Shenzhen Huatongwei International Inspection Co., Ltd.
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CNASL1225

FCC PART 15 SUBPART C TEST REPORT

FCC PART 15.247

Report Reference No.....:	**TRE1208003101 R/C:28607**
FCC ID.....:	**BPJSHINE**
Compiled by (position+printed name+signature)..:	File administrators Jerome Luo
Supervised by (position+printed name+signature)..:	Test Engineer Yuchao Wang
Approved by (position+printed name+signature)..:	Manager Wenliang Li
Date of issue.....:	May 30, 2013
Testing Laboratory Name .....:	**Shenzhen Huatongwei International Inspection Co., Ltd**
Address .....:	Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Applicant's name.....:	**GROWATT NEW ENERGY TECHNOLOGY CO.,LTD**
Address .....:	Building B, Jiayu Industrial Zone, #28 Guanghui Road, Longteng Community, Shiyan, Baoan District, Shenzhen, P.R. China
Test specification:	
Standard .....:	**FCC Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz**
TRF Originator.....:	Shenzhen Huatongwei International Inspection CO., Ltd
Master TRF.....:	Dated 2006-06

Test item description .....:	Data-Logger
Trade Mark .....:	Growatt
Model/Type reference.....:	Shine Pano
Listed Models .....:	Shine WebBox
Modulation Type .....:	OFDM
Operation Frequency.....:	From 2405MHz to 2480MHz
Manufacturer .....:	**GROWATT NEW ENERGY TECHNOLOGY CO.,LTD**
Result.....:	**Positive**

T E S T R E P O R T

Test Report No. :	**TRE1208003101**	May 30, 2013 Date of issue

Equipment under Test	:	Data-Logger
Model /Type	:	Shine Pano, Shine WebBox
Listed Models	:	/
Applicant	:	**GROWATT NEW ENERGY TECHNOLOGY CO.,LTD**
Address	:	Building B, Jiayu Industrial Zone, #28 Guanghui Road, Longteng Community, Shiyan, Baoan District, Shenzhen, P.R. China
Manufacturer	:	**GROWATT NEW ENERGY TECHNOLOGY CO.,LTD**
Address	:	Building B, Jiayu Industrial Zone, #28 Guanghui Road, Longteng Community, Shiyan, Baoan District, Shenzhen, P.R. China

Test Result according to the standards on page 4:	**Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

ANSI C63.10: American National Standard for Testing Unlicensed Wireless Devices

KDB558074: DTS Meas Guidance D01 v03 of Measurement Procedure

2 . SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	May 01, 2012
Testing commenced on	:	May 01, 2012
Testing concluded on	:	May 30, 2013

Note:There are two Data-Logger,one model is Shine Pano, another model is Shine WebBox,they have same RF module.

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage	:	●	120V / 60 Hz	○	115V / 60Hz
		○	12 V DC	○	24 V DC
		○	Other (specified in blank below)		

2.3. Description of the test mode

The EUT has been tested under typical operating condition. The Applicant provides AT command to control the EUT for staying in continous transmitting and receiving mode for testing. There are sixteen channels of EUT, and the test carried out at the channel 11(lowest), channel 18(middle) and channel 26. (highest) channels.

Channel	Frequency(MHz)	Channel	Frequency(MHz)
11	**2405 MHz**	19	2445 MHz
12	2410 MHz	20	2450 MHz
13	2415 MHz	21	2455 MHz
14	2420 MHz	22	2460 MHz
15	2425 MHz	23	2465 MHz
16	2430 MHz	24	2470 MHz
17	2435 MHz	25	2475 MHz
18	**2440 MHz**	**26**	**2480 MHz**

2.4. Short description of the Equipment under Test (EUT)

2.4GHz (Data-Logger (M/N: Shine Pano, Shine WebBox))

For more details, refer to the user's manual of

the EUT. Serial number: Prototype

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

○	Power Cable	Length (m) :	/
		Shield :	/
		Detachable :	/
○	Multimeter	Manufacturer :	/
		Model No. :	/

2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: BPJSHINE** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

2.8. NOTE

1. The EUT is a Data-Logger,The functions of the EUT listed as below:

	Test Standards	Reference Report
Radio	FCC Part 15 Subpart C (Section15.247)	TRE1208003101
MPE	Oet 65	TRE1208003102

2. The frequency bands used in this EUT are listed as follows:

Frequency Band(MHz)	2400-2483.5	5150-5350	5470-5725	5725-5850
Zigbee	√	—	—	—

3. The EUT provides one completed transmitter and receiver.

Modulation Mode	TX Function
Zigbee	1TX

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Huatongwei International Inspection Co., Ltd
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Phone: 86-755-26715686 Fax: 86-755-26748089

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2009) and CISPR Publication 22.

3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: Mar.01. 2012. Valid time is until Feb. 28, 2015.

A2LA-Lab Cert. No. 2243.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until Sept. 30, 2013.

FCC-Registration No.: 662850

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 662850, Renewal date Jun. 01, 2012, valid time is until Jun. 01, 2015.

IC-Registration No.: 5377A

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Jan. 25, 2011, valid time is until Jan. 24, 2014.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

VCCI

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) and Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-292. Date of Registration: Dec. 24, 2010. Valid time is until Dec. 23, 2013.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 19, 2015.

Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-1837. Date of Registration: May 07, 2013. Valid time is until May 06, 2016.

DNV

Shenzhen Huatongwei International Inspection Co., Ltd. has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups

according to relevant parts of ISO/IEC Guide 17025 (2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until Aug. 24, 2013.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

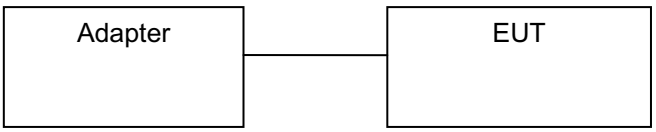
Temperature: 15-35 ° C

Humidity: 30-60 %

Atmospheric pressure: 950-1050mbar

3.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System



3.5. Test Description

FCC PART 15 15.247		
FCC Part 15.207	AC Power Conducted Emission	PASS
FCC Part 15.247(a)(2)	6dB Bandwidth	PASS
FCC Part 15.247(d)	Spurious RF Conducted Emission	PASS
FCC Part 15.247(b)	Maximum Peak Output Power	PASS
FCC Part 15.247(e)	Power Spectral Density	PASS
FCC Part 15.109/ 15.205/ 15.209	Radiated Emissions	PASS
FCC Part 15.247(d)	Band Edge	PASS
FCC Part 15.203/15.247 (b)	Antenna Requirement	PASS

Remark: The measurement uncertainty is not included in the test result.

3.6. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Frequency stability	25 Hz	(1)
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission 9KHz-12.75 GHz	1.60 dB	(1)
Radiated spurious emission 9KHz-12.75 GHz	2.20 dB	(1)
Conducted Emission 9KHz-30MHz	3.42 dB	(1)
Radiated Emission 30~1000MHz	4.65 dB	(1)
Radiated Emissio 1~18GHz	5.16 dB	(1)
Radiated Emissio 18-40GHz	5.54 dB	(1)
Occupied Bandwidth	---------	(1)

Emission Mask	---------	(1)
Modulation Characteristic	---------	(1)
Transmitter Frequency Behavior	---------	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

3.7. Equipments Used during the Test

Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA-BROADBAND ANTENNA	Rohde&Schwarz	HL562	100015	2012/10/27
2	EMI TEST RECEIVER	Rohde&Schwarz	ESI 26	100009	2012/10/27
3	RF TEST PANEL	Rohde&Schwarz	TS / RSP	335015/ 0017	2012/10/27
4	TURNTABLE	ETS	2088	2149	2012/10/27
5	ANTENNA MAST	ETS	2075	2346	2012/10/27
6	EMI TEST OFTWARE	Rohde&Schwarz	ESK1	N/A	2012/10/27
7	HORN ANTENNA	Rohde&Schwarz	HF906	100039	2012/10/27
8	Amplifer	Sonoma	310N	E009-13	2012/10/27
9	JS amplifer	Rohde&Schwarz	JS4-00101800-28-5A	F201504	2012/10/27
10	High pass filter	Compliance Direction systems	BSU-6	34202	2012/10/27
11	Horn Antenna	SCHWARZBECK	BBHA9170	25841	2012/10/27
12	Amplifer	Compliance Direction systems	PAP1-4060	120	2012/10/27
13	Loop Antenna	Rohde&Schwarz	HFH2-Z2	100020	2012/10/27
14	Amplifer	Compliance Direction systems	PAP1-4060	120	2012/10/27
15	HORN ANTENNA	ShwarzBeck	9120D	1012	2012/10/27
16	TURNTABLE	MATURO	TT2.0	----	2012/10/27
17	ANTENNA MAST	MATURO	TAM-4.0-P	----	2012/10/27

Maximum Peak Output Power / Power Spectral Density / 6dB Bandwidth / Band Edge Compliance of RF Emission / Spurious RF Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI TEST RECEIVER	Rohde&Schwarz	ESI 26	100009	2012/10/27
2	Spectrum Analyzer	Rohde&Schwarz	FSP	1164.4391.40	2012/10/27

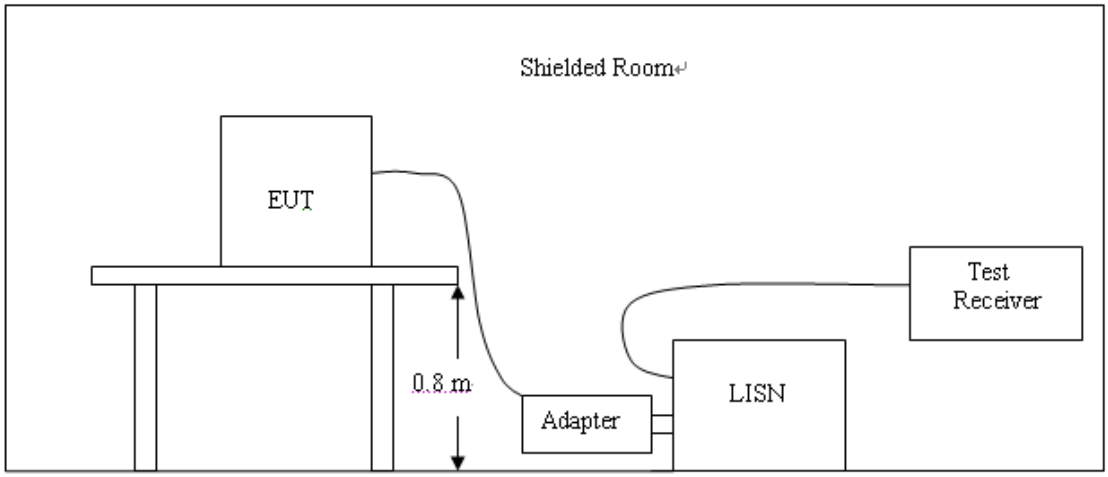
AC Power Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Artificial Mains	Rohde&Schwarz	ESH2-Z5	100028	2012/10/27
2	EMI Test Receiver	Rohde&Schwarz	ESCS 30	100038	2012/10/27
3	Pulse Limiter	Rohde&Schwarz	ESHSZ2	100044	2012/10/27
4	EMI Test Software	Rohde&Schwarz	ES-K1 V1.71	N/A	2012/10/27

The Calibration Interval was one year.

4. TEST CONDITIONS AND RESULTS

4.1. AC Power Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4-2009.
2 Support equipment, if needed, was placed as per ANSI C63.4-2009
3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4-2009
4 The EUT received DC12V power from the adapter, the adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5 All support equipments received AC power from a second LISN, if any.
6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8 During the above scans, the emissions were maximized by cable manipulation.

AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following：

Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

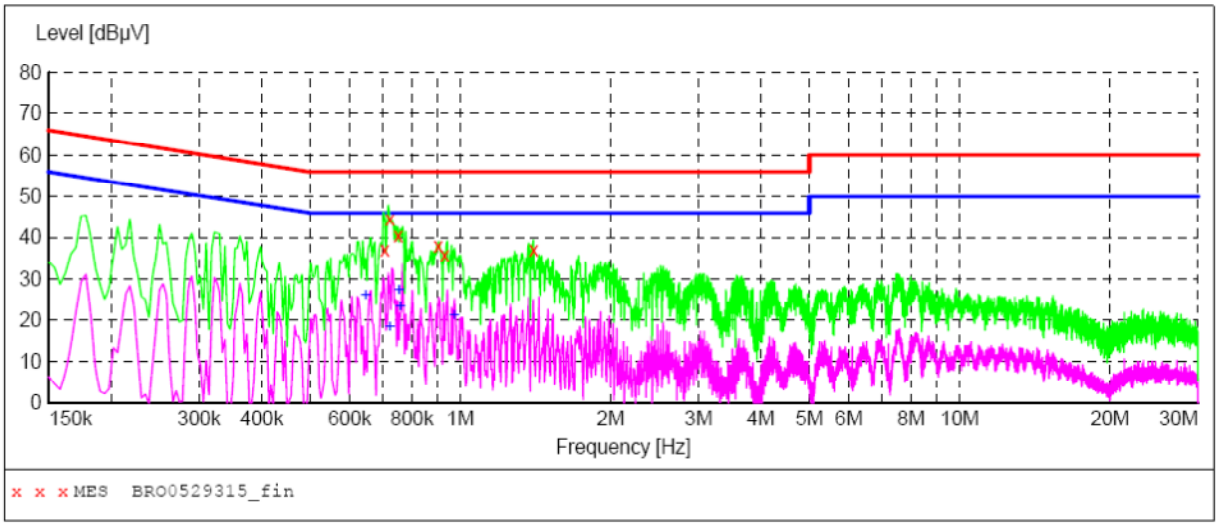
* Decreasing linearly with the logarithm of the frequency

TEST RESULTS

The AC Power Conducted Emission measurement are performed the each test mode and channel (low/middle/high), the datum recorded below is the worst case for all the test modes and channels.

For Shine Pano

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "BRO0529315_fin"

5/30/2013 2:24PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.706000	37.20	10.4	56	18.8	QP	L1	GND
0.722000	44.30	10.4	56	11.7	QP	L1	GND
0.750000	40.50	10.4	56	15.5	QP	L1	GND
0.902000	37.90	10.5	56	18.1	QP	L1	GND
0.930000	35.80	10.5	56	20.2	QP	L1	GND
1.402000	36.90	10.5	56	19.1	QP	L1	GND

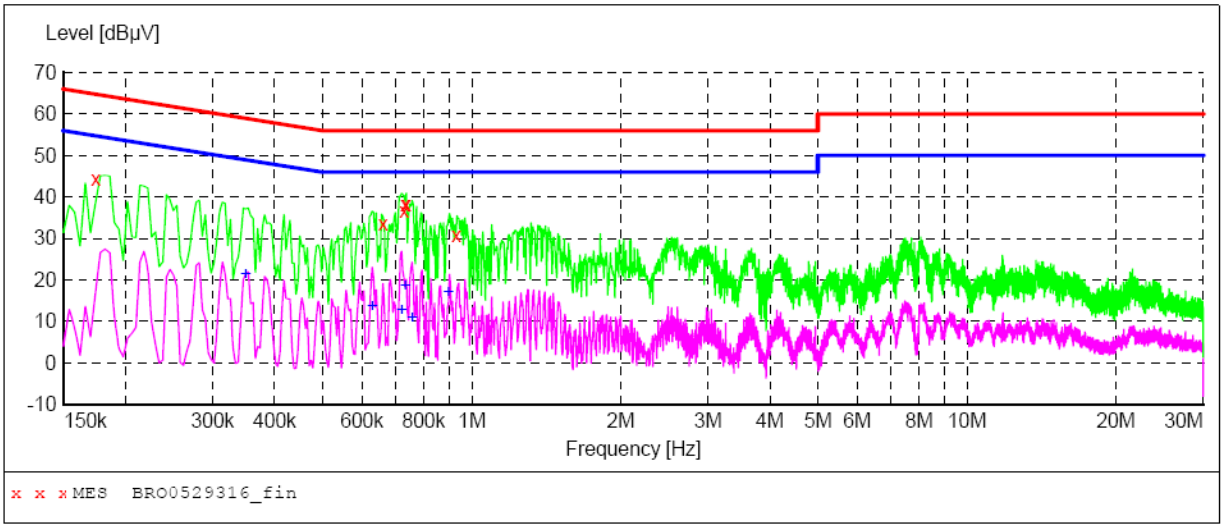
MEASUREMENT RESULT: "BRO0529315_fin2"

5/30/2013 2:24PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.646000	26.10	10.4	46	19.9	AV	L1	GND
0.722000	18.40	10.4	46	27.6	AV	L1	GND
0.754000	27.40	10.4	46	18.6	AV	L1	GND
0.758000	23.50	10.4	46	22.5	AV	L1	GND
0.974000	21.40	10.5	46	24.6	AV	L1	GND

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "BRO0529316_fin"

5/30/2013 2:28PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.174000	44.30	12.3	65	20.5	QP	N	GND
0.662000	33.40	10.4	56	22.6	QP	N	GND
0.730000	36.70	10.4	56	19.3	QP	N	GND
0.734000	38.20	10.4	56	17.8	QP	N	GND
0.738000	38.20	10.4	56	17.8	QP	N	GND
0.930000	30.90	10.5	56	25.1	QP	N	GND

MEASUREMENT RESULT: "BRO0529316_fin2"

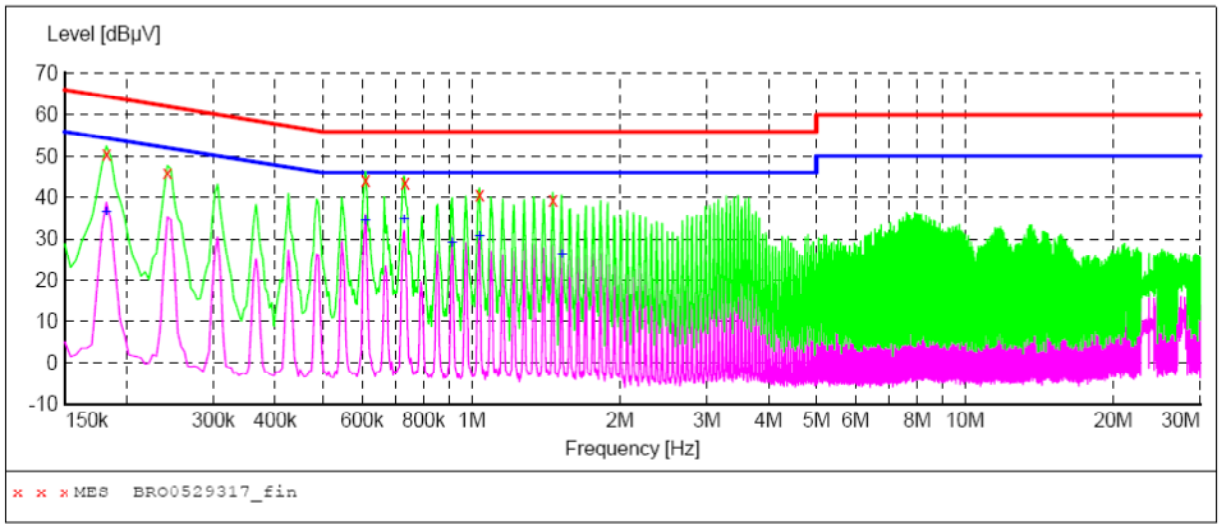
5/30/2013 2:28PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.350000	21.40	10.7	49	27.6	AV	N	GND
0.630000	13.70	10.4	46	32.3	AV	N	GND
0.722000	13.00	10.4	46	33.0	AV	N	GND
0.734000	18.70	10.4	46	27.3	AV	N	GND
0.758000	11.10	10.4	46	34.9	AV	N	GND
0.898000	17.10	10.5	46	28.9	AV	N	GND

For Shine WebBox

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "BRO0529317_fin"

5/30/2013 2:33PM

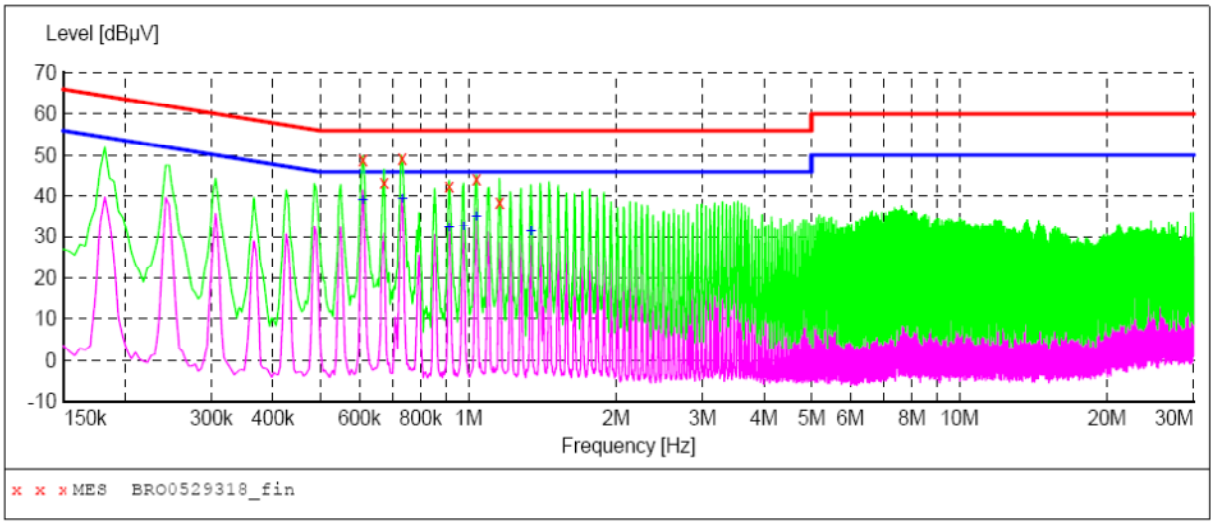
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.182000	50.50	12.1	64	13.9	QP	N	GND
0.242000	45.70	11.4	62	16.3	QP	N	GND
0.610000	43.90	10.4	56	12.1	QP	N	GND
0.734000	43.50	10.4	56	12.5	QP	N	GND
1.038000	40.60	10.6	56	15.4	QP	N	GND
1.462000	39.30	10.5	56	16.7	QP	N	GND

MEASUREMENT RESULT: "BRO0529317_fin2"

5/30/2013 2:33PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.182000	36.50	12.1	54	17.9	AV	N	GND
0.610000	34.40	10.4	46	11.6	AV	N	GND
0.730000	34.80	10.4	46	11.2	AV	N	GND
0.914000	29.20	10.5	46	16.8	AV	N	GND
1.038000	30.80	10.6	46	15.2	AV	N	GND
1.526000	26.40	10.5	46	19.6	AV	N	GND

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "BRO0529318_fin"

5/30/2013 2:36PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.610000	49.00	10.4	56	7.0	QP	L1	GND
0.674000	43.40	10.4	56	12.6	QP	L1	GND
0.734000	49.20	10.4	56	6.8	QP	L1	GND
0.914000	42.40	10.5	56	13.6	QP	L1	GND
1.038000	44.30	10.6	56	11.7	QP	L1	GND
1.158000	38.30	10.6	56	17.7	QP	L1	GND

MEASUREMENT RESULT: "BRO0529318_fin2"

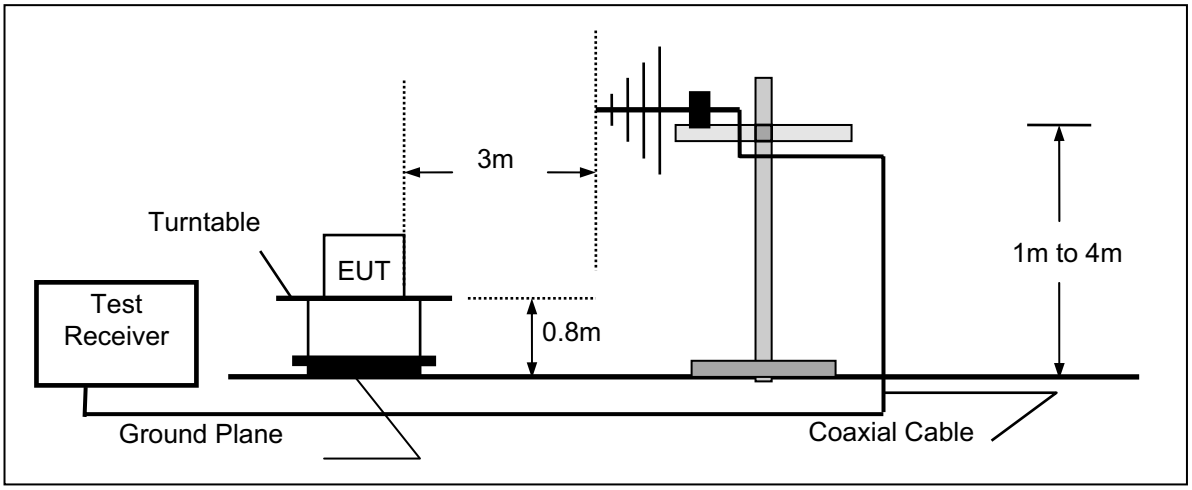
5/30/2013 2:36PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.610000	39.20	10.4	46	6.8	AV	L1	GND
0.734000	39.30	10.4	46	6.7	AV	L1	GND
0.914000	32.30	10.5	46	13.7	AV	L1	GND
0.978000	32.70	10.5	46	13.3	AV	L1	GND
1.038000	35.00	10.6	46	11.0	AV	L1	GND
1.342000	31.40	10.5	46	14.6	AV	L1	GND

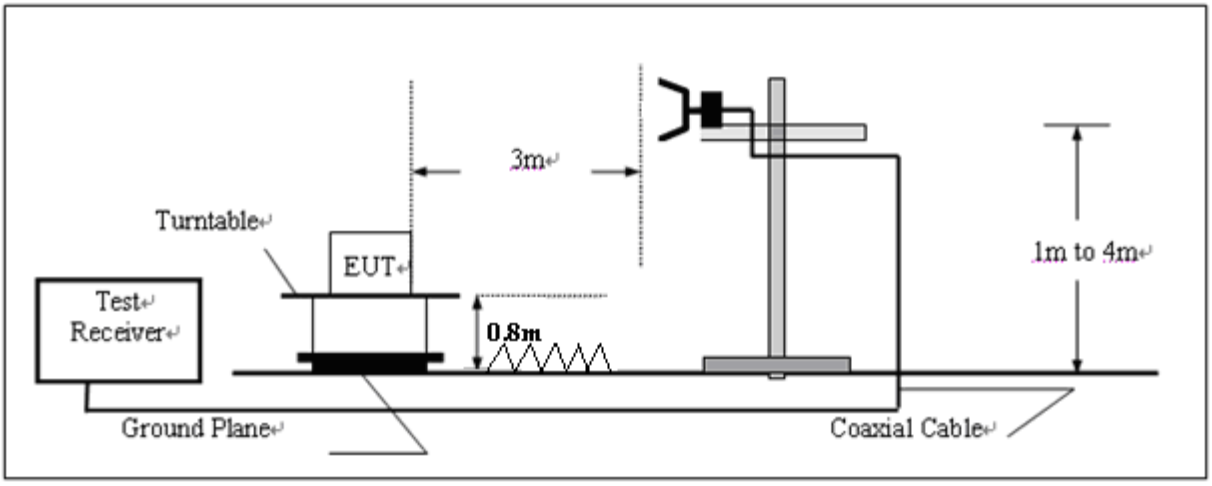
4.2. Radiated Emission

TEST CONFIGURATION

(a) Radiated Emission Test Set-Up, Frequency below 1000MHz



(b) Radiated Emission Test Set-Up, Frequency above 1000MHz



TEST PROCEDURE

1 The EUT was placed on a turn table which is 0.8m above ground plane.
2 Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. The mimimum operation frequency was below 30MHz and the maximum operation frequency was 2480MHz.the test frequency was from 9KHz to 25GHz.

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL + AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

RADIATION LIMIT

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table. According to § 15.247(d), in any 100kHz bandwidth outside the frequency band in which the EUT is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the100kHz bandwidth within the band that contains the highest level of desired power.

The frequency spectrum above 1 GHz for Transmitter was investigated. All emission not reported are much lower than the prescribed limits. Set the RBW=1MHz,VBW=3MHz for Peak Detector while the RBW=1MHz,VBW=10Hz for Average Detector,Readings are both peak and average values.

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	300	20log(2400/F(KHz))	2400/F(KHz)
0.49-1.705	30	20log(24000/F(KHz))	24000/F(KHz)
1.705-30	30	20log(30)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the following table.

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)
1.705-30	3	20log(30)+ 40log(30/3)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

TEST RESULTS

Note: 1.The radiated measurement are performed the each test mode (b/g/n) and channel (low/PlugLink 500 Wireless “N” Adapter/high), the datum recorded below (802.11b mode,the PlugLink 500 Wireless “N” Adapterdle channel) is the worst case for all the test mode and channel.
2. ULTRA-BROADBAND ANTENNA for the radiation emission test below 1G.
3. HORN ANTENNA for the radiation emission test above 1G.

From 9KHz to 30MHz

For Shine Pano

Frequency (MHz)	Corrected Reading (dBμV/m)@3m	FCC Limit (dBμV/m) @3m	Margin (dB)	Detector	Result
0.51	47.16	73.11	25.95	QP	PASS
1.32	43.61	65.87	22.26	QP	PASS
16.05	41.96	69.54	27.58	QP	PASS
21.36	45.78	69.54	23.76	QP	PASS

For Shine WebBox

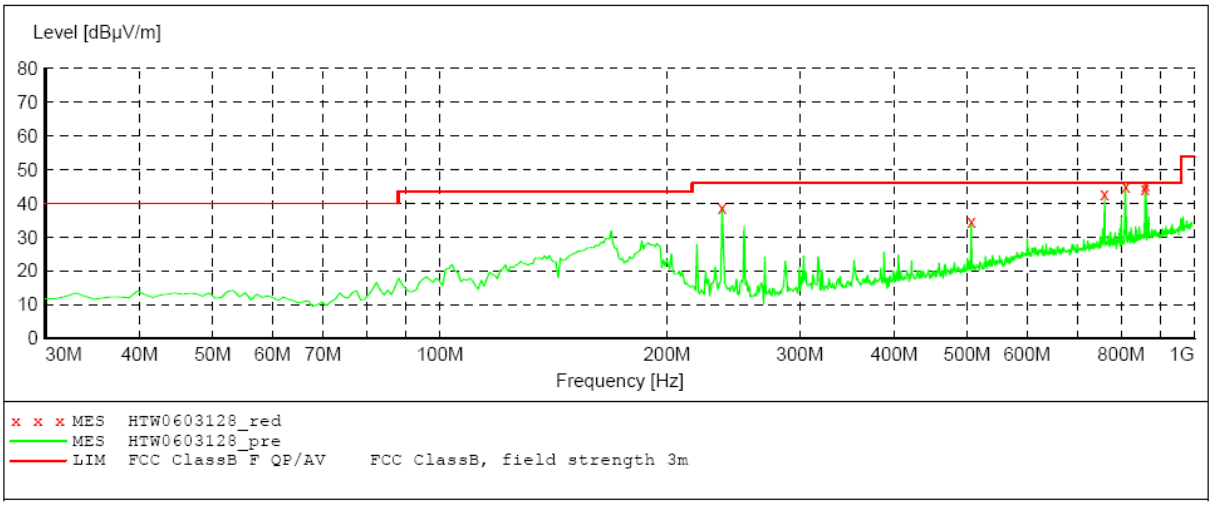
Frequency (MHz)	Corrected Reading (dBμV/m)@3m	FCC Limit (dBμV/m) @3m	Margin (dB)	Detector	Result
0.51	47.16	73.11	25.95	QP	PASS
1.32	43.61	65.87	22.26	QP	PASS
16.05	41.96	69.54	27.58	QP	PASS
21.36	45.78	69.54	23.76	QP	PASS

From 30MHz to 1000MHz

For Shine Pano

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.1 GHz	MaxPeak	Coupled	100 kHz	VULB9163



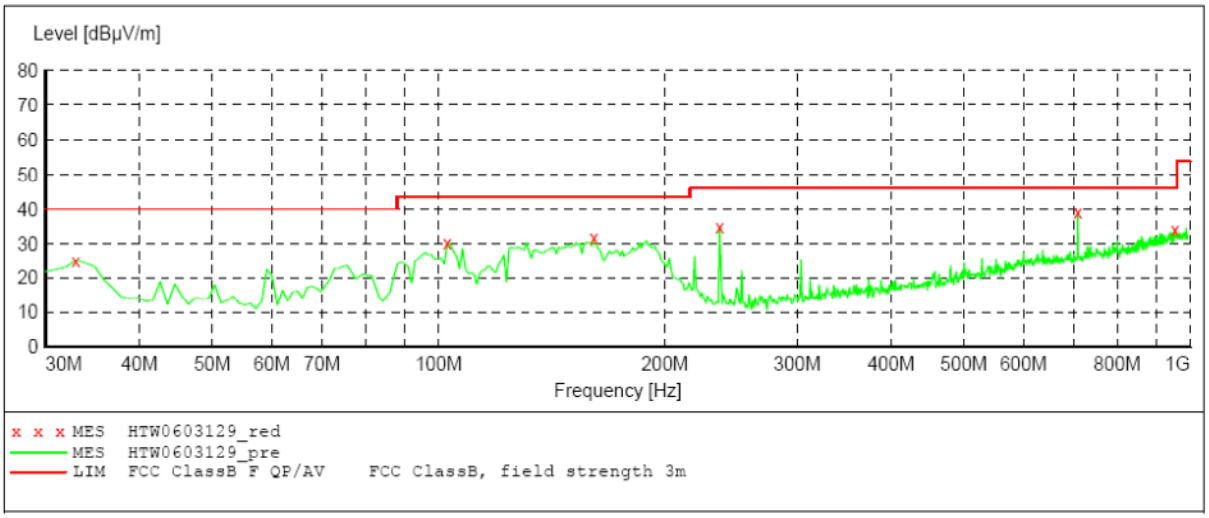
MEASUREMENT RESULT: "HTW0603128_red"

6/3/2013 2:07PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
236.610000	38.60	-15.2	46.0	7.4	QP	100.0	84.00	HORIZONTAL
506.270000	34.60	-6.9	46.0	11.4	QP	300.0	195.00	HORIZONTAL
760.410000	43.00	-0.2	46.0	3.0	QP	100.0	165.00	HORIZONTAL
810.850000	45.00	0.4	46.0	1.0	QP	100.0	165.00	HORIZONTAL
860.320000	44.30	1.7	46.0	1.7	QP	100.0	165.00	HORIZONTAL
862.260000	45.30	1.7	46.0	0.7	QP	100.0	165.00	HORIZONTAL

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.1 GHz	MaxPeak	Coupled	100 kHz	VULB9163



MEASUREMENT RESULT: "HTW0603129_red"

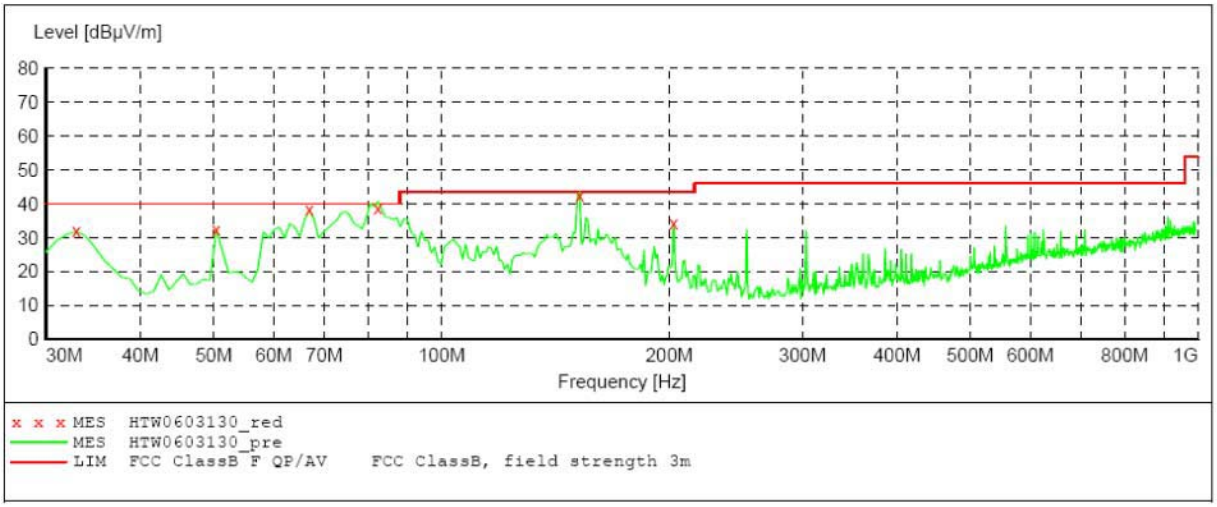
6/3/2013 2:09PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
32.910000	25.20	-16.3	40.0	14.8	QP	100.0	330.00	VERTICAL
102.750000	30.20	-13.9	43.5	13.3	QP	100.0	110.00	VERTICAL
160.950000	31.50	-17.4	43.5	12.0	QP	100.0	88.00	VERTICAL
236.610000	34.60	-15.2	46.0	11.4	QP	100.0	170.00	VERTICAL
709.000000	39.00	-1.5	46.0	7.0	QP	100.0	148.00	VERTICAL
954.410000	33.80	3.5	46.0	12.2	QP	100.0	228.00	VERTICAL

For Shine WebBox

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.1 GHz	MaxPeak	Coupled	100 kHz	VULB9163



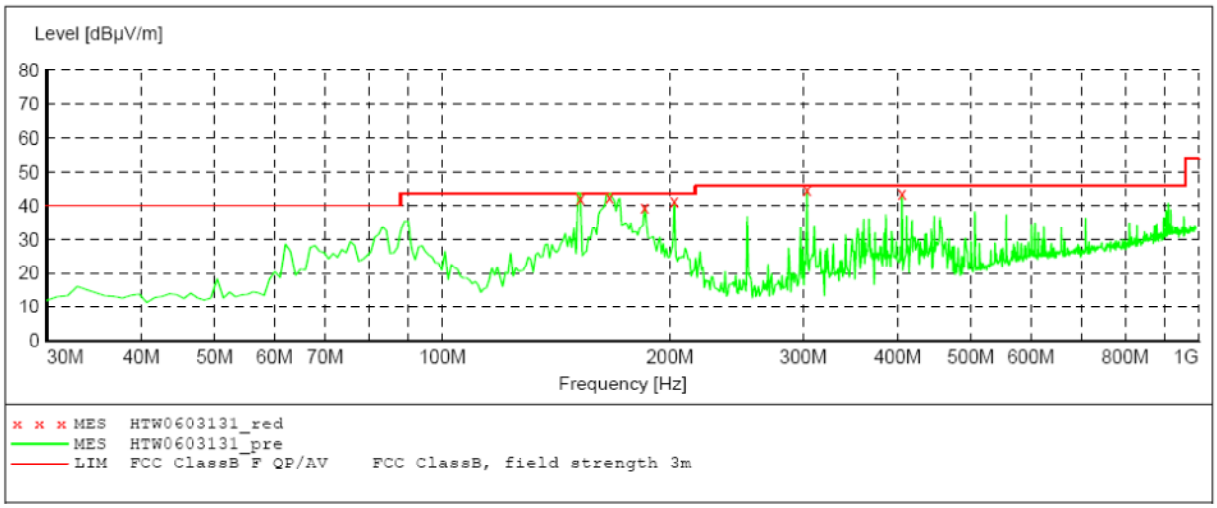
MEASUREMENT RESULT: "HTW0603130_red"

6/3/2013 2:05PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
32.910000	32.00	-16.3	40.0	8.0	QP	100.0	134.00	VERTICAL
50.370000	32.30	-15.2	40.0	7.7	QP	100.0	360.00	VERTICAL
66.860000	38.20	-18.2	40.0	1.8	QP	100.0	360.00	VERTICAL
82.380000	38.60	-18.3	40.0	1.4	QP	100.0	352.00	VERTICAL
152.220000	42.40	-18.1	43.5	1.1	QP	100.0	91.00	VERTICAL
202.660000	34.20	-14.6	43.5	9.3	QP	100.0	174.00	VERTICAL

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.1 GHz	MaxPeak	Coupled	100 kHz	VULB9163



MEASUREMENT RESULT: "HTW0603131_red"

6/3/2013 2:01PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
152.220000	42.00	-18.1	43.5	1.5	QP	300.0	154.00	HORIZONTAL
166.270000	42.60	-17.1	43.5	0.9	QP	300.0	7.00	HORIZONTAL
185.200000	39.50	-15.3	43.5	4.0	QP	100.0	175.00	HORIZONTAL
202.660000	41.30	-14.6	43.5	2.2	QP	100.0	194.00	HORIZONTAL
303.540000	44.80	-13.7	46.0	1.2	QP	100.0	175.00	HORIZONTAL
405.390000	43.40	-10.6	46.0	2.6	QP	100.0	353.00	HORIZONTAL

Page 1/1 6/3/2013 2:03PM HTW0603131

REMARKS:

1.＊Undetectable

2. The IF bandwidth of EMI Test Receiver was 120KHz for measuring from 30 MHz to 1 GHz and 1 MHz for measuring above 1 GHz

3.The Transd=Cabel loss +Antenna factor +pre-amplifier factor

4. The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos. The worst case data is recorded in the report.

Above 1G

Note:I tested two samples (Shine Pano& Shine WebBox),and recored worse case data.

The frequency spectrum above 1 GHz for Transmitter was investigated. All emission not reported are much lower than the prescribed limits. Set the RBW=1MHz,VBW=3MHz for Peak Detector while the RBW=1MHz,VBW=10Hz for Average Detector,Readings are both peak and average values. The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos.

Channel 11-2405MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M												
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	4810.00	50.86	PK	74.00	23.14	1.00 H	178	47.66	32.7	7.00	-36.5	3.20
1	4810.00	45.60	AV	54.00	8.40	1.00 H	178	42.40	32.7	7.00	-36.5	3.20
2	7215.00	53.63	PK	74.00	20.37	1.00 H	321	44.23	35.8	8.90	-35.3	9.40
2	7215.00	46.17	AV	54.00	7.83	1.00 H	321	36.77	35.8	8.90	-35.3	9.40
3	9620.00	52.58	PK	74.00	21.42	1.00 H	48	49.98	37.2	10.20	-34.8	12.60
3	9620.00	48.22	AV	54.00	5.78	1.00 H	48	35.62	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M												
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	4810.00	50.01	PK	74.00	23.99	1.00 V	54	46.81	32.7	7.00	-36.5	3.20
1	4810.00	45.17	AV	54.00	8.83	1.00 V	54	41.97	32.7	7.00	-36.5	3.20
2	7215.00	53.20	PK	74.00	20.80	1.00 V	332	43.80	35.8	8.90	-35.3	9.40
2	7215.00	47.03	AV	54.00	6.97	1.00 V	332	37.63	35.8	8.90	-35.3	9.40
3	9620.00	52.10	PK	74.00	21.90	1.00 V	65	39.50	37.2	10.20	-34.8	12.60
	9620.00	46.78	AV	54.00	7.22	1.00 V	65	34.18	37.2	10.20	-34.8	12.60

Channel 18-2440MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M												
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	4880.00	50.25	PK	74.00	23.75	1.00 H	105	46.85	32.3	7.60	-36.5	3.40
1	4880.00	45.72	AV	54.00	8.28	1.00 H	105	42.32	32.3	7.60	-36.5	3.40
2	7320.00	53.21	PK	74.00	20.79	1.00 H	345	43.81	36.1	8.60	-35.3	9.40
2	7320.00	47.66	AV	54.00	6.34	1.00 H	105	38.26	36.1	8.60	-35.3	9.40
3	9760.00	65.21	PK	74.00	8.79	1.00 H	158	52.61	37.2	10.20	-34.8	12.60
3	9760.00	52.24	AV	54.00	1.76	1.00 H	105	39.64	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M												
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	4880.00	51.20	PK	74.00	22.80	1.00 V	85	47.80	32.3	7.60	-36.5	3.40
1	4880.00	46.07	AV	54.00	7.93	1.00 V	85	42.67	32.3	7.60	-36.5	3.40
2	7320.00	53.20	PK	74.00	20.80	1.00 V	321	43.80	36.1	8.60	-35.3	9.40
2	7320.00	47.71	AV	54.00	6.29	1.00 V	85	38.31	32.3	8.60	-35.3	9.40
3	9760.00	53.85	PK	74.00	20.15	1.00 V	228	41.25	37.2	10.20	-34.8	12.60
3	9760.00	47.00	AV	54.00	7.00	1.00 V	85	34.40	32.3	10.20	-34.8	12.60

Channel 26-2480MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M												
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	4960.00	50.25	PK	74.00	23.75	1.00 H	145	46.45	33.0	7.00	-36.2	3.80
1	4960.00	42.63	AV	54.00	11.37	1.00 H	145	38.83	33.0	7.00	-36.2	3.80
2	7340.00	52.58	PK	74.00	21.42	1.00 H	57	43.18	36.2	8.50	-35.3	9.40
2	7340.00	46.65	AV	54.00	7.35	1.00 H	57	37.25	36.2	8.50	-35.3	9.40
3	9920.00	53.45	PK	74.00	20.55	1.00 H	115	40.75	37.4	10.10	-34.8	12.70
3	9920.00	47.18	AV	54.00	6.82	1.00 H	115	34.48	37.4	10.10	-34.8	12.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M												
No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	4960.00	50.02	PK	74.00	23.98	1.00 V	245	46.22	36.2	8.50	-35.3	3.80
1	4960.00	43.35	AV	54.00	10.65	1.00 V	245	39.55	36.2	8.50	-35.3	3.80
2	7340.00	53.02	PK	74.00	20.98	1.00 V	68	43.62	37.4	10.10	-34.8	9.40
2	7340.00	46.17	AV	54.00	7.83	1.00 V	68	36.77	37.4	10.10	-34.8	9.40
3	9920.00	53.55	PK	74.00	20.45	1.00 V	158	40.85	28.2	5.10	-36.6	12.70
3	9920.00	47.96	AV	54.00	6.04	1.00 V	158	35.26	28.2	5.10	-36.6	12.70

REMARKS: 1. Emission level (dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) -Pre-amplifier Factor
3. The other emission levels were very low against the limit.
4. Margin value = Limit value- Emission level.
5. The limit value is defined as per 15.247

4.3. Maximum Peak Output Power

TEST CONFIGURATION

TEST PROCEDURE

The EUT was directly connected to the analyzer and antenna output port as show in the block diagram as TEST CONFIGURATION shows.

Follow KDB 558074 D01 DTS Meas Guidance D01 v03 of measurement procedure 8.1.2

LIMIT

The Maximum Peak Output Power Measurement is 30dBm.

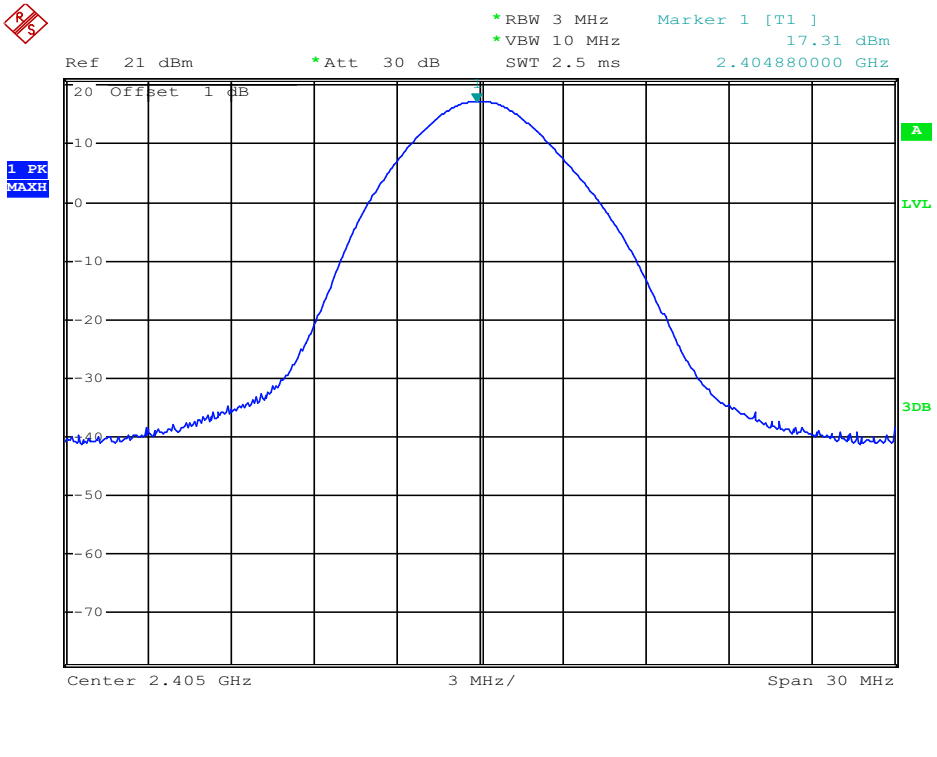
TEST RESULTS

Channel Number	Frequency (MHz)	Reading Power Output(dBm)	Limit (dBm)	Verdict
11	2405	17.31	30	PASS
18	2440	17.31	30	PASS
26	2480	1.97	30	PASS

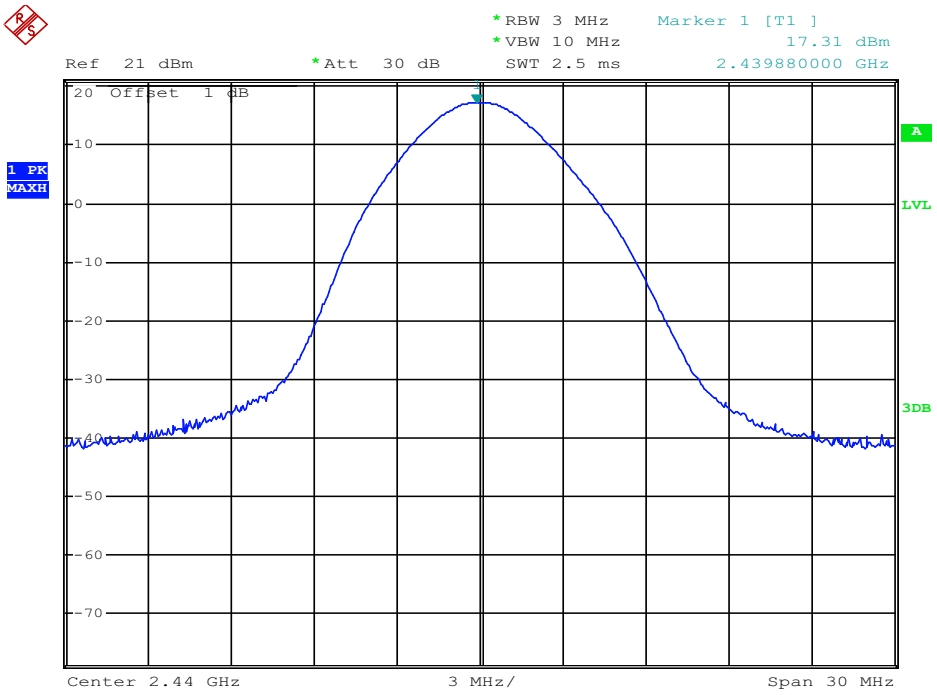
Remark:1.Test results including cable loss;
2.Each mode test difference speeds and recorded worst cases at each mode.

Photos of Maximum Peak Output Power

Channel 11

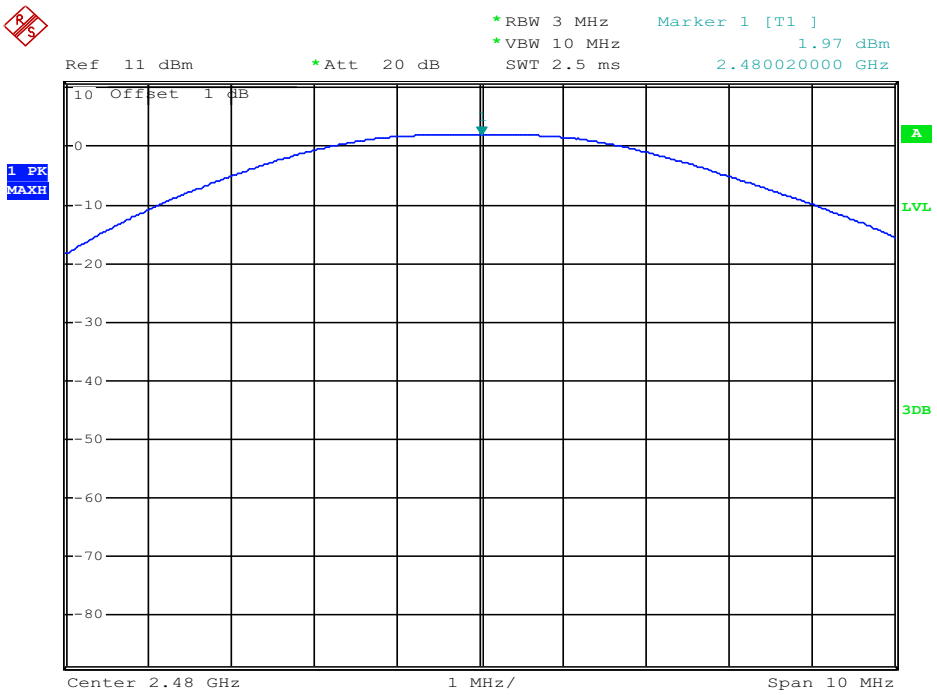


Channel 18



Date: 28.APR.2013 13:44:36

Channel 26



Date: 8.MAY.2013 11:52:33

4.4. Power Spectral Density

TEST CONFIGURATION

TEST PROCEDURE

1.Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ 3 RBW
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit,reduce RBW(no less than 3 kHz)and repeat.
11. If measured value set RBW=100KHz,please correct factor 10log(100/3)=15.2dB into RBW=3KHz for measurement.
12. The resulting peak PSD level must be 8 dBm.
Follow KDB 558074 D01 DTS Meas Guidance v03 of measurement procedure 9.1

LIMIT

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.

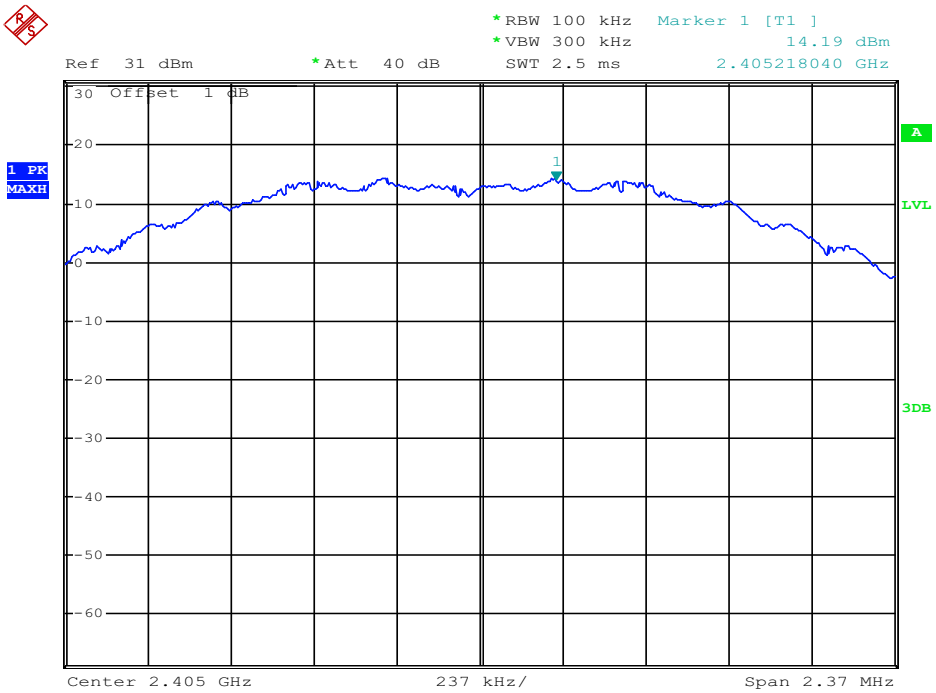
TEST RESULTS

Channel	Frequency (MHz)	Measured PSD (dBm/100kHz)	Measured PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
11	2405.22	14.19	-1.01	8	PASS
18	2440.22	14.44	-0.76	8	PASS
26	2480.20	1.83	-13.37	8	PASS

Note: 1. The test results including the cable lose.

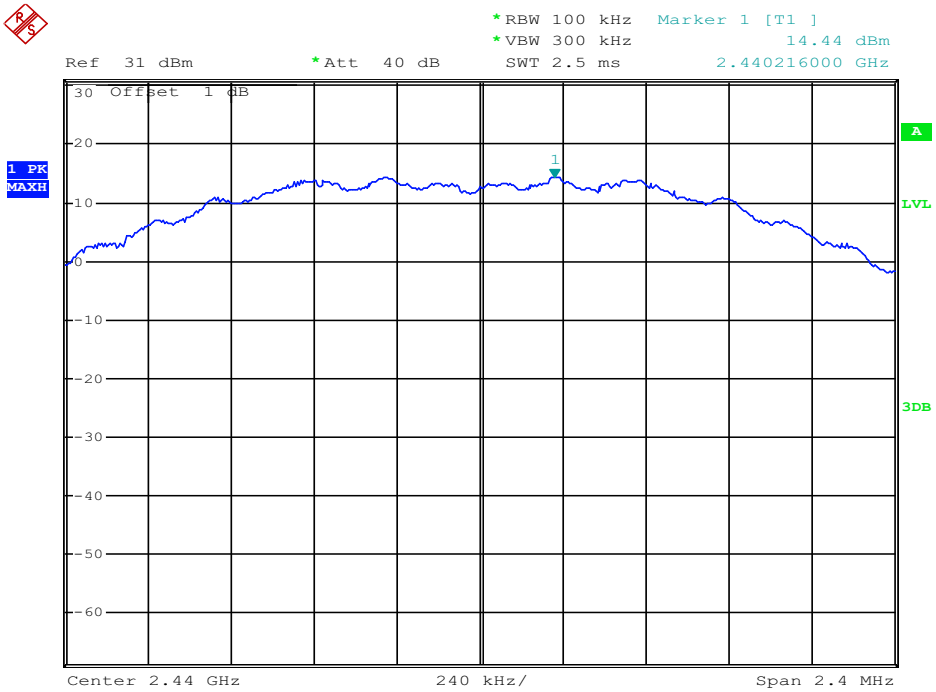
Photos of Power Spectral Density Measurement

Channel 11



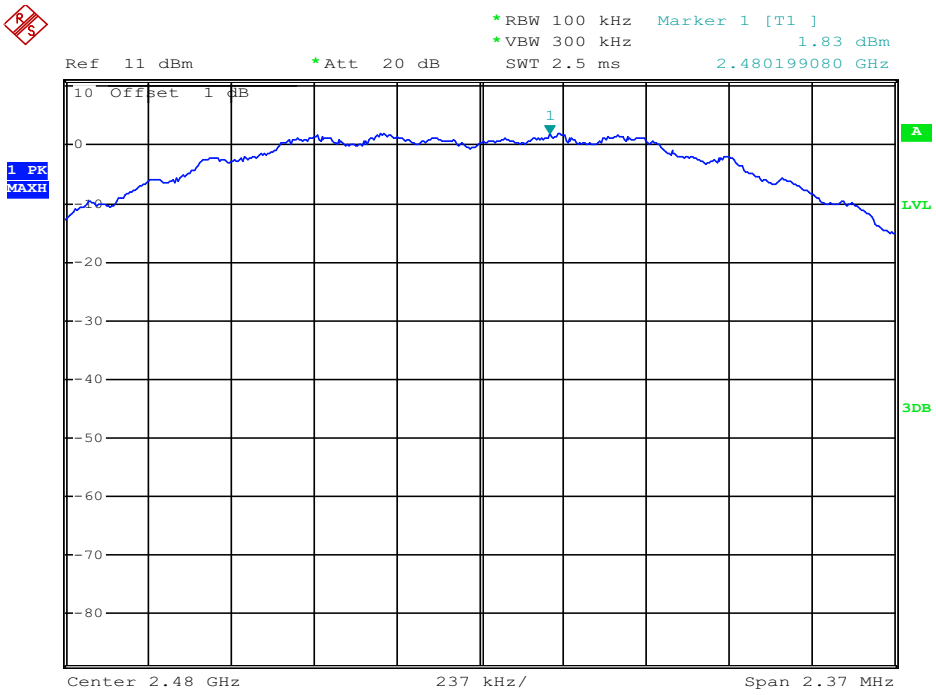
Date: 8.MAY.2013 12:06:36

Channel 18



Date: 8.MAY.2013 12:10:59

Channel 26



Date: 8.MAY.2013 11:55:13

4.5. Band Edge Compliance of RF Emission

Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. For Radiated emissions restricted band RBW=1MHz, VBW=3MHz for peak detector and RBW=1MHz, VBW=10Hz for average detector.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.
6. § 15.209(a) specifies radiated emissions limits for unwanted emissions in the restricted bands in terms of the maximum permissible electric field strength at a specified measurement distance. A correspondent EIRP level can be determined from the following relationship:
   E = EIRP -20log(d) + 104.8
   where:
   EIRP = the equivalent isotropic radiated power in dBm,
   E = electric field strength in dBμV/m,
   d = measurement distance in meters.
7. For emissions at frequencies less than or equal to 30 MHz , a maximum ground reflection factor of 6 dB shall be used and for emissions at frequencies greater than 30 MHz but less than or equal to 1000 MHz, a maximum ground reflection factor of 4.7 dB shall be used. For emissions on frequencies greater than 1000 MHz, no ground reflection factor is applied.

LIMIT

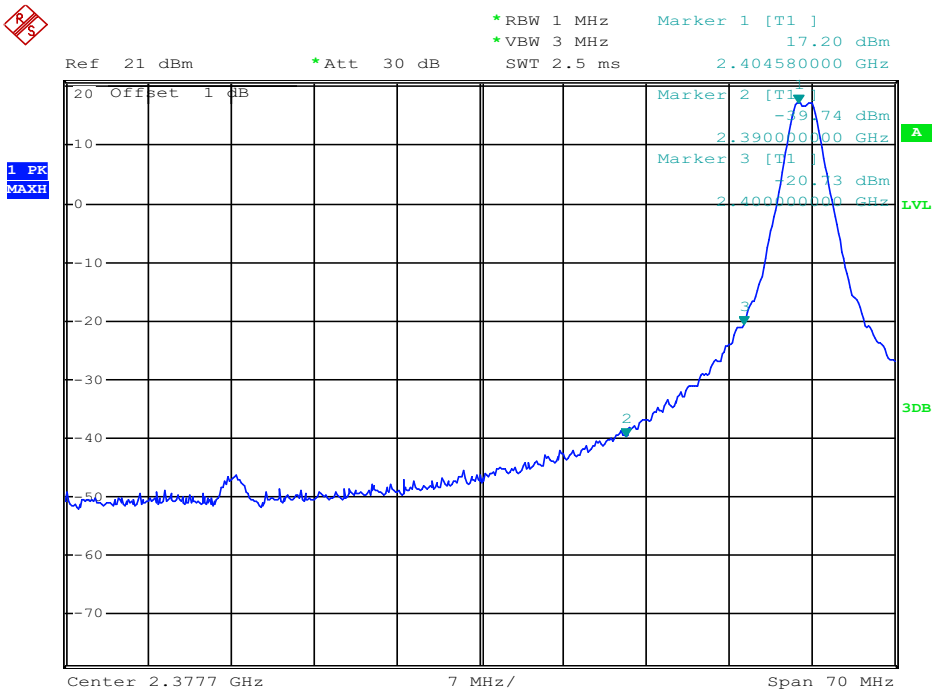
Below -20dB of the highest emission level in operating band.
Radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)

TEST RESULTS

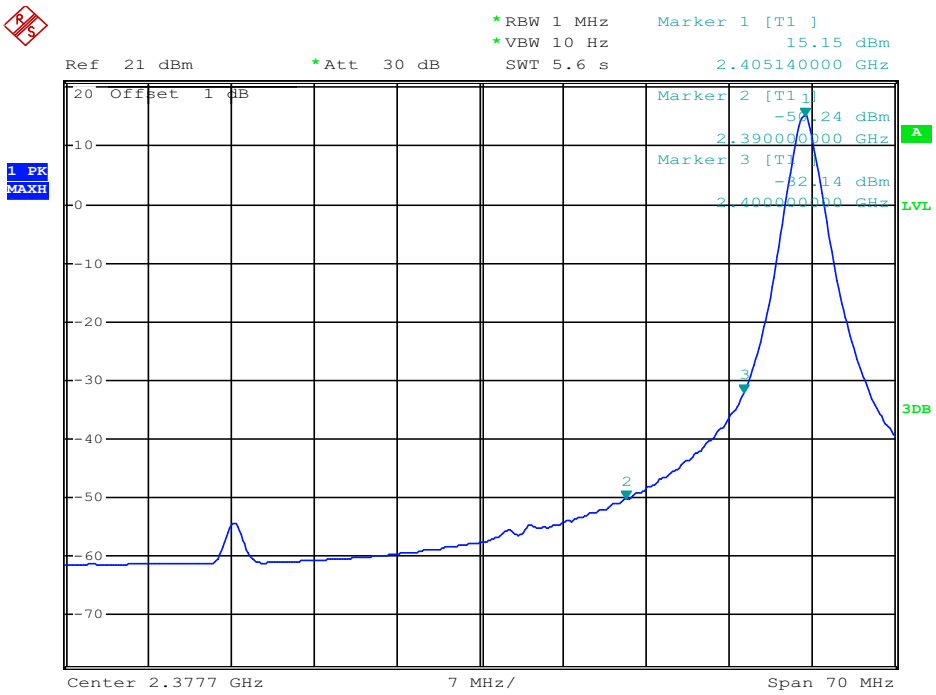
Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Ground reflection factor(dBi)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)
2390.00	-39.74	2.00	0	57.52	PK	74.00
2390.00	-50.24	2.00	0	47.02	AV	54.00
2405.00	17.20	2.00	0	114.46	PK	---
2405.00	15.15	2.00	0	112.41	AV	---
2480.00	-4.67	2.00	0	92.59	PK	---
2480.00	-4.54	2.00	0	92.72	AV	---
2483.50	-32.24	2.00	0	65.02	PK	74.00
2483.50	-45.52	2.00	0	51.74	AV	54.00

Photos of Band Edge Measurement

Channel 1

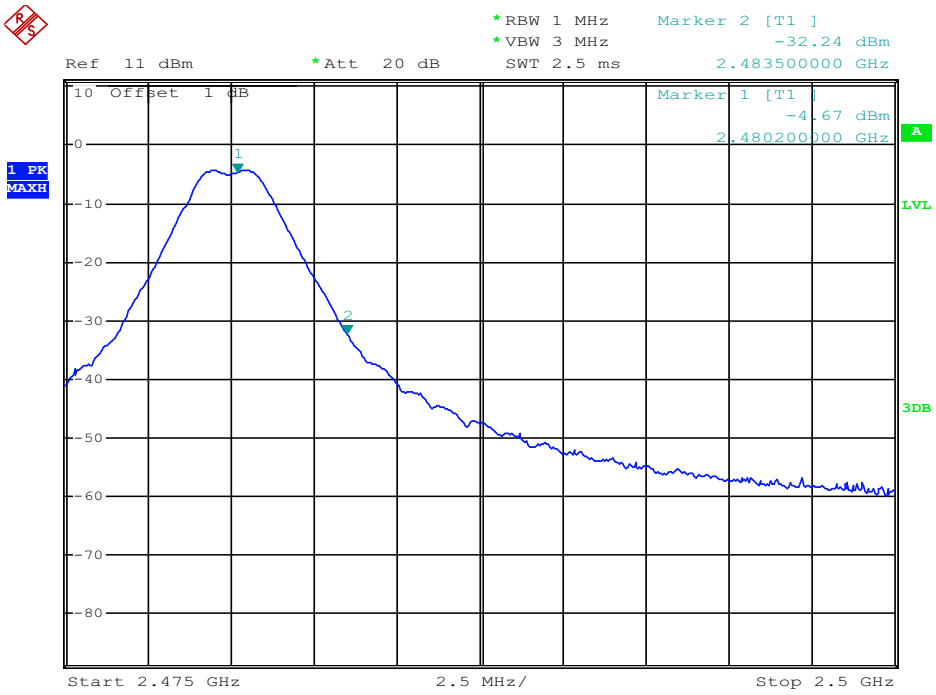


Date: 28.APR.2013 13:54:04

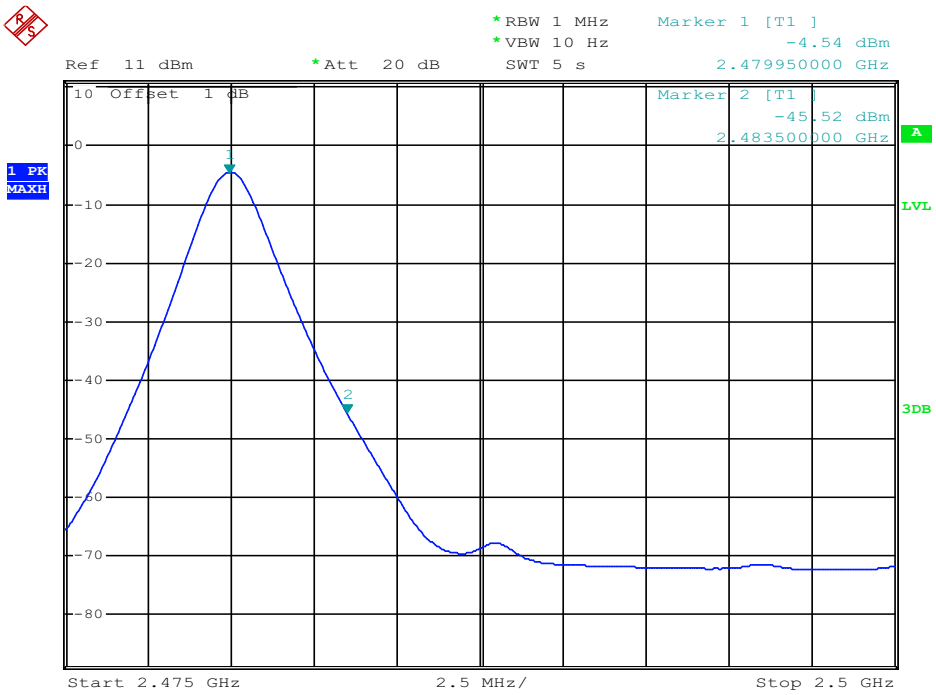


Date: 28.APR.2013 13:54:29

Channel 11



Date: 8.MAY.2013 11:28:03



Date: 8.MAY.2013 11:29:51

4.6. Spurious RF Conducted Emission

TEST CONFIGURATION

TEST PROCEDURE

The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2009 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW=100kHz and VBM= 300KHz to measure the peak field strength , and mwasure frequeny range from 30MHz to 26.5GHz.

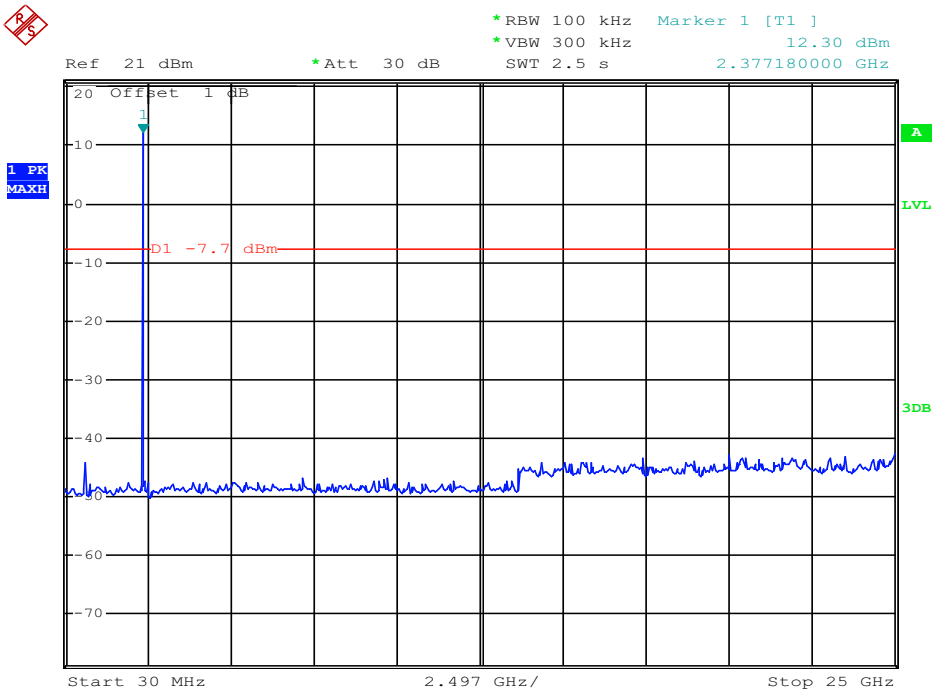
LIMIT

1. Below -20dB of the highest emission level in operating band.

2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

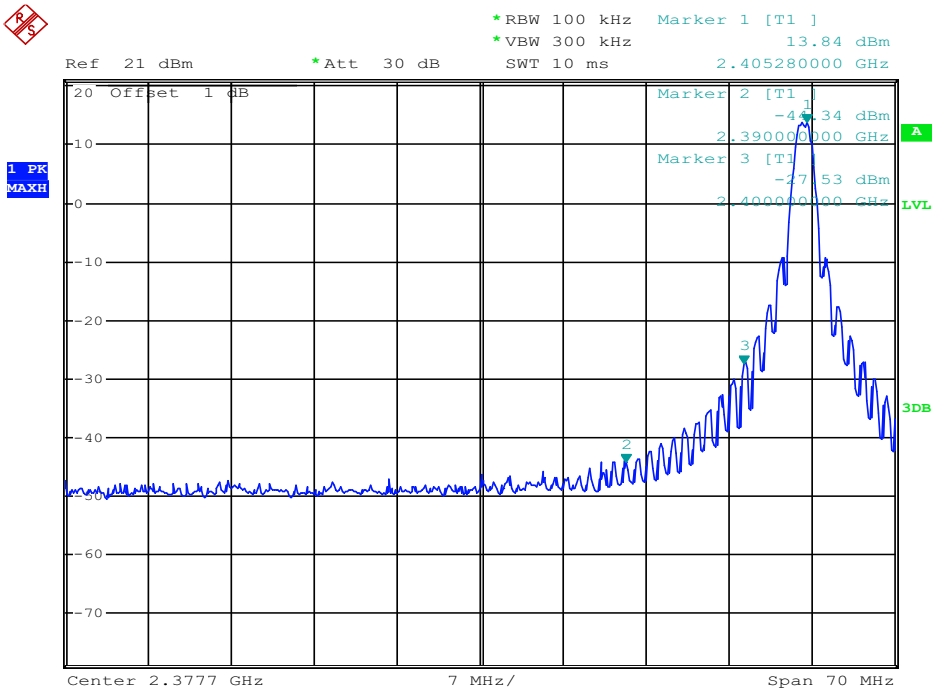
TEST RESULTS

Channel 11



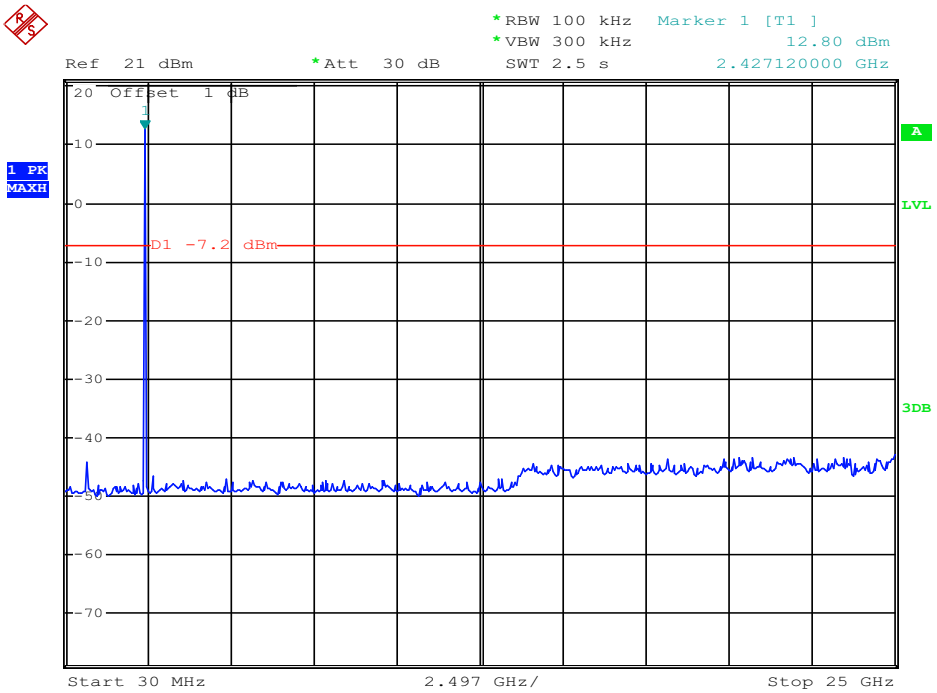
Date: 28.APR.2013 13:55:41

Channel	Frequency (MHz)	Delta peak to band emission	Limit(dBc)
11	2400.00	-41.37	-20
11	2483.90	-58.18	-20



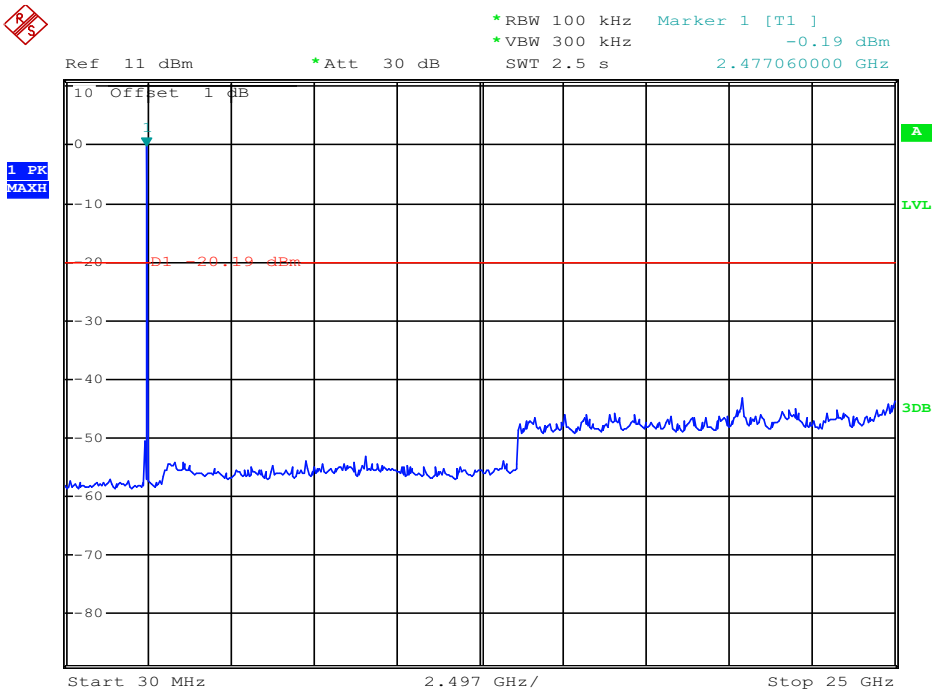
Date: 28.APR.2013 13:53:46

Channel 18



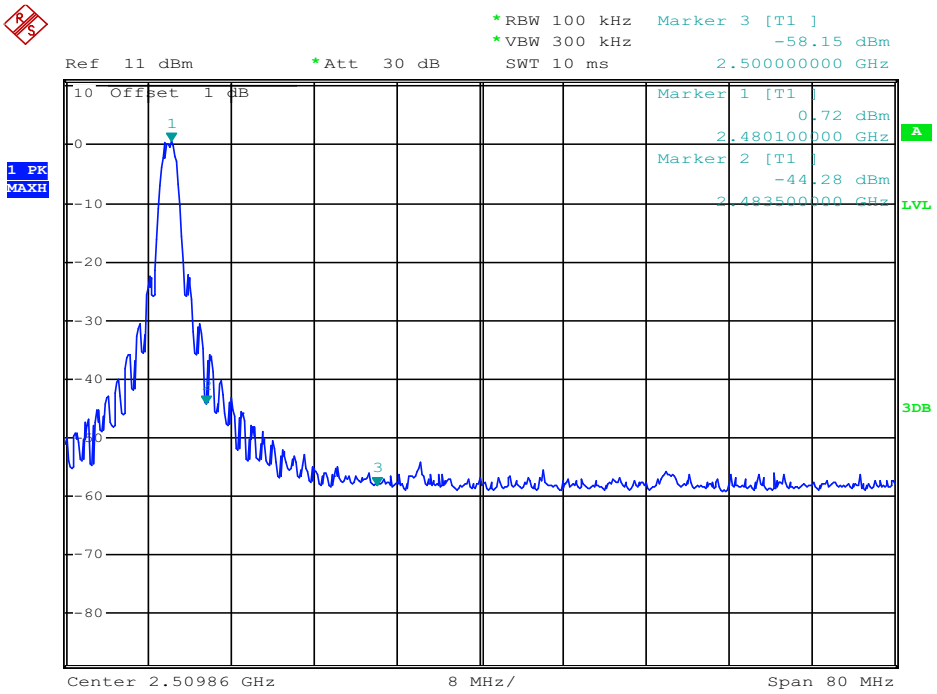
Date: 28.APR.2013 13:48:28

Channel 26



Date: 28.APR.2013 13:37:46

Channel	Frequency(MHz)	Delta peak to band emission	Limit(dBc)
16	2483.50	-45.00	-20
16	2500.00	-58.87	-20



Date: 28.APR.2013 13:40:06

4.7. 6dB Bandwidth

TEST CONFIGURATION

TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with100 KHz RBW and 300KHz VBW.

The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

LIMIT

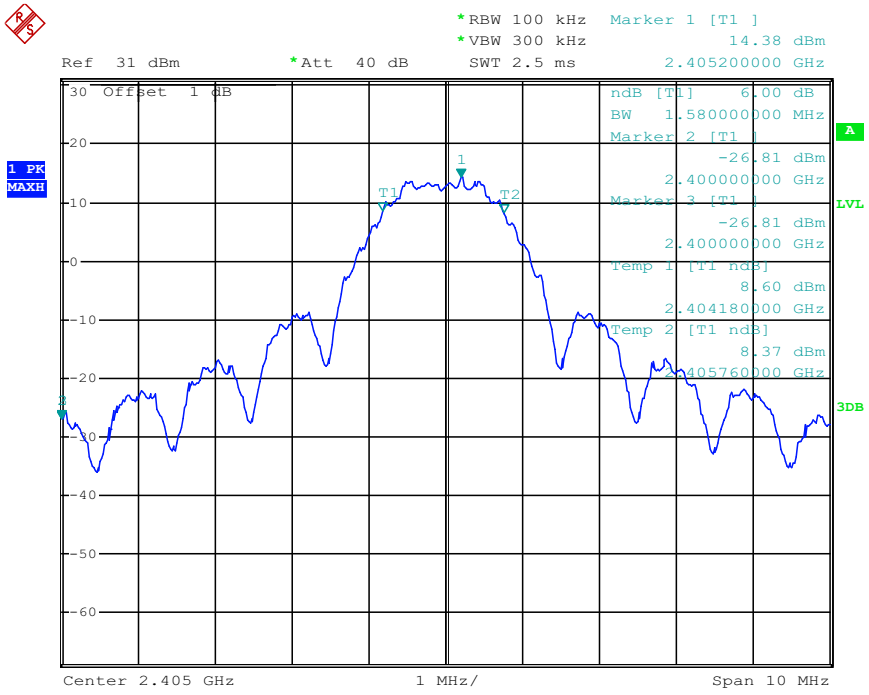
For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

TEST RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits (MHz)	Result
11	2405	1.58	0.500	PASS
18	2440	1.64	0.500	PASS
26	2480	1.58	0.500	PASS

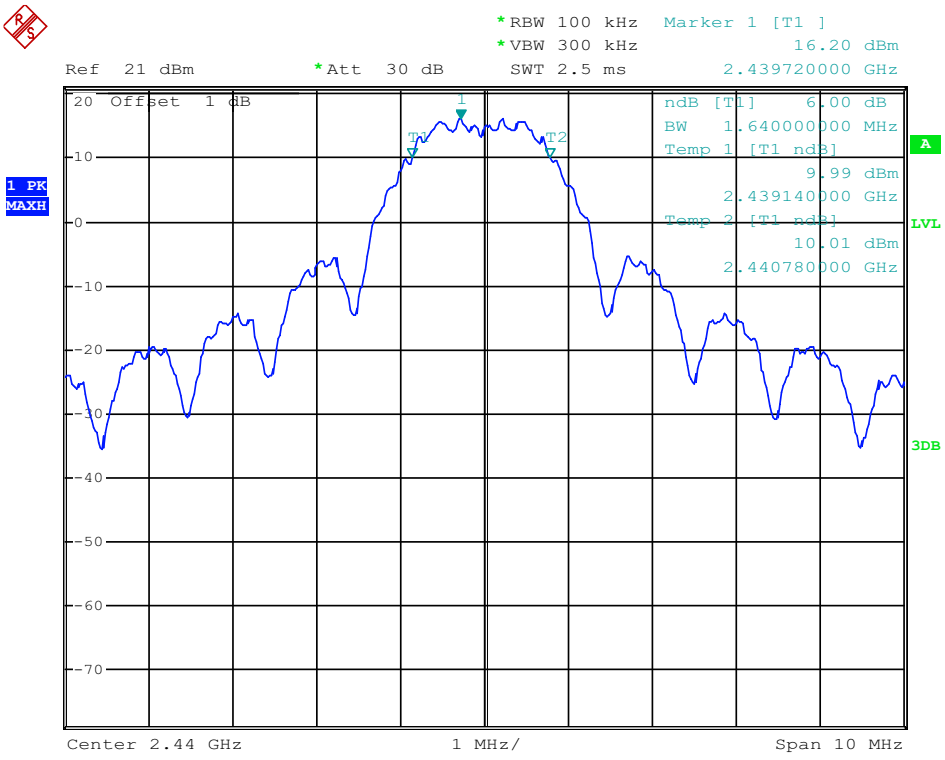
Photos of 6dB Bandwidth Measurement

Channel 11



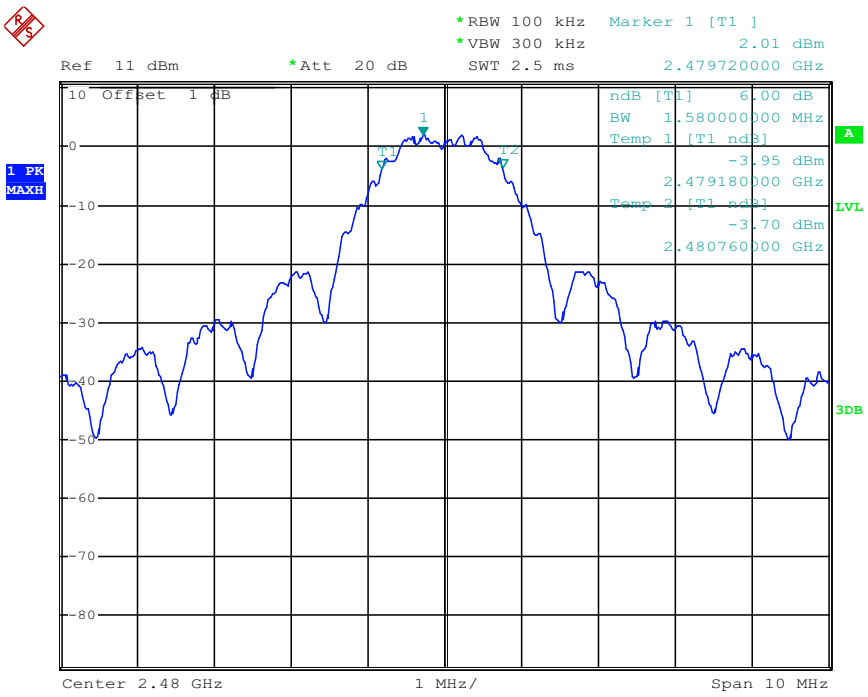
Date: 8.MAY.2013 12:05:59

Channel 18



Date: 22.AUG.2012 14:31:34

Channel 26



Date: 8.MAY.2013 11:53:53

4.8. Antenna Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 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.

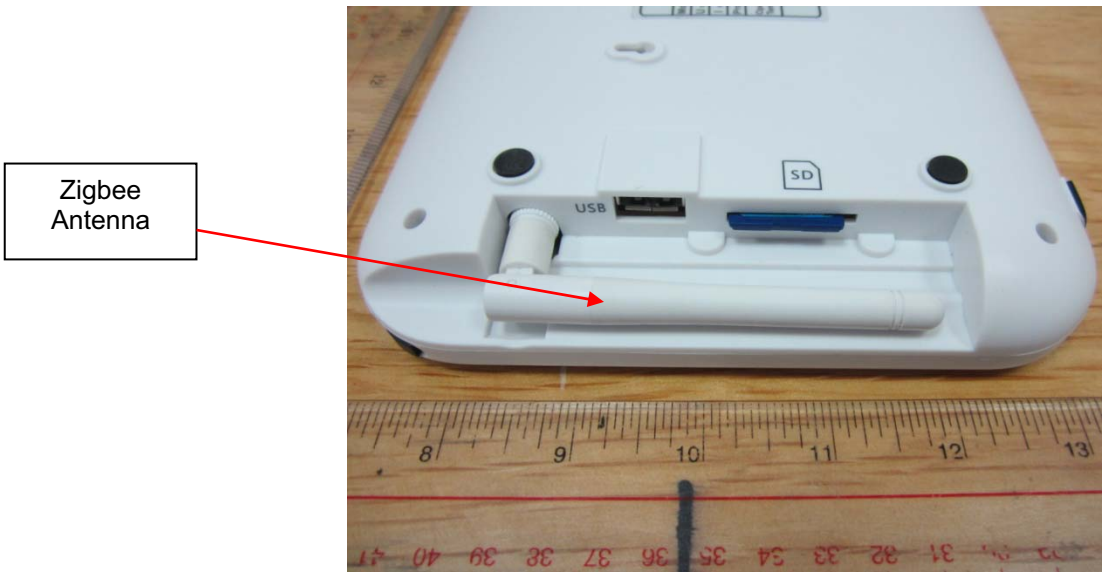
And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Refer to statement below for compliance

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

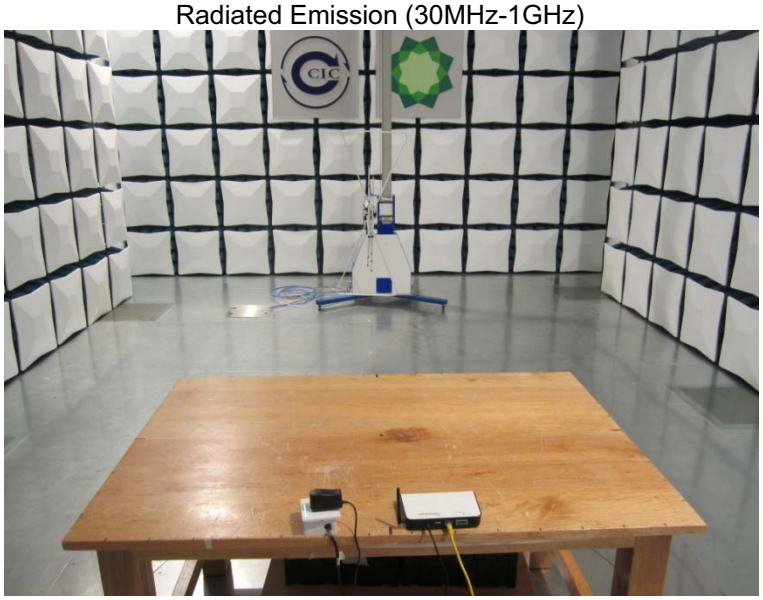
Antenna Connected Construction

The Gain of the antenna is 2.0 dBi.

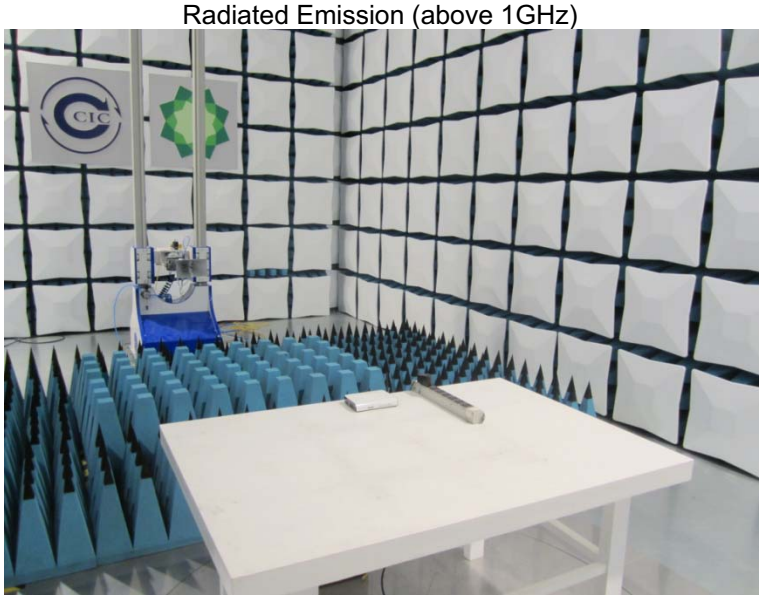


5. Test Setup Photos of the EUT

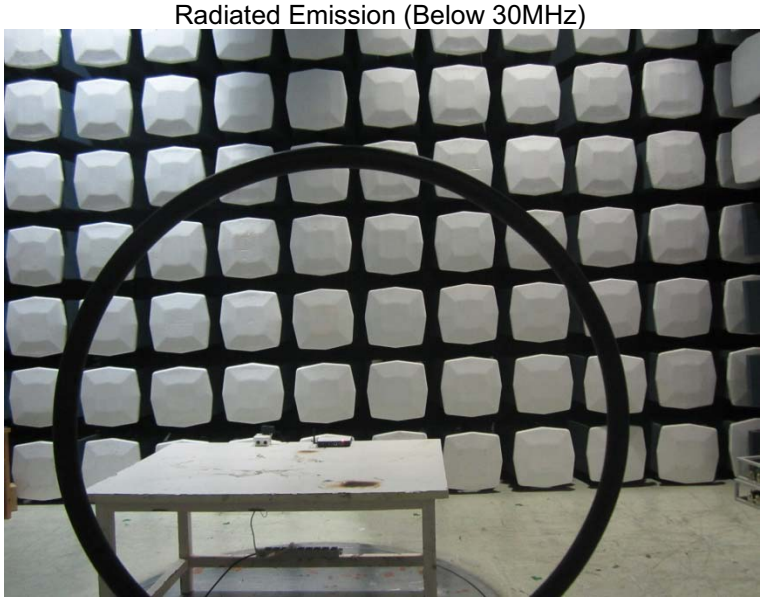
Radiated Emission (30MHz-1GHz)



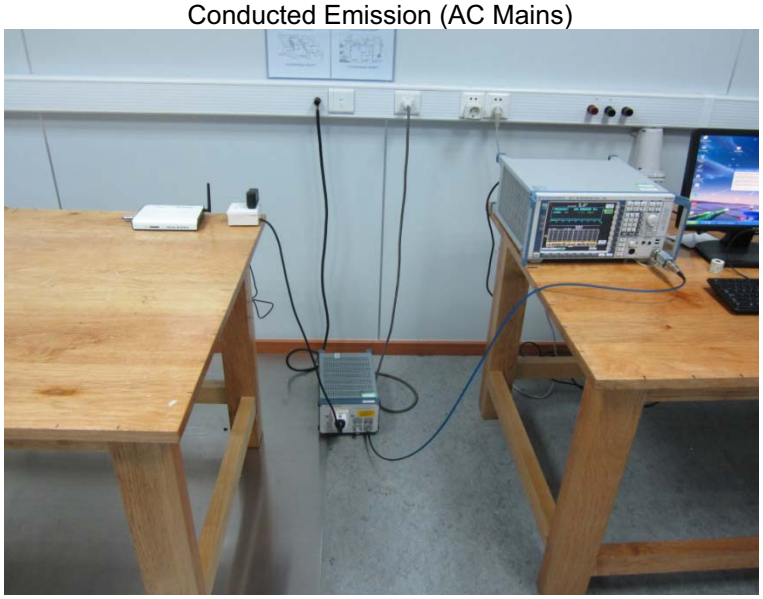
Radiated Emission (above 1GHz)



Radiated Emission (Below 30MHz)



Conducted Emission (AC Mains)



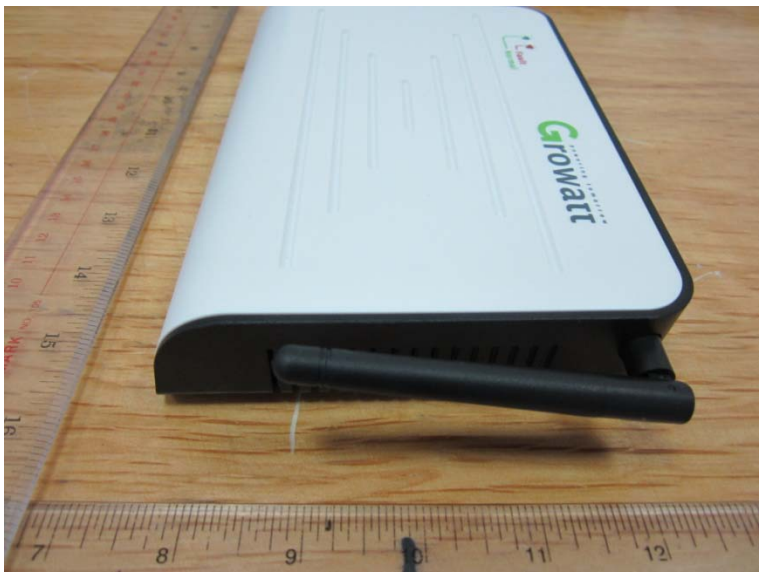
6. External and Internal Photos of the EUT

External Photos of Shine Pano

External Photos of Shine WebBox


GROWATT
Model Name
Shine WebBox
5V
500mA
Protection Degree
IP 20
Operation Ambient Temperature
0~+45°C
P/N:MR00.0001700
S/N:A030211253
Ver.:S0.20.21.00

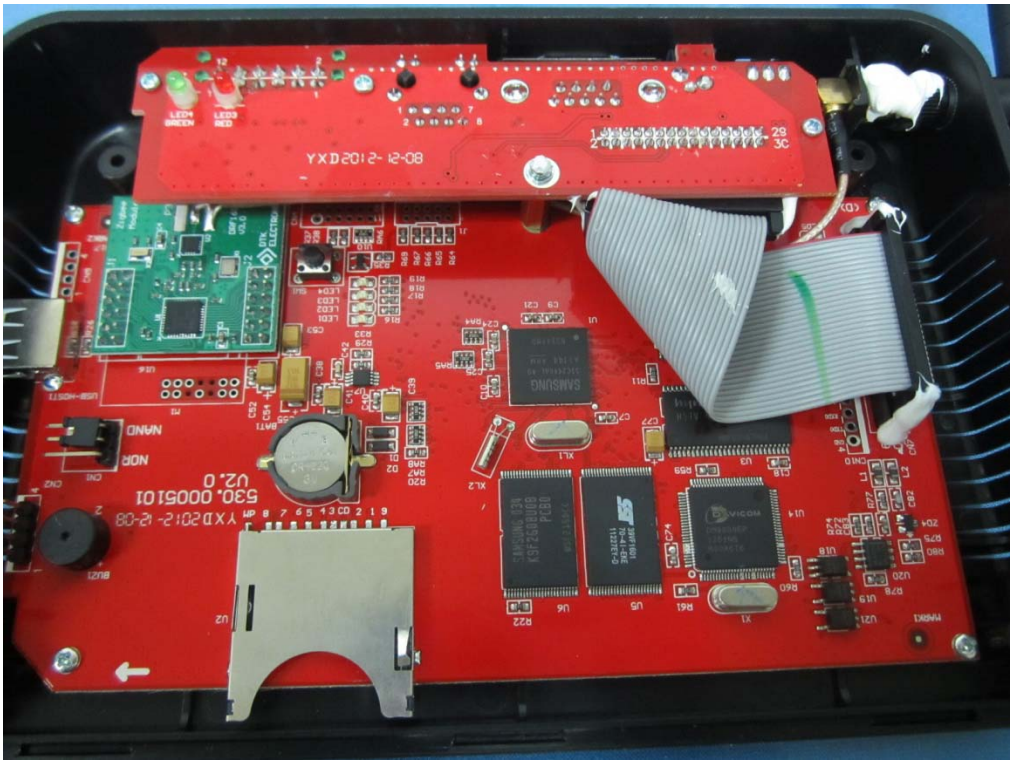

Growatt
Fault
Normal
USB

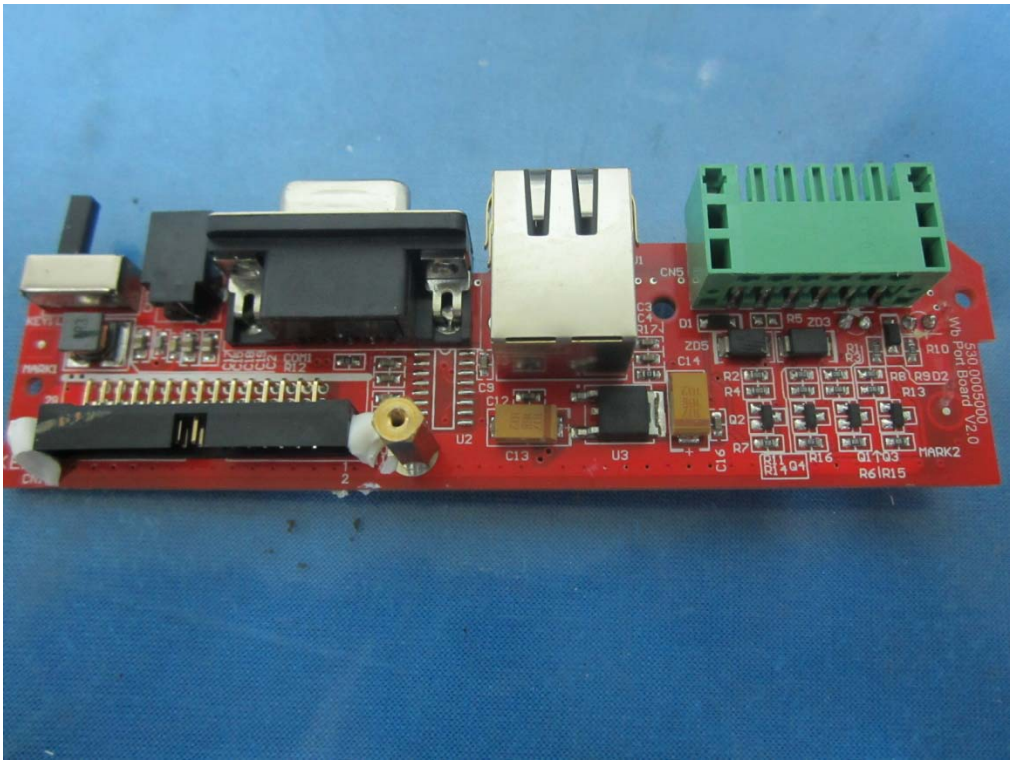

Growatt

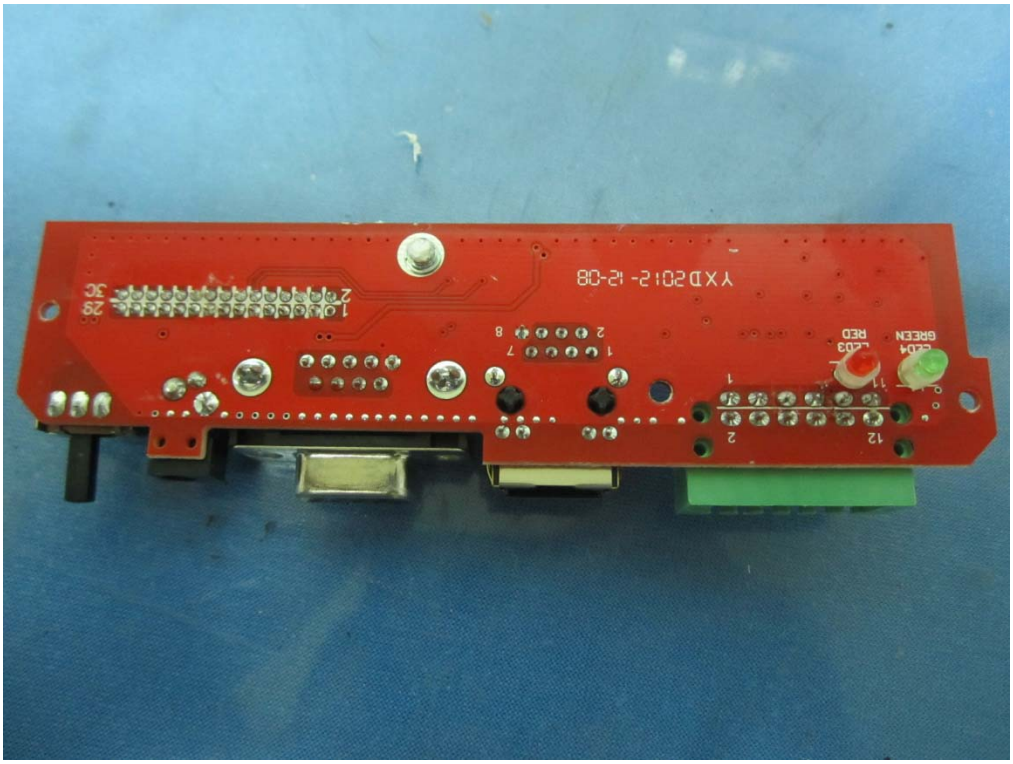

Growatt
SD-CARD
Shine WebBox

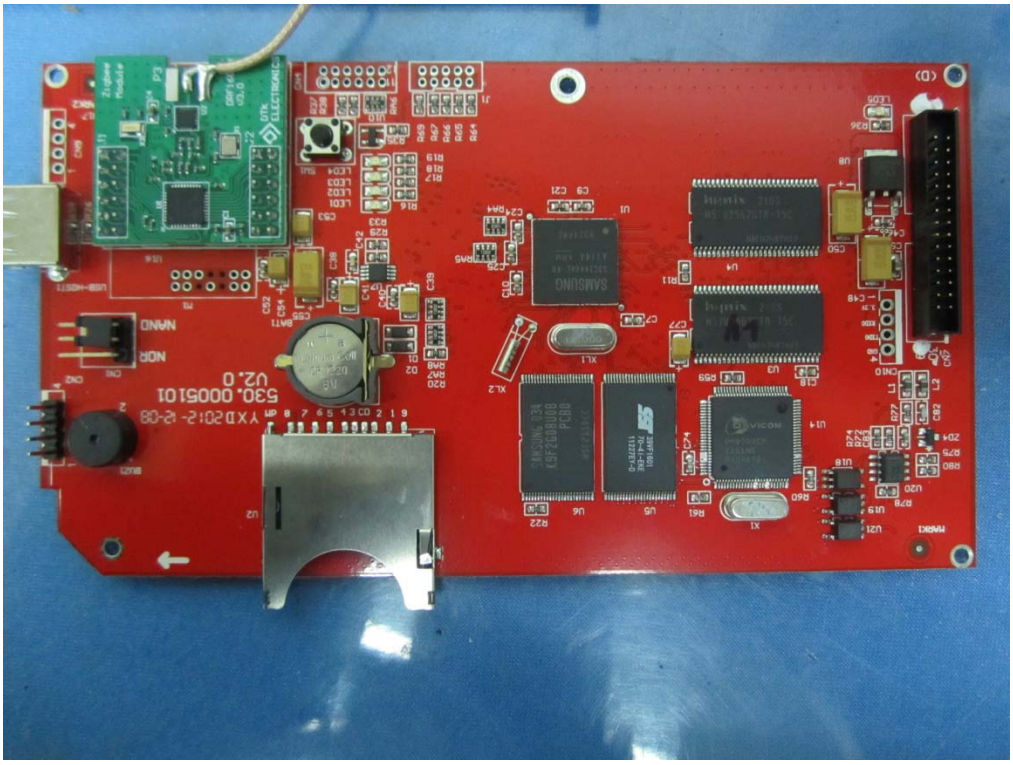

Growatt
Fault
Normal
POWER
RS232
LAN
ON
OFF

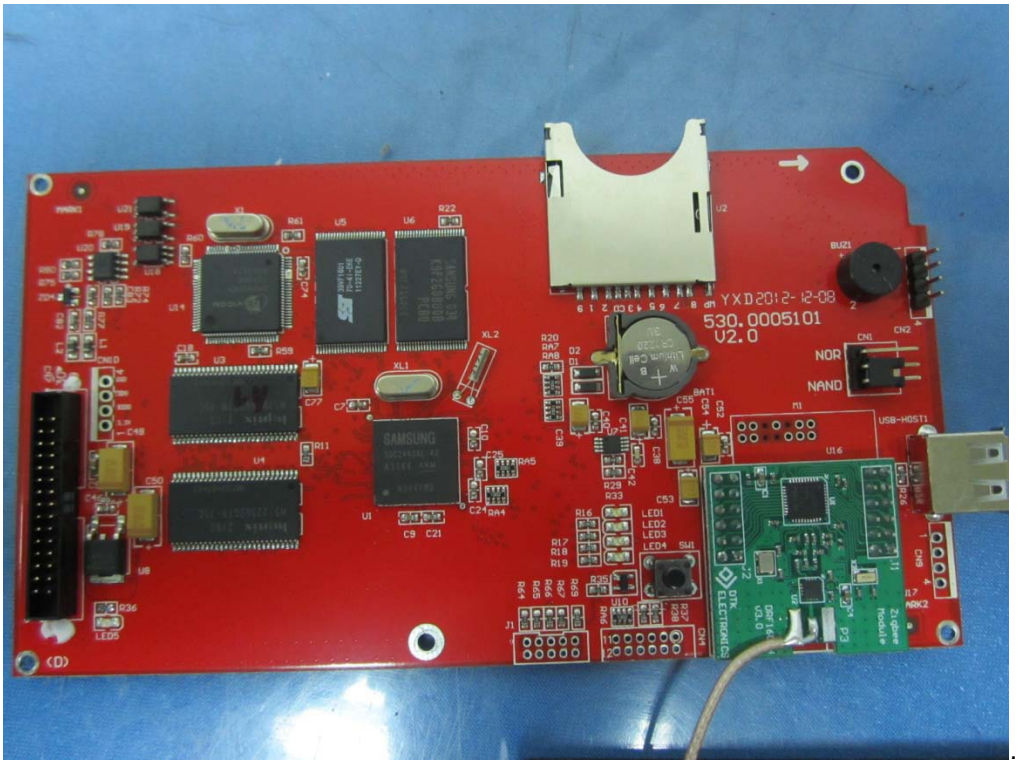
Internal Photos of Shine WebBox

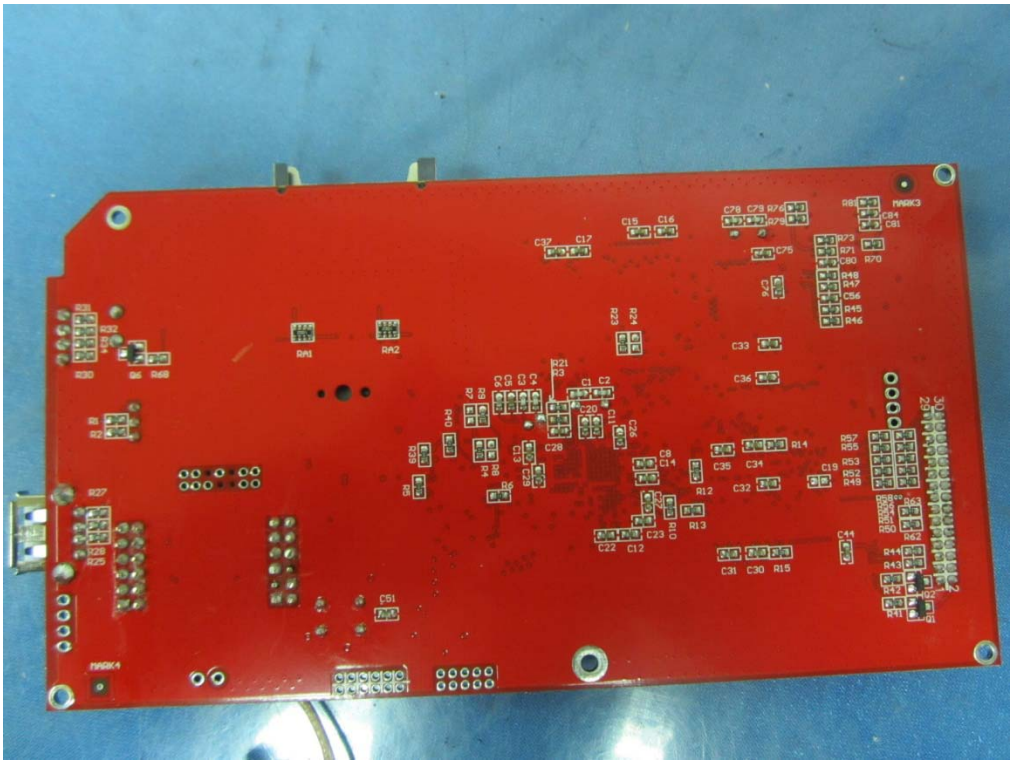


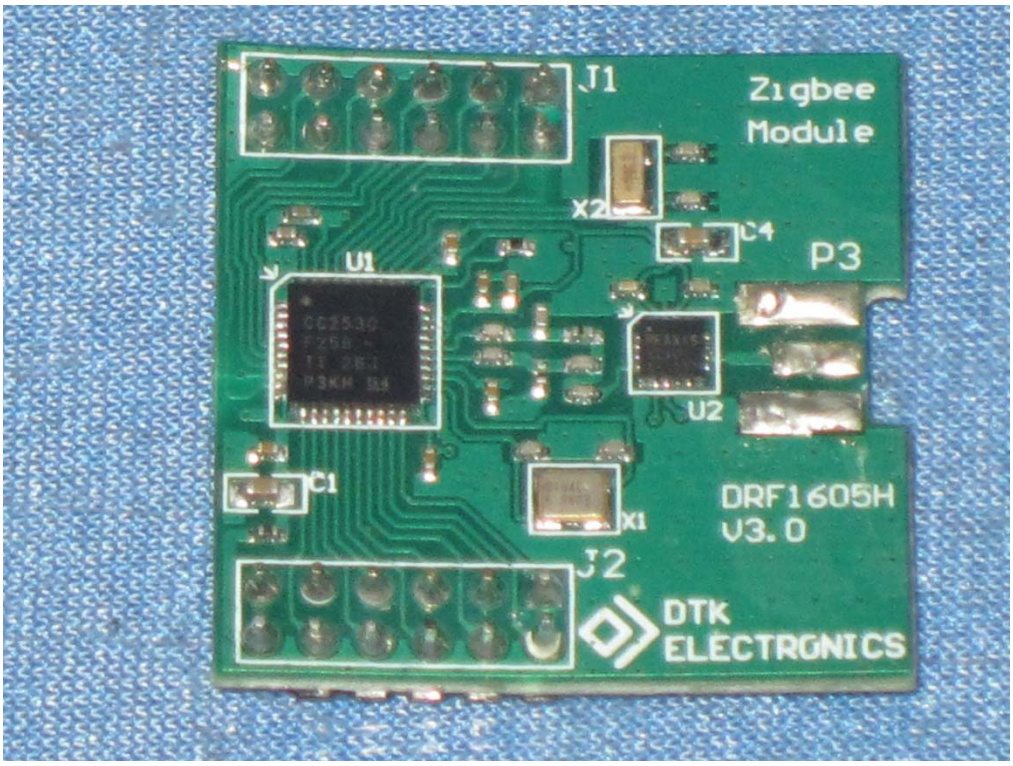

CN5
U2
U3
MARK2
R6 R15
Wb Port Board V2.0

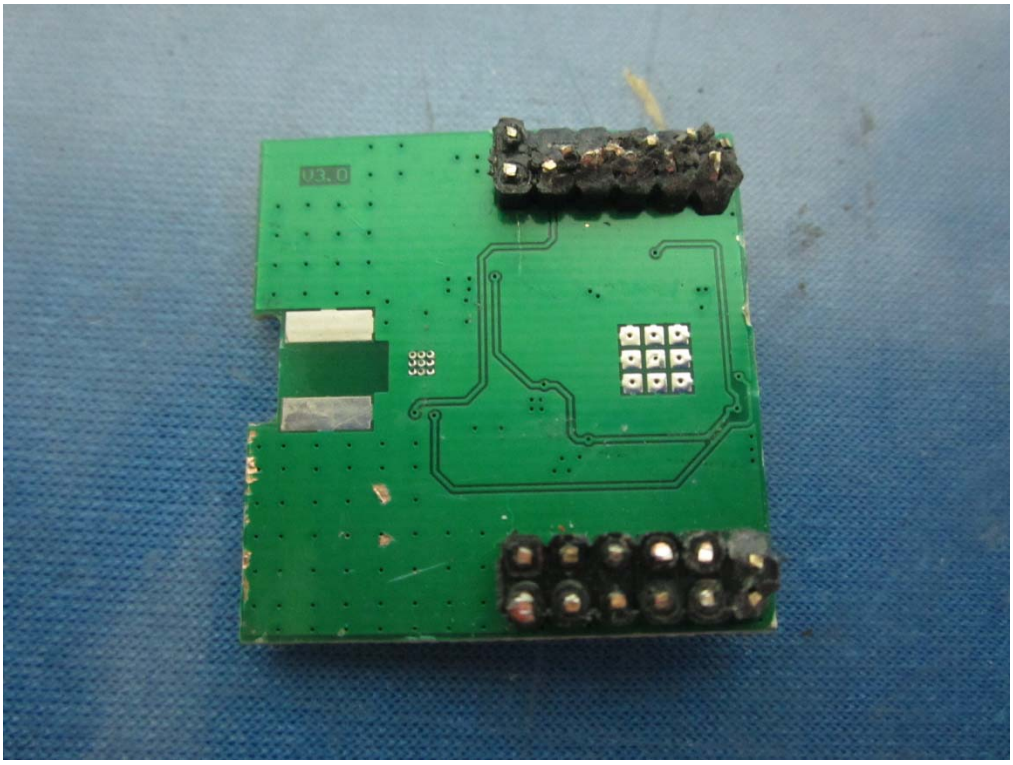

RED
GREEN



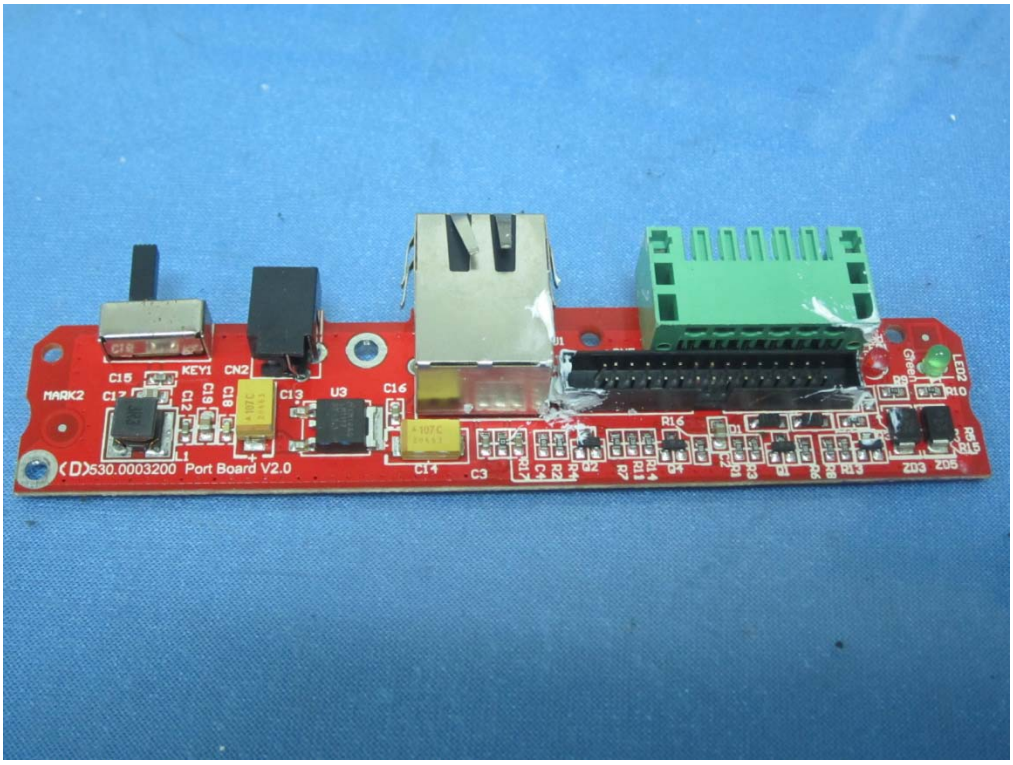

YXD2012-12-08
530.0005101
V2.0
NOR
NAND
SAMSUNG

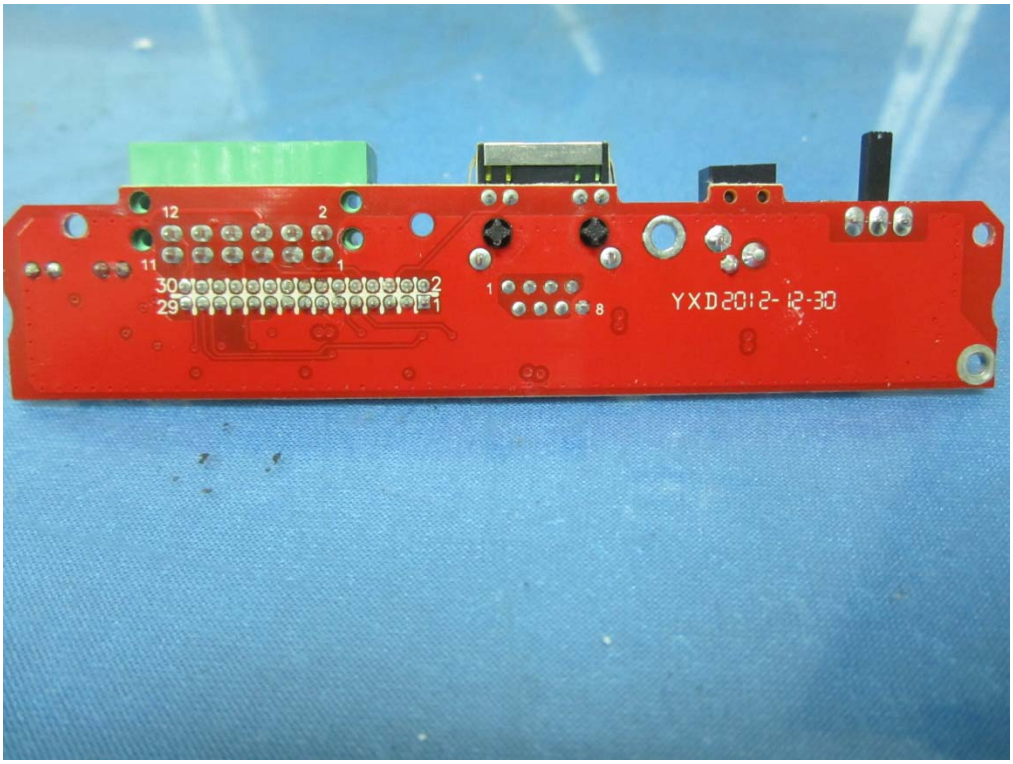


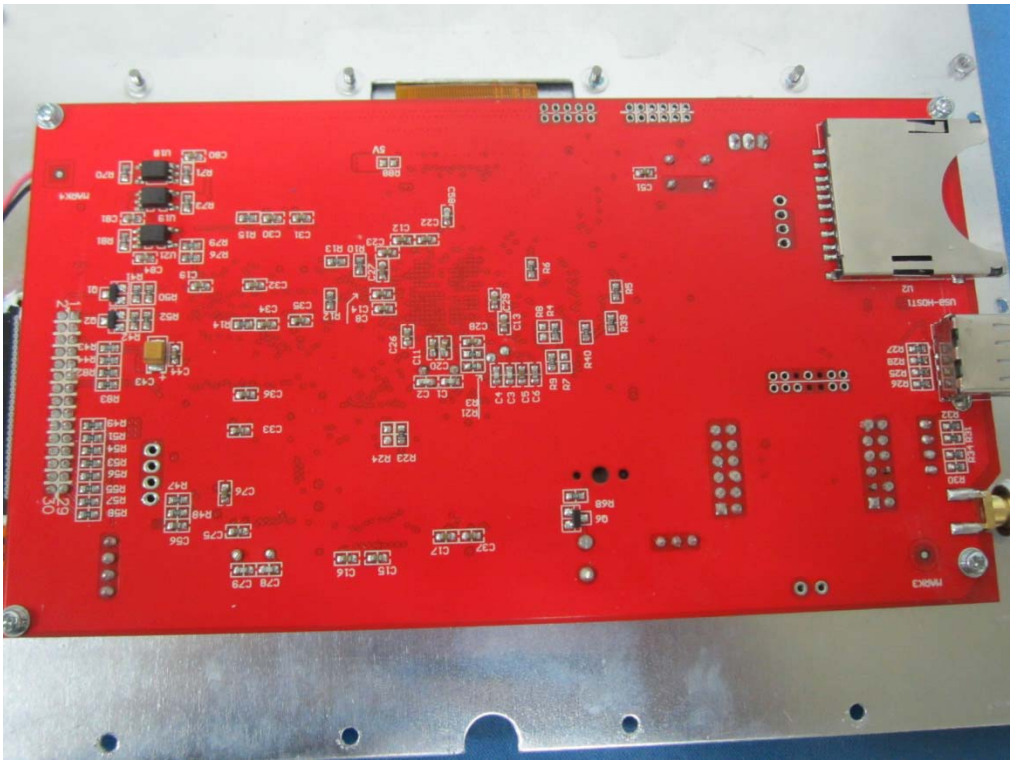

J1
Zigbee
Module
X2
C4
P3
U1
U2
C1
X1
DRF1605H
V3.0
J2
DTK
ELECTRONICS

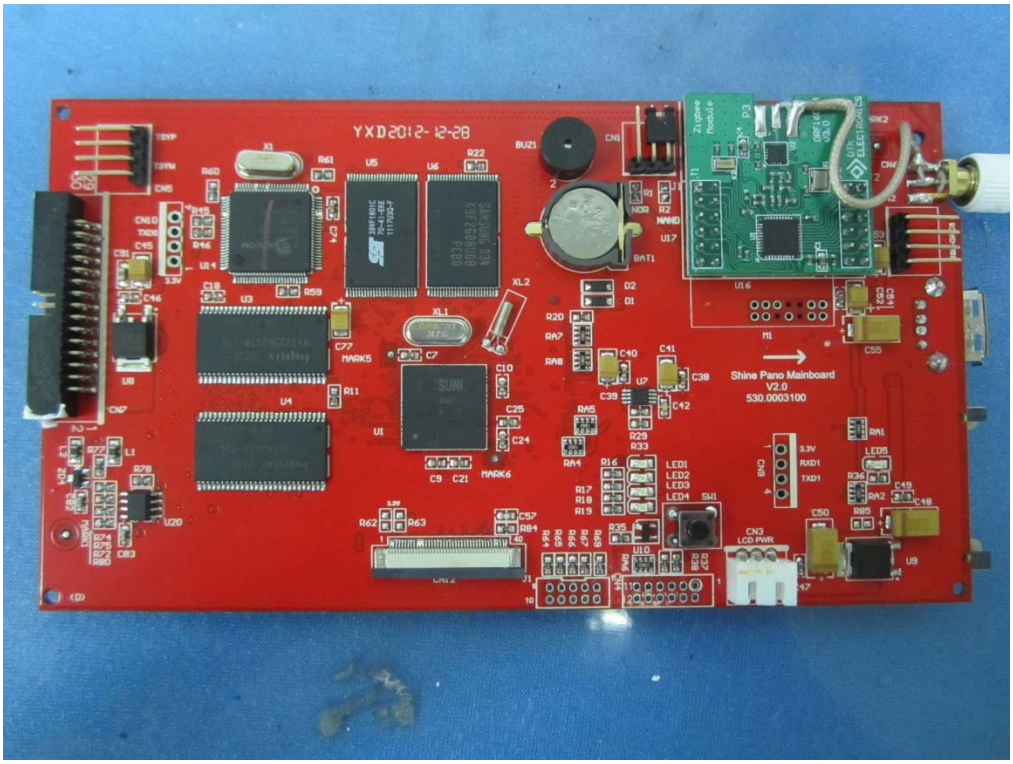


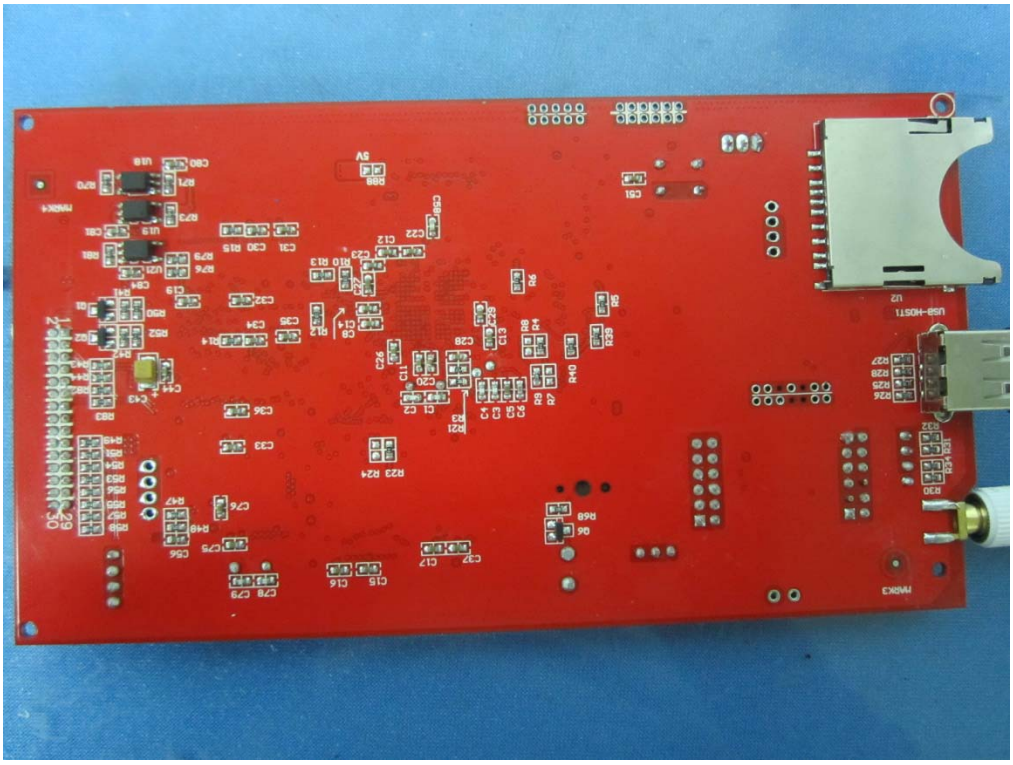
Internal Photos of Shine Pano

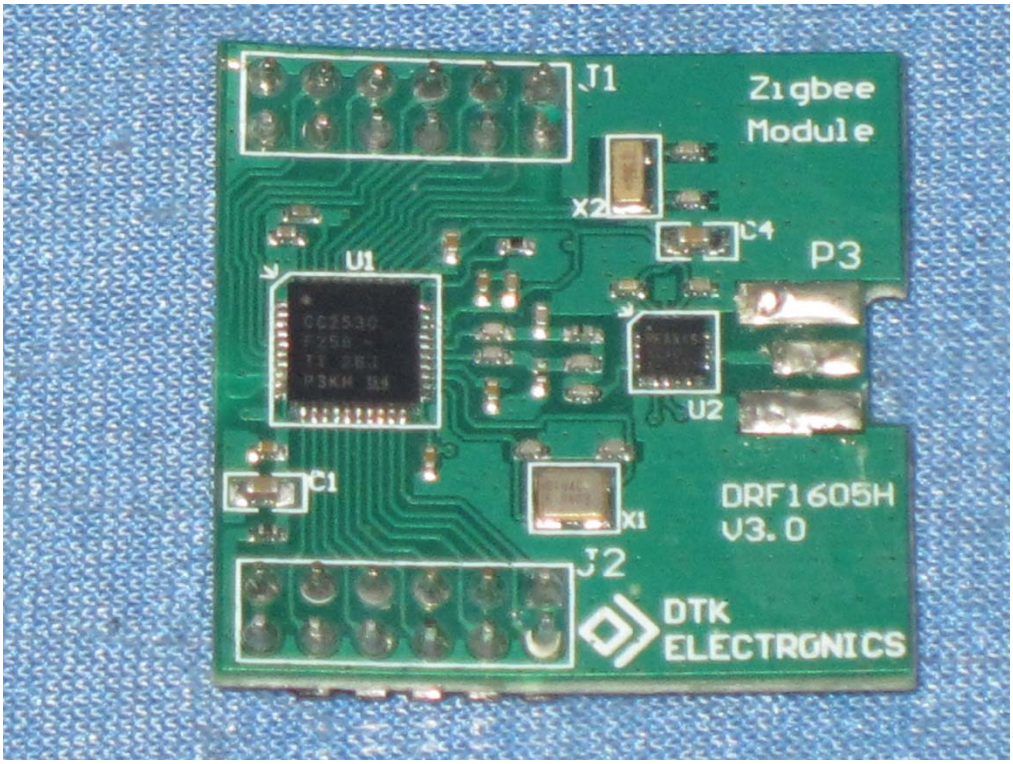

MARK2
KEY1
CN2
C15
C13
U3
C16
R16
530.0003200 Port Board V2.0

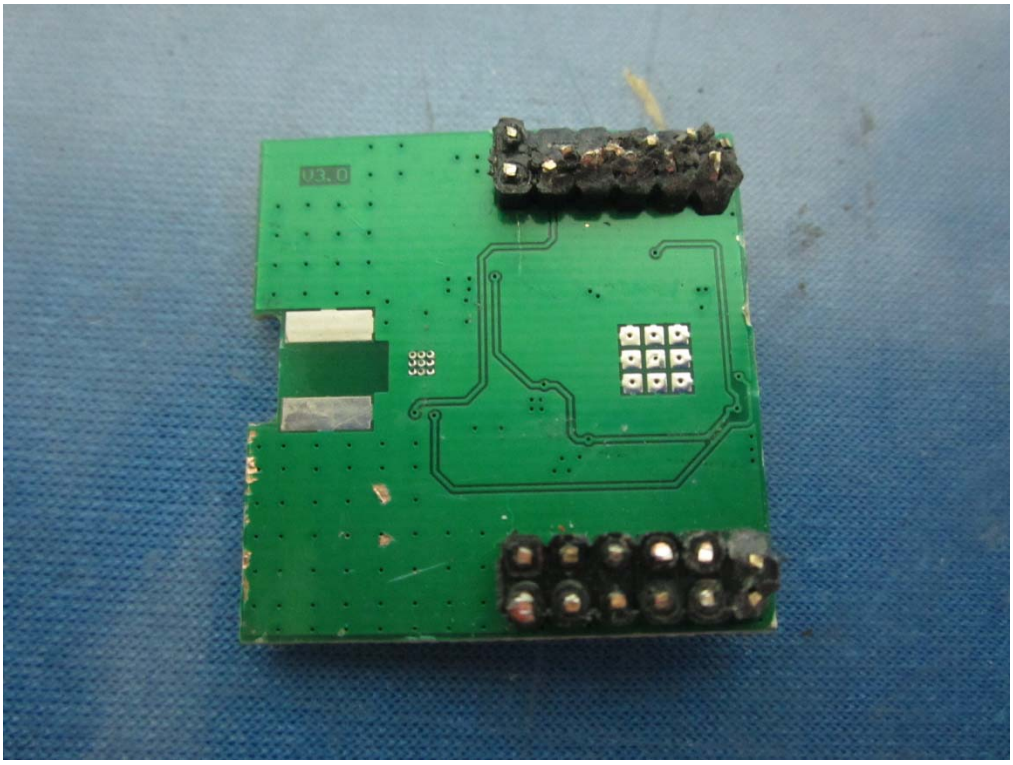

12
2
11
1
30
29
2
1
1
8
YXD2012-12-30




Shine Pano Mainboard
V2.0
530.0003100




J1
Zigbee
Module
X2
C4
P3
U1
U2
C1
X1
DRF1605H
V3.0
J2
DTK
ELECTRONICS



.....End of Report.....