

FCC PART 15.407

TEST REPORT

For

Shenzhen Crystal Video Technology Co.,LTD.

F13, F518 Idea Land, Baoyuan Road, Baoan Central Area, Shenzhen, China

FCC ID: Y3HCB662020120206

Report Type: Original Report	Product Type: WHDI Device
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* This report contains data that are not covered by the NVLAP accreditation and are marked with an asterisk "★" (Rev.2)

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen Crystal Video Technology Co.,LTD.*'s product, model number: *CB6620,CV6620,CV6620-IL,CB6620-IL,CB6628,5002R,5003R*, (*FCC ID: Y3HCB662020120206*) ("EUT") in this report is a transmitter of wireless high-definition receiver, which was measured approximately: 14.7 cm (L) x 9.7cm (W) x 2.1 cm (H), rated input voltage: DC 5V from AC/DC adapter.

Adapter information:

Trade Name: GOSPELL

Model:GP005U-050-200

Input:100-240V,50/60Hz,0.5A

Output:5VDC,2A

Note: The series product, model *CB6620,CV6620,CV6620-IL,CB6620-IL,CB6628,5002R* and *5003R* are electrically identical, the difference between them is just the model name, we selected *CB6620* for fully testing, the details was explained in the attached declaration letter.

** All measurement and test data in this report was gathered from production sample serial number: 1202105 (Assigned by Shenzhen BACL). The EUT was received on 2012-02-20.*

Objective

This type approval report is prepared on behalf of *Shenzhen Crystal Video Technology Co.,LTD.* in accordance with Part 2-Subpart J, Part 15-Subparts A, B and E of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart E, section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

Related Submittal(s)/Grant(s)

No related submittal.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode, which is provided by manufacture.

The operating frequency band is 5150-5250 MHz; the test frequency is 5190 MHz and 5230 MHz.

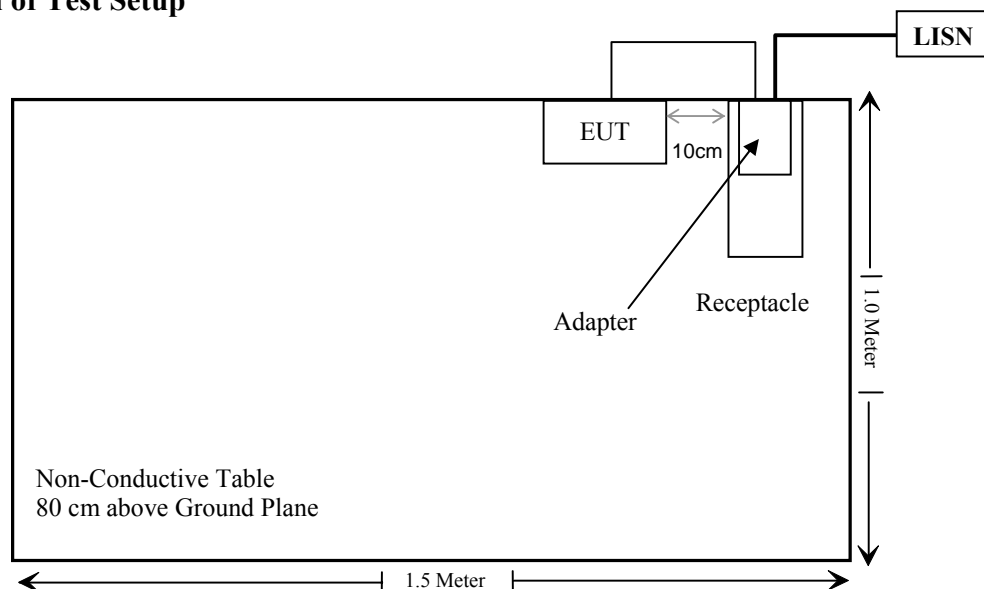
EUT Exercise Software

The test was performed under “AppCom_3.0.3.16”.

Equipment Modifications

No modification was made to the unit tested.

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.407 (f), §2.1093, §1.1307(b)(1)	RF Exposure Evaluation	Compliance
§15.203	Antenna Requirement	Compliance
§15.407(b)(6)& §15.207(a)	Conducted Emissions	Compliance
§15.205& §15.209 &§15.407(b) (1),(6),(7)	Undesirable Emission& Restricted Bands	Compliance
§15.407(a) (1)	26 dB Bandwidth	Compliance
§15.407(a)(1),	Conducted Transmitter Output Power	Compliance
§15.407 (a)(1),(5)	Power Spectral Density	Compliance
§15.407(a)(6)	Peak Excursion Ratio	Compliance
§15.407(g)	Frequency Stability	Compliance

FCC §15.407 (f), §2.1093, §1.1307(b) (1) – RF EXPOSURE EVALUATION

Applicable Standard

According to subpart 15.247(i) and subpart §1.1307(b)(1), 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 level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	(numeric)	(dBm)	(mW)			
5190	2.90	1.95	19.02	79.80	20	0.0309	1.0

Result: The device meet FCC MPE at 20 cm distance

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.407 (a), if the transmitting antennas of directional gain greater than 6dBi are used, the transmit power and power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has five printed antennas on the PCB, only one for transmitting, and the rest for receiving, which in accordance to section 15.203, the maximum gain is 2.9 dBi; please refer to the internal photos.

Result: Compliance.

FCC §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS

Applicable Standard

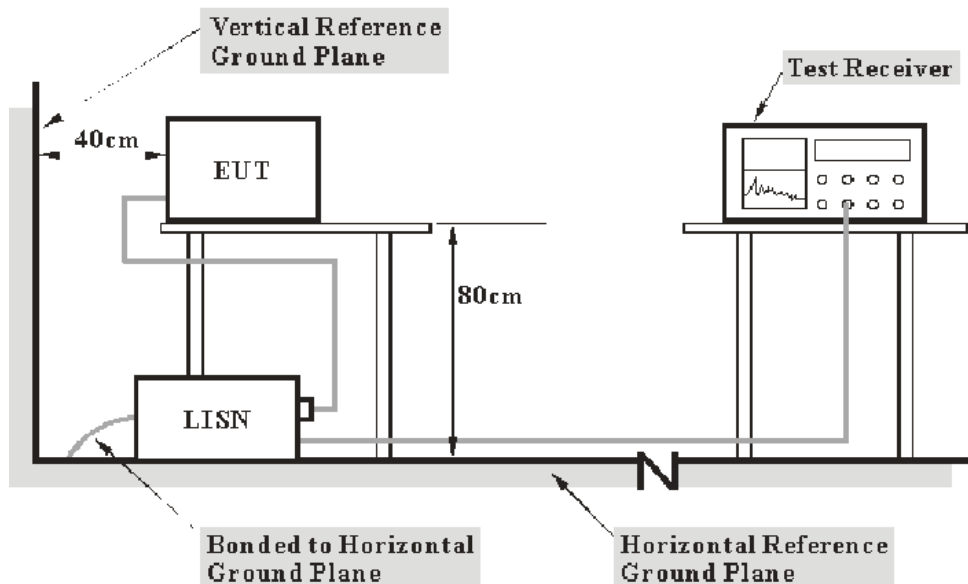
FCC §15.207, §15.407(b) (6)

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratory Corp. (Shenzhen) is ± 2.4 dB.

EUT Setup



- Note:**
1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The adapter was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

<u>Frequency Range</u>	<u>IF B/W</u>
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245	2011-05-03	2012-05-02
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2011-11-17	2012-11-16

***Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

During the conducted emission test, the adapter was connected to the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, with the worst margin reading of:

11.15 dB at 0.780 MHz in the Neutral conducted mode

Test Data

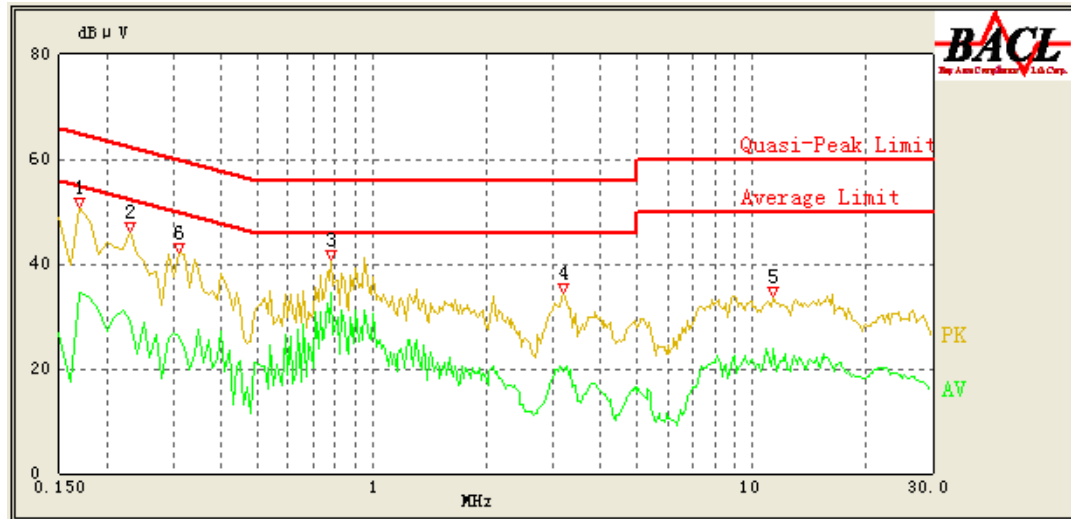
Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Ares Liu on 2012-02-29.

Test Mode: Transmitting

120 V, 60 Hz, Line:



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/QP/Ave.)
0.170	45.90	1.10	65.43	19.53	QP
0.170	34.42	1.10	55.43	21.01	Ave.
0.230	39.84	1.10	63.71	23.87	QP
0.230	29.11	1.10	53.71	24.60	Ave.
0.780	38.12	1.10	56.00	17.88	QP
0.780	34.58	1.10	46.00	11.42	Ave.
3.190	29.94	1.10	56.00	26.06	QP
3.180	19.59	1.10	46.00	26.41	Ave.
11.420	29.10	1.10	60.00	30.90	QP
11.410	23.82	1.10	50.00	26.18	Ave.
0.310	36.77	1.10	61.43	24.66	QP
0.310	26.09	1.10	51.43	25.34	Ave.

120V, 60 Hz, Neutral:

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/QP/Ave.)
0.170	46.64	1.10	65.43	18.79	QP
0.170	34.06	1.10	55.43	21.37	Ave.
0.780	37.92	1.10	56.00	18.08	QP
0.780	34.85	1.10	46.00	11.15	Ave.
3.170	28.32	1.10	56.00	27.68	QP
3.160	19.81	1.10	46.00	26.19	Ave.
8.270	30.38	1.10	60.00	29.62	QP
8.250	24.84	1.10	50.00	25.16	Ave.
0.180	46.96	1.10	65.14	18.18	QP
0.180	34.16	1.10	55.14	20.98	Ave.
0.950	35.45	1.10	56.00	20.55	QP
0.950	30.27	1.10	46.00	15.73	Ave.

FCC §15.209, §15.205 & §15.407(b) (1) (6) (7) – UNDESIRABLE EMISSION & RESTRICTED BANDS

Applicable Standard

FCC §15.407 (b) (1), (6), (7); §15.209; §15.205;

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

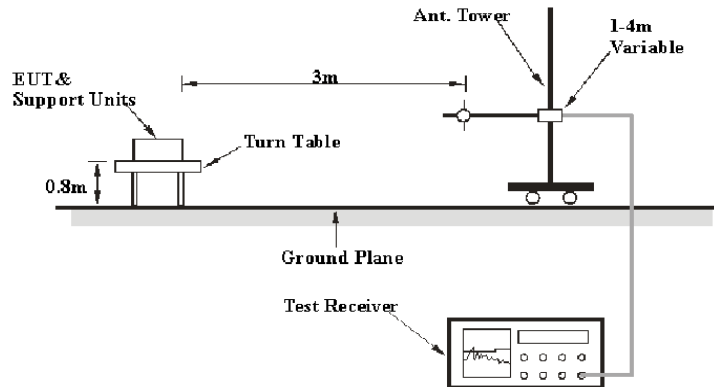
Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

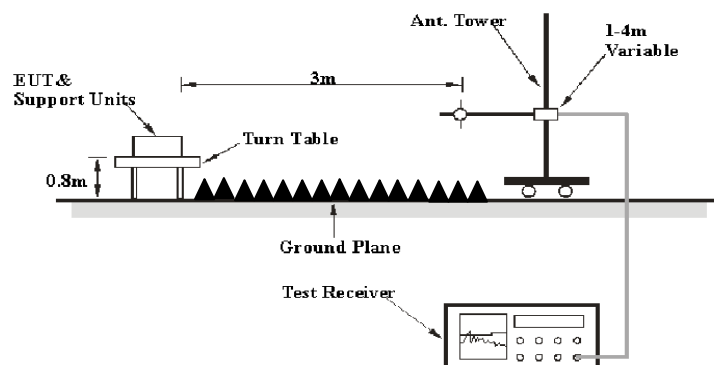
Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is ± 4.0 dB.

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC 15.209, and FCC 15.407 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adapter was connected to a 120 VAC/60 Hz power source,

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>	<i>Detector</i>
30 MHz – 1000 MHz	100 kHz	300 kHz	QP
1000 MHz – 40 GHz	1 MHz	3 MHz	PK
1000 MHz – 40 GHz	1 MHz	10 Hz	Ave.

Test Procedure

During the radiated emission test, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1GHz, peak and Average detection modes for frequencies above 1GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2011-11-24	2012-11-23
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2012-11-27
DUCOMMUN Technologies	Pre-amp	ALN-09173030-01	991396-01	2011-11-24	2012-12-23
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2012-11-30
HP	Spectrum Analyzer	8593A	2919A00242	2011-04-09	2012-04-08
Rohde & Schwarz	Signal Analyzer	FSIQ 26	8386001028	2011-11-24	2012-11-23

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, Section 15.205, 15.209 and Subpart E, Section 15.407, with the worst margin reading of:

3.02 dB at 10460 MHz in the Vertical polarization

Test Data**Environmental Conditions**

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Ares Liu on 2012-02-29.

Test Mode: Transmitting

30MHz~40GHz :

Frequency (MHz)	Reading (dBmV)	Detector (PK/QP /Ave.)	Polar (H/V)	Corrected Amplitude (dB/m)	Correction Data (dBmV/m)	Limit (dBmV/m)	Margin (dB)	Comment
Low Channel (5190MHz)								
35.69	36.21	QP	V	0.09	36.3	40	3.7*	spurious
33.42	45.52	QP	H	-4.22	41.3	46	4.7	spurious
5150	25.05	PK	H	29.03	54.08	68.3	14.22	restrict band
5150	18.36	AV	H	29.03	47.39	54	6.61	restrict band
5150	26.25	PK	V	29.03	55.28	68.3	13.02	restrict band
5150	18.53	AV	V	29.03	47.56	54	6.44	restrict band
5190	85.32	PK	H	29.03	114.35			Fundamental
5190	74.36	AV	H	29.03	103.39			Fundamental
5190	87.63	PK	V	29.03	116.66			Fundamental
5190	78.96	AV	V	29.03	107.99			Fundamental
10380	35.26	PK	H	27.48	62.74	68.3	5.56	harmanic
10380	36.85	PK	V	27.48	64.33	68.3	3.97*	harmanic
High Channel (5230MHz)								
533.43	47.78	QP	V	-7.9	39.88	43.5	3.62*	spurious
535.21	41.59	QP	H	-0.15	41.44	46	4.56	spurious
5230	82.54	PK	H	29.03	111.57			Fundamental
5230	70.65	AV	H	29.03	99.68			Fundamental
5230	83.54	PK	V	29.03	112.57			Fundamental
5230	71.26	AV	V	29.03	100.29			Fundamental
5350	24.16	PK	H	29.18	53.34	68.3	14.96	restrict band
5350	18.01	AV	H	29.18	47.19	54	6.81	restrict band
5350	25.64	PK	V	29.18	54.82	68.3	13.48	restrict band
5350	19.21	AV	V	29.18	48.39	54	5.61	restrict band
10460	34.48	PK	H	28.45	62.93	68.3	5.37	harmanic
10460	35.82	PK	V	28.45	64.27	68.3	4.03	harmanic

There is no noise above 18GHz

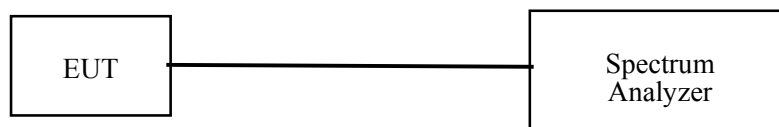
*Within measurement uncertainty!

Conducted Spurious Emission at Antenna Port

Test Procedure

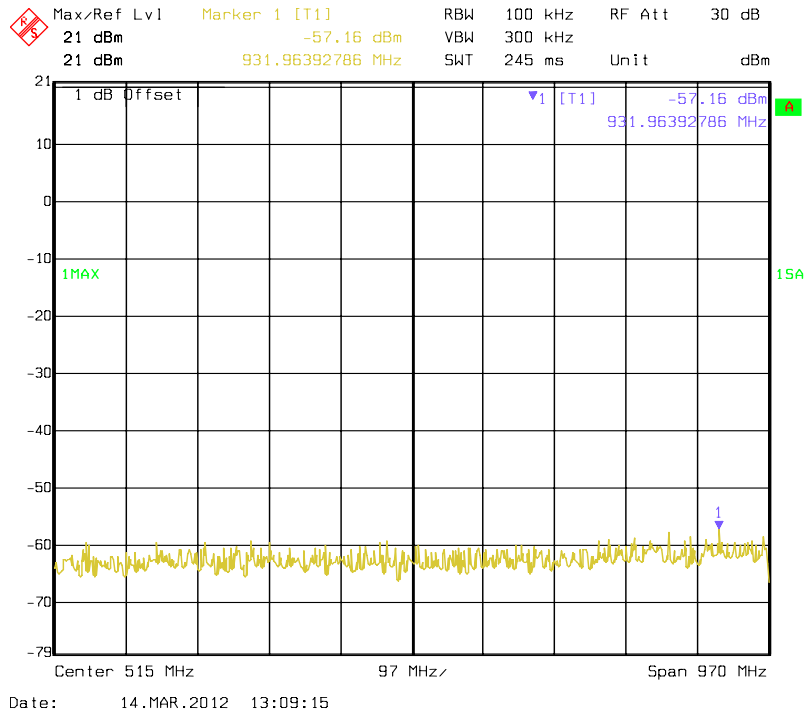
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. The single test point connect to the spectrum analyzer. The Resolution bandwidth is set to 1MHz, The Video bandwidth is set to 1MHz, report the peak value out of the operating band.
3. Repeat above procedures until all frequencies measured were complete.

Offset value =attenuation+combiner loss +cable loss

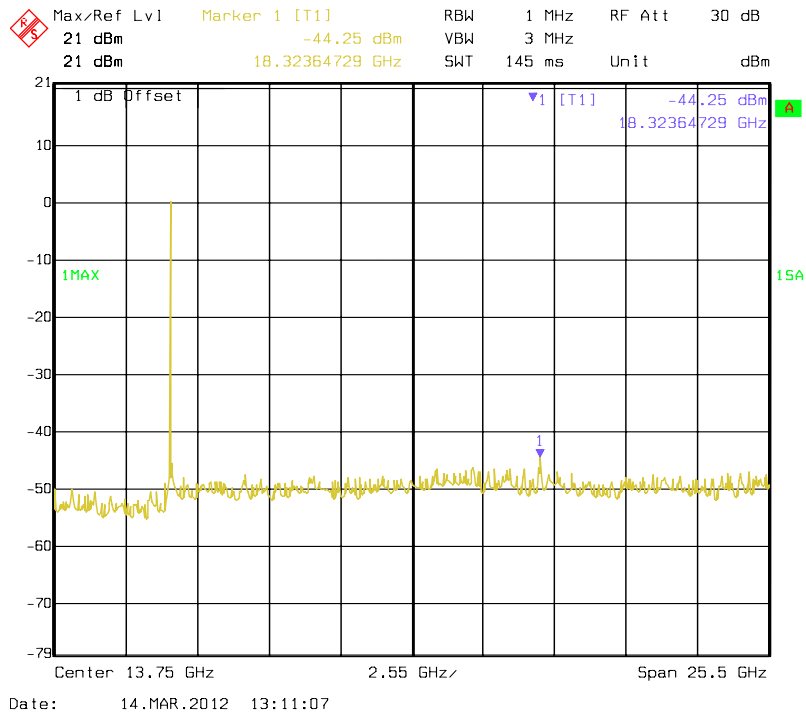


Please refer to the following plots.

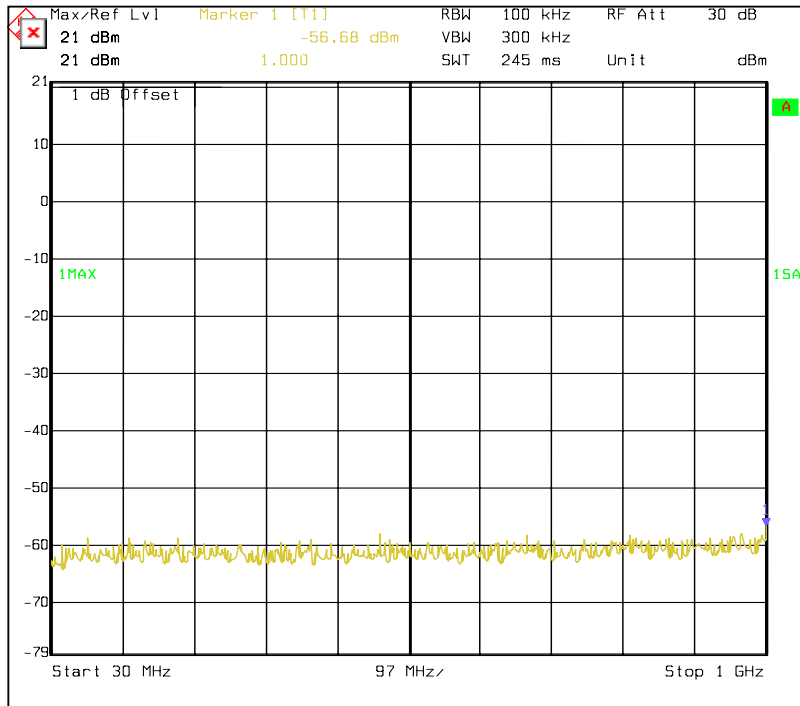
5190 MHz Below 1G



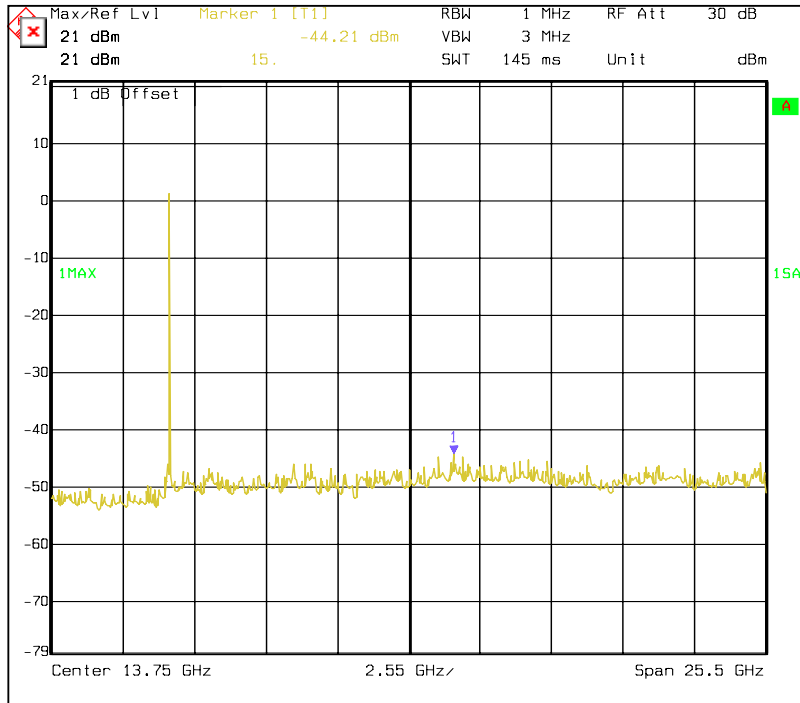
5190 MHz Above 1G



5230 MHz Below 1G



5230 MHz Above 1G



FCC §15.407(a) (1) – 26 dB OCCUPIED BANDWIDTH

Applicable Standard

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or $4 \text{ dBm} + 10 \log B$, where B is the 26-dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

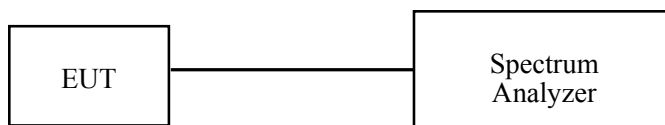
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2011-07-08	2012-07-07

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Use a RBW = approximately 1% of the emission bandwidth. Set the VBW > RBW. Use a peak detector. Do not use the Max Hold function. Rather, use the view button to capture the emission. Measure maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat, measurement as needed until the RBW/EBW ratio is approximately 1%.
4. Repeat above procedures until all frequencies measured were complete.



Test Data**Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

The testing was performed by Ares Liu on 2012-03-07.

Test Result: Pass.

Please refer to the following tables and plots.

Channel Frequency (MHz)	26dB Bandwidth (MHz)
5190	38.87
5230	45.37

Delta 1 [T1] RBW 300 kHz RF Att 30 dB
 Ref Lvl 0.49 dB VBW 1 MHz
 21 dBm 38.86973948 MHz SWT 5 ms Unit dBm

1 dB Offset

D1 8.83 dBm

D2 -13.17 dBm

Center 5.19 GHz 8 MHz Span 80 MHz

Date: 07.MAR.2012 16:09:30

Ref Lvl
21 dBm

Delta 1 [T1]
-1.42 dB

RBW 300 kHz
RF Att 30 dB
VBW 1 MHz
Unit dBm

Center 5.23 GHz
Span 60 MHz
8 MHz

D1 6.3 dBm
D2 19.7 dBm

IMAX

[T1] 5.20715431 GHz
[T1] 45.37074148 MHz

-20.61 dBm
-1.42 dB

1 dB Offset

Date: 21.FEB.2012 06:49:00

FCC §15.407(a) (1) – CONDUCTED TRANSMITTER OUTPUT POWER**Applicable Standard**

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or $4 \text{ dBm} + 10 \log B$, where B is the 26-dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2011-07-08	2012-07-07

* **Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set 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 span = 80MHz (to encompass the entire emission bandwidth (EBW) of the signal). Set RBW = 1 MHz. Set VBW ≥ 3 MHz. Use sample detector mode. Use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at full control power for entire sweep of every sweep. If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to “free run”. Trace average 100 traces in power averaging mode. Compute power by integrating the spectrum across the 26 dB EBW of the signal. The integration can be performed using the spectrum analyzer’s band power measurement function with band limits set equal to the EBW band edges or by summing power levels in each 1 MHz band in linear power terms. The 1 MHz band power levels to be summed can be obtained by averaging, in linear power terms, power levels in each frequency bin across the 1 MHz.
4. Repeat above procedures until all frequencies measured were complete.

Test Data**Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

The testing was performed by Ares Liu on 2012-03-07.

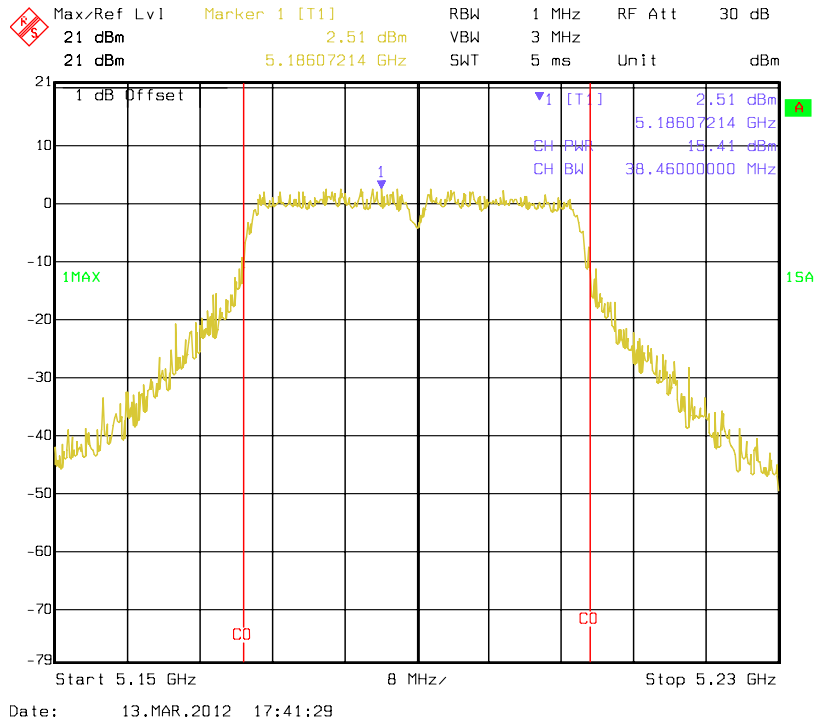
Test Mode: Transmitting

Test Result: Pass

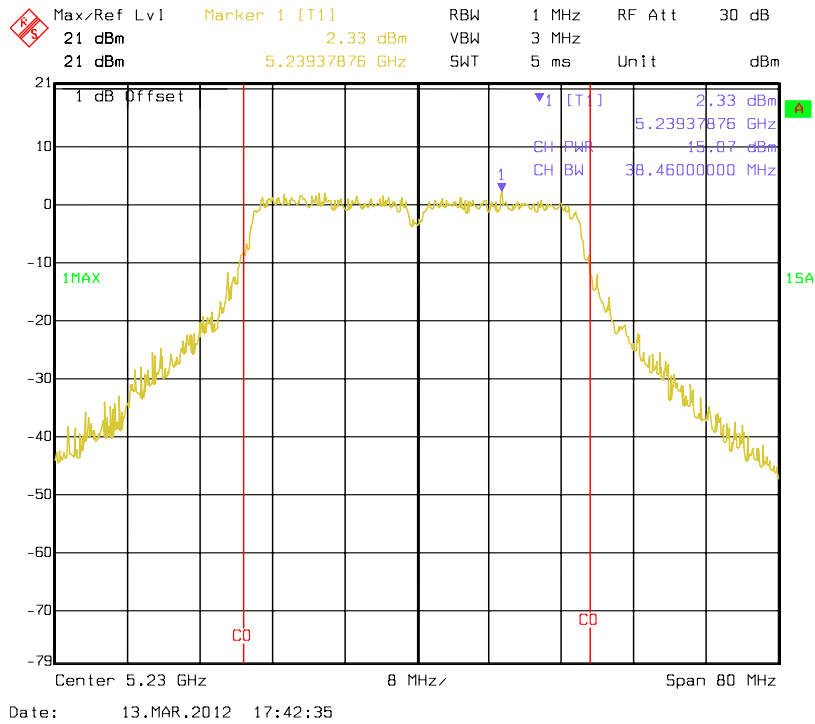
Please refer to the following tables and plots.

Channel Frequency (MHz)	Output Power (dBm)	Limit (dBm)
5190	15.41	17
5230	15.04	17

Output Power-5190 MHz



Output Power-5230 MHz



FCC §15.407(a) (1) (5) - POWER SPECTRAL DENSITY**Applicable Standard**

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The peak power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A resolution bandwidth less than the measurement bandwidth can be used, provided that the measured power is integrated to show total power over the measurement bandwidth. If the resolution bandwidth is approximately equal to the measurement bandwidth, and much less than the emission bandwidth of the equipment under test, the measured results shall be corrected to account for any difference between the resolution bandwidth of the test instrument and its actual noise bandwidth.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set 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. Use sample detector and power averaging (not video averaging) mode. Set RBW= 1 MHz*, VBW > 1 MHz. The PPSD is the highest level found across the emission in any 1-MHz band after 100 sweeps of averaging. This method is permitted only if the transmission pulse or sequence of pulses remains at maximum transmits power throughout each of the 100 sweeps of averaging and that the interval between pulses is not included in any of the sweeps.
4. Repeat above procedures until all frequencies measured were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2011-07-08	2012-07-07

* **Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data**Environmental Conditions**

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

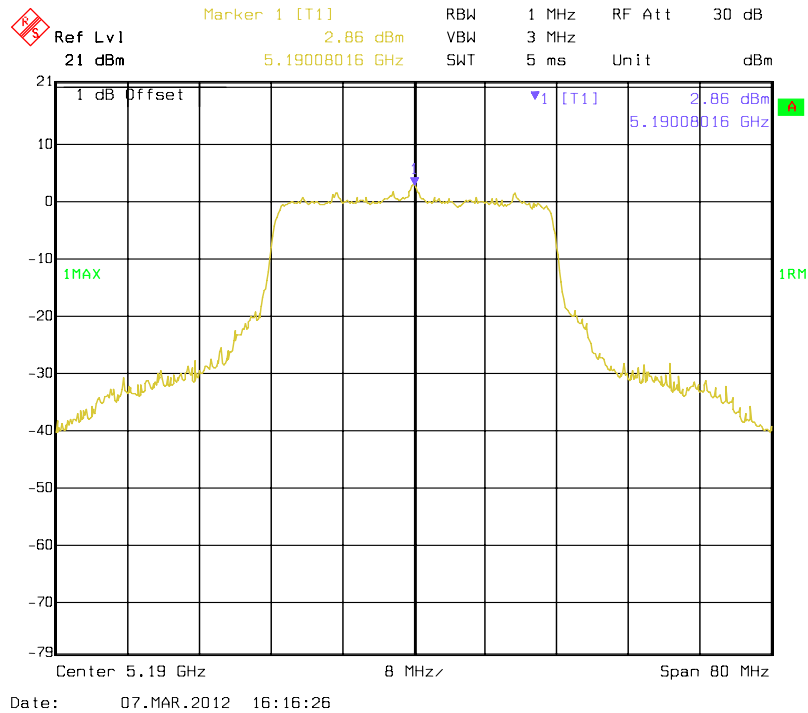
The testing was performed by Ares Liu on 2012-03-07.

Test Mode: Transmitting

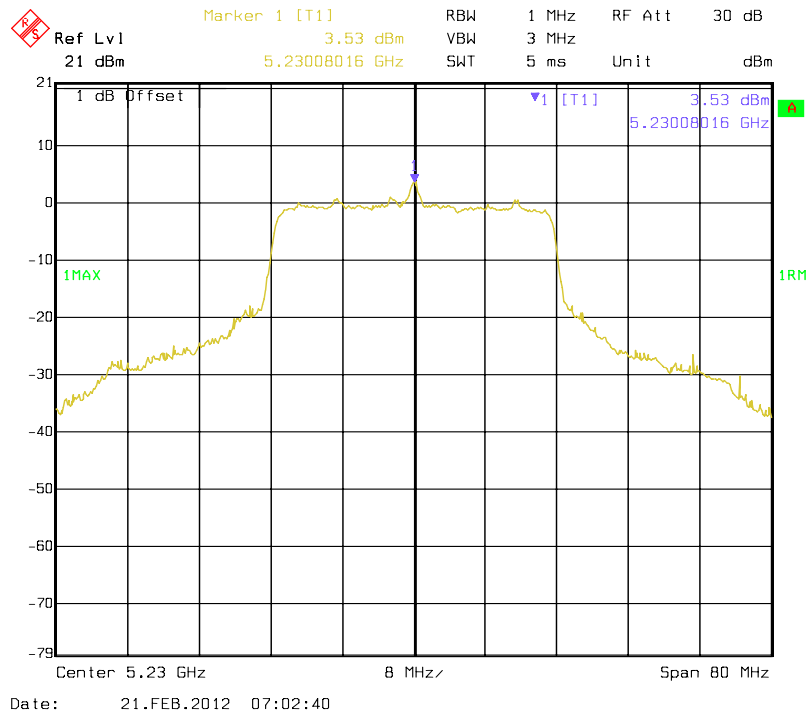
Test Result: Pass

Channel Frequency (MHz)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
5190	2.86	4
5230	3.53	4

Power Spectral Density-5190 MHz



Power Spectral Density -5230 MHz



FCC §15.407(a) (6) – PEAK EXCURSION RATIO

Applicable Standard

According to §15.407(a) (6), the ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

Test Procedure

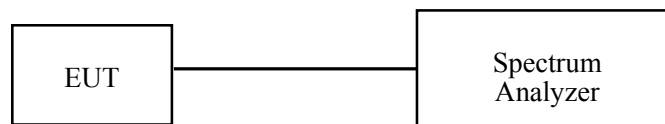
Set the spectrum analyzer span to view the entire emission bandwidth.
The largest difference between the following two traces must be ≤ 13 dB for all frequencies across the emission bandwidth. Submit a plot.

1st Trace:

- Set RBW = 1 MHz, VBW ≥ 3 MHz with peak detector and maxhold settings.

2nd Trace:

- create the 2nd trace using the settings described in the setion “FCC §15.407(a)(1)(2) – CONDUCTED TRANSMITTER OUTPUT POWER”.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2011-07-08	2012-07-07

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

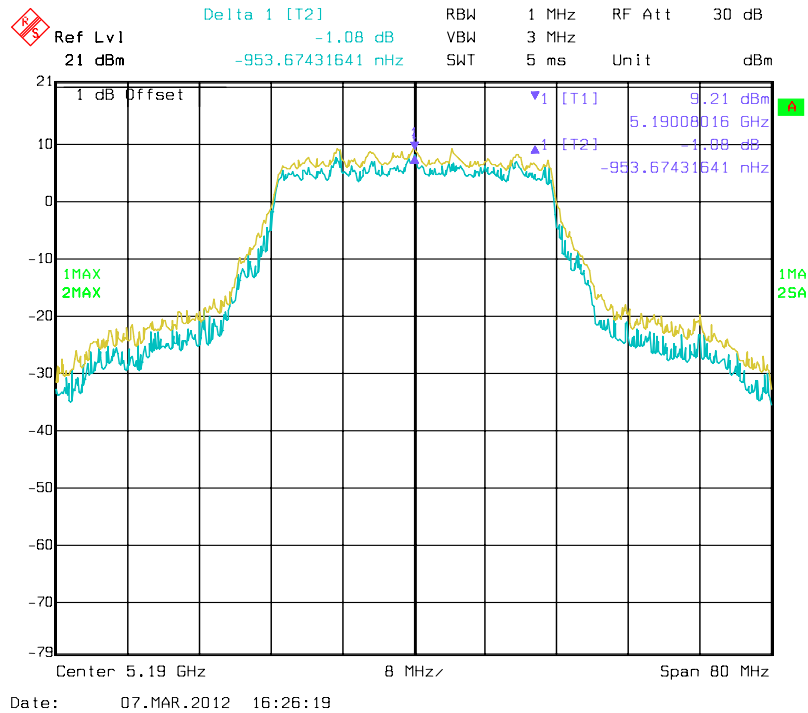
Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Ares Liu on 2012-03-07.

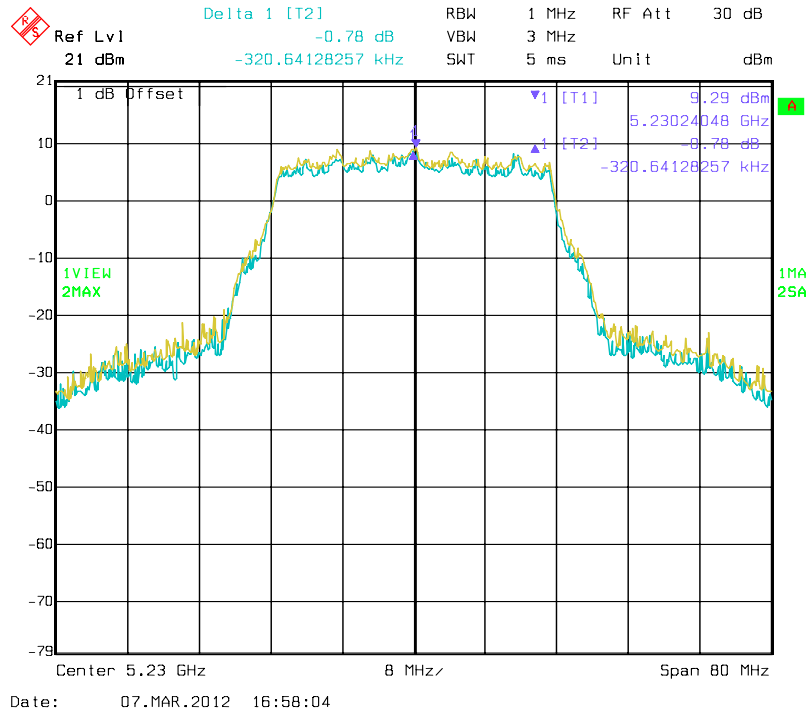
Test Mode: Transmitting

Channel Frequency (MHz)	Peak Excursion Ratio (dB)	Limit (dB)
5190	1.08	13
5230	0.78	13

Peak Excursion Radio-5190 MHz



Peak Excursion Radio-5230 MHz



FCC §407(g) - FREQUENCY STABILITY

Applicable Standards

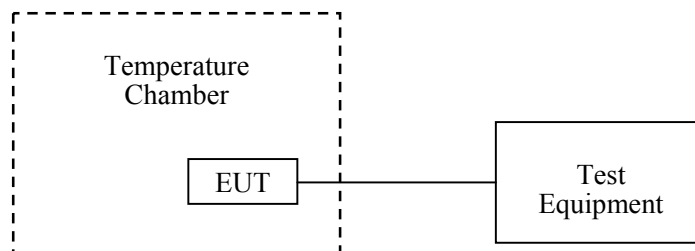
FCC§407(g), manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external AC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The AC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: An external variable AC power supply was connected to the adaptor terminals of the equipment under test. The voltage was set to 80% and 115% of the nominal value and was then decreased until the transmitter light no longer illuminated. The output frequency was recorded for each voltage.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
WUHUAN	Temperature & Humidity Chamber	HTP205	20021115	2011-06-04	2012-06-03
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2011-07-08	2012-07-07

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data**Environmental Conditions**

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Ares Liu on 2012-02-21.

Test Mode: Transmitting

Channel Frequency (MHz)	Power supply (V_{AC})	Temperature (°C)	Measurement Frequency (MHz)
5190	120	-30	5190.014
		-20	5190.011
		-10	5190.010
		+0	5190.011
		+10	5190.016
		+20	5190.018
		+30	5190.021
		+40	5190.024
		+50	5190.021
	138	+20	5190.017
	102	+20	5190.019

DECLARATION LETTER



Shenzhen Crystal Video Technology Co., LTD
F13, F518 Idea Land, Baoyuan Road, Baoan Central Area, Shenzhen, China
Tel: 0755-26716030, Fax: 0755-23496331

Product Similarity Declaration

To Whom It May Concern,

We, Shenzhen Crystal Video Technology Co., LTD, hereby declare that our product wireless high-definition receiver, Model Number: CB6620、CV6620、CV6620-IL、CB6620-IL、CB6628、5002R、5003R are electrically identical with the Model Number: CB6620 that was certified by BACL. Their only difference is model name.

The rest are the same.

Please contact me if you have any question.

Signature:

Xiao jun

Xiaojun / Quality Manager
Date: 2012-02-10

2012.02.10

***** END OF REPORT *****