUT & POWER

Product Name	RFID
Model Number	FS-GM201
Frequency Range	902MHz to 928MHz
Transmit Power	29.41dBm
Channel Spacing	500kHz
Channel Number	50 Channels
Type of Modulation	ASK or PSK (FHSS)
Frequency Selection	by software / firmware
Antenna Type	Patch Antenna, Antenna Gain : 8dBic (5.85dBi)
Power Source	5VDC, 0.2A (From Power Adapter)

Power Adapter :

No.	Manufacturer	Model No.	Power Input	Power Output
1	FAIRWAY	WRG10F-050A	100-240VAC, 0.5A max, 47-63Hz	5VDC , 0.2A

Remark:

1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: XLG-FS-GM201 filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.
3. For more details, please refer to the User's manual of the EUT.

3. DESCRIPTION OF TEST MODES

The EUT had been tested under operating condition.

There are three channels have been tested as following :

Channel	Frequency (MHz)
Low	902.75
Middle	915.25
High	927.25

4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 : 2003 and FCC CFR 47 15.207, 15.209 and 15.247.



5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

No. 8, Jiu Cheng Ling, Jiaokeng Village, Sinhua Township, Tainan Hsien 712, Taiwan R.O.C.

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.






Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5.3 LABORATORY ACCREDITATIONS LISTINGS

The test facilities used to perform radiated and conducted emissions tests are accredited by Taiwan Accreditation Foundation for the specific scope of accreditation under Lab Code: 1109 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, IC 2324H-1 for OATS -6.

5.4 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	 FCC MRA: TW-1037
Japan	VCCI	3/10 meter Open Area Test Sites to perform conducted/radiated measurements	 C-2882 R-2635
Taiwan	TAF	CISPR 11, FCC METHOD-47 CFR Part 18, EN 55011, EN 60601-1-2, CISPR 22, CNS 13438, EN 55022, EN 55024, AS/NZS CISPR 22 CISPR 14, EN 55014-1, EN 55014-2, CNS 13783-1, CISPR 22, CNS 13439, EN 55013, FCC Method-47 CFR Part 15 Subpart B, IC ICES-003, VCCI V-3 & V-4 FCC Method-47 CFR Part 15 Subpart C and ANSI C63.4, LP 0002 EN / IEC 61000-4-2 / -3 / -4 / -5 / -6 / -8 / -11 EN 61000-3-2, EN 61000-3-3 EN 61000-6-3, EN 61000-6-1, AS/NZS 4251.1, EN 61000-6-4, EN 61000-6-2, AS/NZS 4251.2, EN 61204-3, EN 50130-4, EN 62040-2, EN 50371, EN 50385, AS/NZS 4268, ETSI EN 300 386 ETSI EN 300 328, ETSI EN 301 489-1/-3/-9/-17 ETSI EN 301 893, ETSI EN 300 220-2/-1 ETSI EN 300 440-2/-1 ETSI EN 301 357-2/-1 RSS-310, RSS-210 Issue 7, RSS-Gen Issue 2	
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS13439	 SL2-IN-E-0039 SL2-R1/R2-0039 SL2-A1-E-0039
Canada	Industry Canada	RSS210, Issue 7	 IC 2324H-1

* No part of this report may be used to claim or imply product endorsement by TAF or any agency of the US Government.



6. CALIBRATION AND UNCERTAINTY

6.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

6.2 MEASUREMENT UNCERTAINTY

The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4.

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 1000 MHz	+/- 3.2 dB
Radiated Emission, 1 to 26.5GHz	+/- 3.2 dB
Power Line Conducted Emission	+/- 2.1 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



7. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

No.	Product	Manufacturer	Model No.	Serial No.	FCC ID
1	Notebook PC	DELL	Latitude D610	CN-0C4708-48643-625-5565	E2K24BNHM
2	Notebook PC	HP	nx6130	CNU543274R	CNTWM3B2200BGA
3	Modem	ZyXEL	Omni 56K	S1Z4107727	1880MN156K
4	Printer	HP	Deskjet 948c	CN19T6S011	DoC
5	Mouse	KINYO	KM-770	0804	DoC

SETUP DIAGRAM FOR TESTS

EUT & peripherals setup diagram is shown in appendix setup photos.

EUT OPERATING CONDITION

1. Setup all computers like the setup diagram.
2. Open software RFID Tracer.exe
Configure Reader→Intel RFID Tracer Configuration
Settings: FCC_GENERIC
Antenna Ports: Select Antenna→Setup Power→Setup Dwell Time
RF Channels: Import from Excel→E:\Guest EUT driver\ Guest RFID \ Guest RFID
Channel→ Select Frequency
3. TX Mode (below 1GHz/ above 1GHz)
 - (1) Frequency Control : Fixed
 - (2) Select : Low / Middle / High
Change: DEC(1) / DEC(26) / DEC(50)
 - (3) Module Select Antenna : ANT1 or ANT2
 - (4) Power set ANT1=ANT2
Low=280 / Middle=280 / High=280
5. All of the functions are under run.
6. Start test.



8. APPLICABLE LIMITS AND TEST RESULTS

8.1 DUTY CYCLE CORRECTION FACTOR

LIMIT

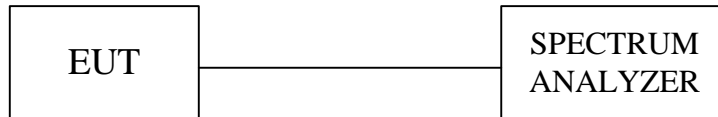
Limit : N/A

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
SPECTRUM ANALYZER	AGILENT	E4446A	MY43360132	06/09/2010
SPECTRUM ANALYZER	AGILENT	E4446A	MY46180323	05/26/2010

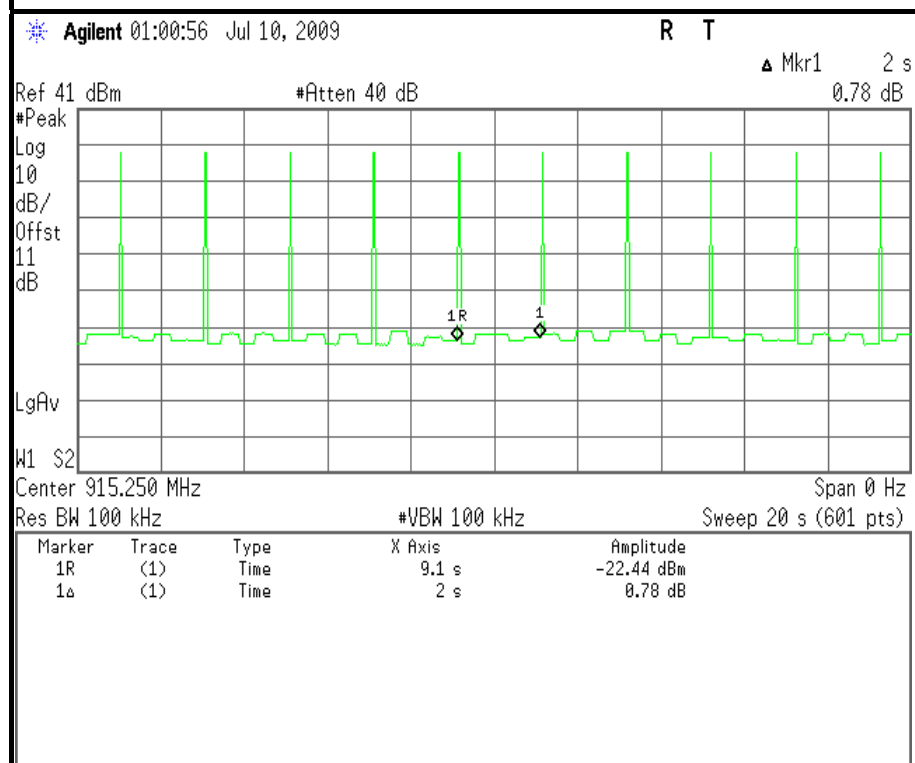
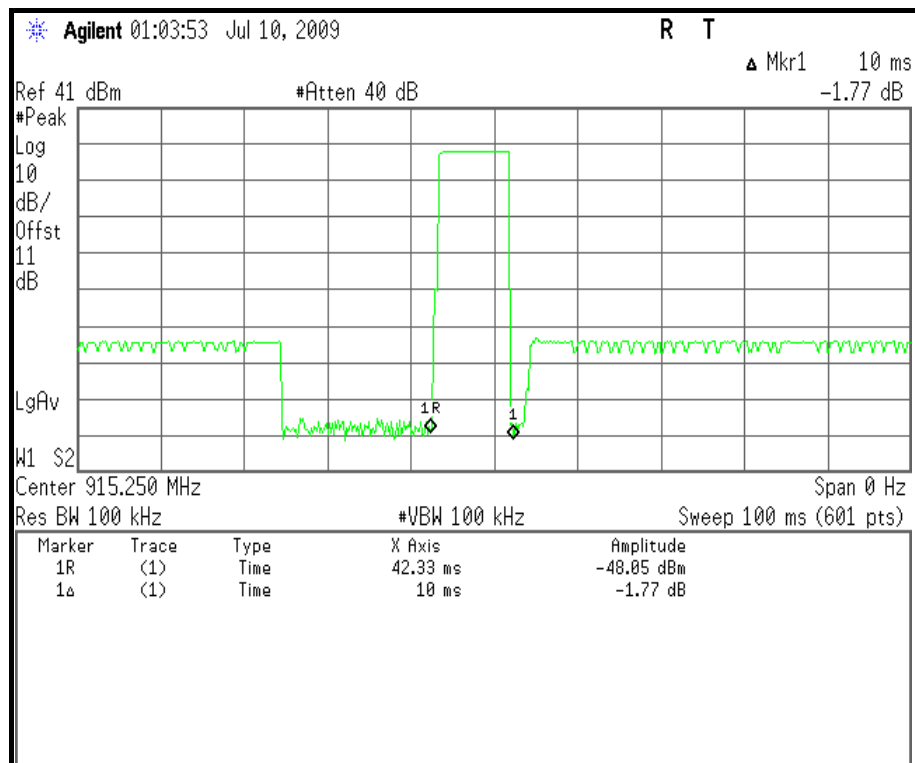
Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

1. Set center frequency of spectrum analyzer = operating frequency.
2. Set the spectrum analyzer as RBW, VBW=1MHz, Span = 0Hz.
3. Repeat above procedures until all frequency measured were complete.

**TEST RESULTS** $T_p = 100(\text{ms})$ $T_{on} = 10(\text{ms})$ $\text{Duty Cycle Correction Factor} = 20 * \log(T_{on} / T_p)$
 $= 20 * \log(10 / 100) = -20$ 



8.2 20dB BANDWIDTH FOR HOPPING

LIMIT

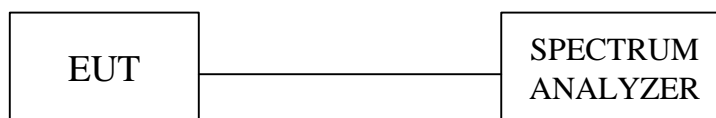
§15.247(a)(1)(i) For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
SPECTRUM ANALYZER	AGILENT	E4446A	MY43360132	06/09/2010
SPECTRUM ANALYZER	AGILENT	E4446A	MY46180323	05/26/2010

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

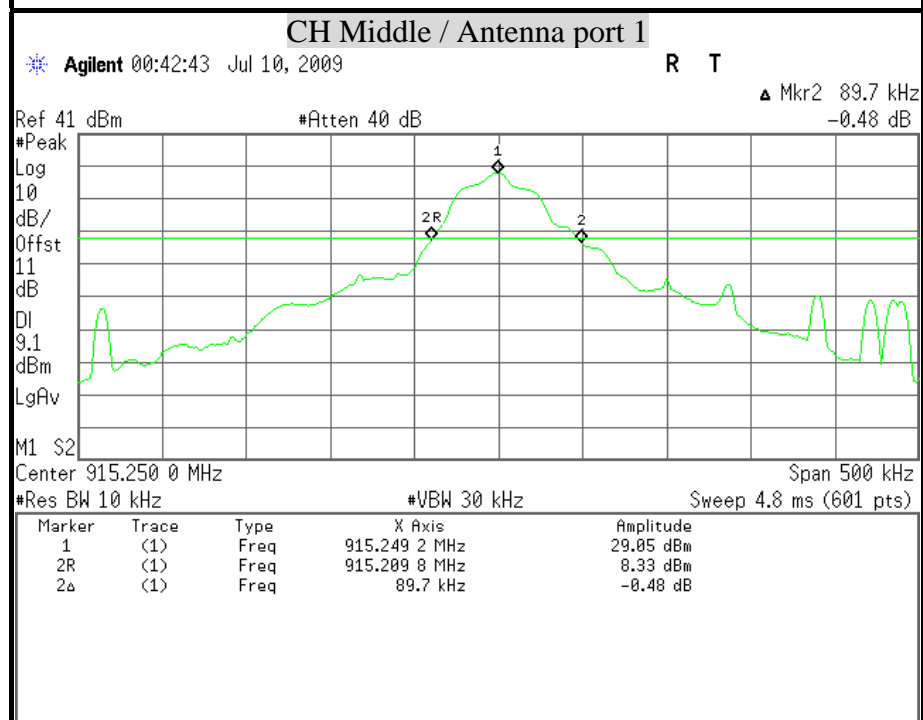
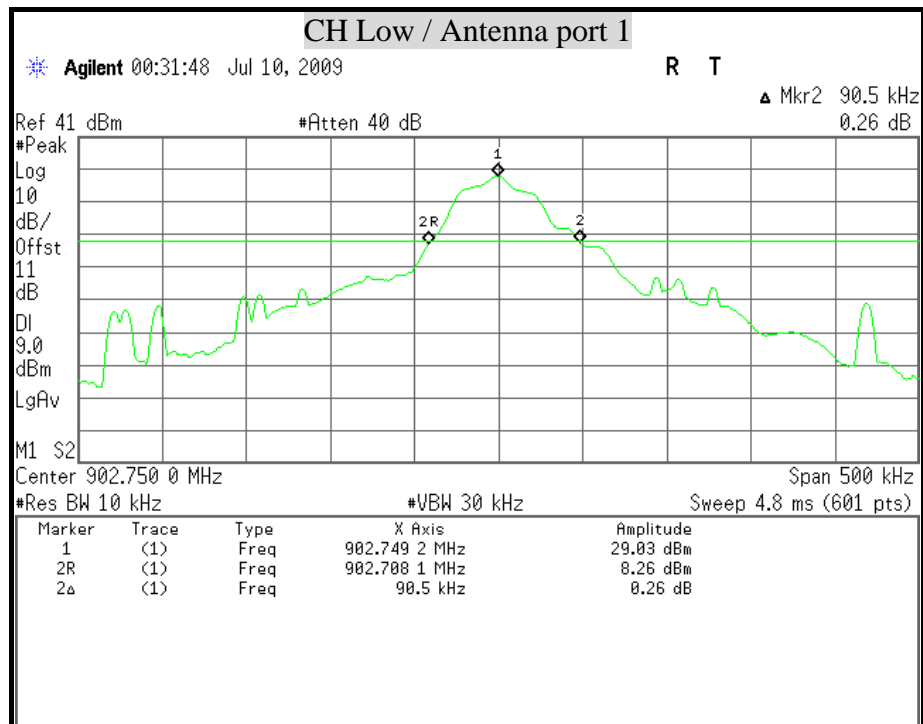
The 20dB band width was measured with a spectrum analyzer connected to RF antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate center frequency. The analyzer center frequency was set to the EUT carrier frequency, using the analyzer. Display Line and Marker Delta functions, the 20dB band width of the emission was determined.

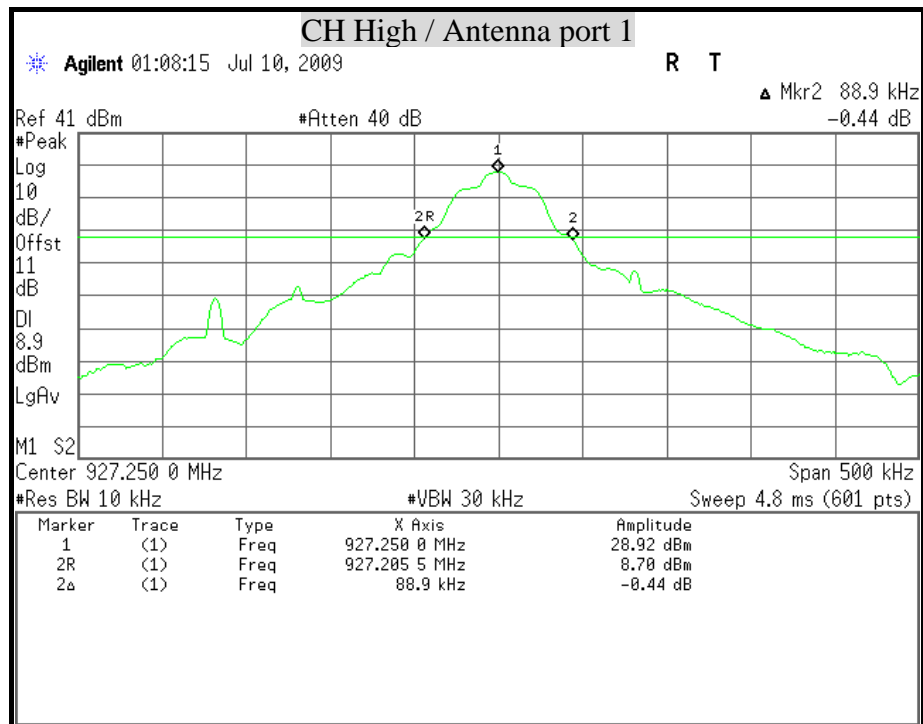
**TEST RESULTS****Antenna port 1**

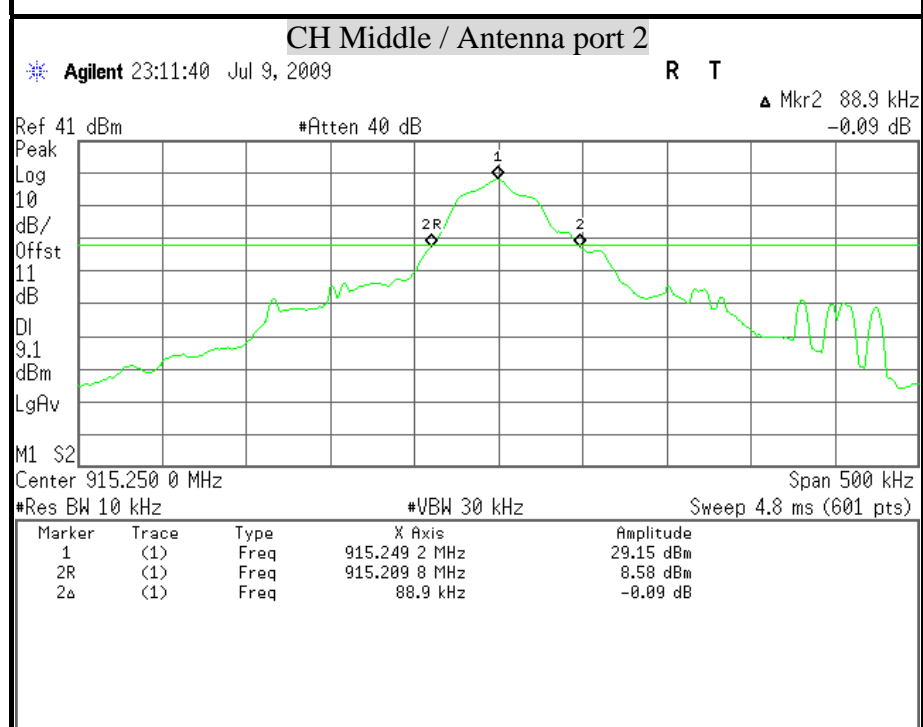
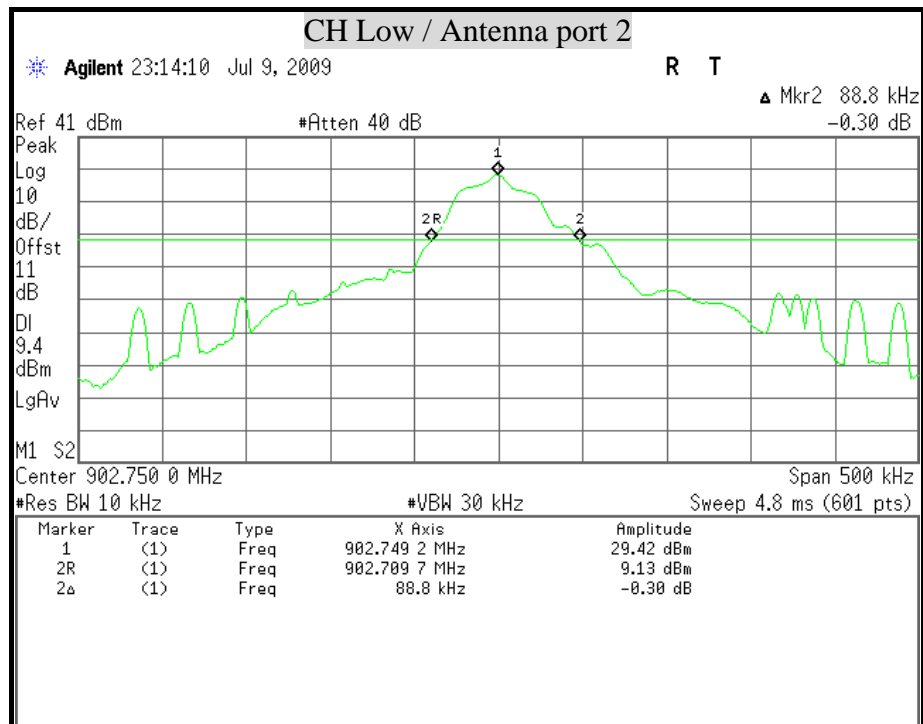
Channel	Channel Frequency (MHz)	20dB Bandwidth (KHz)	Limit (KHz)	Pass / Fail
Low	902.75	90.5	< 250	N/A
Middle	915.25	89.7	< 250	N/A
High	927.25	88.9	< 250	N/A

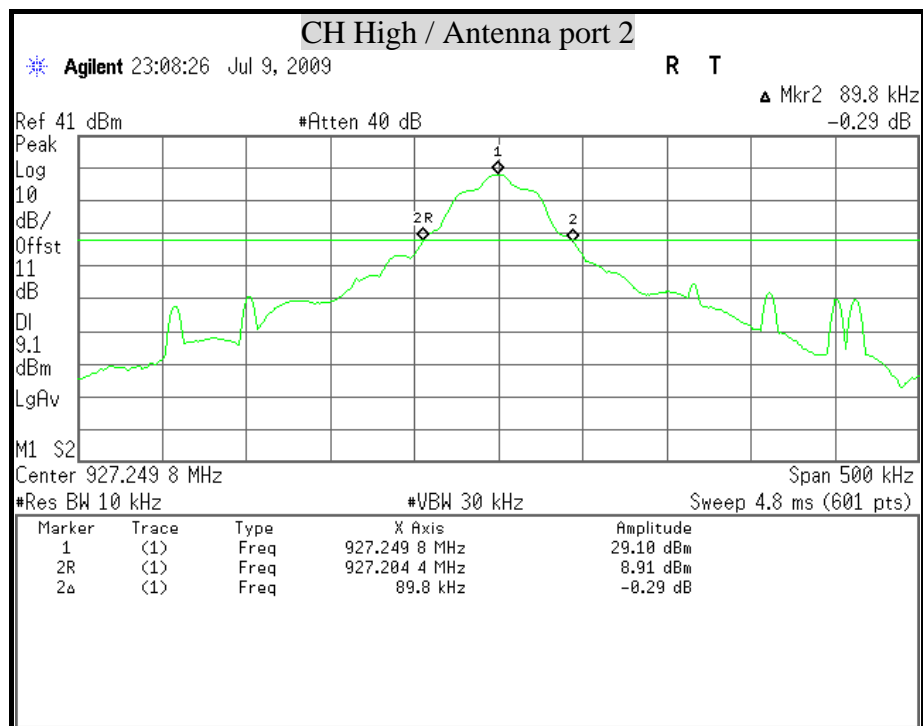
Antenna port 2

Channel	Channel Frequency (MHz)	20dB Bandwidth (KHz)	Limit (KHz)	Pass / Fail
Low	902.75	88.8	< 250	N/A
Middle	915.25	88.9	< 250	N/A
High	927.25	89.8	< 250	N/A

**20dB BANDWIDTH**









8.3 MAXIMUM PEAK OUTPUT POWER

LIMIT

§15.247(b)(2) 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.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
SPECTRUM ANALYZER	AGILENT	E4446A	MY43360132	06/09/2010
SPECTRUM ANALYZER	AGILENT	E4446A	MY46180323	05/26/2010

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

The RF power output was measured with a power meter connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate center frequency, A power meter was used to record the shape of the transmit signal.

**TEST RESULTS****Antenna port 1**

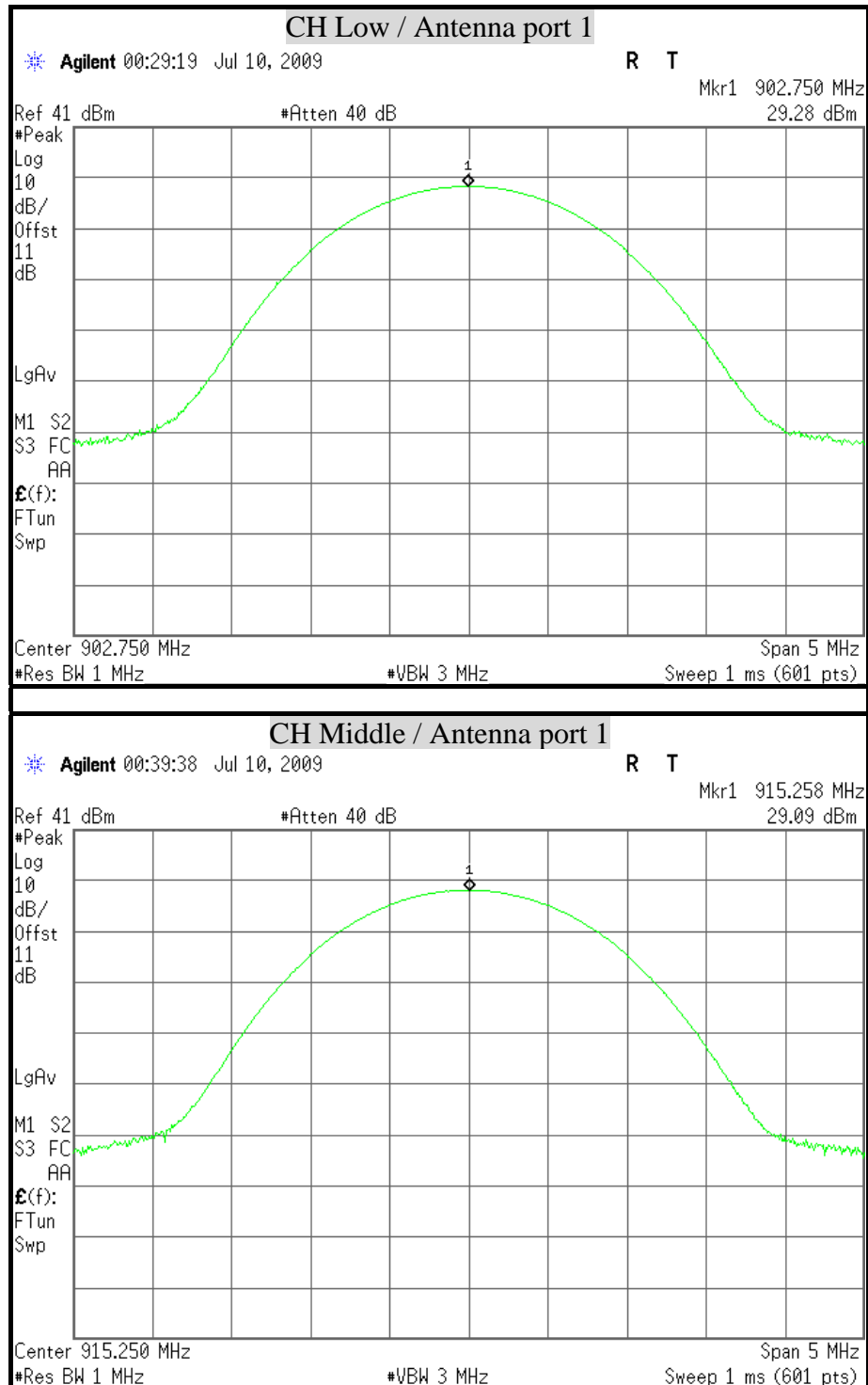
Channel	Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	902.75	29.28	30	PASS
Middle	915.25	29.09	30	PASS
High	927.25	28.95	30	PASS

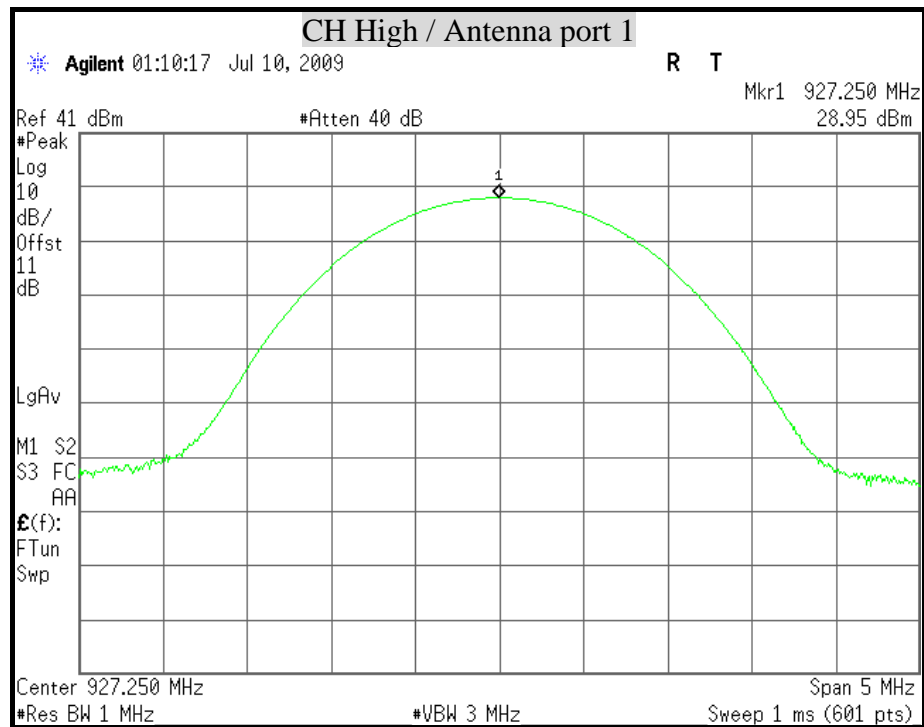
Remark: The cable assembly insertion loss of 11dB (including 10dB pad and 1dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

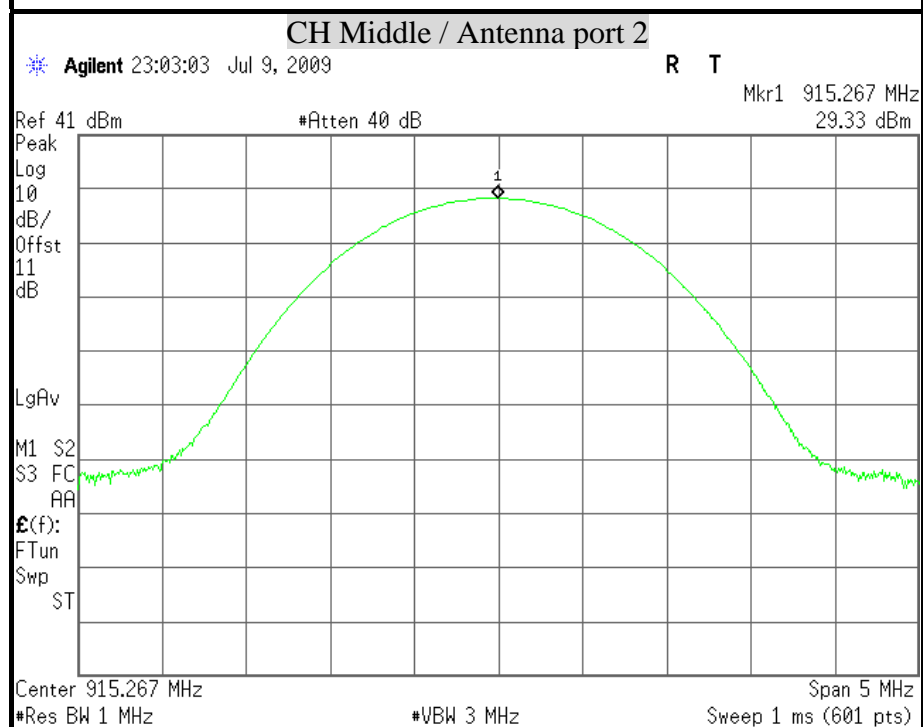
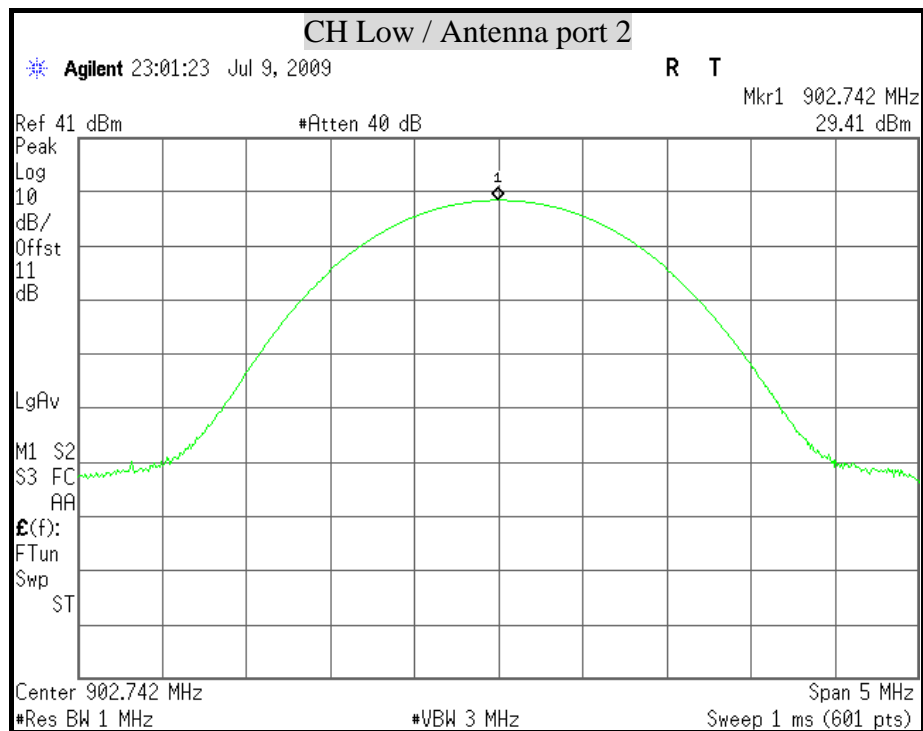
Antenna port 2

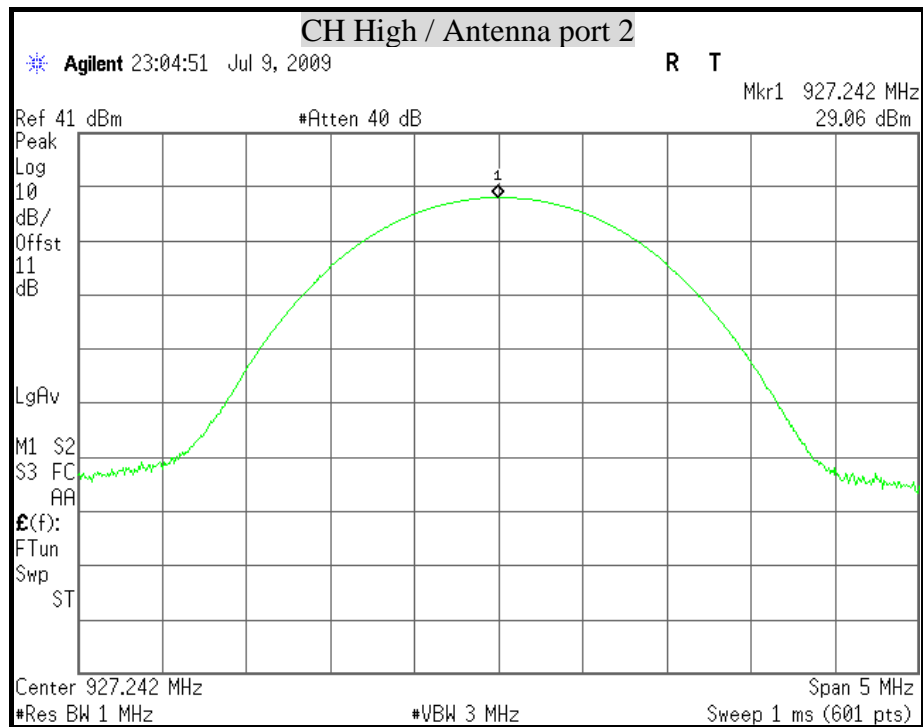
Channel	Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	902.75	29.41	30	PASS
Middle	915.25	29.33	30	PASS
High	927.25	29.06	30	PASS

Remark: The cable assembly insertion loss of 11dB (including 10dB pad and 1dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

**MAXIMUM PEAK OUTPUT POWER**









8.4 HOPPING CHANNEL SEPARATION

LIMIT

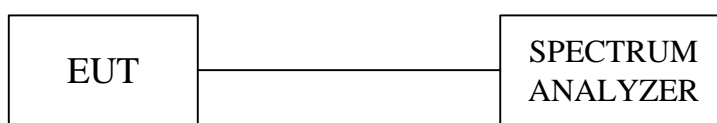
§15.247(a)(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
SPECTRUM ANALYZER	AGILENT	E4446A	MY43360132	06/09/2010
SPECTRUM ANALYZER	AGILENT	E4446A	MY46180323	05/26/2010

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 100 kHz. The sweep time is coupled.

**TEST RESULTS****Antenna port 1**

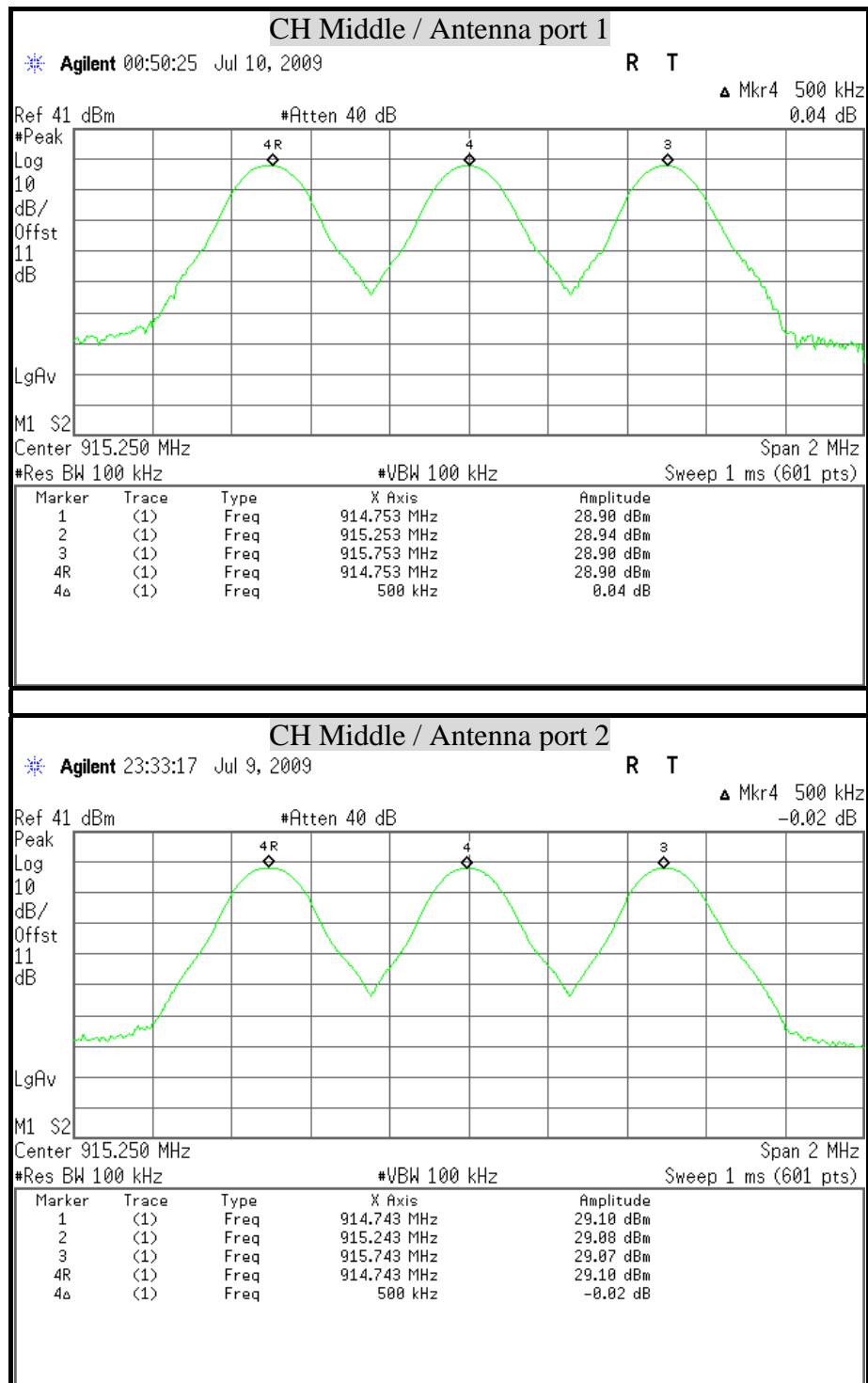
Channel	Adjacent Hopping Channel Separation (kHz)	20dB bandwidth (kHz)	Minimum Bandwidth (kHz)	Result
915.25MHz (Mid)	500	89.7	25	PASS

Antenna port 2

Channel	Adjacent Hopping Channel Separation (kHz)	20dB bandwidth (kHz)	Minimum Bandwidth (kHz)	Result
915.25MHz (Mid)	500	88.9	25	PASS



HOPPING CHANNEL SEPARATION





8.5 NUMBER OF HOPPING FREQUENCY USED

LIMIT

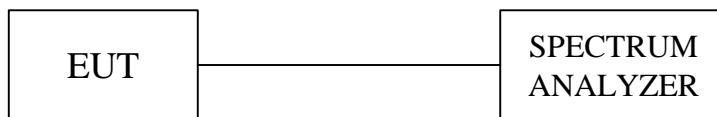
§15.247(a)(1)(i) For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
SPECTRUM ANALYZER	AGILENT	E4446A	MY43360132	06/09/2010
SPECTRUM ANALYZER	AGILENT	E4446A	MY46180323	05/26/2010

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



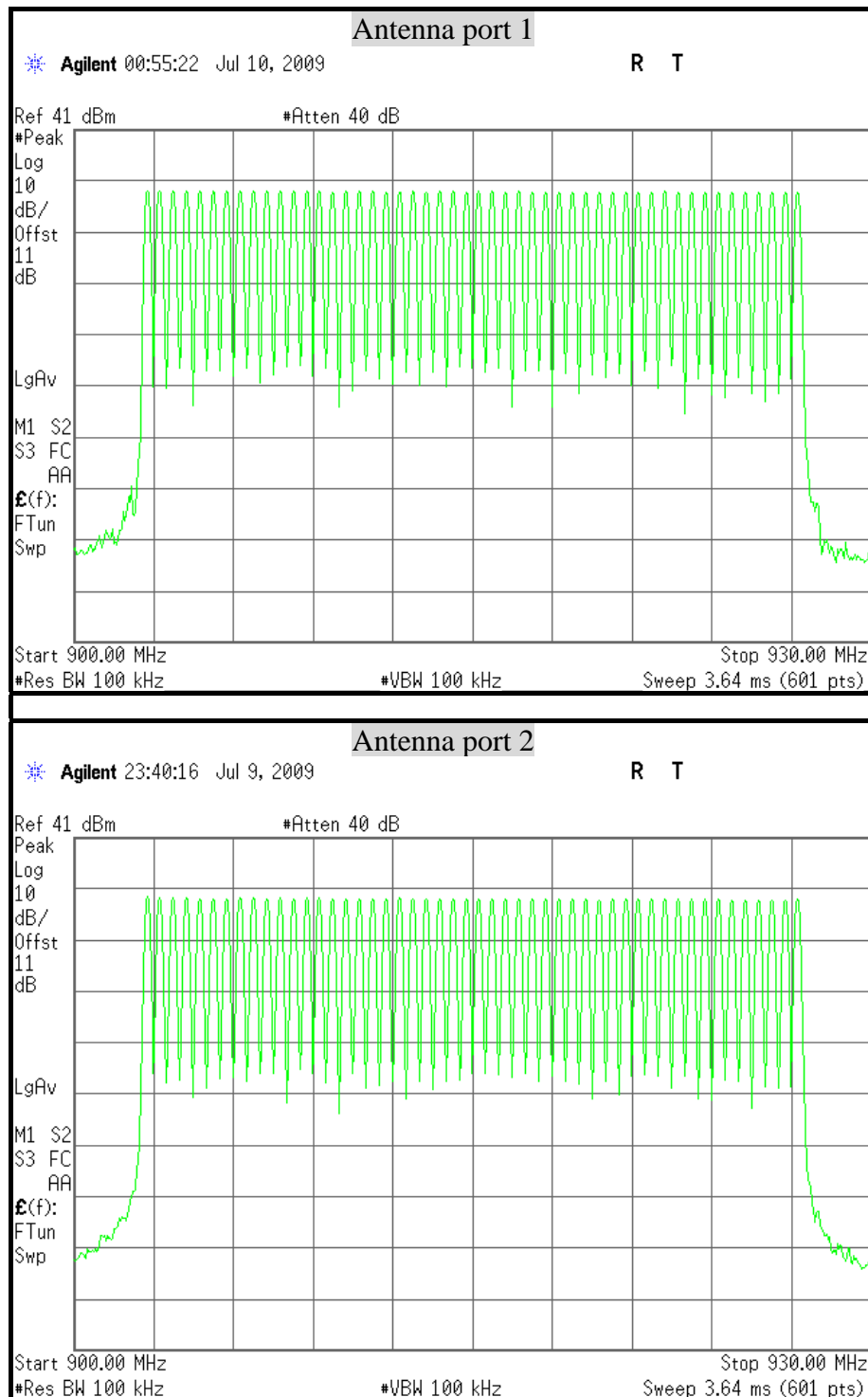
TEST PROCEDURE

1. Check the calibration of the measuring instrument (spectrum analyzer) using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in test setup without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Set the spectrum analyzer on Max Hold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
4. Set the spectrum analyzer on View mode and then plot the result on spectrum analyzer screen.
5. Repeat above procedures until all frequencies measured were complete.

TEST RESULTS

Refer to the attached plot.

There are 50 hopping frequencies in a hopping sequence.

**NUMBER OF HOPPING FREQUENCY USED**



8.6 AVERAGE TIME OF OCCUPANCY

LIMIT

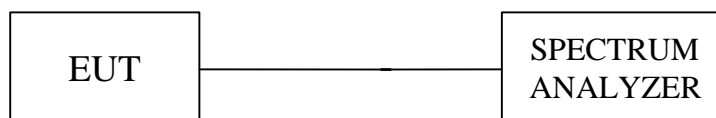
§15.247(a)(1)(i) For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
SPECTRUM ANALYZER	AGILENT	E4446A	MY43360132	06/09/2010
SPECTRUM ANALYZER	AGILENT	E4446A	MY46180323	05/26/2010

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a slow scan.

**TEST RESULTS****Antenna port 1**

Transmitting Frequency	Pulse width (ms)	Number of Pulse in 20 Seconeds	Average Time of Occupancy (sec.)	Limit (sec)	Results
915.25 MHz	10	10	0.1	0.4	PASS

Cycle = number channel \times 0.4sec= 50 \times 0.4 = 20sec

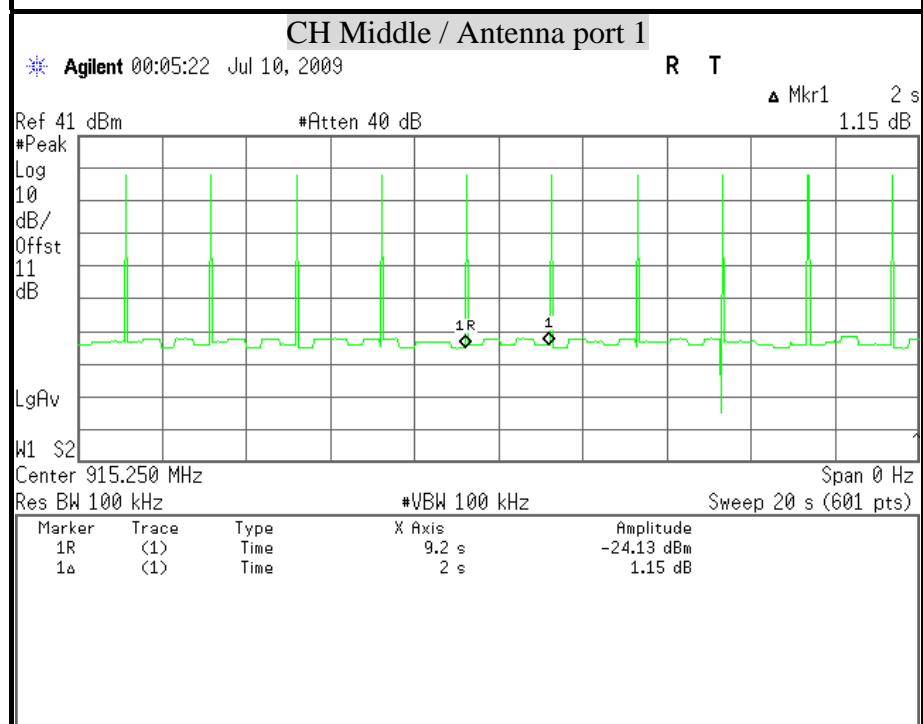
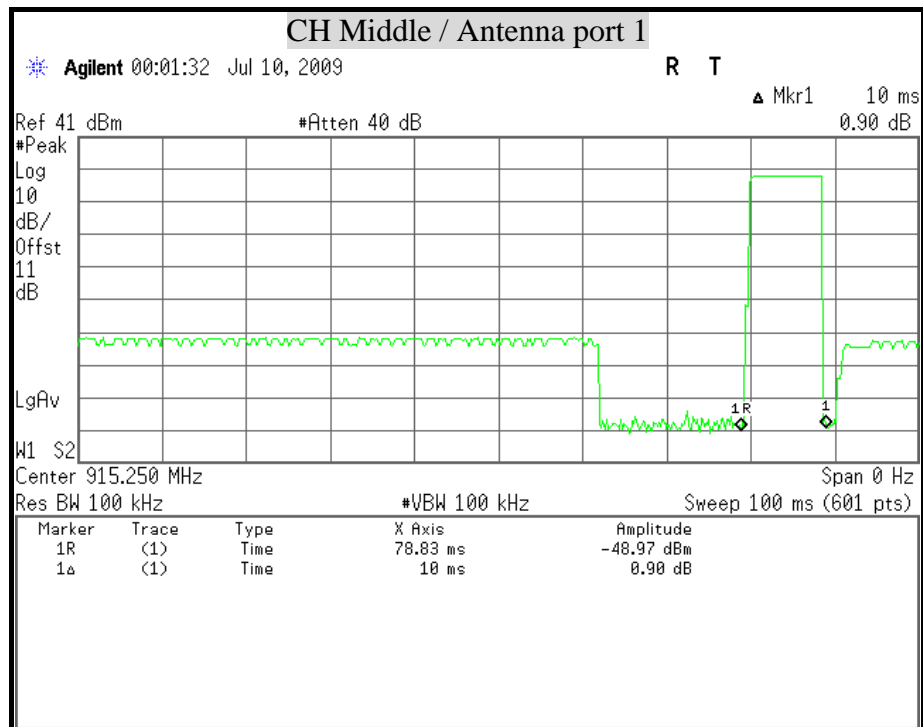
Average Time of Occupancy = pulse width \times hopping number = 10 \times 10 = 100 (ms)

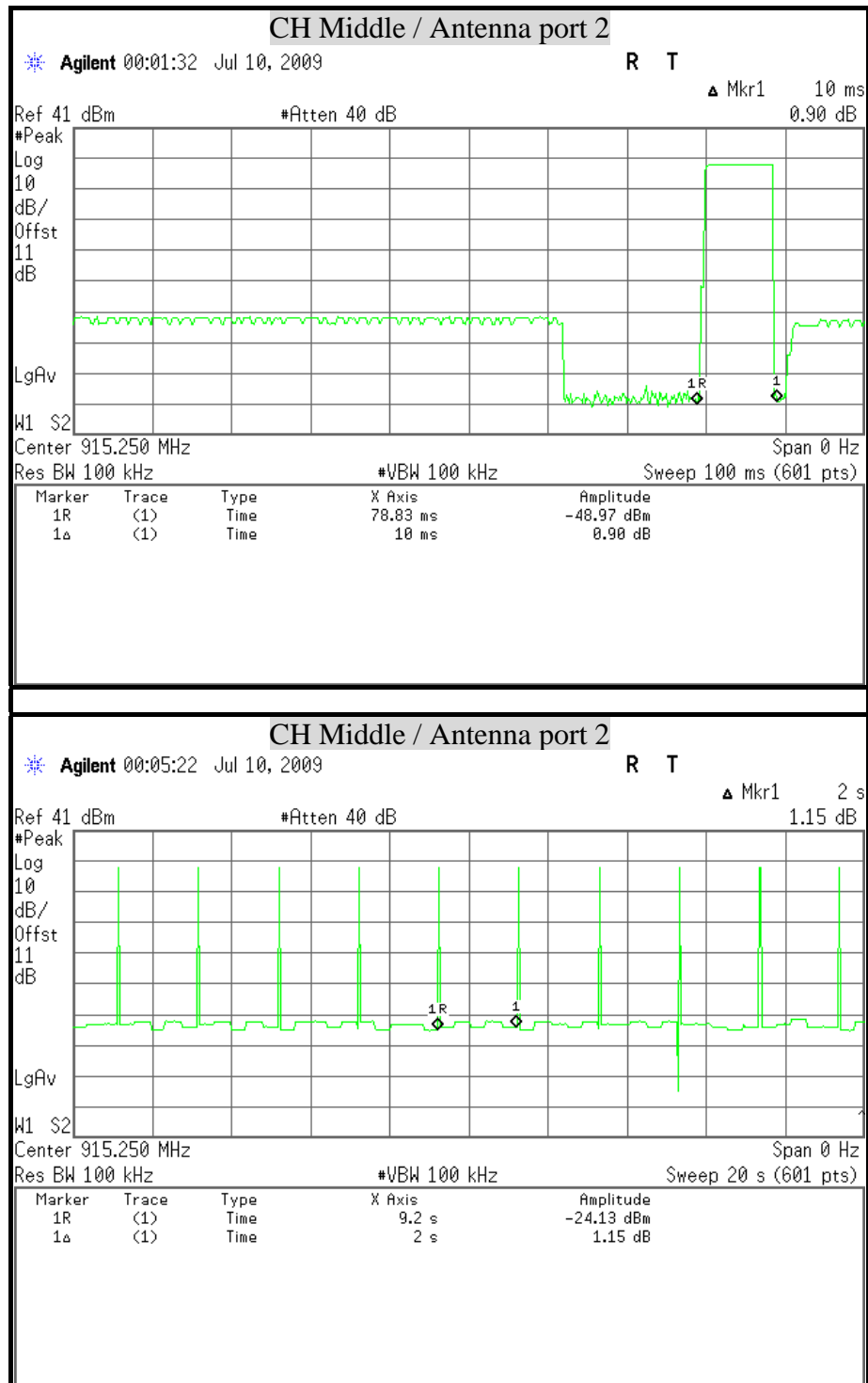
Antenna port 2

Transmitting Frequency	Pulse width (ms)	Number of Pulse in 20 Seconeds	Average Time of Occupancy (sec.)	Limit (ms.)	Results
915.25 MHz	10	10	0.1	0.4	PASS

Cycle = number channel \times 0.4sec= 50 \times 0.4 = 20sec

Average Time of Occupancy = pulse width \times hopping number = 10 \times 10 = 100 (ms)

**PULSE WIDTH / NUMBER OF PULSES**





8.7 CONDUCTED SPURIOUS EMISSION

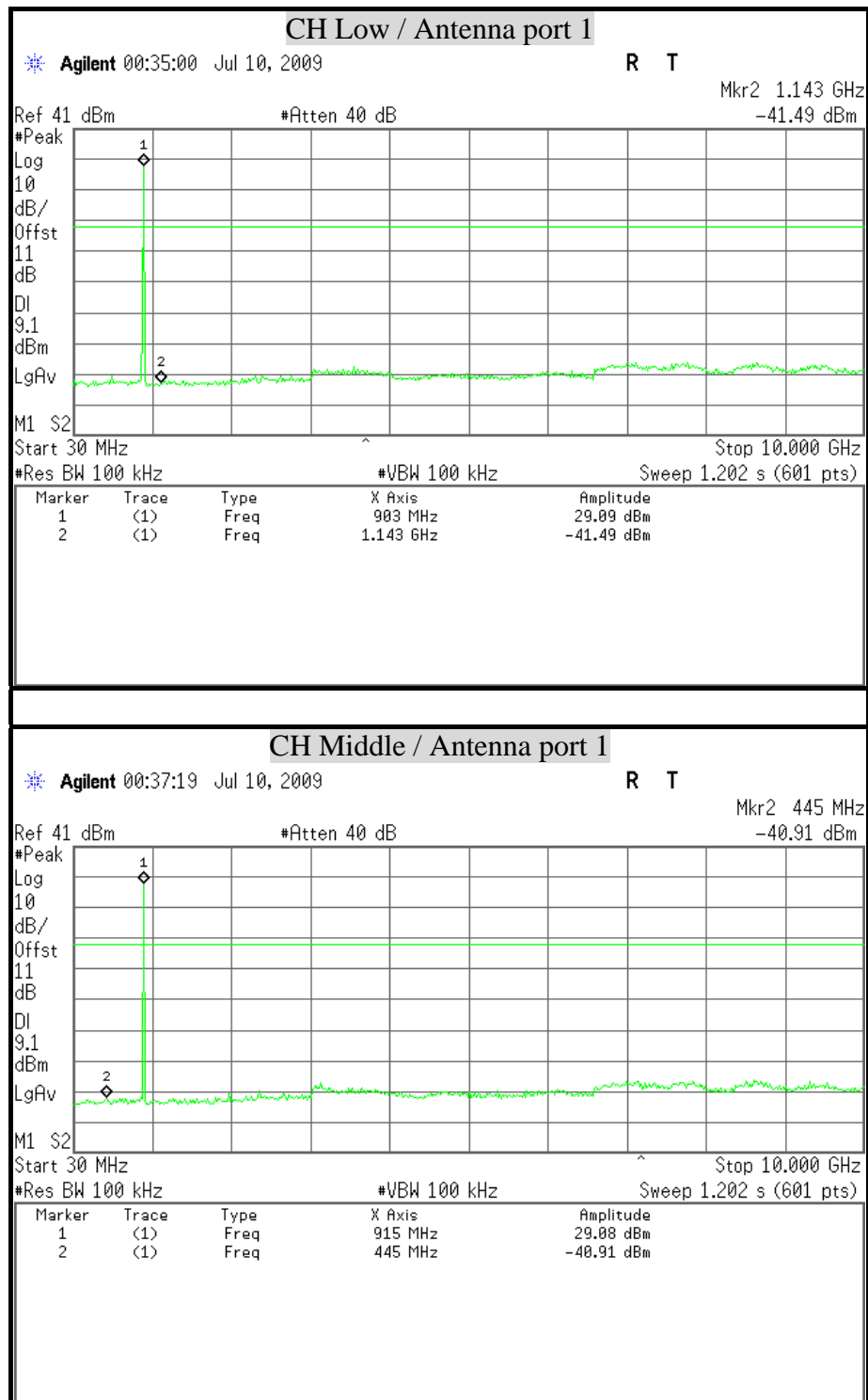
LIMITS

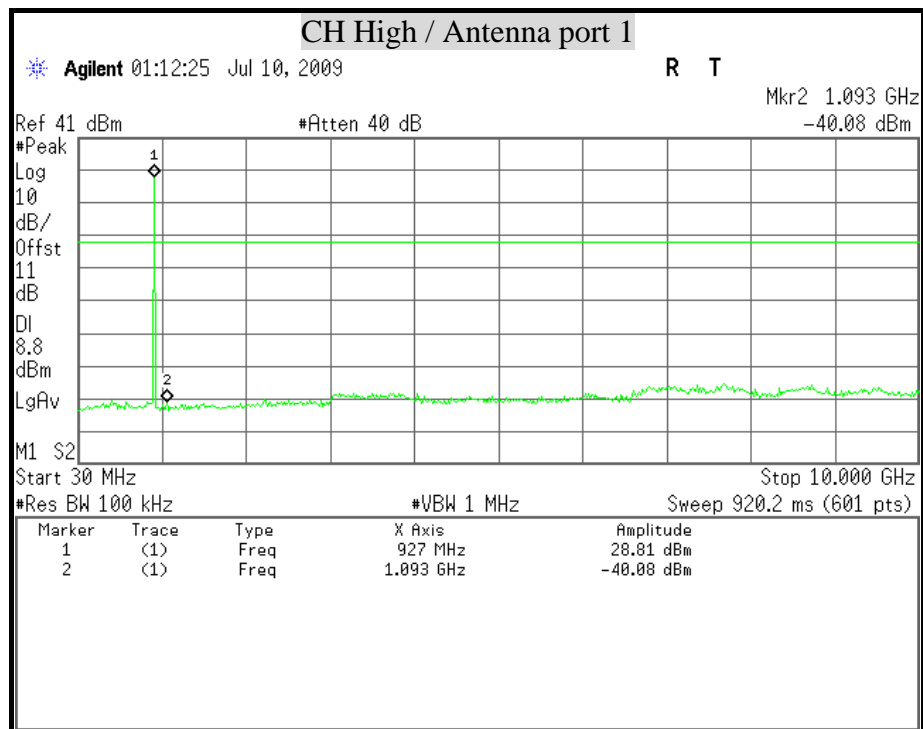
§ 15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

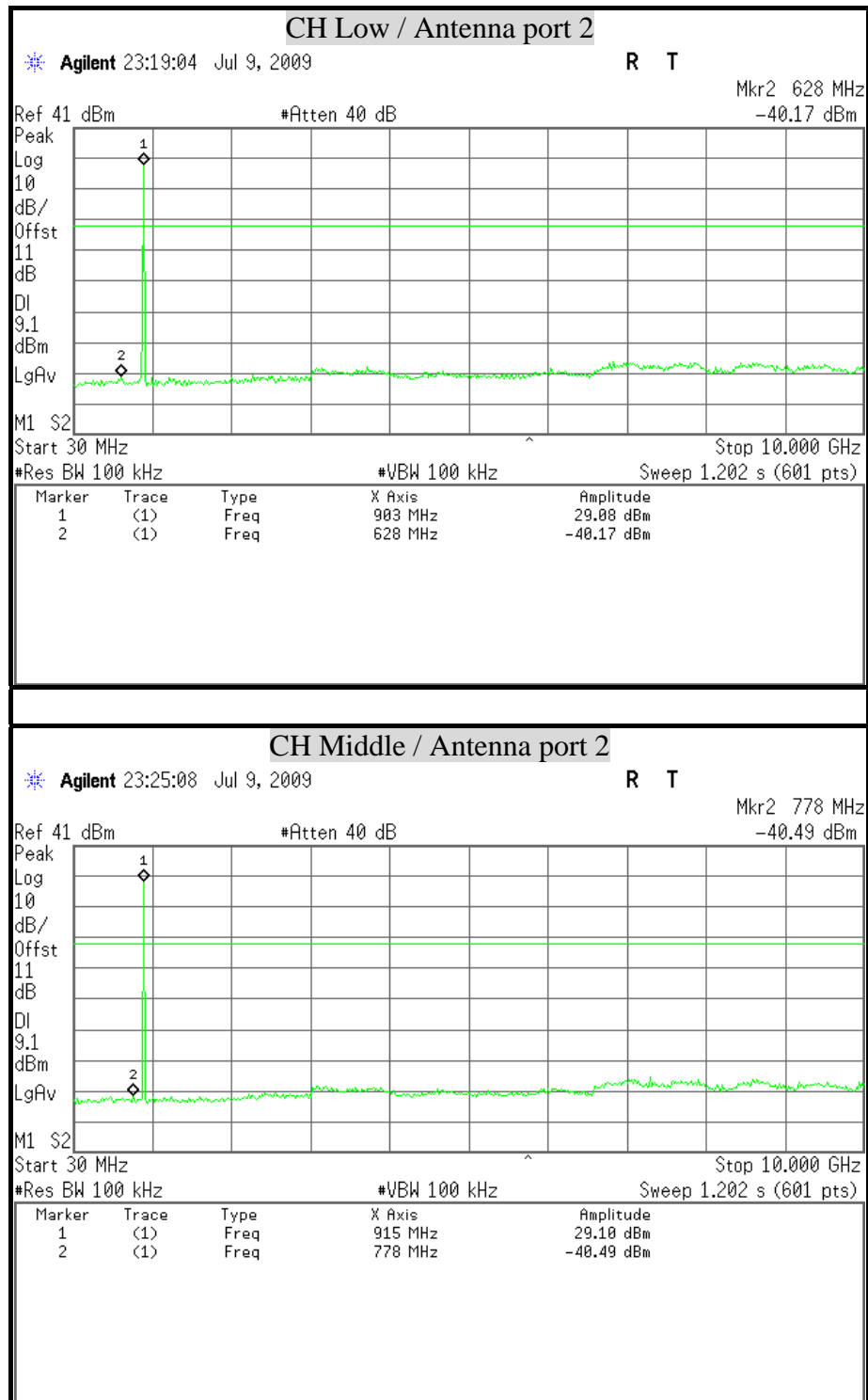
TEST PROCEDURE

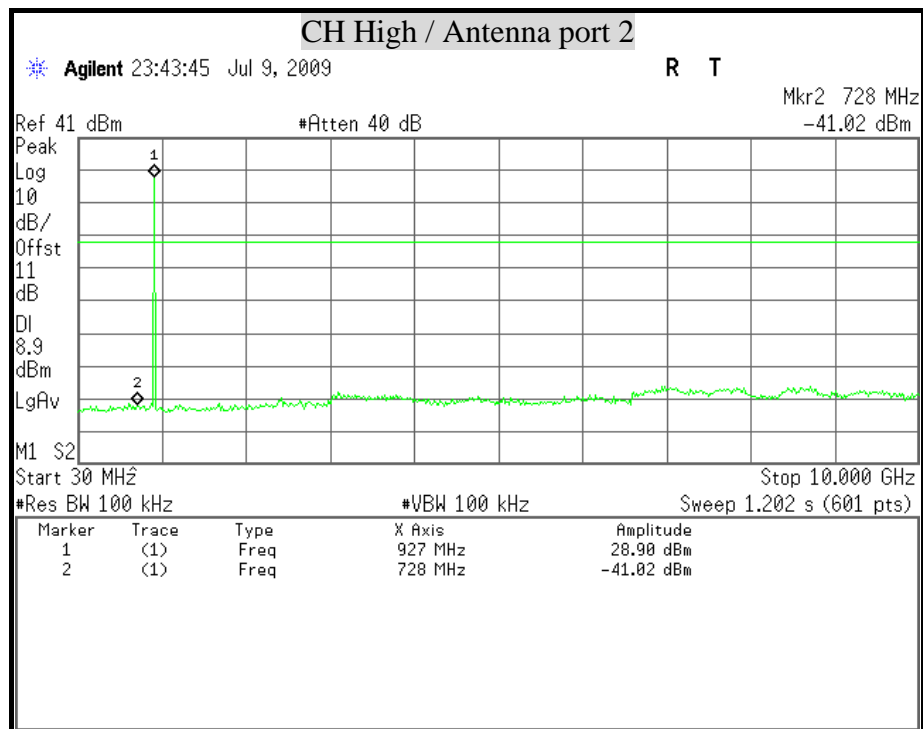
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.

The spectrum from 30 MHz to 26.5 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

**TEST RESULTS****BAND EDGE COMPLIANCE OF RF CONDUCTED EMISSIONS****OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT**









8.8 RADIATED EMISSIONS

8.8.1 TRANSMITTER RADIATED SUPURIOUS EMSSIONS

LIMITS

§ 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3338	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

§ 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



§ 15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table :

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

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

§ 15.209 (b) In the emission table above, the tighter limit applies at the band edges.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
SPECTRUM ANALYZER	AGILENT	E4446A	MY43360132	06/09/2010
SPECTRUM ANALYZER	AGILENT	E4446A	MY46180323	05/26/2010
EMI TEST RECEIVER	R & S	ESCI	100221	05/17/2010
BILOG ANTENNA	SCHWARZBECK	VULB	9168_249	09/17/2010
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00078732	06/30/2010
PRE-AMPLIFIER	Agilent	8449B	3008A01471	08/02/2010
PRE-AMPLIFIER	HP	8447F	2944A03748	09/24/2010
Notch Filters Band Reject	Micro-Tronics	BRM50702-01	009	N.C.R.
TUNABLE BANDREJECT FILTER	K&L	3TNF-500/1000-N/N	461	N.C.R.
Band Reject Filter	Micro-Tronics	BRM80706	001	N.C.R.
RF COAXIAL CABLE	HUBERSUHNER	SUCOFLEX 104PEA	SN31347	07/21/2010
RF COAXIAL CABLE	HUBERSUHNER	SUCOFLEX 104PEA	SN31350	07/21/2010
RF COAXIAL CABLE	HUBERSUHNER	SUCOFLEX 104PEA	SN31355	07/21/2010
LOOP ANTENNA	EMCO	6502	2356	05/28/2010

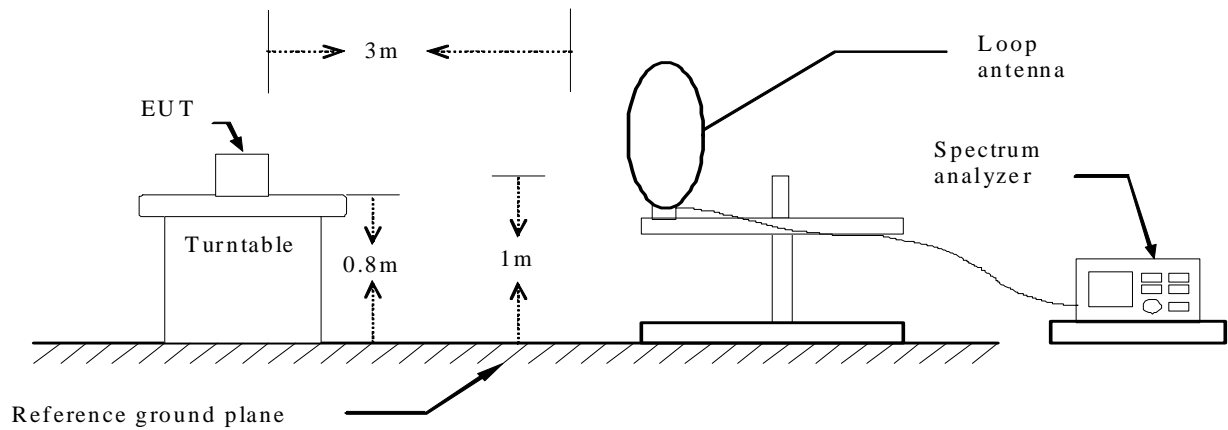
Remark: 1. Each piece of equipment is scheduled for calibration once a year.

2. N.C.R = No Calibration Request.

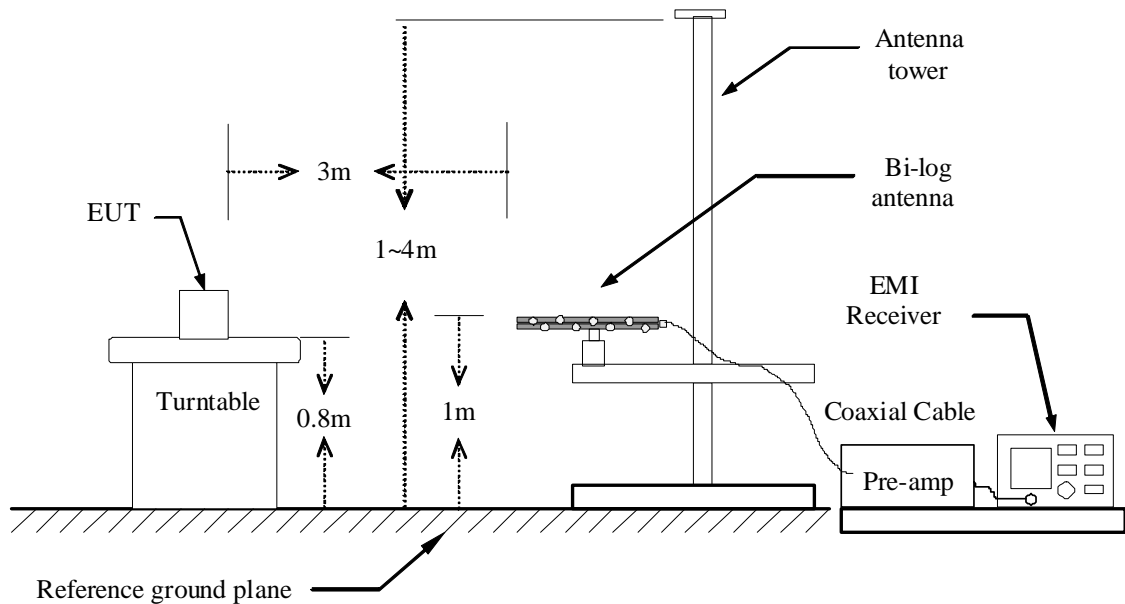
TEST SETUP

The diagram below shows the test setup that is utilized to make the measurements for emission from below 1GHz.

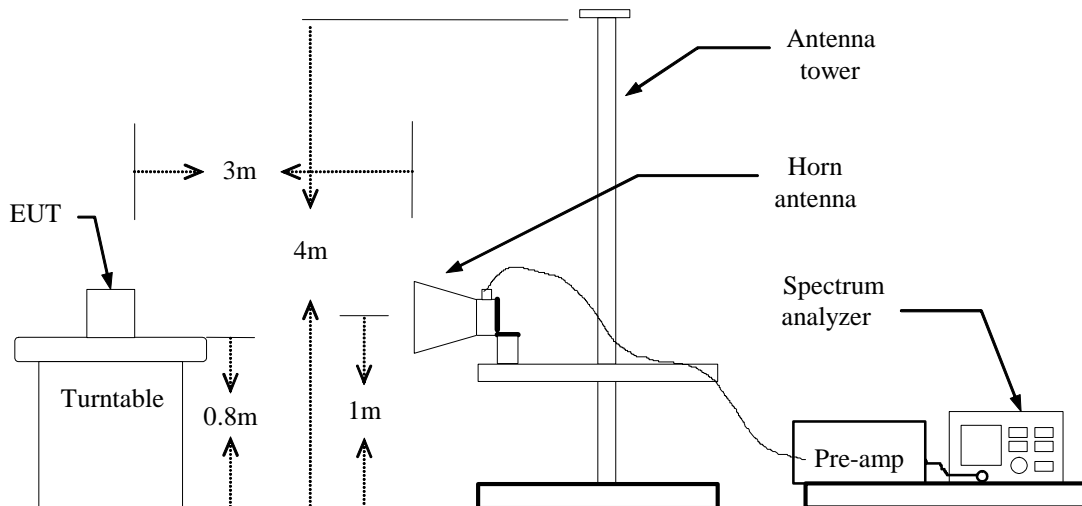
9kHz ~ 30MHz



30MHz ~ 1GHz



The diagram below shows the test setup that is utilized to make the measurements for emission above 1GHz.



TEST PROCEDURE

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- When measuring the radiated emission below 1GHz, the EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. When measuring the radiated emission above 1GHz, the EUT was set 3 meters away from the interference-receiving antenna.
- The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarization of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Note :

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

**8.8.2 WORST-CASE RADIATED EMISSION BELOW 1 GHz****BELOW 1 GHz (9kHz ~ 30MHz)**

No emission found between lowest internal used/generated frequency to 30MHz.

BELOW 1 GHz (30MHz ~ 1GHz)

Product Name	RFID	Test Date	2009/07/09
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH Low TX / Antenna port 1	TEMP & Humidity	24.8°C, 54%

Horizontal						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
44.55	59.62	-30.22	29.40	40.00	-10.60	Peak
165.80	56.45	-31.00	25.45	43.50	-18.05	Peak
200.72	65.29	-33.20	32.09	43.50	-11.41	Peak
300.63	61.01	-27.96	33.05	46.00	-12.95	Peak
364.65	54.15	-27.50	26.65	46.00	-19.35	Peak
801.15	49.14	-20.31	28.83	46.00	-17.17	Peak
884.57	50.99	-19.24	31.75	46.00	-14.25	Peak
893.30	51.73	-19.10	32.63	46.00	-13.37	Peak
Vertical						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
34.85	63.34	-31.13	32.21	40.00	-7.79	Peak
165.80	59.15	-31.00	28.15	43.50	-15.35	Peak
200.72	62.13	-33.20	28.93	43.50	-14.57	Peak
431.58	54.74	-26.33	28.41	46.00	-17.59	Peak
497.54	57.89	-25.21	32.68	46.00	-13.32	Peak
527.61	53.06	-24.69	28.37	46.00	-17.63	Peak
736.16	49.27	-21.09	28.18	46.00	-17.82	Peak
884.57	52.45	-19.24	33.21	46.00	-12.79	Peak

Remark:

1. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit.
2. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
4. Result (dBμV/m) = Reading (dBμV) + Correction Factor (dB/m)
5. Margin (dB) = Remark result (dBμV/m) - Quasi-peak limit (dBμV/m).



Product Name	RFID	Test Date	2009/07/09
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH Middle TX / Antenna port 1	TEMP & Humidity	24.8 °C, 54%

Horizontal						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
45.52	60.17	-30.20	29.98	40.00	-10.02	Peak
165.80	55.88	-31.00	24.88	43.50	-18.62	Peak
200.72	65.04	-33.20	31.84	43.50	-11.66	Peak
300.63	57.76	-27.96	29.80	46.00	-16.20	Peak
366.59	54.91	-27.47	27.45	46.00	-18.55	Peak
763.32	48.47	-20.64	27.83	46.00	-18.17	Peak
900.09	51.85	-19.00	32.85	46.00	-13.15	Peak
938.89	49.86	-18.66	31.20	46.00	-14.80	Peak
Vertical						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
34.85	62.92	-31.13	31.79	40.00	-8.21	Peak
177.44	57.69	-31.96	25.73	43.50	-17.77	Peak
200.72	61.98	-33.20	28.78	43.50	-14.72	Peak
497.54	57.13	-25.21	31.93	46.00	-14.07	Peak
527.61	53.46	-24.69	28.77	46.00	-17.23	Peak
879.72	49.64	-19.32	30.32	46.00	-15.68	Peak
901.06	53.25	-18.99	34.26	46.00	-11.74	Peak
950.53	50.62	-18.56	32.06	46.00	-13.94	Peak

Remark:

1. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit.
2. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
4. Result (dBμV/m) = Reading (dBμV) + Correction Factor (dB/m)
5. Margin (dB) = Remark result (dBμV/m) - Quasi-peak limit (dBμV/m).



Product Name	RFID	Test Date	2009/07/09
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH High TX / Antenna port 1	TEMP & Humidity	24.8 °C, 54%

Horizontal						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
44.55	60.25	-30.22	30.03	40.00	-9.97	Peak
133.79	57.46	-32.29	25.17	43.50	-18.33	Peak
165.80	56.60	-31.00	25.59	43.50	-17.91	Peak
200.72	64.56	-33.20	31.36	43.50	-12.14	Peak
300.63	58.23	-27.96	30.27	46.00	-15.73	Peak
763.32	49.00	-20.64	28.36	46.00	-17.64	Peak
898.15	57.24	-19.03	38.21	46.00	-7.79	Peak
957.32	50.65	-18.52	32.13	46.00	-13.87	Peak
Vertical						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
34.85	64.26	-31.13	33.13	40.00	-6.87	Peak
200.72	62.61	-33.20	29.40	43.50	-14.10	Peak
366.59	55.80	-27.47	28.33	46.00	-17.67	Peak
431.58	54.11	-26.33	27.78	46.00	-18.22	Peak
497.54	57.86	-25.21	32.66	46.00	-13.34	Peak
527.61	53.20	-24.69	28.51	46.00	-17.49	Peak
897.18	54.03	-19.04	34.99	46.00	-11.01	Peak
957.32	52.14	-18.52	33.62	46.00	-12.38	Peak

Remark:

1. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit.
2. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
4. Result (dBμV/m) = Reading (dBμV) + Correction Factor (dB/m)
5. Margin (dB) = Remark result (dBμV/m) - Quasi-peak limit (dBμV/m).



Product Name	RFID	Test Date	2009/07/09
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH Low TX / Antenna port 2	TEMP & Humidity	24.8 °C, 54%

Horizontal						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
41.64	61.13	-30.47	30.66	40.00	-9.34	Peak
125.06	62.17	-33.23	28.94	43.50	-14.56	Peak
191.99	59.67	-32.79	26.88	43.50	-16.62	Peak
200.72	70.37	-33.20	37.17	43.50	-6.33	Peak
299.66	56.73	-27.97	28.76	46.00	-17.24	Peak
366.59	54.82	-27.47	27.35	46.00	-18.65	Peak
801.15	47.58	-20.31	27.26	46.00	-18.74	Peak
884.57	52.18	-19.24	32.94	46.00	-13.06	Peak
Vertical						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
34.85	63.52	-31.13	32.39	40.00	-7.61	Peak
165.80	59.44	-31.00	28.44	43.50	-15.06	Peak
200.72	60.39	-33.20	27.19	43.50	-16.31	Peak
497.54	57.02	-25.21	31.82	46.00	-14.18	Peak
527.61	52.85	-24.69	28.16	46.00	-17.84	Peak
710.94	49.85	-21.70	28.16	46.00	-17.84	Peak
884.57	52.10	-19.24	32.86	46.00	-13.14	Peak
930.16	51.74	-18.74	33.00	46.00	-13.00	Peak

Remark:

1. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit.
2. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
4. Result (dBμV/m) = Reading (dBμV) + Correction Factor (dB/m)
5. Margin (dB) = Remark result (dBμV/m) - Quasi-peak limit (dBμV/m).



Product Name	RFID	Test Date	2009/07/09
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH Middle TX / Antenna port 2	TEMP & Humidity	24.8 °C, 54%

Horizontal						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
42.61	60.29	-30.39	29.90	40.00	-10.10	Peak
200.72	64.30	-33.20	31.10	43.50	-12.40	Peak
232.73	59.05	-31.68	27.37	46.00	-18.63	Peak
299.66	56.89	-27.97	28.92	46.00	-17.08	Peak
364.65	53.92	-27.50	26.42	46.00	-19.58	Peak
499.48	51.26	-25.17	26.09	46.00	-19.91	Peak
766.23	48.77	-20.62	28.15	46.00	-17.85	Peak
893.30	54.17	-19.10	35.07	46.00	-10.93	Peak
Vertical						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
34.85	63.14	-31.13	32.01	40.00	-7.99	Peak
200.72	61.31	-33.20	28.11	43.50	-15.39	Peak
366.59	54.65	-27.47	27.19	46.00	-18.81	Peak
497.54	57.42	-25.21	32.22	46.00	-13.78	Peak
527.61	53.03	-24.69	28.34	46.00	-17.66	Peak
758.47	47.87	-20.68	27.19	46.00	-18.81	Peak
880.69	49.75	-19.30	30.45	46.00	-15.55	Peak
893.30	52.86	-19.10	33.76	46.00	-12.24	Peak

Remark:

1. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit.
2. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
4. Result (dBμV/m) = Reading (dBμV) + Correction Factor (dB/m)
5. Margin (dB) = Remark result (dBμV/m) - Quasi-peak limit (dBμV/m).



Product Name	RFID	Test Date	2009/07/09
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH High TX / Antenna port 2	TEMP & Humidity	24.8 °C, 54%

Horizontal						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
45.52	60.29	-30.20	30.10	40.00	-9.90	Peak
200.72	64.52	-33.20	31.32	43.50	-12.18	Peak
232.73	59.10	-31.68	27.42	46.00	-18.58	Peak
300.63	61.16	-27.96	33.20	46.00	-12.80	Peak
320.03	54.83	-27.87	26.96	46.00	-19.04	Peak
766.23	47.63	-20.62	27.01	46.00	-18.99	Peak
897.18	56.36	-19.04	37.32	46.00	-8.68	Peak
957.32	50.57	-18.52	32.05	46.00	-13.95	Peak
Vertical						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
34.85	63.77	-31.13	32.65	40.00	-7.35	Peak
165.80	58.21	-31.00	27.21	43.50	-16.29	Peak
200.72	61.48	-33.20	28.27	43.50	-15.23	Peak
300.63	56.98	-27.96	29.02	46.00	-16.98	Peak
497.54	57.11	-25.21	31.91	46.00	-14.09	Peak
896.21	52.94	-19.06	33.89	46.00	-12.11	Peak
932.10	55.18	-18.72	36.46	46.00	-9.54	Peak
957.32	52.11	-18.52	33.59	46.00	-12.41	Peak

Remark:

1. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit.
2. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
4. Result (dBμV/m) = Reading (dBμV) + Correction Factor (dB/m)
5. Margin (dB) = Remark result (dBμV/m) - Quasi-peak limit (dBμV/m).



8.8.3 TRANSMITTER RADIATED EMISSION ABOVE 1 GHz

Product Name	RFID	Test Date	2009/06/18
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH Low TX / Antenna port 1	TEMP & Humidity	25.4°C, 50%

Horizontal									
Frequency (MHz)	Reading-PK (dBμV)	Reading-AV (dBμV)	Correction Factor (dB/m)	Result-PK (dBμV/m)	Result-AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-AV (dBμV/m)	Margin (dB)	Remark
1357.00	60.73	---	-13.88	46.84	---	74.00	54.00	-7.16	Peak
1595.00	62.65	---	-12.76	49.89	---	74.00	54.00	-4.11	Peak
1807.50	70.97	---	-11.00	59.97	39.97	74.00	54.00	-14.03	AVG Duty Cycle Factor
2487.50	59.49	---	-8.86	50.62	---	74.00	54.00	-3.38	Peak
2708.50	75.47	---	-8.54	66.93	46.93	74.00	54.00	-7.07	AVG Duty Cycle Factor
3609.50	68.12	---	-7.21	60.91	40.91	74.00	54.00	-13.09	AVG Duty Cycle Factor
4510.50	56.07	---	-5.36	50.71	---	74.00	54.00	-3.29	Peak
5420.00	52.00	---	-3.42	48.58	---	74.00	54.00	-5.42	Peak
8123.00	49.15	---	0.55	49.70	---	74.00	54.00	-4.30	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
6. $\text{Result} = \text{Reading} + \text{Correction Factor}$
 $\text{Margin} = \text{Result} - \text{Limit}$
 $\text{Remark Peak} = \text{Result(PK)} - \text{Limit(AV)}$
 $\text{Remark AVG} = \text{Result(AV)} - \text{Limit(AV)}$
7. For Fundamental & Harmonics: $\text{Average Level} = \text{Peak Level} + \text{Duty Cycle Factor}$



Product Name	RFID	Test Date	2009/06/18
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH Low TX / Antenna port 1	TEMP & Humidity	25.4°C, 50%

Vertical									
Frequency (MHz)	Reading-PK (dBμV)	Reading-AV (dBμV)	Correction Factor (dB/m)	Result-PK (dBμV/m)	Result-AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-AV (dBμV/m)	Margin (dB)	Remark
1595.00	68.64	47.86	-12.76	55.88	35.10	74.00	54.00	-18.90	AVG
1807.50	69.55	---	-11.00	58.55	38.55	74.00	54.00	-15.45	AVG Duty Cycle Factor
2487.50	65.91	43.95	-8.86	57.05	35.09	74.00	54.00	-18.91	AVG
2708.50	76.02	---	-8.54	67.48	47.48	74.00	54.00	-6.52	AVG Duty Cycle Factor
3609.50	69.77	---	-7.21	62.56	42.56	74.00	54.00	-11.44	AVG Duty Cycle Factor
4510.50	61.66	58.02	-5.36	56.30	52.66	74.00	54.00	-1.34	AVG
5420.00	59.21	54.85	-3.42	55.79	51.43	74.00	54.00	-2.57	AVG
6321.00	57.56	52.94	-2.38	55.18	50.56	74.00	54.00	-3.44	AVG
7222.00	51.89	---	-0.90	50.99	---	74.00	54.00	-3.01	Peak
8123.00	58.24	---	0.55	58.79	38.79	74.00	54.00	-15.21	AVG Duty Cycle Factor

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
6. $\text{Result} = \text{Reading} + \text{Correction Factor}$
 $\text{Margin} = \text{Result} - \text{Limit}$
 $\text{Remark Peak} = \text{Result(PK)} - \text{Limit(AV)}$
 $\text{Remark AVG} = \text{Result(AV)} - \text{Limit(AV)}$
7. For Fundamental & Harmonics: $\text{Average Level} = \text{Peak Level} + \text{Duty Cycle Factor}$



Product Name	RFID	Test Date	2009/06/18
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH Middle TX / Antenna port 1	TEMP & Humidity	25.4°C, 50%

Horizontal									
Frequency (MHz)	Reading-PK (dBμV)	Reading-AV (dBμV)	Correction Factor (dB/m)	Result-PK (dBμV/m)	Result-AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-AV (dBμV/m)	Margin (dB)	Remark
1391.00	59.16	---	-13.80	45.36	---	74.00	54.00	-8.64	Peak
1595.00	62.99	---	-12.76	50.23	---	74.00	54.00	-3.77	Peak
1833.00	64.62	---	-10.79	53.83	---	74.00	54.00	-0.17	Peak
2496.00	58.75	---	-8.85	49.90	---	74.00	54.00	-4.10	Peak
2742.50	76.35	---	-8.49	67.86	47.86	74.00	54.00	-6.14	AVG Duty Cycle Factor
3660.50	65.94	---	-7.14	58.80	38.80	74.00	54.00	-15.20	AVG Duty Cycle Factor
4578.50	56.73	---	-5.19	51.54	---	74.00	54.00	-2.46	Peak
5488.00	53.00	---	-3.31	49.69	---	74.00	54.00	-4.31	Peak
6406.00	50.27	---	-2.29	47.98	---	74.00	54.00	-6.02	Peak
7324.00	49.94	---	-0.83	49.12	---	74.00	54.00	-4.88	Peak
8233.50	49.71	---	0.69	50.40	---	74.00	54.00	-3.60	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
6. $Result = Reading + Correction\ Factor$
 $Margin = Result - Limit$
 $Remark\ Peak = Result(PK) - Limit(AV)$
 $Remark\ AVG = Result(AV) - Limit(AV)$
7. For Fundamental & Harmonics: $Average\ Level = Peak\ Level + Duty\ Cycle\ Factor$



Product Name	RFID	Test Date	2009/06/18
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH Middle TX / Antenna port 1	TEMP & Humidity	25.4°C, 50%

Vertical									
Frequency (MHz)	Reading-PK (dBμV)	Reading-AV (dBμV)	Correction Factor (dB/m)	Result-PK (dBμV/m)	Result-AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-AV (dBμV/m)	Margin (dB)	Remark
1595.00	70.45	50.07	-12.76	57.69	37.31	74.00	54.00	-16.69	AVG
1833.00	64.60	---	-10.79	53.81	---	74.00	54.00	-0.19	Peak
2487.50	64.95	44.37	-8.86	56.09	35.51	74.00	54.00	-18.49	AVG
2742.50	74.74	---	-8.49	66.25	46.25	74.00	54.00	-7.75	AVG Duty Cycle Factor
3660.50	69.23	---	-7.14	62.09	42.09	74.00	54.00	-11.91	AVG Duty Cycle Factor
4578.50	58.02	---	-5.19	52.83	---	74.00	54.00	-1.17	Peak
5488.00	55.34	---	-3.31	52.03	---	74.00	54.00	-1.97	Peak
6406.00	55.09	---	-2.29	52.80	---	74.00	54.00	-1.20	Peak
7324.00	55.99	---	-0.83	55.16	35.16	74.00	54.00	-18.84	AVG Duty Cycle Factor
8233.50	55.31	---	0.69	55.99	35.99	74.00	54.00	-18.01	AVG Duty Cycle Factor

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
6. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(AV)
Remark AVG = Result(AV) – Limit(AV)
7. For Fundamental & Harmonics: Average Level = Peak Level + Duty Cycle Factor



Product Name	RFID	Test Date	2009/06/16
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH High TX / Antenna port 1	TEMP & Humidity	24.9°C, 63%

Horizontal									
Frequency (MHz)	Reading-PK (dBμV)	Reading-AV (dBμV)	Correction Factor (dB/m)	Result-PK (dBμV/m)	Result-AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-AV (dBμV/m)	Margin (dB)	Remark
1374.00	60.13	---	-13.84	46.29	---	74.00	54.00	-7.71	Peak
1595.00	61.25	---	-12.76	48.49	---	74.00	54.00	-5.51	Peak
1858.50	62.41	---	-10.58	51.83	---	74.00	54.00	-2.17	Peak
2496.00	64.28	43.12	-8.85	55.43	34.27	74.00	54.00	-19.73	AVG
2785.00	78.72		-8.43	70.29	50.29	74.00	54.00	-3.71	AVG Duty Cycle Factor
3711.50	65.09		-7.07	58.02	38.02	74.00	54.00	-15.98	AVG Duty Cycle Factor
4638.00	60.29	56.04	-5.03	55.26	51.01	74.00	54.00	-2.99	AVG
7417.50	50.22	---	-0.76	49.46	---	74.00	54.00	-4.54	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
6. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(AV)
Remark AVG = Result(AV) – Limit(AV)
7. For Fundamental & Harmonics: Average Level = Peak Level + Duty Cycle Factor



Product Name	RFID	Test Date	2009/06/16
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH High TX / Antenna port 1	TEMP & Humidity	24.9°C, 63%

Vertical									
Frequency (MHz)	Reading-PK (dBμV)	Reading-AV (dBμV)	Correction Factor (dB/m)	Result-PK (dBμV/m)	Result-AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-AV (dBμV/m)	Margin (dB)	Remark
1595.00	64.70	---	-12.76	51.94	---	74.00	54.00	-2.06	Peak
1858.50	65.76	63.42	-10.58	55.18	52.84	74.00	54.00	-1.16	AVG
2496.00	65.48	44.12	-8.85	56.63	35.27	74.00	54.00	-18.73	AVG
2785.00	75.73	---	-8.43	67.30	47.30	74.00	54.00	-6.70	AVG Duty Cycle Factor
3711.50	69.18	---	-7.07	62.11	42.11	74.00	54.00	-11.89	AVG Duty Cycle Factor
4638.00	63.91	---	-5.03	58.88	38.88	74.00	54.00	-15.12	AVG Duty Cycle Factor
5564.50	54.15	---	-3.22	50.94	---	74.00	54.00	-3.06	Peak
6491.00	53.79	---	-2.20	51.59	---	74.00	54.00	-2.41	Peak
7417.50	60.02	---	-0.76	59.26	39.26	74.00	54.00	-14.74	AVG Duty Cycle Factor
8344.00	58.45	53.10	0.83	59.28	53.93	74.00	54.00	-0.07	AVG

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
6. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(AV)
Remark AVG = Result(AV) – Limit(AV)
7. For Fundamental & Harmonics: Average Level = Peak Level + Duty Cycle Factor



Product Name	RFID	Test Date	2009/06/13
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH Low TX / Antenna port 2	TEMP & Humidity	24.9°C, 63%

Horizontal									
Frequency (MHz)	Reading-PK (dBμV)	Reading-AV (dBμV)	Correction Factor (dB/m)	Result-PK (dBμV/m)	Result-AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-AV (dBμV/m)	Margin (dB)	Remark
1595.00	62.41	---	-12.76	49.65	---	74.00	54.00	-4.35	Peak
1807.50	67.64	---	-11.00	56.64	36.64	74.00	54.00	-17.36	AVG Duty Cycle Factor
2487.50	61.20	---	-8.86	52.34	---	74.00	54.00	-1.66	Peak
2708.50	72.96	---	-8.54	64.42	44.42	74.00	54.00	-9.58	AVG Duty Cycle Factor
3609.50	65.45	---	-7.21	58.24	38.24	74.00	54.00	-15.76	AVG Duty Cycle Factor
4510.50	61.21	57.37	-5.36	55.85	52.01	74.00	54.00	-1.99	AVG
5420.00	51.35	---	-3.42	47.93	---	74.00	54.00	-6.07	Peak
8123.00	58.50	---	0.55	59.05	39.05	74.00	54.00	-14.95	AVG Duty Cycle Factor

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
6. $\text{Result} = \text{Reading} + \text{Correction Factor}$
 $\text{Margin} = \text{Result} - \text{Limit}$
 $\text{Remark Peak} = \text{Result(PK)} - \text{Limit(AV)}$
 $\text{Remark AVG} = \text{Result(AV)} - \text{Limit(AV)}$
7. For Fundamental & Harmonics: $\text{Average Level} = \text{Peak Level} + \text{Duty Cycle Factor}$



Product Name	RFID	Test Date	2009/06/16
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH Low TX / Antenna port 2	TEMP & Humidity	24.9°C, 63%

Vertical									
Frequency (MHz)	Reading-PK (dBμV)	Reading-AV (dBμV)	Correction Factor (dB/m)	Result-PK (dBμV/m)	Result-AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-AV (dBμV/m)	Margin (dB)	Remark
1595.00	70.74	50.26	-12.76	57.98	37.50	74.00	54.00	-16.50	AVG
1807.50	66.63	63.73	-11.00	55.63	52.73	74.00	54.00	-1.27	AVG
2487.50	64.68	43.87	-8.86	55.82	35.01	74.00	54.00	-18.99	AVG
2708.50	74.67	---	-8.54	66.13	46.13	74.00	54.00	-7.87	AVG Duty Cycle Factor
3609.50	70.80	---	-7.21	63.59	43.59	74.00	54.00	-10.41	AVG Duty Cycle Factor
4510.50	62.88	---	-5.36	57.52	37.52	74.00	54.00	-16.48	AVG Duty Cycle Factor
5420.00	59.26	54.57	-3.42	55.84	51.15	74.00	54.00	-2.85	AVG
6321.00	52.89	---	-2.38	50.52	---	74.00	54.00	-3.48	Peak
7222.00	57.82	52.83	-0.90	56.92	51.93	74.00	54.00	-2.07	AVG
8123.00	63.02	---	0.55	63.57	43.57	74.00	54.00	-10.43	AVG Duty Cycle Factor

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
6. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(AV)
Remark AVG = Result(AV) – Limit(AV)
7. For Fundamental & Harmonics: Average Level = Peak Level + Duty Cycle Factor



Product Name	RFID	Test Date	2009/06/13
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH Middle TX / Antenna port 2	TEMP & Humidity	24.1°C, 46%

Horizontal									
Frequency (MHz)	Reading-PK (dBμV)	Reading-AV (dBμV)	Correction Factor (dB/m)	Result-PK (dBμV/m)	Result-AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-AV (dBμV/m)	Margin (dB)	Remark
1595.00	62.86	---	-12.76	50.10	---	74.00	54.00	-3.90	Peak
1833.00	65.17	62.93	-10.79	54.38	52.14	74.00	54.00	-1.86	AVG
2487.50	60.68	---	-8.86	51.82	---	74.00	54.00	-2.18	Peak
2742.50	73.98	---	-8.49	65.49	45.49	74.00	54.00	-8.51	AVG Duty Cycle Factor
3660.50	66.25	---	-7.14	59.11	39.11	74.00	54.00	-14.89	AVG Duty Cycle Factor
4578.50	61.30	57.66	-5.19	56.11	52.47	74.00	54.00	-1.53	AVG
5488.00	52.25	---	-3.31	48.94	---	74.00	54.00	-5.06	Peak
8233.50	57.79	---	0.69	58.48	38.48	74.00	54.00	-15.52	AVG Duty Cycle Factor

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
6. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(AV)
Remark AVG = Result(AV) – Limit(AV)
7. For Fundamental & Harmonics: Average Level = Peak Level + Duty Cycle Factor



Product Name	RFID	Test Date	2009/06/16
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH Middle TX / Antenna port 2	TEMP & Humidity	24.1°C, 46%

Vertical									
Frequency (MHz)	Reading-PK (dBμV)	Reading-AV (dBμV)	Correction Factor (dB/m)	Result-PK (dBμV/m)	Result-AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-AV (dBμV/m)	Margin (dB)	Remark
1595.00	70.65	50.13	-12.76	57.89	37.37	74.00	54.00	-16.63	AVG
1833.00	66.08	63.21	-10.79	55.29	52.42	74.00	54.00	-1.58	AVG
2487.50	64.83	44.15	-8.86	55.97	35.29	74.00	54.00	-18.71	AVG
2742.50	73.53	---	-8.49	65.04	45.04	74.00	54.00	-8.96	AVG Duty Cycle Factor
3660.50	71.16	---	-7.14	64.02	44.02	74.00	54.00	-9.98	AVG Duty Cycle Factor
4578.50	62.18	58.66	-5.19	56.99	53.47	74.00	54.00	-0.53	AVG
5488.00	52.35	---	-3.31	49.04	---	74.00	54.00	-4.96	Peak
6406.00	53.35	---	-2.29	51.06	---	74.00	54.00	-2.94	Peak
7324.00	59.60	---	-0.83	58.77	38.77	74.00	54.00	-15.23	AVG Duty Cycle Factor
8233.50	63.83	---	0.69	64.52	44.52	74.00	54.00	-9.48	AVG Duty Cycle Factor

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
6. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(AV)
Remark AVG = Result(AV) – Limit(AV)
7. For Fundamental & Harmonics: Average Level = Peak Level + Duty Cycle Factor



Product Name	RFID	Test Date	2009/06/13
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH High TX / Antenna port 2	TEMP & Humidity	24.9°C, 53%

Horizontal									
Frequency (MHz)	Reading-PK (dBμV)	Reading-AV (dBμV)	Correction Factor (dB/m)	Result-PK (dBμV/m)	Result-AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-AV (dBμV/m)	Margin (dB)	Remark
1365.50	58.90	---	-13.86	45.04	---	74.00	54.00	-8.96	Peak
1595.00	62.37	---	-12.76	49.61	---	74.00	54.00	-4.39	Peak
1858.50	61.65	---	-10.58	51.07	---	74.00	54.00	-2.93	Peak
2496.00	60.75	---	-8.85	51.90	---	74.00	54.00	-2.10	Peak
2785.00	71.71	---	-8.43	63.28	43.28	74.00	54.00	-10.72	AVG Duty Cycle Factor
3711.50	66.61	---	-7.07	59.54	39.54	74.00	54.00	-14.46	AVG Duty Cycle Factor
4638.00	59.87	55.48	-5.03	54.84	50.45	74.00	54.00	-3.55	AVG
5564.50	51.83	---	-3.22	48.62	---	74.00	54.00	-5.38	Peak
7417.50	50.37	---	-0.76	49.61	---	74.00	54.00	-4.39	Peak
8344.00	54.79	48.17	0.83	55.62	49.00	74.00	54.00	-5.00	AVG

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
6. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(AV)
Remark AVG = Result(AV) – Limit(AV)
7. For Fundamental & Harmonics: Average Level = Peak Level + Duty Cycle Factor



Product Name	RFID	Test Date	2009/06/16
Model Name	FS-GM201	Test By	Rueyyan Lin
Test Mode	CH High TX / Antenna port 2	TEMP & Humidity	24.9°C, 53%

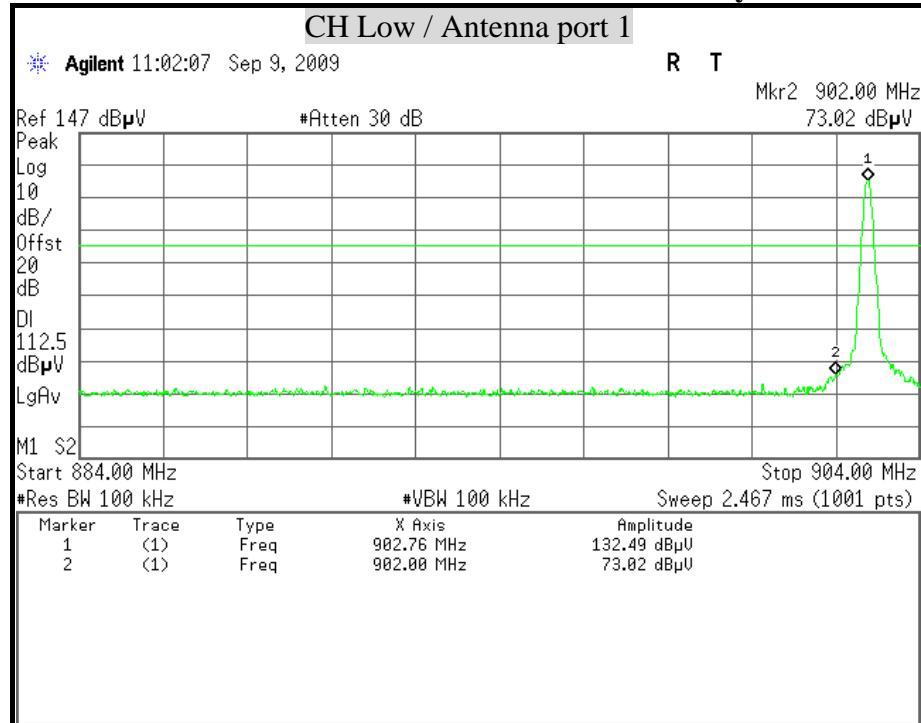
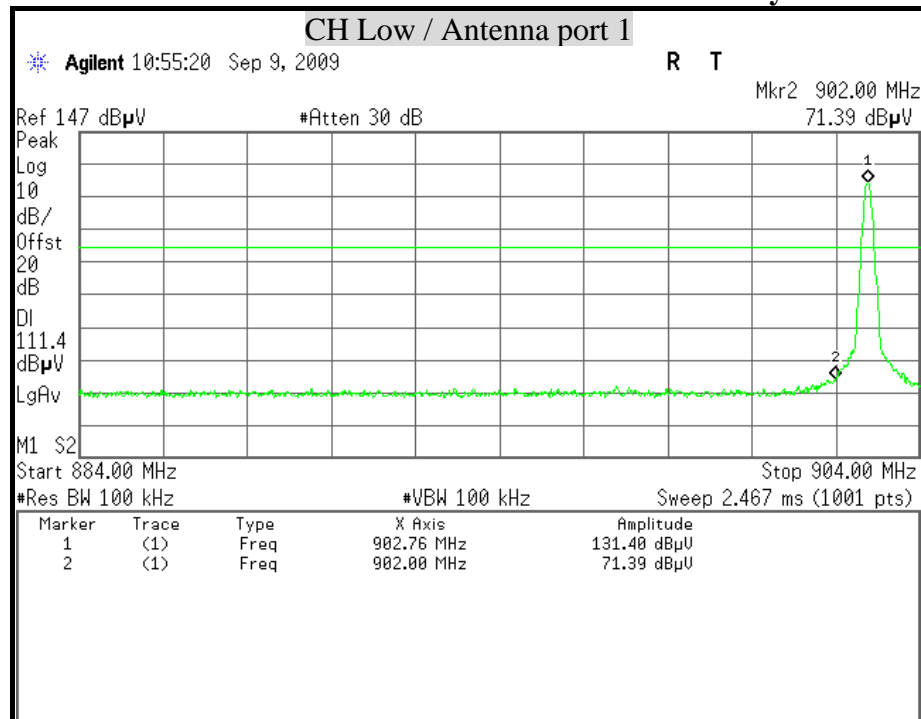
Vertical									
Frequency (MHz)	Reading-PK (dBμV)	Reading-AV (dBμV)	Correction Factor (dB/m)	Result-PK (dBμV/m)	Result-AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-AV (dBμV/m)	Margin (dB)	Remark
1595.00	67.31	48.52	-12.76	54.55	35.76	74.00	54.00	-18.24	AVG
1858.50	65.11	62.67	-10.58	54.53	52.09	74.00	54.00	-1.91	AVG
2487.50	65.22	43.97	-8.86	56.36	35.11	74.00	54.00	-18.89	AVG
2785.00	74.28	---	-8.43	65.85	45.85	74.00	54.00	-8.15	AVG Duty Cycle Factor
3711.50	69.25	---	-7.07	62.18	42.18	74.00	54.00	-11.82	AVG Duty Cycle Factor
4638.00	61.47	57.42	-5.03	56.44	52.39	74.00	54.00	-1.61	AVG
5564.50	53.49	---	-3.22	50.28	---	74.00	54.00	-3.72	Peak
6491.00	57.23	51.26	-2.20	55.03	49.06	74.00	54.00	-4.94	AVG
7417.50	58.63	53.89	-0.76	57.87	53.13	74.00	54.00	-0.87	AVG
8344.00	60.07	---	0.83	60.90	40.90	74.00	54.00	-13.10	AVG Duty Cycle Factor

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
6. $Result = Reading + Correction\ Factor$
 $Margin = Result - Limit$
 $Remark\ Peak = Result(PK) - Limit(AV)$
 $Remark\ AVG = Result(AV) - Limit(AV)$
7. For Fundamental & Harmonics: $Average\ Level = Peak\ Level + Duty\ Cycle\ Factor$



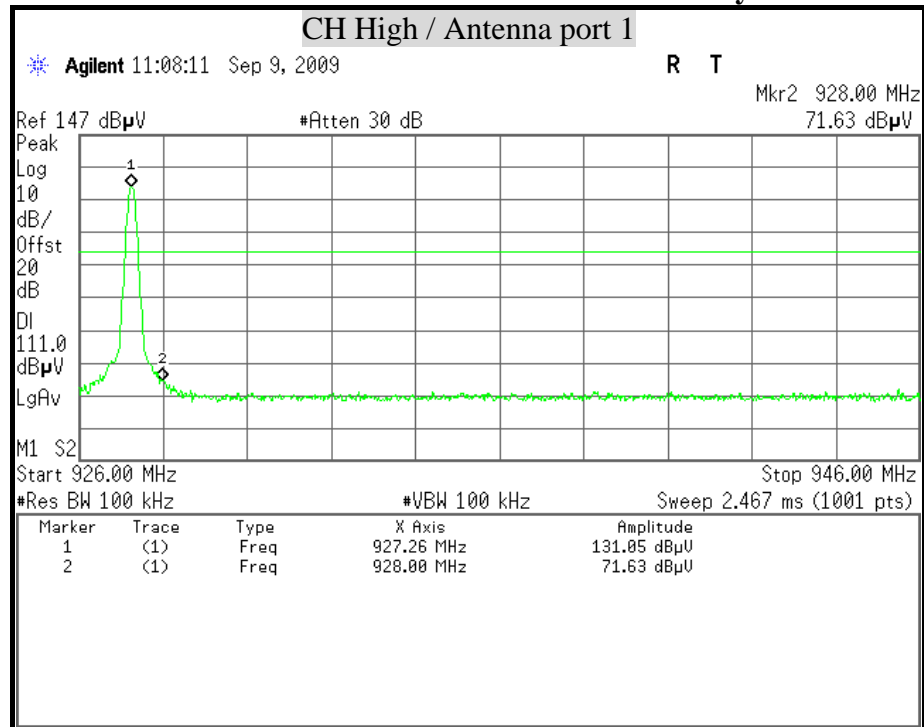
8.8.4 RESTRICTED BAND EDGES

Detector mode : Peak**Polarity : Horizontal****Detector mode : Peak****Polarity : Vertical**



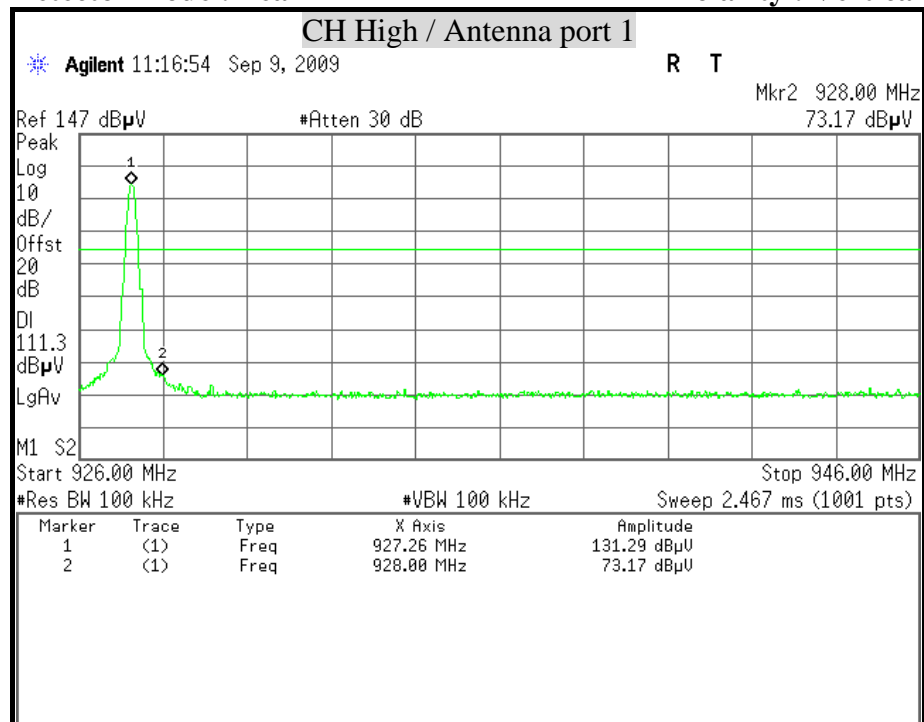
Detector mode : Peak

Polarity : Horizontal



Detector mode : Peak

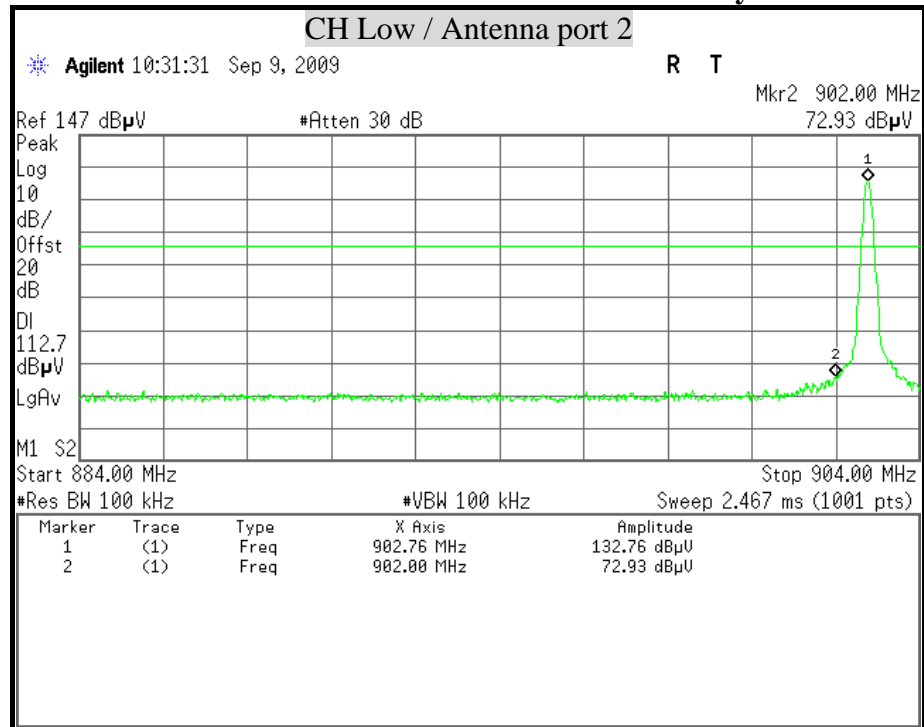
Polarity : Vertical





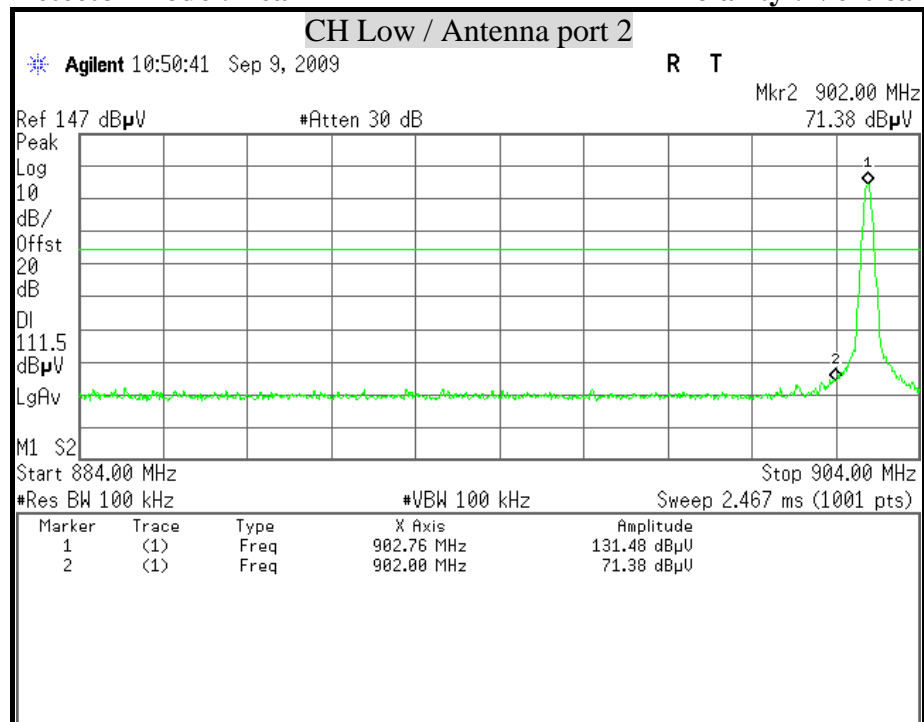
Detector mode : Peak

Polarity : Horizontal



Detector mode : Peak

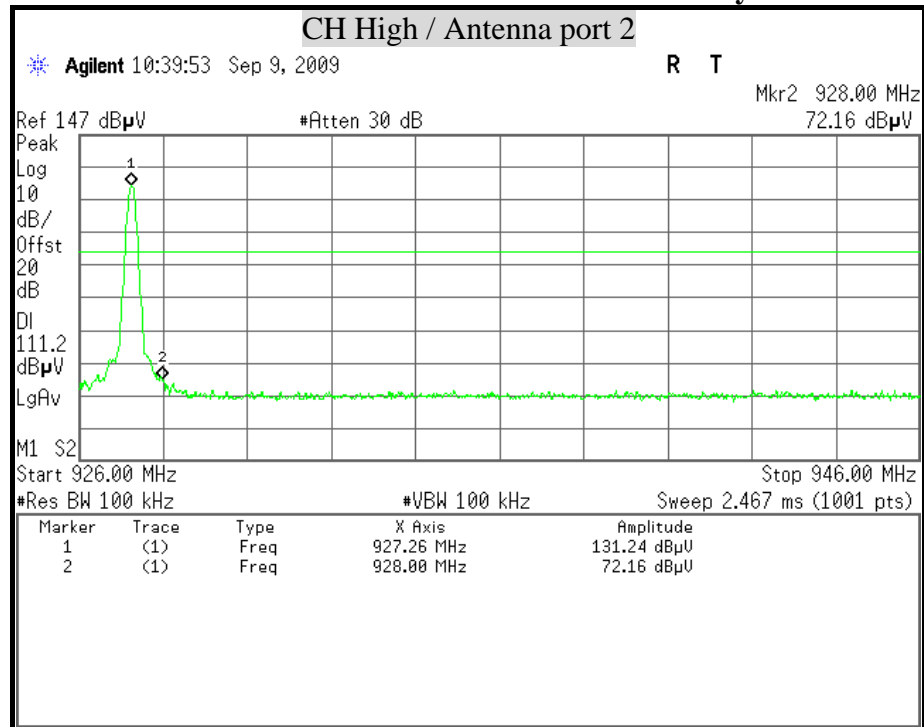
Polarity : Vertical





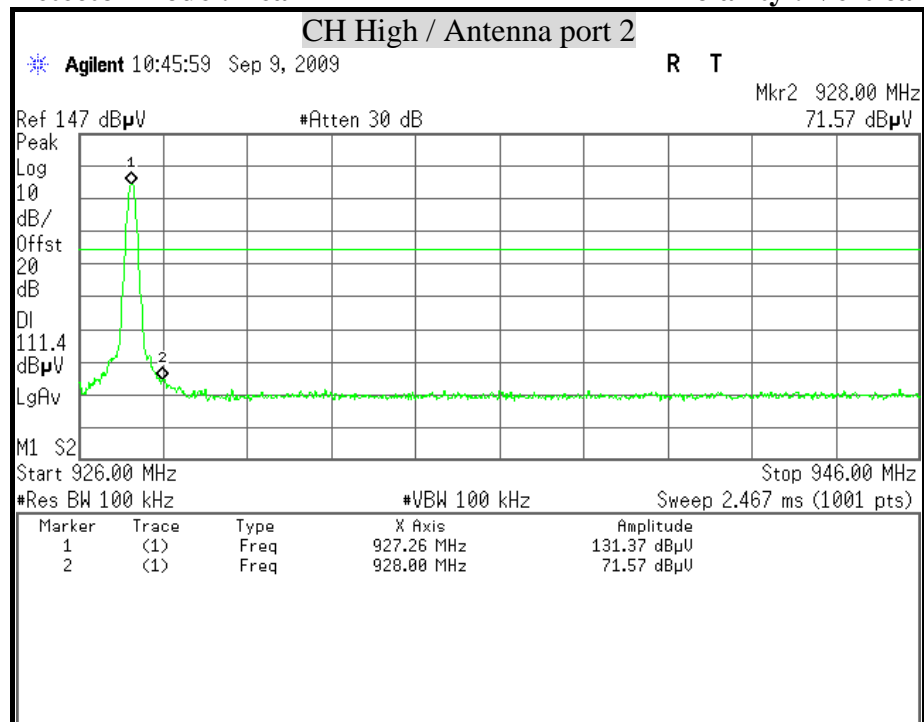
Detector mode : Peak

Polarity : Horizontal



Detector mode : Peak

Polarity : Vertical





8.9 POWERLINE CONDUCTED EMISSIONS

LIMITS

§ 15.207 (a) Except as shown in paragraph (b) and (c) this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

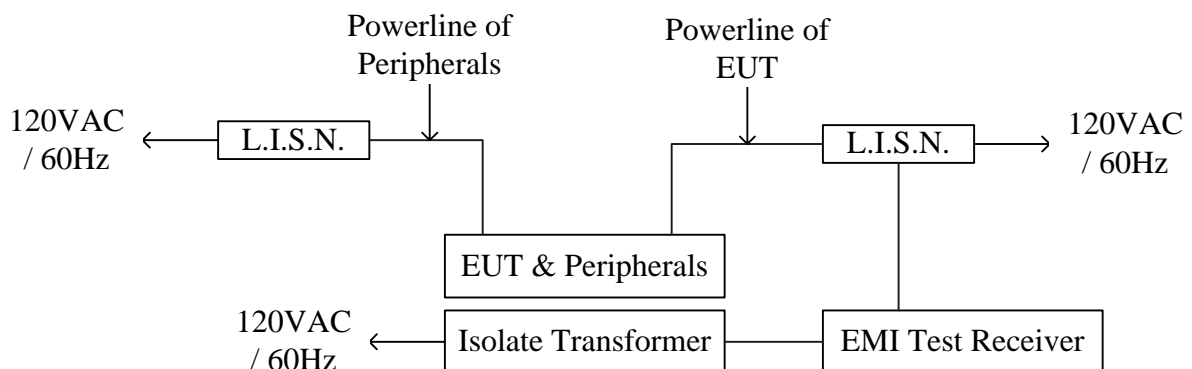
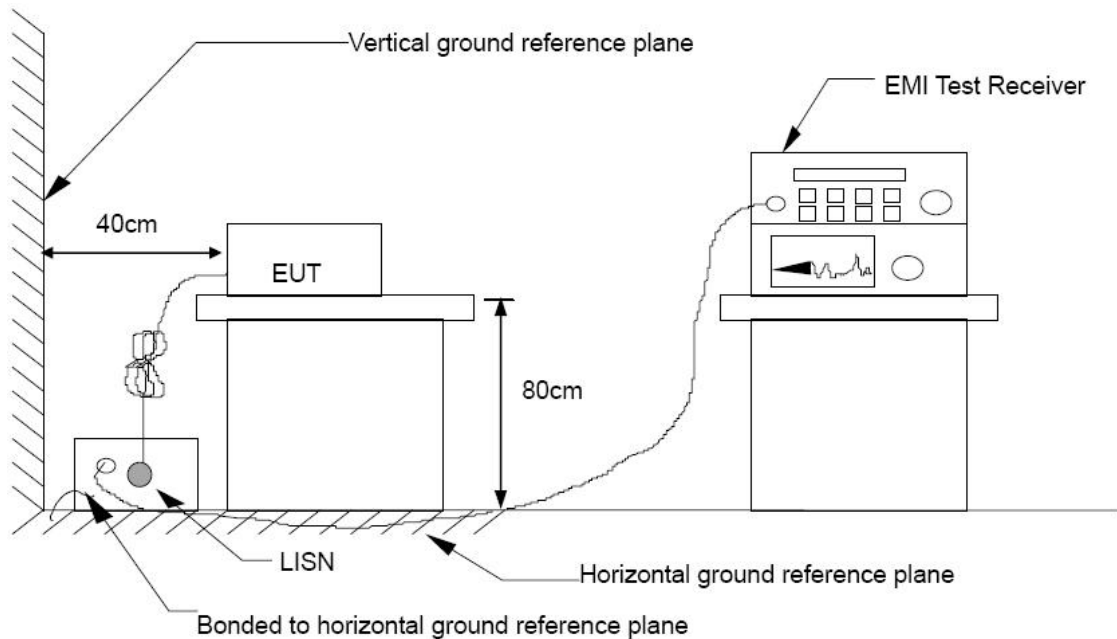
Frequency of Emission (MHz)	Conducted limit (dB μ v)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.5 - 5	56	46
5 - 30	60	50

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
L.I.S.N	SCHWARZBECK	NSLK 8127	8127-465	08/13/2010
TEST RECEIVER	R & S	ESHS30	838550/003	02/02/2010
TEST RECEIVER	R & S	ESCS 30	826547/004	08/05/2010
PULSE LIMIT	R & S	ESH3-Z2	100117	09/17/2010
N TYPE COAXIAL CABLE	BELDEN	8268 M17/164	003	07/09/2010

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80cm above the horizontal ground plane. The EUT IS CONFIGURED IN ACCORDANCE WITH ANSI C63.4 : 2003.

The resolution bandwidth is set to 9 kHz for both quasi-peak detection and average detection measurements.

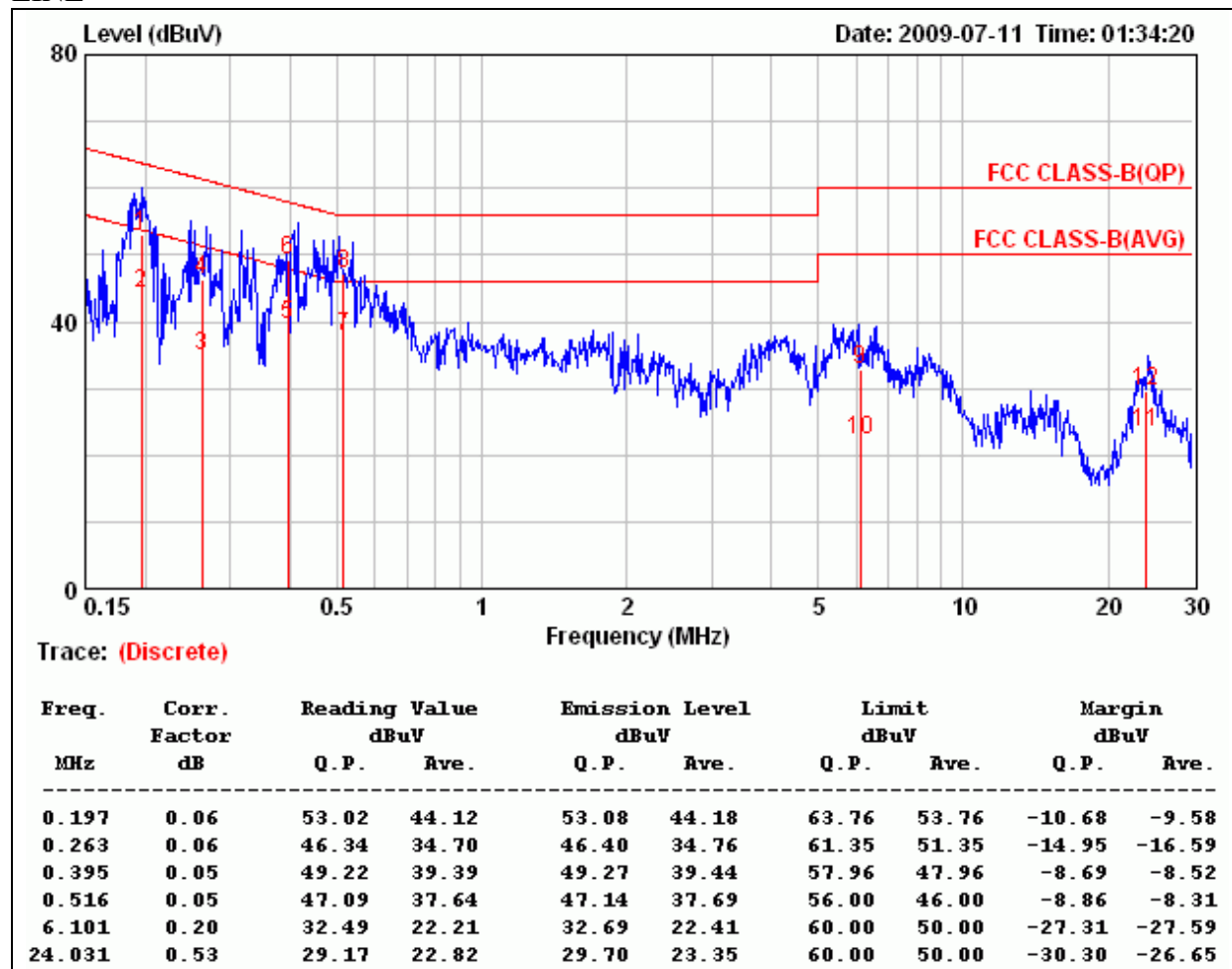
Line conducted data is recorded for both NEUTRAL and LINE.



TEST RESULTS

Product Name	RFID	Test Date	2009/07/11
Model	FS-GM201	Test By	Rueyyan Lin
Test Mode	TX Mode	TEMP & Humidity	21.1°C, 64%

LINE

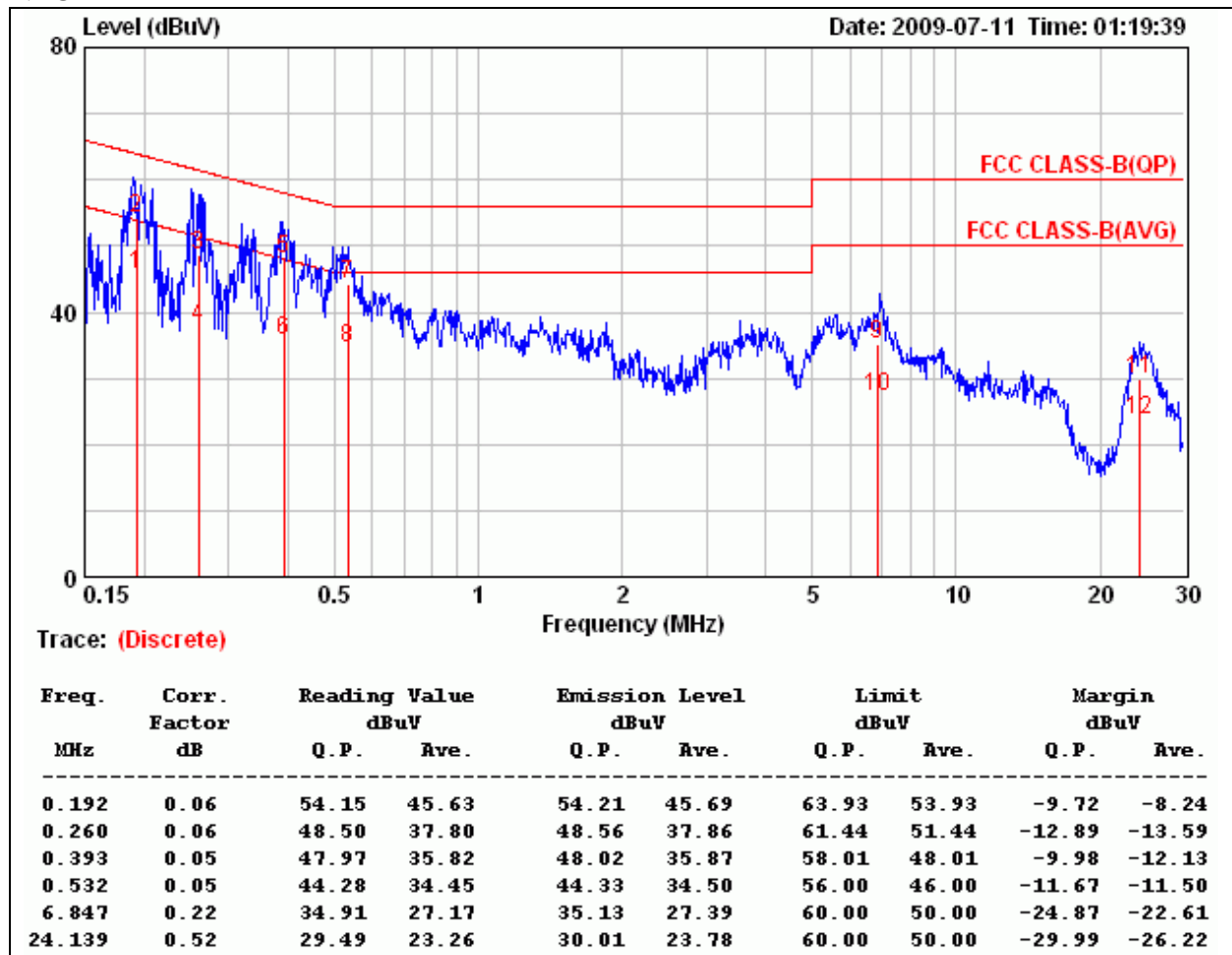
**Remark:**

1. Correction Factor = Insertion loss + cable loss
2. Margin value = Emission level – Limit value



Product Name	RFID	Test Date	2009/07/11
Model	FS-GM201	Test By	Rueyyan Lin
Test Mode	TX Mode	TEMP & Humidity	21.1°C, 64%

NEUTRAL



Remark:

1. Correction Factor = Insertion loss + cable loss
2. Margin value = Emission level - Limit value



APPENDIX I MAXIMUM PERMISSIBLE EXPOSURE

According to FCC 1.1310 : The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b) LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time
(A) Limits for Occupational / Control Exposures				
300-1,500	--	--	F/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Population / Uncontrol Exposures				
300-1,500	--	--	F/1500	6
1,500-100,000	--	--	1	30

CALCULATIONS

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

$$P (mW) = P (W) / 1000 \text{ and}$$

$$d (cm) = d(m) / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

**LIMIT**

Power Density Limit, $S=0.6\text{mW/cm}^2$

TEST RESULTS

Antenna Gain (dBi)	Minimum separation distance (cm)	Output Power (dBm)	Numeric antenna gain (dB)	Power Density Limit (mW/cm^2)	Power Density at 20cm (mW/cm^2)
5.85	23.0	29.41	3.85	0.60	0.505038

Remark: For mobile or fixed location transmitters, the maximum power density is 0.6 mW/cm^2 even if the calculation indicates that the power density would be larger.