



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Wireless Microphone

Model: GWD910R

Trade Name: GOMET

Issued to

**Taiwan Gomet Technology Co., Ltd.
No. 8-1, Lane 212, Sec. 1, Chung-Shan N. Road Tamsui,
Taipei, Taiwan 251**

Issued by

**Compliance Certification Services Inc.
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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	Sep. 10, 2010	Initial Issue	ALL	Jill Shiau



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1. TEST RESULT CERTIFICATION

Applicant: **Taiwan Gomet Technology Co., Ltd.**
No. 8-1, Lane 212, Sec. 1, Chung-Shan N. Road Tamsui,
Taipei, Taiwan 251

Manufacturer: **Taiwan Gomet Technology Co., Ltd.**
No. 8-1, Lane 212, Sec. 1, Chung-Shan N. Road Tamsui,
Taipei, Taiwan 251

Equipment Under Test: Wireless Microphone

Trade Name: GOMET

Model: GWD910R

Date of Test: August 10 ~ Oct. 6, 2010

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2003 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

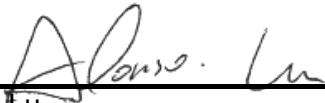
The test results of this report relate only to the tested sample EUT identified in this report.

Approved by:



Stan Lin
Supervisor

Reviewed by:



Alonso Lu
Engineer



2. EUT DESCRIPTION

Product	Wireless Microphone		
Trade Name	GOMET		
Model Number	GWD910R		
Model Discrepancy	N/A		
EUT Power Rating	3.6V, 1300mA		
Power Adapter	N/A	Model	MW35-1200300
Power Adapter Power Rating	I/P: 1200vac, 60Hz, 7W O/P: 12VDC, 300mA		
Operating Frequency Range	904~925MHz		
Transmit Power	20.14dBm (0.10328W) (Peak) 14.11dBm (0.02576W) (Average)		
Modulation Technique	DSSS		
Number of Channels	8 Channels		
Antenna Specification	Dipole Antenna / Gain: -6.0dBi Monopole Antenna / Gain: 0dBi		

Remark:

1. The sample selected for test was production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: **QS6-GWD910R** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4: 2003 and FCC CFR 47 Part 2, Part 15.207, 15.209 and 15.247.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4: 2003 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4: 2003.



3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

- (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 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	(²)
13.36 - 13.41	322 - 335.4		

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

² Above 38.6

- (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.

3.5 DESCRIPTION OF TEST MODES

Software used to control the EUT(Model: GWD910R) for staying in continuous transmitting mode was programmed.

The worst case data rate is determined as the data rate with highest output power.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz, which worst case was in normal link mode only.

Channel Low (904.5MHz), Channel Mid (916.5MHz) and Channel High (925.5MHz) were chosen for full testing.

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.



4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

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

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY48250064	11/05/2010
Spectrum Analyzer	R&S	FSEB	825829/011	11/02/2010
USB Power Sensor	BOONTON	52012	2061194	06/22/2011

3M Semi Anechoic Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY48250064	11/05/2010
Spectrum Analyzer	R&S	FSEB	825829/011	11/02/2010
Pre-Amplifier	HP	8447D	2944A06530	01/02/2011
Pre-Amplifier	HP	8449B	3008A01738	04/17/2011
EMI Test Receiver	SCHAFFNER	SCR 3501	436	01/26/2011
Loop Antenna	EMCO	6502	2356	05/28/2011
Bilog Antenna	SCHWAZBECK	VULB9160	3084	09/11/2011
Horn Antenna	EMCO	3115	00022250	05/09/2011
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
Test S/W	LabVIEW 6.1 (Wugu Chamber EMI Test V1_4.5.3)			

Powerline Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESCS30	845552/030	05/27/2011
LISN	R&S	ENV216	100069	01/27/2011
LISN	FCC	FCC-LISN-50/2 50-16-2-07	06013	10/13/2010
Test S/W	CCS-3A1-CE			



4.3 MEASUREMENT UNCERTAINTY

Parameter	Uncertainty
Powerline Conducted Emission	± 1.78026
3M Semi Anechoic Chamber / 30MHz ~ 1GHz	± 3.8856
3M Semi Anechoic Chamber / Above 1GHz	± 3.8721

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



5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

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

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☐ No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan

Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☒ No. 81-1, Lane 210, Pa-De 2nd Rd., Luchu Hsiang, Taoyuan Shien, (338) Taiwan, R.O.C.

Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4: 2003 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 pre-selectors 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 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	CFR 47, FCC Part15/18, CISPR 22, EN 55022, ICES-003, AS/NZS CISPR 22, VCCI V-3, EN 55011, CISPR 11, IEC/EN 61000-4-2/3/4/5/6/8/11, EN 61000-6-1/2/3/4, EN 55024, CISPR 24, AS/NZS CISPR 24, AS/NZS 61000.6.2, EN 55014-1/-2, ETSI EN 300 386 v1.3.2/v1.3.3, IEC/EN 61000-3-2, AS/NZS 61000.3.2, IEC/EN 61000-3-3, AS/NZS 61000.3.3	 No. 0824-01
USA	FCC MRA	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	
Japan	VCCI	3/10 meter Open Area Test Sites and conducted test sites to perform radiated/conducted measurements	VCCI R-2882/2541/2798/725/1868 C-402/747/912 T-321/1646
Taiwan	TAF	EN 55014-1, CISPR 14, CNS 13781-1, EN 55013, CISPR 13, CNS 13439, EN 55011, CISPR 11, CNS 13803, PLMN09, IS2045-0, LP0002 FCC Part 27/90, Part 15B/C/D/E, RSS-192/193/210/310 ETSI EN 300 328/ 300 220-1/ 300 220-2/ 301 893/ 301 489-01/ 301 489-03/ 301 489-07 / 301 489-17/ 300 440-1/ 300 440-2 AS/NZS 4268, AS/NZS 4771 CISPR 22, EN 55022, CNS 13438, AS/NZS CISPR 22, VCCI, IEC/EN 61000-4-2/3/4/5/6/8/11, CNS 14676-2/3/4/5/6/8, CNS 14934-2/3, CNS 13783-1, CNS 13439, CNS 13803	 Testing Laboratory 0363
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	SL2-IS-E-0014 / IN-E-0014 /A1-E-0014 /R1-E-0014 /R2-E-0014 /L1-E-0014
Canada	Industry Canada	RSS212, Issue 1	 IC 2324C-3 IC 2324C-5

Note: No part of this report may be used to claim or imply product endorsement by A2LA, TAF or other government agency.



6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
	N/A						

****No any support equipment during the test.**

***Remark:** Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*



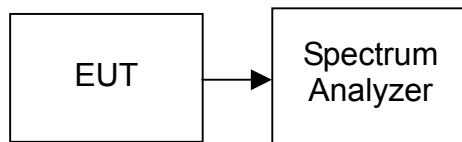
7. FCC PART 15.247 REQUIREMENTS

7.1 6dB BANDWIDTH

LIMIT

According to §15.247(a)(2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST CONFIGURATION



TEST PROCEDURE

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 10kHz, VBW = 30kHz, Span = 5MHz, Sweep = auto.
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

TEST RESULTS

No non-compliance noted

TEST DATA

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	904.5	1.383	>500	PASS
Mid	916.5	1.383		PASS
High	925.5	1.375		PASS



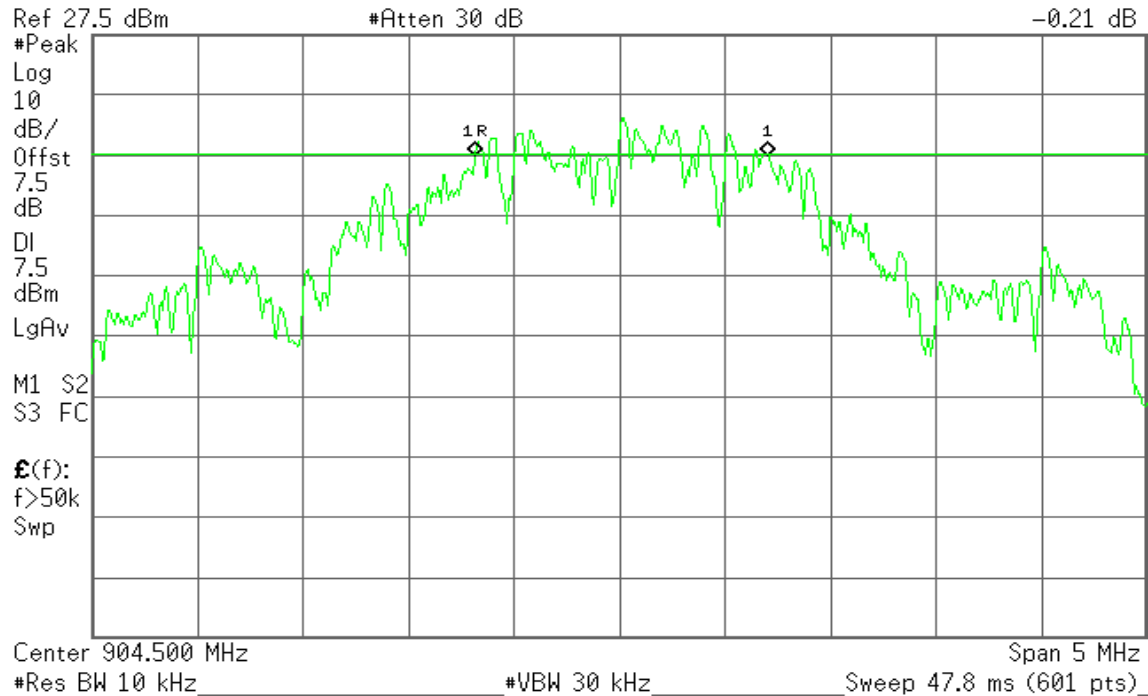
Test Plot

6dB Bandwidth (CH Low)

Agilent 18:08:37 Aug 14, 2010

R L

Mkr1 1.383 MHz
-0.21 dB

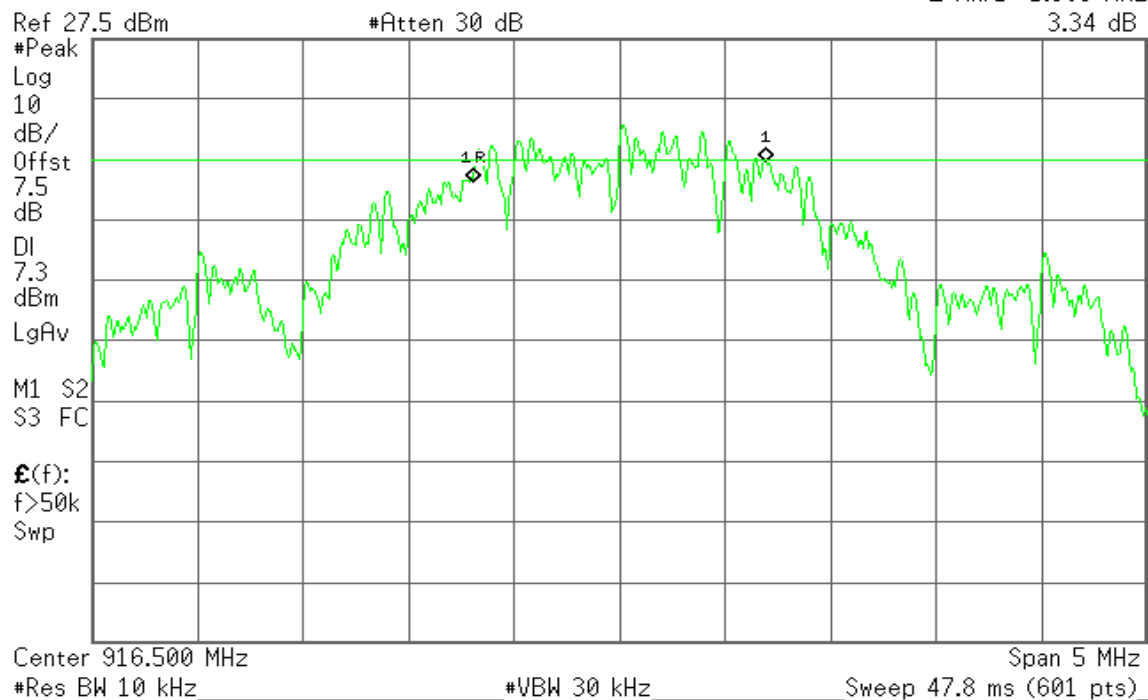


6dB Bandwidth (CH Mid)

Agilent 18:05:59 Aug 14, 2010

R L

Mkr1 1.383 MHz
3.34 dB





6dB Bandwidth (CH High)

Agilent 18:07:28 Aug 14, 2010

R L

Mkr1 1.375 MHz
-0.18 dB

Ref 27.5 dBm

#Atten 30 dB

#Peak

Log

10

dB/

Offst

7.5

dB

DI

6.8

dBm

LgAv

M1 S2

S3 FC

$E(f)$:

f>50k

Swp

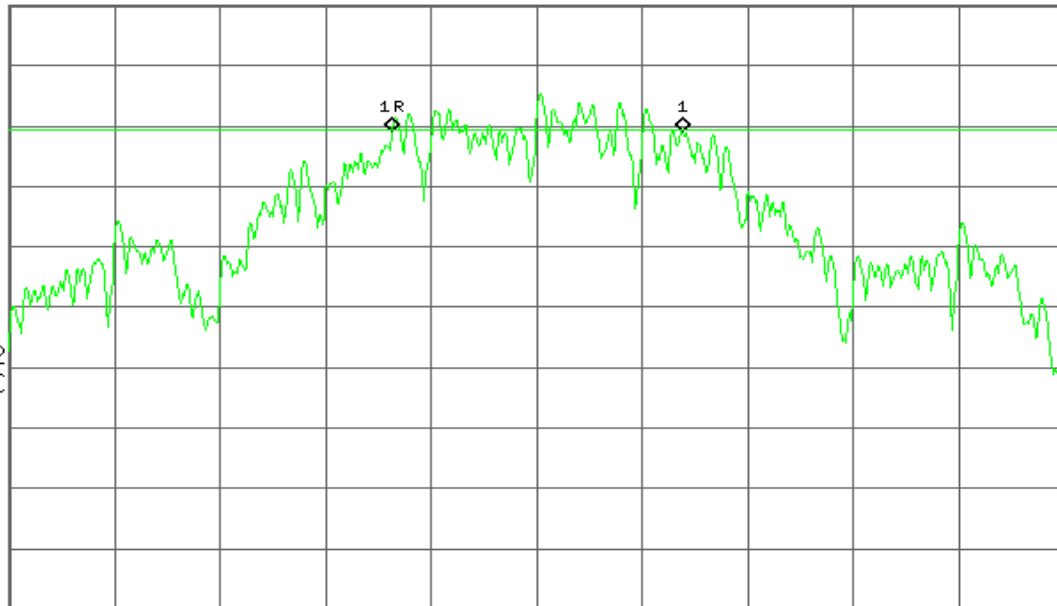
Center 925.500 MHz

Span 5 MHz

#Res BW 10 kHz

#VBW 30 kHz

Sweep 47.8 ms (601 pts)





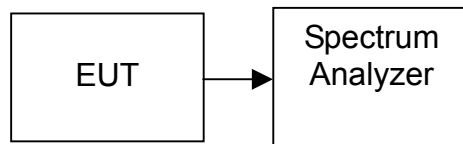
7.2 PEAK POWER

LIMIT

The maximum peak output power of the intentional radiator shall not exceed the following:

1. According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.
2. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST CONFIGURATION



TEST PROCEDURE

According the FCC KDB558074 (Measurement of Digital Transmission Systems requirement Operating under Section 15.247 March 23, 2005, Power Output Option 1) as the following step:

1. Set the RBW greater than 6 dB bandwidth of the emission (RBW = 2MHz, VBW = 2MHz).

TEST RESULTS

No non-compliance noted

TEST DATA

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	904.5	20.14	0.10328	1.00	PASS
Mid	916.5	19.92	0.09817		PASS
High	925.5	19.23	0.08375		PASS



Test Plot

Peak Power (CH Low)

Agilent 10:20:48 Oct 6, 2010

R L

Mkr1 904.950 MHz
20.14 dBm

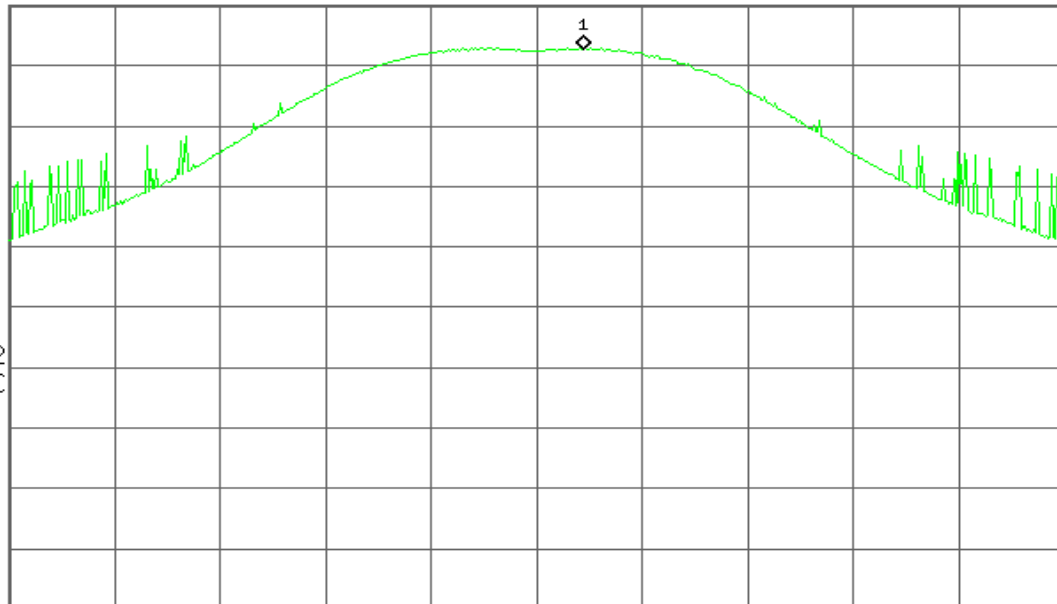
Ref 27.5 dBm

#Atten 30 dB

#Peak
Log
10
dB/
Offst
7.5
dB

M1 S2
S3 FC

£(f):
FTun
Swp



Center 904.500 MHz

#Res BW 2 MHz

#VBW 2 MHz

Span 10 MHz
Sweep 1 ms (601 pts)

Peak Power (CH Mid)

Agilent 10:13:33 Oct 6, 2010

R L

Mkr1 916.017 MHz
19.92 dBm

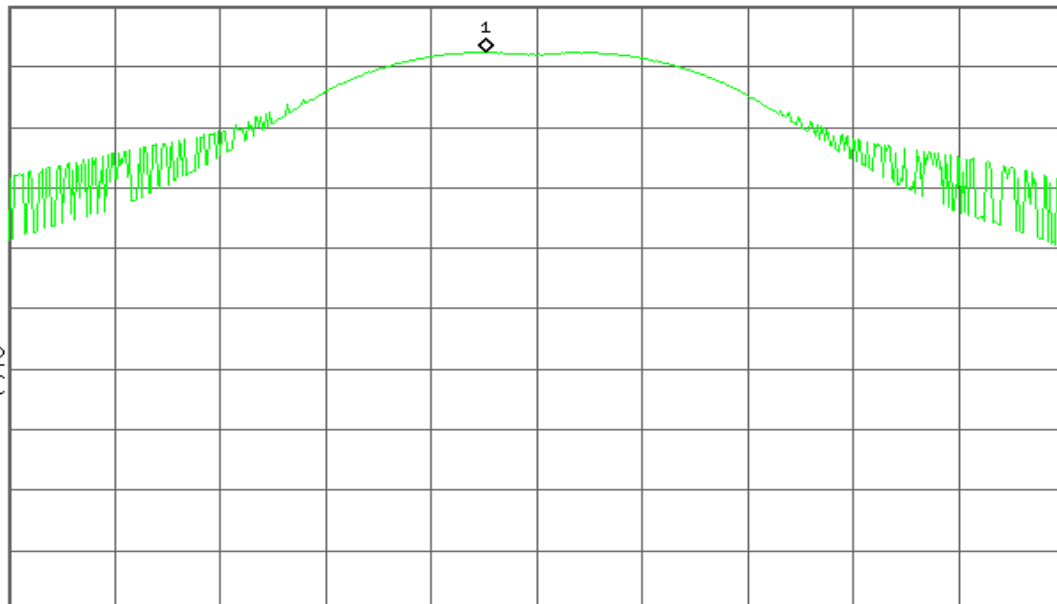
Ref 27.5 dBm

#Atten 30 dB

#Peak
Log
10
dB/
Offst
7.5
dB

M1 S2
S3 FC

£(f):
FTun
Swp



Center 916.500 MHz

#Res BW 2 MHz

#VBW 2 MHz

Span 10 MHz
Sweep 1 ms (601 pts)



Peak Power (CH High)

Agilent 10:17:24 Oct 6, 2010

R L

Mkr1 925.067 MHz

19.23 dBm

Ref 27.5 dBm

#Atten 30 dB

#Peak

Log

10

dB/

Offst

7.5

dB

M1 S2

S3 FC

$E(f)$:

FTun

Swp

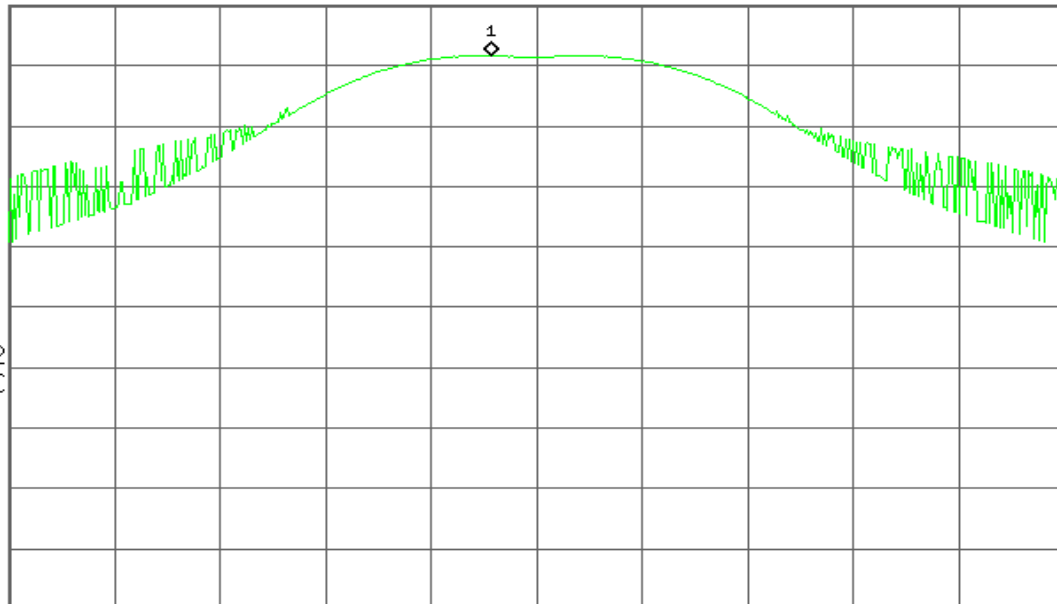
Center 925.500 MHz

#Res BW 2 MHz

#VBW 2 MHz

Span 10 MHz

Sweep 1 ms (601 pts)



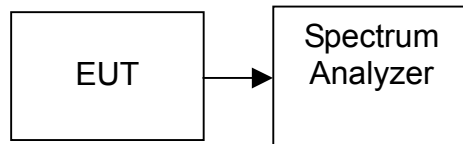


7.3 AVERAGE POWER

LIMIT

None; for reporting purposes only.

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer. The Spectrum Analyzer is set to the Samp detection.

TEST RESULTS

No non-compliance noted

TEST DATA

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	904.5	14.11	0.02576
Mid	916.5	12.71	0.01866
High	925.5	12.15	0.01641



Test Plot

Average Power (CH Low)

Agilent 19:19:43 Sep 9, 2010

R L



Channel Power

14.11 dBm /5.0000 MHz

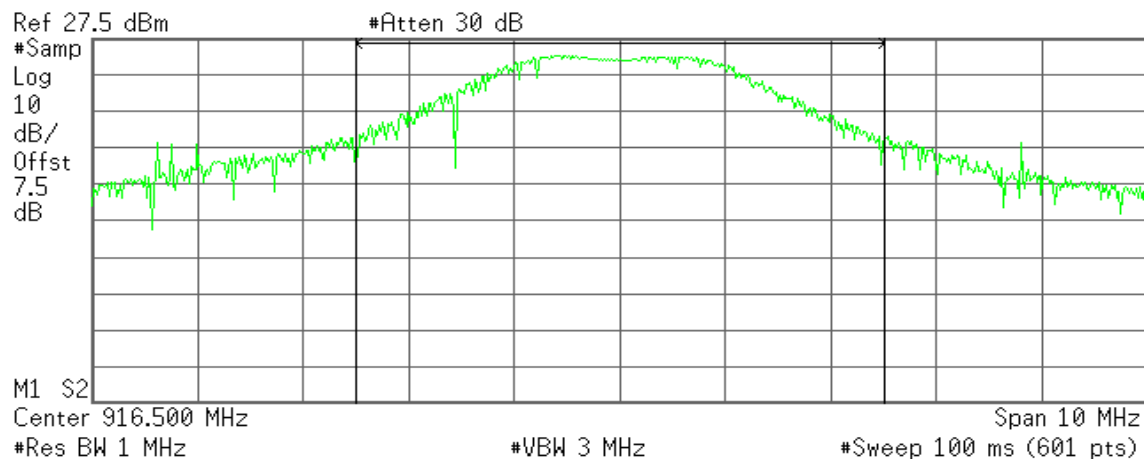
Power Spectral Density

-52.88 dBm/Hz

Average Power (CH Mid)

Agilent 19:21:37 Sep 9, 2010

R L



Channel Power

12.71 dBm /5.0000 MHz

Power Spectral Density

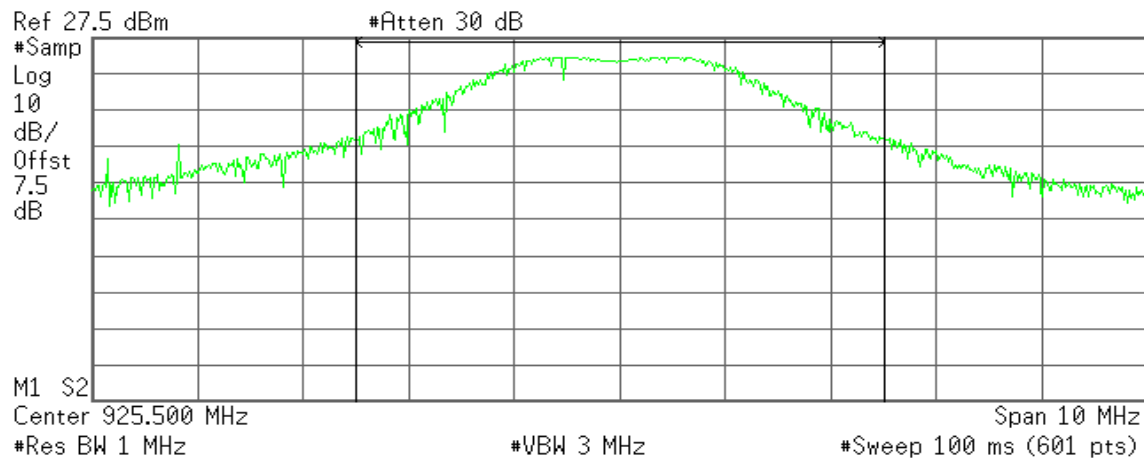
-54.28 dBm/Hz



Average Power (CH High)

✱ Agilent 19:29:22 Sep 9, 2010

R L



Channel Power

12.15 dBm /5.0000 MHz

Power Spectral Density

-54.84 dBm/Hz

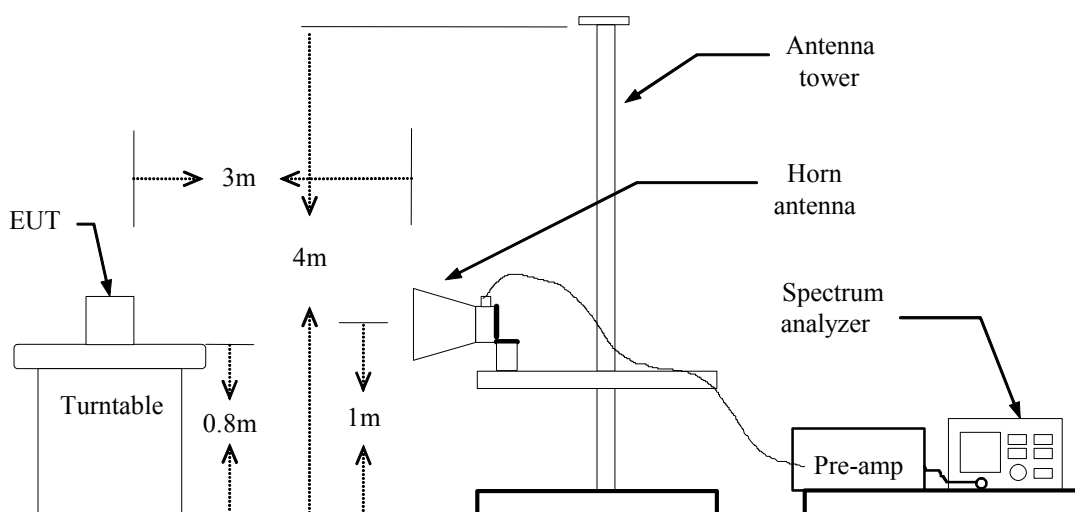


7.4 BAND EDGES MEASUREMENT

LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands 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, provided the transmitter demonstrates compliance with the peak conducted power limits. 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 Section 15.205(c)).

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
(a) PEAK: RBW=VBW=100KHz / Sweep=AUTO
5. Repeat the procedures until all the PEAK versus POLARIZATION are measured.

TEST RESULTS

Refer to attach spectrum analyzer data chart.

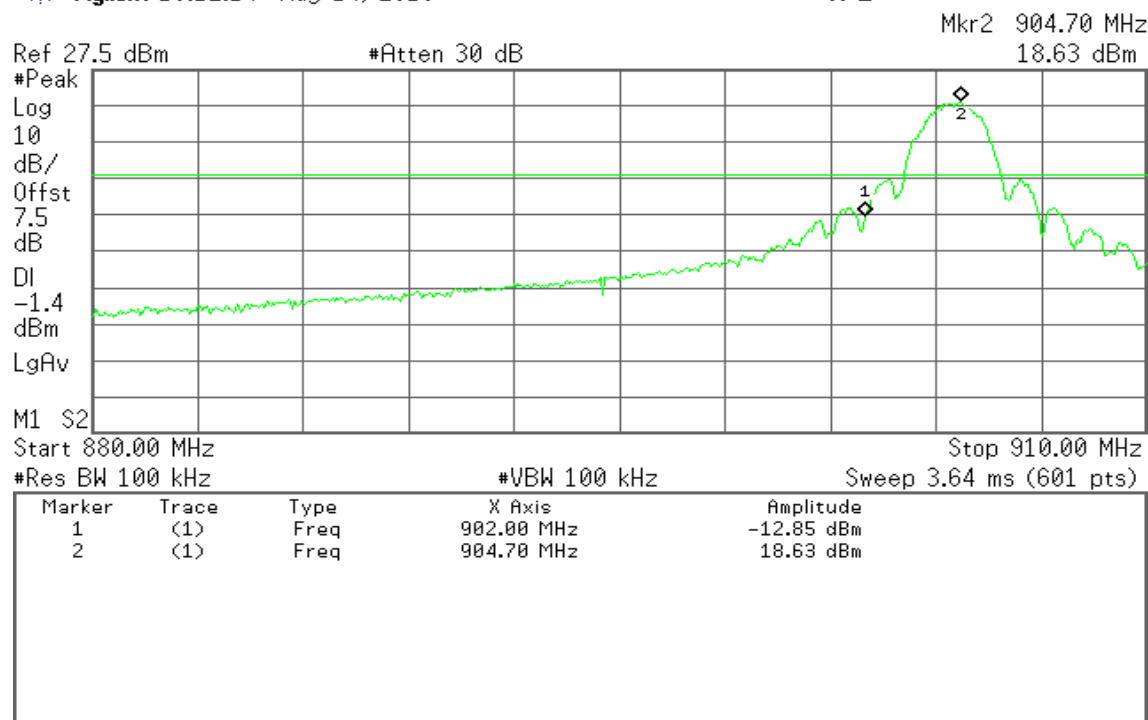


Test Plot

Band Edges (CH Low)

Agilent 18:12:14 Aug 14, 2010

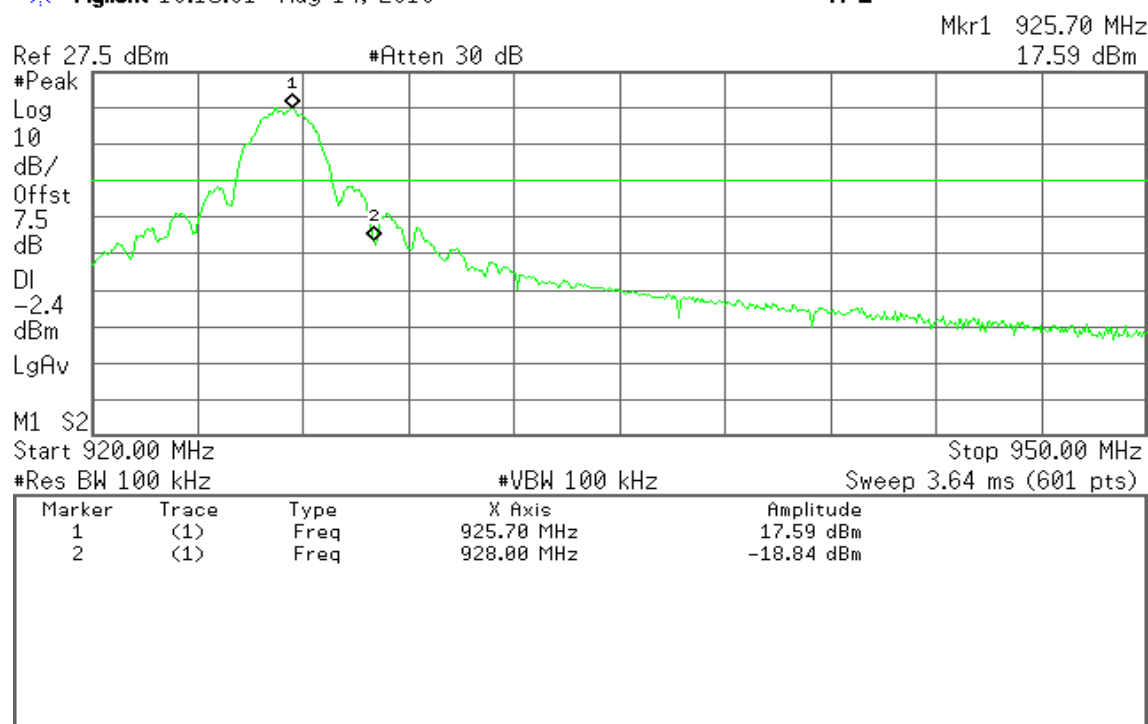
R L



Band Edges (CH High)

Agilent 18:15:01 Aug 14, 2010

R L



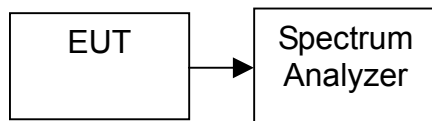


7.5 PEAK POWER SPECTRAL DENSITY

LIMIT

1. According to §15.247(e), for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.
2. According to §15.247(f), the digital modulation operation of the hybrid system, with the frequency hopping turned off, shall comply with the power density requirements of paragraph (d) of this section.

TEST CONFIGURATION



TEST PROCEDURE

According the FCC KDB558074 (Measurement of Digital Transmission Systems requirement Operating under Section 15.247 March 23, 2005, Power spectral density Option 1) as the following step:

1. Started with serval zoom-in steps with the beginning of 5MHz Span until the highest levels which could be found within the respective emission channels/bands
2. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 300kHz, Sweep=100s
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.

TEST RESULTS

No non-compliance noted

TEST DATA

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	904.5	7.76	8.00	PASS
Mid	916.5	6.88		PASS
High	925.5	7.27		PASS



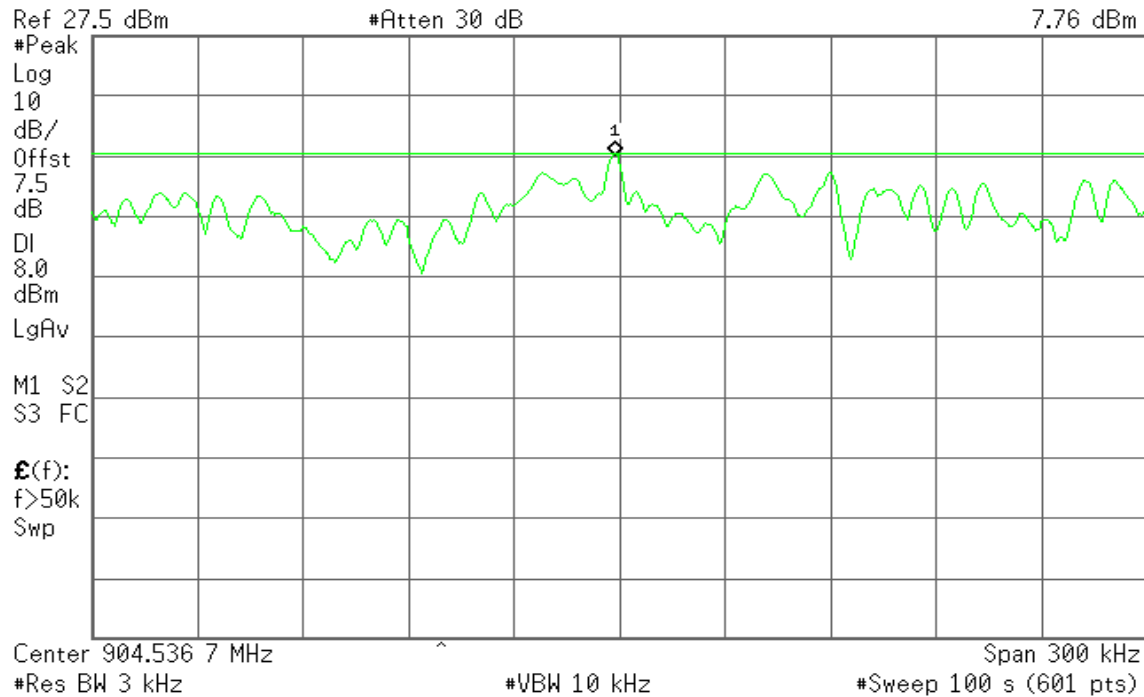
Test Plot

PPSD (CH Low)

Agilent 16:05:20 Aug 14, 2010

R L

Mkr1 904.535 2 MHz
7.76 dBm

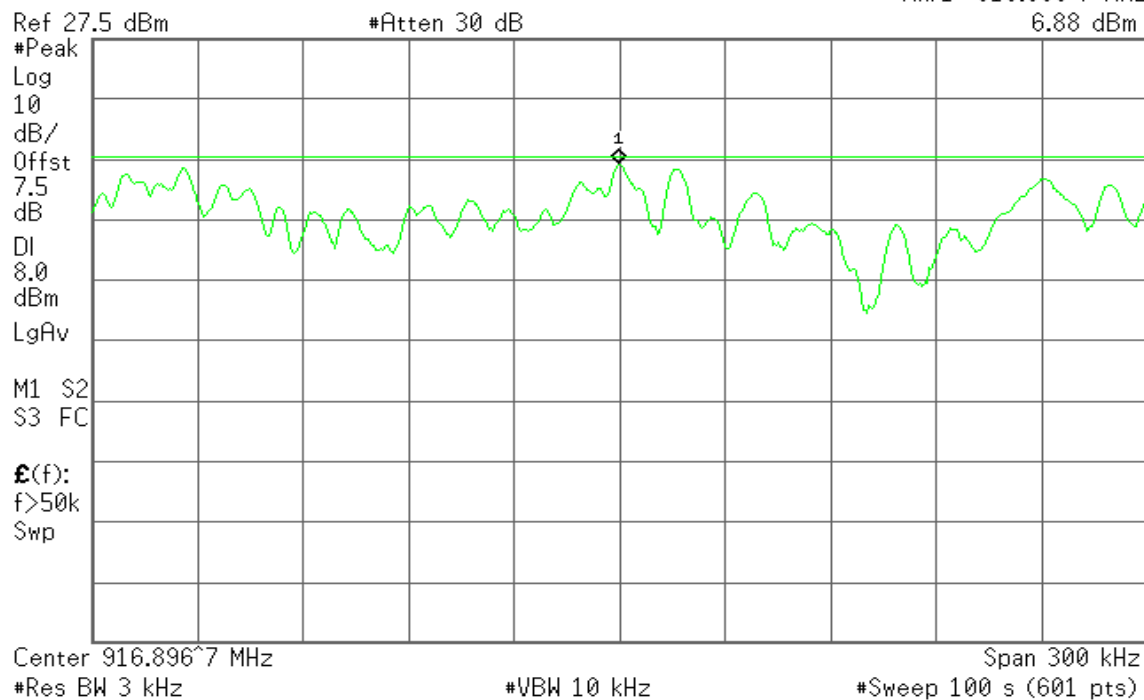


PPSD (CH Mid)

Agilent 16:15:30 Aug 14, 2010

R L

Mkr1 916.896 7 MHz
6.88 dBm





PPSD (CH High)

Agilent 16:19:35 Aug 14, 2010

R L

Mkr1 925.535 3 MHz
7.27 dBm

Ref 27.5 dBm

#Atten 30 dB

#Peak

Log

10

dB/

Offst

7.5

dB

DI

8.0

dBm

LgAv

M1 S2

S3 FC

$E(f)$:

$f > 50k$

Swp

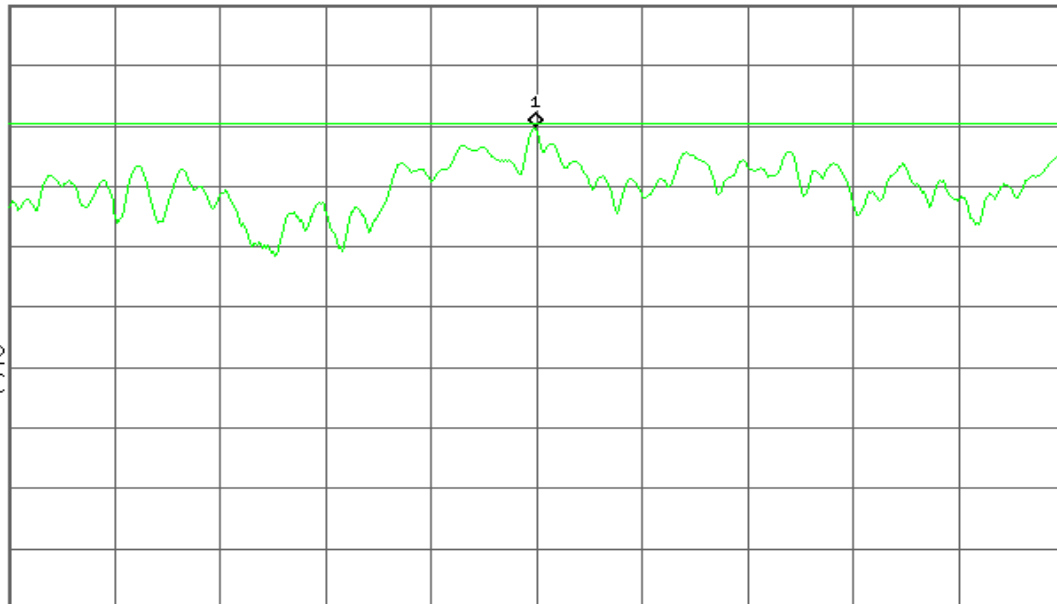
Center 925.535 8 MHz

#Res BW 3 kHz

#VBW 10 kHz

Span 300 kHz

#Sweep 100 s (601 pts)





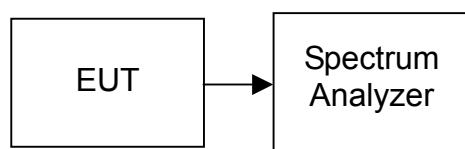
7.6 SPURIOUS EMISSIONS

7.6.1 CONDUCTED MEASUREMENT

LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands 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, provided the transmitter demonstrates compliance with the peak conducted power limits. 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 Section 15.205(c)).

TEST CONFIGURATION



TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

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

Measurements are made over the 30MHz to 10GHz range with the transmitter set to the lowest, middle, and highest channels.

TEST RESULTS

No non-compliance noted.

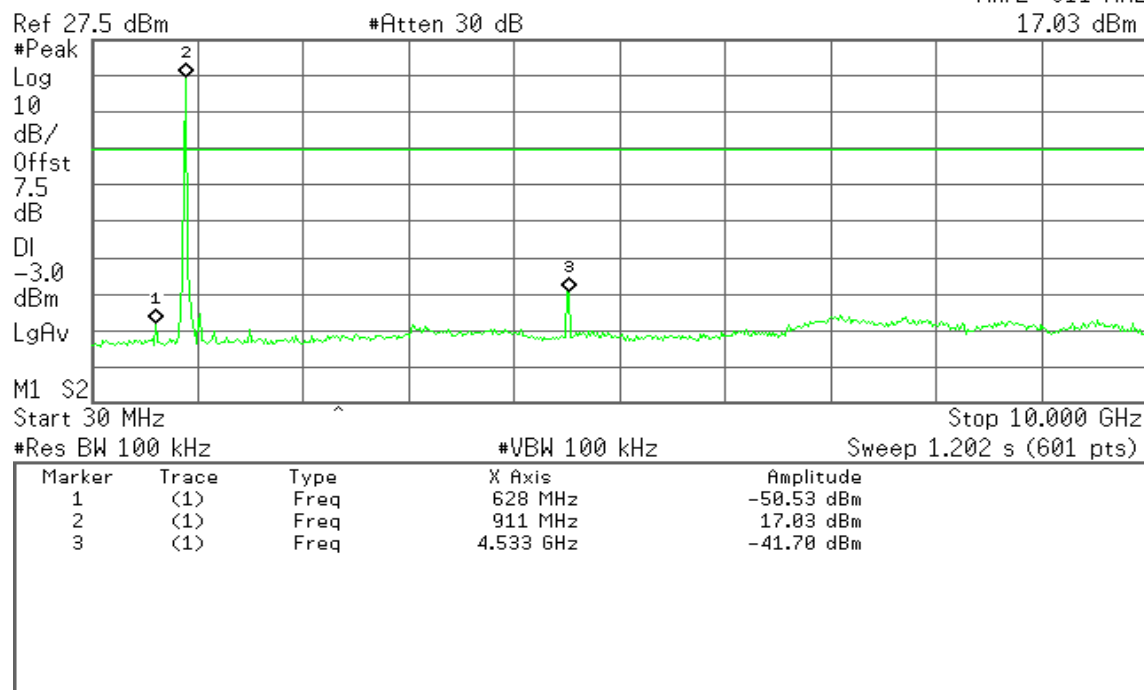
**Test Plot****CH Low**

* Agilent 17:59:54 Aug 14, 2010

R L

Mkr2 911 MHz

17.03 dBm

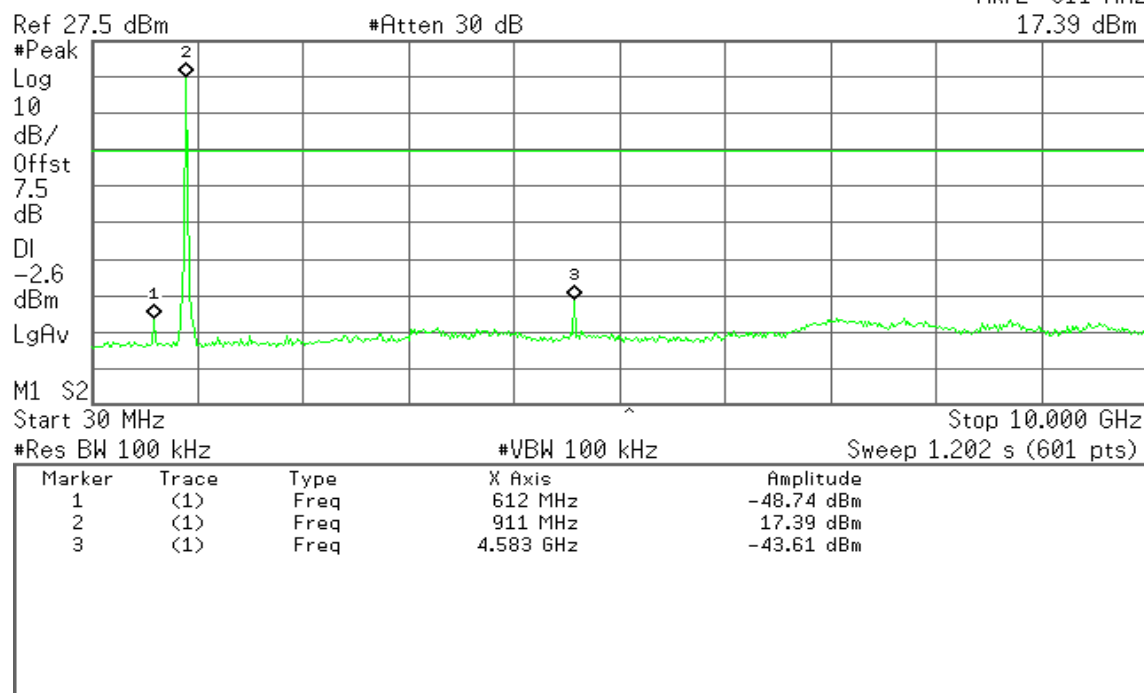
**CH Mid**

* Agilent 18:02:52 Aug 14, 2010

R L

Mkr2 911 MHz

17.39 dBm



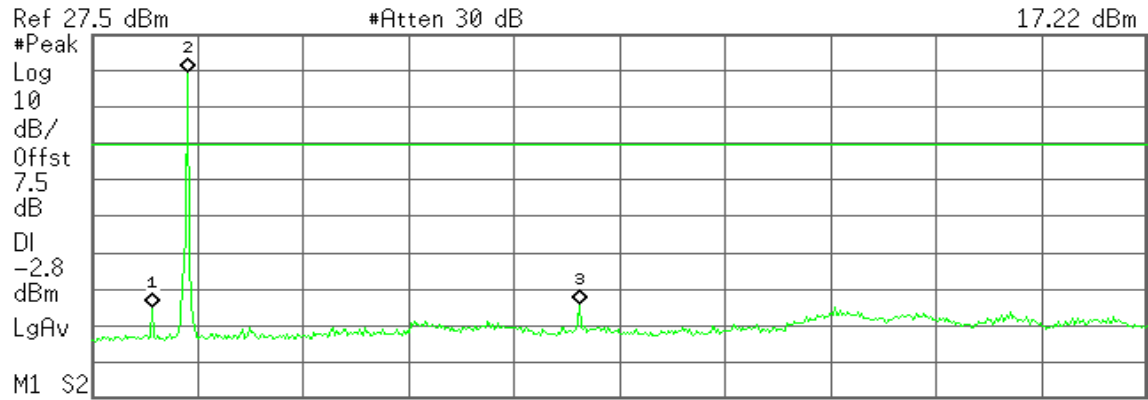


CH High

Agilent 17:54:22 Aug 14, 2010

R L

Mkr2 927 MHz



Start 30 MHz Stop 10.000 GHz
#Res BW 100 kHz #VBW 100 kHz Sweep 1.202 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	595 MHz	-47.30 dBm
2	(1)	Freq	927 MHz	17.22 dBm
3	(1)	Freq	4.633 GHz	-46.47 dBm



7.6.2 RADIATED EMISSIONS

LIMIT

1. According to §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 (μV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

Remark: 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.

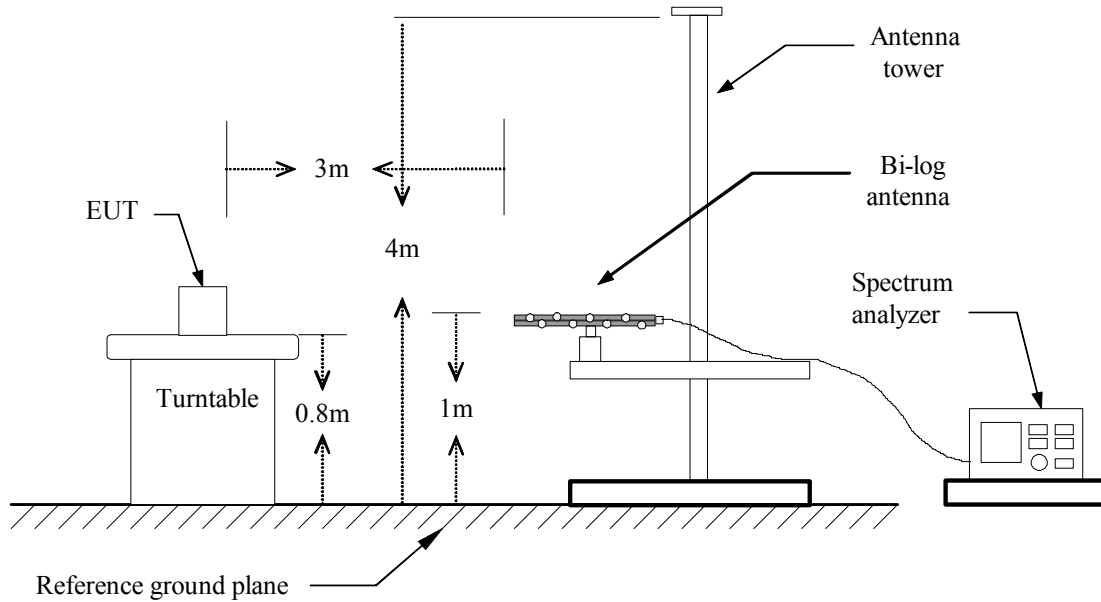
2. In the emission table above, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

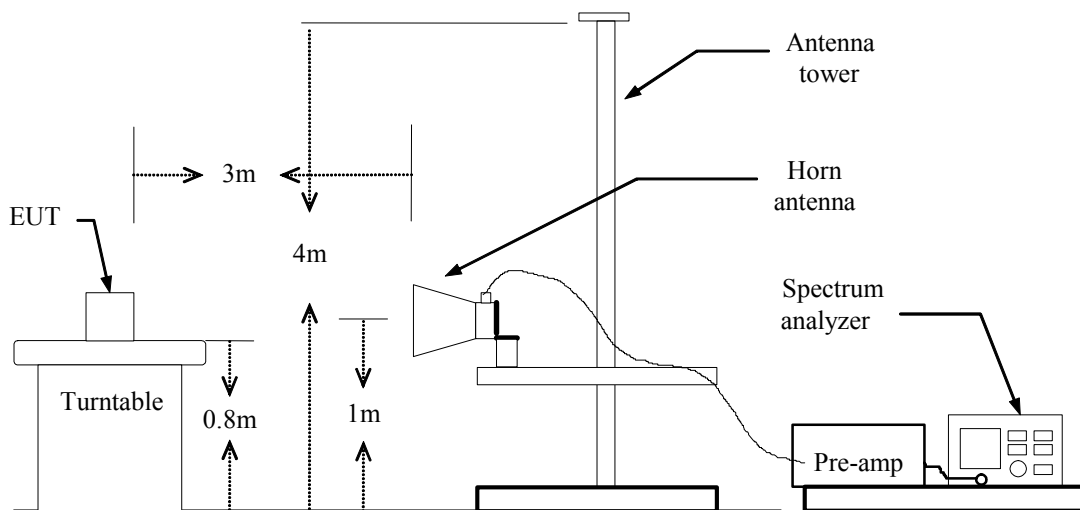


TEST CONFIGURATION

Below 1 GHz



Above 1 GHz





TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

Below 1GHz:

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz:

(a)PEAK: RBW=VBW=1MHz / Sweep=AUTO

(b)AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

7. Repeat above procedures until the measurements for all frequencies are complete.

TEST RESULTS

No non-compliance noted.

**TEST DATA****Below 1GHz****Fundamental****Dipole Antenna**

Operation Mode: TX / CH Low **Test Date:** August 11, 2010
Temperature: 18°C **Tested by:** Stan Lin
Humidity: 60% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Remark
904.9400	V	113.17	0.41	113.58	Peak
904.9400	V	91.67	0.41	92.08	AVG
904.9400	H	109.97	0.41	110.38	Peak
904.9400	H	89.52	0.41	89.93	AVG

Operation Mode: TX / CH Mid **Test Date:** August 11, 2010
Temperature: 18°C **Tested by:** Stan Lin
Humidity: 60% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Remark
916.5800	V	109.59	0.69	110.28	Peak
916.5800	V	87.43	0.69	88.12	AVG
916.5800	H	112.84	0.69	113.53	Peak
916.5800	H	91.92	0.69	92.61	AVG



Operation Mode: TX / CH High **Test Date:** August 11, 2010
Temperature: 18°C **Tested by:** Stan Lin
Humidity: 60% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Remark
926.2800	V	108.13	0.91	109.04	Peak
926.2800	V	85.93	0.91	86.84	AVG
926.2800	H	114.59	0.91	115.50	Peak
926.2800	H	92.22	0.91	93.13	AVG

Monopole Antenna

Operation Mode: TX / CH Low **Test Date:** August 11, 2010
Temperature: 18°C **Tested by:** Stan Lin
Humidity: 60% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Remark
904.9400	V	113.70	0.41	114.11	Peak
904.9400	V	91.36	0.41	91.77	AVG
904.9400	H	107.75	0.41	108.16	Peak
904.9400	H	86.66	0.41	87.07	AVG

Operation Mode: TX / CH Mid **Test Date:** August 11, 2010
Temperature: 18°C **Tested by:** Stan Lin
Humidity: 60% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Remark
916.5800	V	111.67	0.73	112.40	Peak
916.5800	V	90.76	0.73	91.49	AVG
918.5200	H	106.23	0.69	106.92	Peak
918.5200	H	84.69	0.69	85.38	AVG

**Operation Mode:** TX / CH High**Test Date:** August 11, 2010**Temperature:** 18°C**Tested by:** Stan Lin**Humidity:** 60% RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Remark
926.2800	V	111.11	0.91	112.02	Peak
926.2800	V	88.52	0.91	89.43	AVG
926.2800	H	104.05	0.91	104.96	Peak
926.2800	H	82.79	0.91	83.70	AVG

**Harmonics****Dipole Antenna****Operation Mode:** TX / CH Low**Test Date:** August 10, 2010**Temperature:** 18°C**Tested by:** Stan Lin**Humidity:** 60% RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
92.0799	V	92.0799	44.60	-18.05	26.55	43.50	QP
140.5800	V	140.5800	39.91	-12.28	27.63	43.50	QP
258.9200	V	258.9200	41.20	-12.31	28.89	46.00	QP
485.8999	V	485.8999	45.71	-7.41	38.30	46.00	QP
621.7000	V	621.7000	49.32	-4.40	44.92	46.00	QP
755.5599	V	755.5599	41.28	-2.15	39.13	46.00	QP
129.0146	H	45.02	-14.55	30.47	43.50	-13.03	QP
146.4000	H	47.73	-12.48	35.25	43.50	-8.25	QP
251.1804	H	46.74	-12.46	34.28	46.00	-11.72	QP
344.2800	H	43.78	-9.83	33.95	46.00	-12.05	QP
621.7000	H	45.51	-4.40	41.11	46.00	-4.89	QP
755.5600	H	47.01	-2.15	44.86	46.00	-1.14	QP

Remark:

1. No emission found between lowest internal used / generated frequency to 30 MHz. (9kHz ~ 30MHz)
2. Measuring frequencies from 9 kHz to the 1GHz.
3. Radiated emissions measured in the measured frequency range were made with an instrument using peak detector or quasi-peak detector mode.
4. 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.
5. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.

**Operation Mode:** TX / CH Mid**Test Date:** August 10, 2010**Temperature:** 18°C**Tested by:** Stan Lin**Humidity:** 60% RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
95.9600	V	44.74	-17.80	26.94	43.50	-16.56	QP
140.5800	V	42.51	-12.28	30.23	43.50	-13.27	QP
260.8599	V	43.76	-12.26	31.50	46.00	-14.50	QP
346.2200	V	43.90	-9.78	34.12	46.00	-11.88	QP
569.3200	V	42.21	-5.35	36.86	46.00	-9.14	QP
608.1200	V	44.40	-4.14	40.26	46.00	-5.74	QP
45.5200	H	42.13	-13.45	28.68	40.00	-11.32	QP
127.0000	H	44.66	-14.97	29.69	43.50	-13.81	QP
243.4000	H	49.17	-13.09	36.08	46.00	-9.92	QP
367.5600	H	43.67	-9.59	34.08	46.00	-11.92	QP
497.5400	H	47.05	-7.13	39.92	46.00	-6.08	QP
759.4400	H	42.42	-2.15	40.27	46.00	-5.73	QP

Remark:

1. No emission found between lowest internal used / generated frequency to 30 MHz. (9kHz ~ 30MHz)
2. Measuring frequencies from 9 kHz to the 1GHz.
3. Radiated emissions measured in the measured frequency range were made with an instrument using peak detector or quasi-peak detector mode.
4. 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.
5. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.

**Operation Mode:** TX / CH High**Test Date:** August 10, 2010**Temperature:** 18°C**Tested by:** Stan Lin**Humidity:** 60% RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
140.5800	V	42.32	-12.28	30.04	43.50	-13.46	QP
161.9200	V	43.04	-13.09	29.95	43.50	-13.55	QP
255.0400	V	44.27	-12.39	31.88	46.00	-14.12	QP
322.9400	V	43.62	-10.46	33.16	46.00	-12.84	QP
600.3600	V	42.19	-4.00	38.19	46.00	-7.81	QP
773.0200	V	42.17	-2.17	40.00	46.00	-6.00	QP
140.5800	H	41.03	-12.28	28.75	43.50	-14.75	QP
175.5000	H	43.10	-14.18	28.92	43.50	-14.58	QP
251.1804	H	46.63	-12.46	34.17	46.00	-11.83	QP
344.2800	H	43.17	-9.83	33.34	46.00	-12.66	QP
615.8800	H	42.54	-4.29	38.25	46.00	-7.75	QP
771.0800	H	43.47	-2.16	41.31	46.00	-4.69	QP

Remark:

1. No emission found between lowest internal used / generated frequency to 30 MHz. (9kHz ~ 30MHz)
2. Measuring frequencies from 9 kHz to the 1GHz.
3. Radiated emissions measured in the measured frequency range were made with an instrument using peak detector or quasi-peak detector mode.
4. 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.
5. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.

**Monopole Antenna****Operation Mode:** TX / CH Low**Test Date:** August 11, 2010**Temperature:** 18°C**Tested by:** Stan Lin**Humidity:** 60% RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
30.0000	V	53.73	-15.14	38.59	40.00	-1.41	QP
68.8000	V	54.76	-17.92	36.84	40.00	-3.16	QP
117.3000	V	48.27	-16.58	31.69	43.50	-11.81	QP
274.4400	V	47.67	-11.97	35.70	46.00	-10.30	QP
485.9000	V	50.25	-7.41	42.84	46.00	-3.16	QP
621.7000	V	47.17	-4.40	42.77	46.00	-3.23	QP
757.5000	V	45.42	-2.15	43.27	46.00	-2.73	QP
37.7599	H	51.86	-13.92	37.94	40.00	-2.06	QP
68.8000	H	51.06	-17.92	33.14	40.00	-6.86	QP
152.2200	H	47.13	-12.68	34.45	43.50	-9.05	QP
175.5000	H	47.94	-14.18	33.76	43.50	-9.74	QP
588.7199	H	45.72	-4.49	41.23	46.00	-4.77	QP
761.3800	H	46.77	-2.16	44.61	46.00	-1.39	QP

Remark:

1. No emission found between lowest internal used / generated frequency to 30 MHz. (9kHz ~ 30MHz)
2. Measuring frequencies from 9 kHz to the 1GHz.
3. Radiated emissions measured in the measured frequency range were made with an instrument using peak detector or quasi-peak detector mode.
4. 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.
5. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.

**Operation Mode:** TX / CH Mid**Test Date:** August 11, 2010**Temperature:** 18°C**Tested by:** Stan Lin**Humidity:** 60% RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
31.9546	V	52.37	-14.81	37.56	40.00	-2.44	QP
68.8000	V	54.89	-17.92	36.97	40.00	-3.03	QP
88.2000	V	49.91	-18.44	31.47	43.50	-12.03	QP
165.8000	V	47.01	-13.41	33.60	43.50	-9.90	QP
499.4800	V	46.97	-7.08	39.89	46.00	-6.11	QP
594.5400	V	46.14	-4.23	41.91	46.00	-4.09	QP
37.7599	H	51.58	-13.92	37.66	40.00	-2.34	QP
68.8000	H	52.91	-17.92	34.99	40.00	-5.01	QP
256.9800	H	46.92	-12.34	34.58	46.00	-11.42	QP
369.5000	H	47.55	-9.59	37.96	46.00	-8.04	QP
582.9000	H	45.90	-4.75	41.15	46.00	-4.85	QP
780.7800	H	46.03	-2.16	43.87	46.00	-2.13	QP

Remark:

1. No emission found between lowest internal used / generated frequency to 30 MHz. (9kHz ~ 30MHz)
2. Measuring frequencies from 9 kHz to the 1GHz.
3. Radiated emissions measured in the measured frequency range were made with an instrument using peak detector or quasi-peak detector mode.
4. 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.
5. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.

**Operation Mode:** TX / CH High**Test Date:** August 11, 2010**Temperature:** 18°C**Tested by:** Stan Lin**Humidity:** 60% RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
31.9546	V	51.81	-14.81	37.00	40.00	-3.00	QP
68.8000	V	55.07	-17.92	37.15	40.00	-2.85	QP
264.7400	V	46.80	-12.17	34.63	46.00	-11.37	QP
456.8000	V	45.76	-8.12	37.64	46.00	-8.36	QP
629.4600	V	46.75	-4.54	42.21	46.00	-3.79	QP
780.7800	V	46.22	-2.16	44.06	46.00	-1.94	QP
37.7599	H	50.60	-13.92	36.68	40.00	-3.32	QP
45.5200	H	47.70	-13.45	34.25	40.00	-5.75	QP
68.8000	H	49.49	-17.92	31.57	40.00	-8.43	QP
138.6400	H	45.78	-12.55	33.23	43.50	-10.27	QP
606.1800	H	45.61	-4.11	41.50	46.00	-4.50	QP
796.3000	H	46.72	-2.17	44.55	46.00	-1.45	QP

Remark:

1. No emission found between lowest internal used / generated frequency to 30 MHz. (9kHz ~ 30MHz)
2. Measuring frequencies from 9 kHz to the 1GHz.
3. Radiated emissions measured in the measured frequency range were made with an instrument using peak detector or quasi-peak detector mode.
4. 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.
5. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.

**Above 1 GHz****Dipole Antenna****Operation Mode:** TX / CH Low**Test Date:** August 12, 2010**Temperature:** 18°C**Tested by:** Stan Lin**Humidity:** 60 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1806.667	V	62.52	35.05	-7.18	55.34	27.87	74.00	54.00	-26.13	AVG
2713.333	V	58.51	33.74	-3.93	54.58	29.81	74.00	54.00	-24.19	AVG
3620.000	V	56.75	32.58	-0.87	55.88	31.71	74.00	54.00	-22.29	AVG
4520.000	V	59.10	32.70	-0.87	60.96	34.56	74.00	54.00	-19.44	AVG
5420.000	V	50.98	31.07	3.99	54.97	35.06	74.00	54.00	-18.94	AVG
6102.500*7	V	48.34	47.02	4.19	52.53	51.21	93.58	72.08	-39.13	AVG
6335.000	V	55.44	31.17	4.21	59.65	35.38	74.00	54.00	-18.62	AVG
7235.000	V	49.39	32.51	6.20	55.59	38.71	74.00	54.00	-15.29	AVG
8142.500	V	48.03	33.15	8.59	56.62	41.74	74.00	54.00	-12.26	AVG
9035.000	V	47.21	31.37	9.70	56.91	41.07	74.00	54.00	-12.93	AVG
1526.667	H	52.47	---	-8.71	43.76	---	74.00	54.00	-30.24	Peak
1806.667	H	67.10	35.61	-7.18	59.92	28.43	74.00	54.00	-25.57	AVG
2460.000	H	52.99	---	-4.89	48.10	---	74.00	54.00	-25.90	Peak
3613.333	H	52.69	---	-0.91	51.78	---	74.00	54.00	-22.22	Peak
4520.000	H	53.46	32.18	1.86	55.32	34.04	74.00	54.00	-19.96	AVG
6327.500	H	52.10	30.61	4.20	56.30	34.81	74.00	54.00	-19.19	AVG
7227.500	H	48.64	30.64	6.21	54.85	36.85	74.00	54.00	-17.15	AVG

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. 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.
5. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).
7. Peak limit = Fundament Peak Result – 20dB (Peak); Average limit= –Fundament Average Result –20 dB

**Operation Mode:** TX / CH Mid**Test Date:** August 12, 2010**Temperature:** 18°C**Tested by:** Stan Lin**Humidity:** 60 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1220.000	V	61.48	---	-10.28	51.20	---	74.00	54.00	-22.80	Peak
1833.333	V	61.19	34.57	-7.03	54.16	27.54	74.00	54.00	-26.46	AVG
2753.333	V	57.75	34.55	-3.77	53.98	30.78	74.00	54.00	-23.22	AVG
3666.667	V	55.81	32.71	-0.64	55.17	32.07	74.00	54.00	-21.93	AVG
4580.000	V	61.39	33.92	1.92	63.31	35.84	74.00	54.00	-18.16	AVG
5495.000	V	49.99	32.57	4.27	54.26	36.84	74.00	54.00	-17.16	AVG
6102.500	V	48.47	47.06	4.19	52.66	51.25	74.00	54.00	-2.75	AVG
6417.500	V	50.34	31.92	4.23	54.57	36.15	74.00	54.00	-17.85	AVG
7017.500	V	47.11	32.29	6.23	53.34	38.52	74.00	54.00	-15.48	AVG
7340.000	V	47.76	33.58	6.19	53.95	39.77	74.00	54.00	-14.23	AVG
8255.000	V	53.91	30.77	8.53	62.44	39.30	74.00	54.00	-14.70	AVG
1220.000	H	57.14	---	-10.28	46.86	---	74.00	54.00	-27.14	Peak
1833.333	H	65.41	34.83	-7.03	58.38	27.80	74.00	54.00	-26.20	AVG
2466.667	H	54.23	---	-4.87	49.36	---	74.00	54.00	-24.64	Peak
2753.333	H	55.86	33.16	-3.77	52.09	29.39	74.00	54.00	-24.61	AVG
3666.667	H	53.67	31.91	-0.64	53.03	31.27	74.00	54.00	-22.73	AVG
4580.000	H	54.82	33.11	1.92	56.74	35.03	74.00	54.00	-18.97	AVG
5502.500	H	47.33	---	4.30	51.63	---	74.00	54.00	-22.37	Peak
6417.500	H	47.24	---	4.23	51.47	---	74.00	54.00	-22.53	Peak
7325.000	H	47.96	31.26	6.19	54.15	37.45	74.00	54.00	-16.55	AVG
8240.000	H	47.09	32.07	8.54	55.63	40.61	74.00	54.00	-13.39	AVG

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. 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.
5. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / CH High

Test Date: August 12, 2010

Temperature: 18°C

Tested by: Stan Lin

Humidity: 60 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1246.667	V	59.34	---	-10.14	49.20	---	74.00	54.00	-24.80	Peak
1846.667	V	57.70	---	-6.96	50.74	---	74.00	54.00	-23.26	Peak
2780.000	V	58.70	33.82	-3.66	55.04	30.16	74.00	54.00	-23.84	AVG
3706.667	V	56.76	32.59	-0.44	56.32	32.15	74.00	54.00	-21.85	AVG
4626.667	V	63.07	34.02	1.98	65.05	36.00	74.00	54.00	-18.00	AVG
5547.500	V	52.96	32.51	4.29	57.25	36.80	74.00	54.00	-17.20	AVG
6102.500	V	47.92	46.71	4.19	52.11	50.90	74.00	54.00	-3.10	AVG
6485.000	V	54.28	32.54	4.23	58.51	36.77	74.00	54.00	-17.23	AVG
7025.000	V	47.44	31.02	6.23	53.67	37.25	74.00	54.00	-16.75	AVG
7407.500	V	49.15	32.27	6.18	55.33	38.45	74.00	54.00	-15.55	AVG
8337.500	V	46.63	33.06	8.48	55.11	41.54	74.00	54.00	-12.46	AVG
1853.333	H	64.12	38.72	-6.93	57.19	31.79	74.00	54.00	-22.21	AVG
2466.667	H	53.25	---	-4.87	48.38	---	74.00	54.00	-25.62	Peak
2773.333	H	59.48	35.29	-3.68	55.80	31.61	74.00	54.00	-22.39	AVG
3700.000	H	57.22	35.34	-0.47	56.75	34.87	74.00	54.00	-19.13	AVG
4626.667	H	61.49	34.77	1.98	63.47	36.75	74.00	54.00	-17.25	AVG
5547.500	H	51.10	34.86	4.29	55.39	39.15	74.00	54.00	-14.85	AVG
6102.500	H	48.88	47.62	4.19	53.07	51.81	74.00	54.00	-2.19	AVG
6485.000	H	55.48	34.19	4.23	59.71	38.42	74.00	54.00	-15.58	AVG
7407.500	H	55.16	33.27	6.18	61.34	39.45	74.00	54.00	-14.55	AVG
8337.500	H	51.11	35.08	8.48	59.59	43.56	74.00	54.00	-10.44	AVG
9252.500	H	49.16	34.31	10.08	59.24	44.39	74.00	54.00	-9.61	AVG

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. 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.
5. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Monopole Antenna

Operation Mode: TX / CH Low

Test Date: August 12, 2010

Temperature: 18°C

Tested by: Stan Lin

Humidity: 60 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1186.667	V	63.50	35.95	-10.44	53.06	25.51	74.00	54.00	-28.49	AVG
1806.667	V	62.37	35.04	-7.18	55.19	27.86	74.00	54.00	-26.14	AVG
2713.333	V	58.80	33.82	-3.93	54.87	29.89	74.00	54.00	-24.11	AVG
3613.333	V	54.06	32.66	-0.91	53.15	31.75	74.00	54.00	-22.25	AVG
4526.667	V	57.72	32.71	1.87	59.59	34.58	74.00	54.00	-19.42	AVG
5427.500	V	55.54	31.59	4.02	59.56	35.61	74.00	54.00	-18.39	AVG
6102.500	V	49.11	47.86	4.19	53.30	52.05	74.00	54.00	-1.95	AVG
6335.000	V	57.70	31.37	4.21	61.91	35.58	74.00	54.00	-18.42	AVG
7242.500	V	51.35	31.34	6.20	57.55	37.54	74.00	54.00	-16.46	AVG
8135.000	V	55.89	32.01	8.59	64.48	40.60	74.00	54.00	-13.40	AVG
8532.500	V	46.87	31.76	8.47	55.34	40.23	74.00	54.00	-13.77	Peak
1186.667	H	54.62	---	-10.44	44.18	---	74.00	54.00	-29.82	Peak
1526.667	H	54.15	---	-8.71	45.44	---	74.00	54.00	-28.56	Peak
1806.667	H	55.85	---	-7.18	48.67	---	74.00	54.00	-25.33	Peak
2713.333	H	54.69	---	-3.93	50.76	---	74.00	54.00	-23.24	Peak
3620.000	H	50.93	---	-0.87	50.06	---	74.00	54.00	-23.94	Peak
4520.000	H	46.49	32.05	1.86	54.20	33.91	74.00	54.00	-20.09	AVG
5427.500	H	53.28	---	4.02	50.51	---	74.00	54.00	-23.49	Peak
6335.000	H	54.49	30.80	4.21	57.49	35.01	74.00	54.00	-18.99	AVG
7235.000	H	49.31	30.92	6.20	55.51	37.12	74.00	54.00	-16.88	AVG
8142.500	H	49.95	31.20	8.59	58.54	39.79	74.00	54.00	-14.21	AVG

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. 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.
5. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / CH Mid**Test Date:** August 12, 2010**Temperature:** 18°C**Tested by:** Stan Lin**Humidity:** 60 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1526.667	V	54.13	---	-8.71	45.42	---	74.00	54.00	-28.58	Peak
1833.333	V	58.21	---	-7.03	51.18	---	74.00	54.00	-22.82	Peak
2466.667	V	51.40	---	-4.87	46.53	---	74.00	54.00	-27.47	Peak
2753.333	V	54.46	---	-3.77	50.69	---	74.00	54.00	-23.31	Peak
3666.667	V	53.51	33.17	-0.64	52.87	32.53	74.00	54.00	-21.47	AVG
4580.000	V	52.65	34.25	1.92	54.57	36.17	74.00	54.00	-17.83	AVG
5495.000	V	48.53	30.77	4.27	52.80	35.04	74.00	54.00	-18.96	AVG
6417.500	V	49.96	30.27	4.23	54.19	34.50	74.00	54.00	-19.50	AVG
7325.000	V	50.38	30.76	6.19	56.57	36.95	74.00	54.00	-17.05	AVG
8247.500	V	46.28	30.39	8.54	54.82	38.93	74.00	54.00	-15.07	AVG
1526.667	H	54.13	---	-8.71	45.42	---	74.00	54.00	-28.58	Peak
1833.333	H	58.21	---	-7.03	51.18	---	74.00	54.00	-22.82	Peak
2466.667	H	51.40	---	-4.87	46.53	---	74.00	54.00	-27.47	Peak
2753.333	H	54.46	---	-3.77	50.69	---	74.00	54.00	-23.31	Peak
3666.667	H	53.51	33.17	-0.64	52.87	32.53	74.00	54.00	-21.47	AVG
4580.000	H	52.65	34.25	1.92	54.57	36.17	74.00	54.00	-17.83	AVG
5495.000	H	48.53	30.77	4.27	52.80	35.04	74.00	54.00	-18.96	AVG
6417.500	H	49.96	30.27	4.23	54.19	34.50	74.00	54.00	-19.50	AVG
7325.000	H	50.38	30.76	6.19	56.57	36.95	74.00	54.00	-17.05	AVG
8247.500	H	46.28	30.39	8.54	54.82	38.93	74.00	54.00	-15.07	AVG

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. 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.
5. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / CH High**Test Date:** August 10, 2010**Temperature:** 18°C**Tested by:** Stan Lin**Humidity:** 60 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1226.667	V	56.63	---	-10.25	46.38	---	74.00	54.00	-27.62	Peak
1833.333	V	59.79	33.94	-7.03	52.76	26.91	74.00	54.00	-27.09	Peak
2753.333	V	61.69	34.82	-3.77	57.92	31.05	74.00	54.00	-22.95	AVG
3666.667	V	56.02	33.73	-0.64	55.38	33.09	74.00	54.00	-20.91	AVG
4580.000	V	60.10	33.29	1.92	62.02	35.21	74.00	54.00	-18.79	AVG
5547.500	V	55.04	32.18	4.29	59.33	36.47	74.00	54.00	-17.53	AVG
6102.500	V	47.43	---	4.19	51.62	---	74.00	54.00	-22.38	Peak
6477.500	V	54.55	30.79	4.22	58.77	35.01	74.00	54.00	-18.99	AVG
7407.500	V	49.30	32.51	6.18	55.48	38.69	74.00	54.00	-15.31	AVG
8337.500	V	48.58	33.27	8.48	57.06	41.75	74.00	54.00	-12.25	AVG
1853.333	H	57.94	---	-6.93	51.01	---	74.00	54.00	-22.99	Peak
2466.667	H	54.20	---	-4.87	49.33	---	74.00	54.00	-24.67	Peak
2780.000	H	58.29	32.74	-3.66	54.63	29.08	74.00	54.00	-24.92	AVG
3700.000	H	56.17	33.83	-0.47	55.70	33.36	74.00	54.00	-20.64	AVG
4626.667	H	54.09	34.17	1.98	56.07	36.15	74.00	54.00	-17.85	AVG
5555.000	H	48.15	33.42	4.29	52.44	37.71	74.00	54.00	-16.29	AVG
6470.000	H	51.91	32.51	4.23	56.14	36.74	74.00	54.00	-17.26	AVG
7407.500	H	48.56	31.18	6.18	54.74	37.36	74.00	54.00	-16.64	AVG

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. 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.
5. 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.



7.7 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of 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 Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

**TEST DATA****Operation Mode:** Charging**Test Date:** August 12, 2010**Temperature:** 25°C**Tested by:** Alonso Lu**Humidity:** 57% RH

Freq. (MHz)	QP Reading	AV Reading	Corr. factor	QP Result	AV Result	QP Limit	AV Limit	QP Margin	AV Margin	Note
0.1524	35.67	5.97	9.73	45.40	15.70	65.87	55.87	-20.47	-40.17	L1
0.1774	35.27	13.07	9.73	45.00	22.80	64.61	54.61	-19.61	-31.81	L1
0.2304	33.58	4.58	9.72	43.30	14.30	62.44	52.44	-19.14	-38.14	L1
23.0587	31.53	27.23	10.57	42.10	37.80	60.00	50.00	-17.90	-12.20	L1
28.1808	32.37	26.17	10.63	43.00	36.80	60.00	50.00	-17.00	-13.20	L1
29.4633	32.08	23.88	10.62	42.70	34.50	60.00	50.00	-17.30	-15.50	L1
0.1578	36.08	6.38	9.72	45.80	16.10	65.58	55.58	-19.78	-39.48	L2
0.2399	35.39	13.89	9.71	45.10	23.60	62.10	52.10	-17.00	-28.50	L2
0.6075	14.19	-0.01	9.61	23.80	9.60	56.00	46.00	-32.20	-36.40	L2
0.7795	21.99	-0.01	9.61	31.60	9.60	56.00	46.00	-24.40	-36.40	L2
23.0626	30.49	26.19	10.71	41.20	36.90	60.00	50.00	-18.80	-13.10	L2
24.3451	30.23	25.23	10.77	41.00	36.00	60.00	50.00	-19.00	-14.00	L2
28.1847	30.87	25.57	10.83	41.70	36.40	60.00	50.00	-18.30	-13.60	L2
29.4633	30.46	24.76	10.84	41.30	35.60	60.00	50.00	-18.70	-14.40	L2

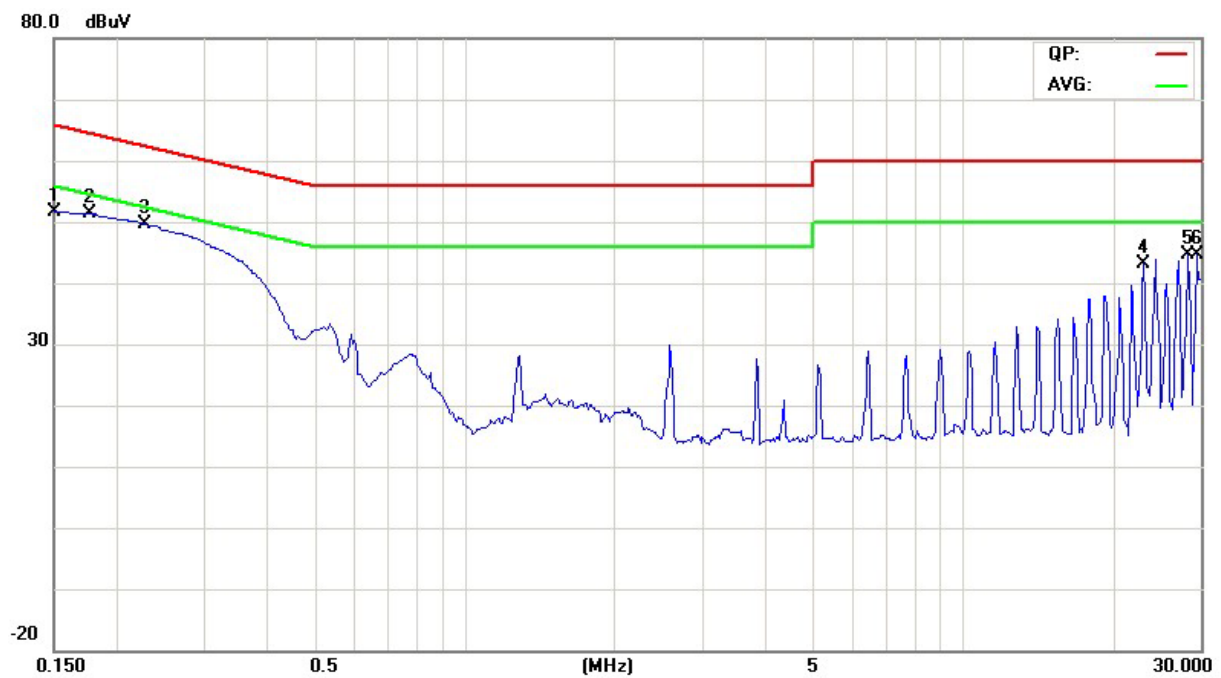
Remark:

1. The measuring frequencies range between 0.15 MHz and 30 MHz.
2. The emissions measured in the frequency range between 0.15 MHz and 30MHz were made with an instrument using Quasi-peak detector and Average detector.
3. The IF bandwidth of SPA between 0.15MHz and 30MHz was 10kHz. The IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz.
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)

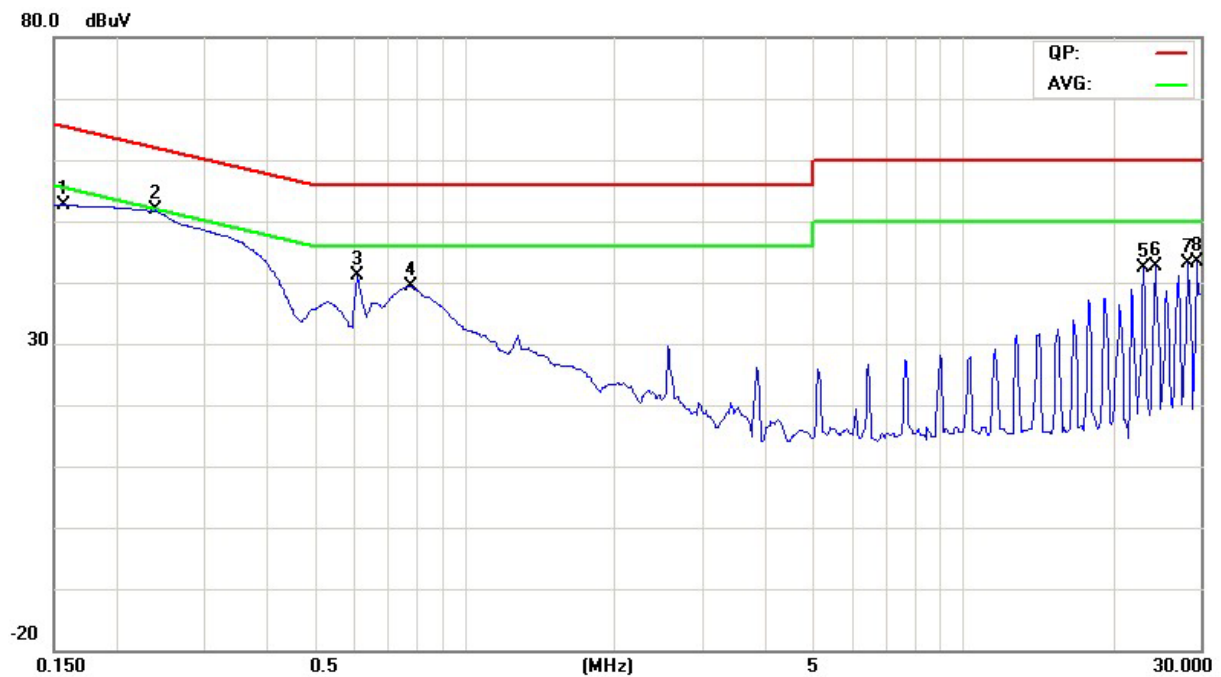


Test Plot

Conducted emissions (Line 1)



Conducted emissions (Line 2)





8. APPENDIX I

RADIO FREQUENCY EXPOSURE

LIMIT

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

EUT Specification

EUT	Wireless Microphone
Frequency band (Operating)	☐ WLAN: 2.412GHz ~ 2.462GHz ☐ WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz ☐ WLAN: 5.745GHz ~ 5.825GHz ☒ Others: 904~925 MHz
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others
Exposure classification	☐ Occupational/Controlled exposure ($S = 5\text{mW/cm}^2$) ☒ General Population/Uncontrolled exposure ($S=1\text{mW/cm}^2$)
Antenna diversity	☒ Single antenna ☐ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Max. output power	20.14 dBm (103.28mW)
Antenna gain (Max)	0dBi (including cable loss) (Numeric gain: 1.0)
Evaluation applied	☒ MPE Evaluation ☐ SAR Evaluation ☐ N/A

Remark:

1. The maximum output power is 20.14dBm (103.28mW) at 904.5MHz (with 1.0numeric antenna gain.)
2. For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 1.0 mW/cm^2 even if the calculation indicates that the power density would be larger.

TEST RESULTS

No non-compliance noted.

**Calculation**

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:

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

Changing to units of mW and cm, using:

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

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \textbf{Equation 1}$$

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

Maximum Permissible Exposure

EUT output power = 103.28mW

Numeric Antenna gain = 1.0

Substituting the MPE safe distance using $d = 20$ cm into Equation 1:

Yields

$$S = 0.000199 \times P \times G$$

Where P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

→ Power density = 0.020553mW / cm²

(For mobile or fixed location transmitters, the maximum power density is 1.0 mW/cm² even if the calculation indicates that the power density would be larger.)