

FCC TEST REPORT  
for  
IRIS Corporation Berhad

Smart Terminal  
Model No.:ST5, ST5e, ST5ex

Prepared for : IRIS Corporation Berhad  
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57000 Kuala Lumpur, Malaysia.

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Report Number : 201309771F-1  
Date of Test : Sep. 07~ Oct. 10, 2013  
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## TEST REPORT

Applicant : IRIS Corporation Berhad  
Manufacturer : OPTIMA KLASIK SDN. BHD. (807783-T)  
EUT : Smart Terminal  
Model No. : ST5, ST5e, ST5ex  
Serial No. : N/A  
Trade Mark :



Rating : DC 9V, 3.0A Max. Via Adapter (AC 100-240V, 50/60Hz)

Measurement Procedure Used:  
FCC Part15 Subpart C, Paragraph 15.247: 2012

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test : Sep. 07~ Oct. 10, 2013

Prepared by :

(Engineer / Rock Zeng)

Reviewer :

(Project Manager / Sally Zhang)

Approved & Authorized Signer :

(Manager / Tom Chen)

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

EUT : Smart Terminal

Model Number : ST5, ST5e, ST5ex

(Note: The above samples are same except the model number, so we prepare “ST5” for FCC test only.)

Test Power Supply : AC 120V/60Hz for Adapter

Adapter : Power Supply  
Model: MKU30B-3  
Input: AC 100-240V, 50/60Hz, 0.58A  
Output: DC 9V, 3.0A Max.

RF Transmission : 2412MHz~2462MHz (802.11b/802.11g)  
Frequency

Antenna Type : Integral

Antenna Gain : 0 dBi

Applicant : IRIS Corporation Berhad  
Address : IRIS Smart Technology Complex, Technology Park Malaysia, 57000  
Kuala Lumpur, Malaysia.

Manufacturer : OPTIMA KLASIK SDN. BHD. (807783-T)  
Address : IRIS Smart Technology Complex, Technology Park Malaysia, Bukit  
Jalil, 57000 Kuala Lumpur, Malaysia

Date of receiver : Sep. 07, 2013

Date of Test : Sep. 07~ Oct. 10, 2013

## 1.2. Description of Test Facility

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

### **CNAS - LAB Code: L3503**

Shenzhen Anbotek Compliance Laboratory Limited., Laboratory has been assessed and in compliance with CNAS/CL01: 2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

### **FCC-Registration No.: 752021**

Shenzhen Anbotek Compliance Laboratory Limited, 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 752021, July 10, 2013.

### **IC-Registration No.: 8058A-1**

Shenzhen Anbotek Compliance Laboratory Limited., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 8058A, Feb. 22, 2013.

### **Test Location**

All Emissions tests were performed at  
Shenzhen Anbotek Compliance Laboratory Limited. at 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China

## 1.3. Measurement Uncertainty

Radiation Uncertainty : Ur = 4.3dB

Conduction Uncertainty : Uc = 3.4dB

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4: 2009 and FCC Part 15, Paragraph 15.247.

### 2.1. Summary of Test Results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.107, 15.207	Conducted Emission Test	PASS	Complies
FCC Part 15, Paragraph 15.247(b)(1)	Peak Output Power	PASS	Complies
FCC Part 15, Paragraph 15.247(a)(2)	6dB Bandwidth	PASS	Complies
FCC Part 15, Paragraph 15.247(c)	100kHz Bandwidth of Frequency Band Edges	PASS	Complies
FCC Part 15, Paragraph 15.209(a)(f)	Spurious Emission	PASS	Complies
FCC Part 15, Paragraph 15.247(a)(1)	Frequency Separation	-	N/A
FCC Part 15, Paragraph 15.247(a)(1)(iii)	Number of Hopping Frequency	-	N/A
FCC Part 15, Paragraph 15.247(a)(1)(iii)	Time of Occupancy	-	N/A
FCC Part 15, Paragraph 15.247(c)	Peak Power Density	PASS	Complies

\* The digital circuit porting of the EUT has been tested and verified to comply with FCC Part 15, Subpart B., Class B Digital Devices and the associated Radio Receiver has also been tested and found to comply with FCC Part 15, Subpart B – Radio Receivers.

### 2.2. Description of Test Modes

The EUT has been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

IEEE802.11b: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 1 Mbps lowest data rate (worst case) are chosen for the final testing.

IEEE802.11g: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 6 Mbps lowest data rate (the worst case) are chosen for the final testing.

## 2.3. List of channels:

√ - available

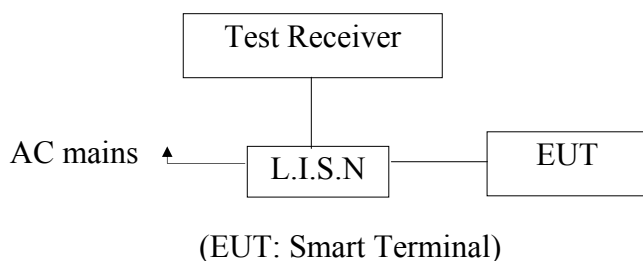
X - tested

Number	Frequency(MHz)		802.11 b/g
1	2412	√	X
2	2417	√	
3	2422	√	
4	2427	√	
5	2432	√	
6	2437	√	X
7	2442	√	
8	2447	√	
9	2452	√	
10	2457	√	
11	2462	√	X

### 3. Conducted Emission Test

#### 3.1. Block Diagram of Test Setup

##### 3.1.1. Block diagram of connection between the EUT and simulators



#### 3.2. Power Line Conducted Emission Measurement Limits (15.207)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. \*Decreasing linearly with logarithm of frequency.  
2. The lower limit shall apply at the transition frequencies.

#### 3.3. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

EUT : Smart Terminal  
Model Number : ST5  
Applicant : IRIS Corporation Berhad

#### 3.4. Operating Condition of EUT

3.4.1. Setup the EUT and simulator as shown as Section 3.1.

3.4.2. Turn on the power of all equipment.

3.4.3. Let the EUT work in test mode (Charging) and measure it.

### 3.5. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.4-2003 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

The test results are reported on Section 3.6.

### 3.6. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Two-Line V-network	Rohde & Schwarz	ENV216	100055	Apr. 23, 2013	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Apr. 23, 2013	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Apr. 23, 2013	1 Year

### 3.7. Power Line Conducted Emission Measurement Results

**PASS.**

The frequency range from 150KHz to 30 MHz is investigated.

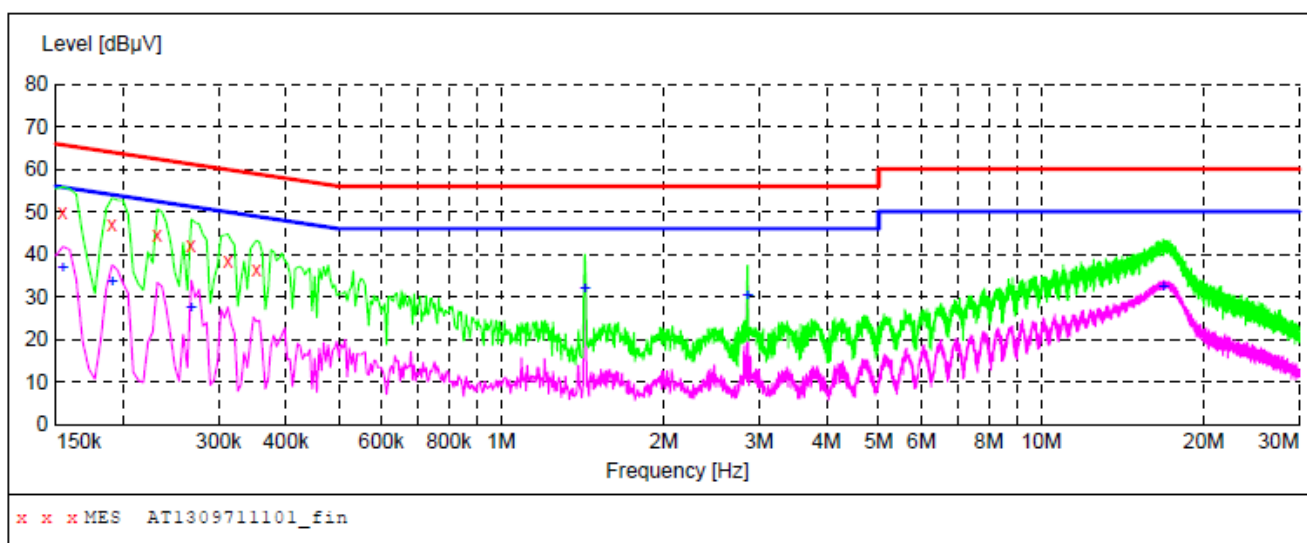
Please refer the following pages.

**CONDUCTED EMISSION TEST DATA**

EUT: Smart Terminal M/N:ST5  
Operating Condition: Charging  
Test Site: 1# Shielded Room  
Operator: Andy Chen  
Test Specification: AC 120V/60Hz  
Comment: Live Line  
Tem:25°C Hum:50%

**SCAN TABLE: "Voltage(150K~30M)FIN"**

Short Description: 150K-30M Disturbance Voltages

**MEASUREMENT RESULT: "AT1309711101\_fin"**

9/8/2013 10:56AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.154500	49.90	20.1	66	15.9	QP	L1	GND
0.190500	46.90	20.1	64	17.1	QP	L1	GND
0.231000	44.50	20.1	62	17.9	QP	L1	GND
0.267000	42.20	20.1	61	19.0	QP	L1	GND
0.312000	38.40	20.1	60	21.5	QP	L1	GND
0.352500	36.40	20.1	59	22.5	QP	L1	GND

**MEASUREMENT RESULT: "AT1309711101\_fin2"**

9/8/2013 10:56AM

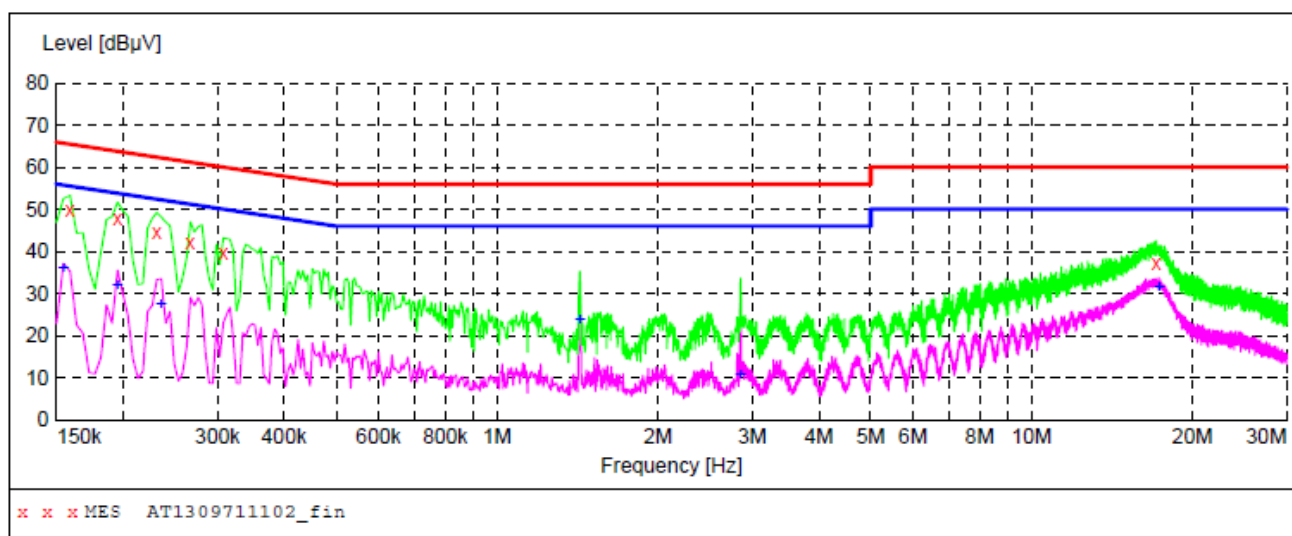
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.154500	36.70	20.1	56	19.1	AV	L1	GND
0.190500	33.60	20.1	54	20.4	AV	L1	GND
0.267000	27.50	20.1	51	23.7	AV	L1	GND
1.427500	31.90	20.3	46	14.1	AV	L1	GND
2.858500	30.20	20.4	46	15.8	AV	L1	GND
16.817500	32.40	20.7	50	17.6	AV	L1	GND

**CONDUCTED EMISSION TEST DATA**

EUT: Smart Terminal M/N:ST5  
Operating Condition: Charging  
Test Site: 1# Shielded Room  
Operator: Andy Chen  
Test Specification: AC 120V/60Hz  
Comment: Neutral Line  
Tem:25°C Hum:50%

**SCAN TABLE: "Voltage (150K~30M) FIN"**

Short Description: 150K-30M Disturbance Voltages

**MEASUREMENT RESULT: "AT1309711102\_fin"**

9/8/2013 10:54AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.159000	50.00	20.1	66	15.5	QP	N	GND
0.195000	47.70	20.1	64	16.1	QP	N	GND
0.231000	44.80	20.1	62	17.6	QP	N	GND
0.267000	42.30	20.1	61	18.9	QP	N	GND
0.307500	39.50	20.1	60	20.5	QP	N	GND
17.105500	37.10	20.7	60	22.9	QP	N	GND

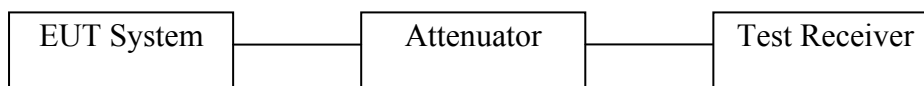
**MEASUREMENT RESULT: "AT1309711102\_fin2"**

9/8/2013 10:54AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.154500	36.10	20.1	56	19.7	AV	N	GND
0.195000	32.10	20.1	54	21.7	AV	N	GND
0.235500	27.60	20.1	52	24.7	AV	N	GND
1.427500	23.90	20.3	46	22.1	AV	N	GND
2.854000	10.80	20.4	46	35.2	AV	N	GND
17.285500	31.70	20.7	50	18.3	AV	N	GND

## 4. FCC Part 15.247 Requirements for DSSS & OFDM Modulation

### 4.1 Test Setup



### 4.2 6dB Bandwidth

#### a. Limit

For the direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

#### b. 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 = 100kHz, VBW  $\geq 3 \times$  RBW = 300kHz,  
Detector= Peak  
Trace mode= Max hold.  
Sweep- auto couple.
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

#### c. Test Setup See 4.1

#### d. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 09, 2013	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 09, 2013	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 23, 2013	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Aug. 09, 2013	3 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 23, 2013	3 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 23, 2013	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

#### e. Test Results

Pass.

**f. Test Data**

Test mode: IEEE 802.11b

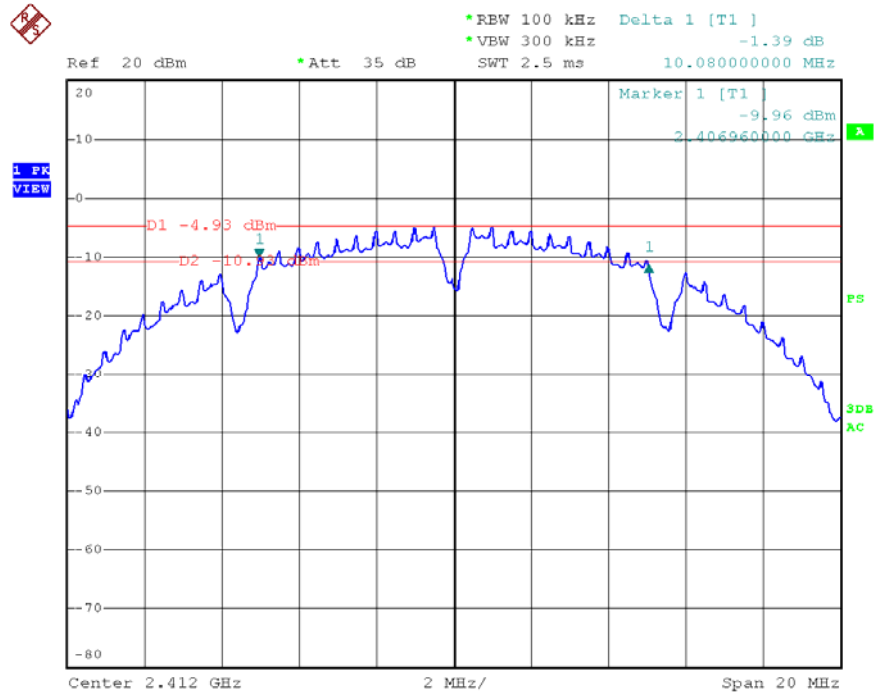
Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Results
Low	2412	10.08	>500	Pass
Mid	2437	10.08		Pass
High	2462	10.08		Pass

Test mode: IEEE 802.11g

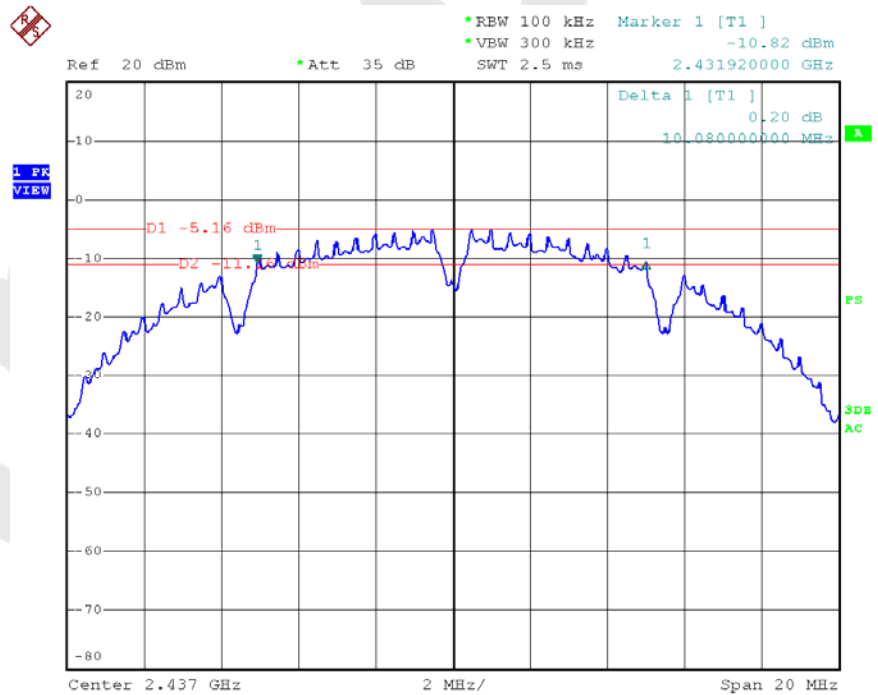
Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Results
Low	2412	16.44	>500	Pass
Mid	2437	16.44		Pass
High	2462	16.44		Pass

Please refer to the following pages.

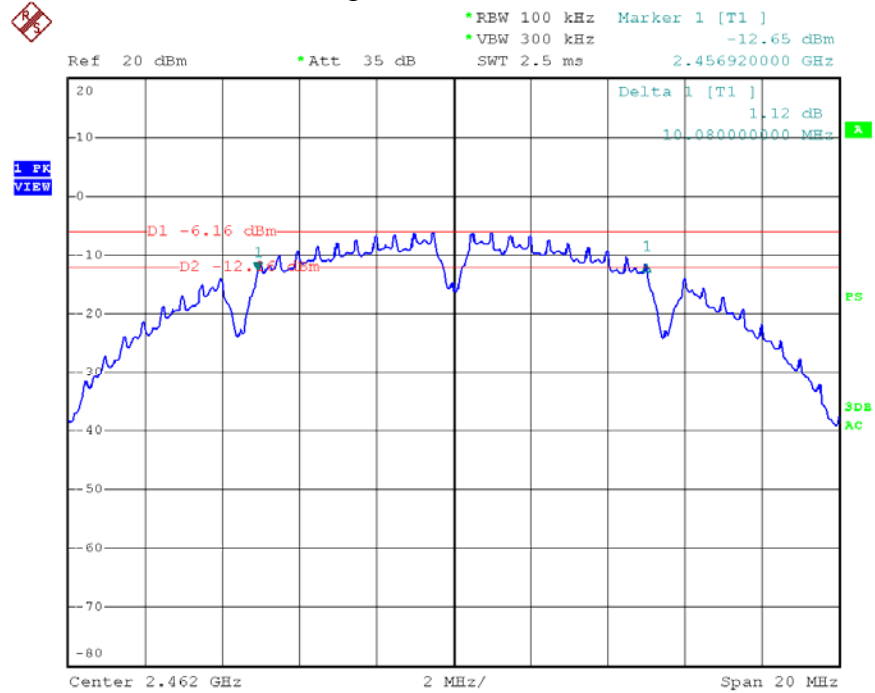
Test Mode: 802.11b---Low



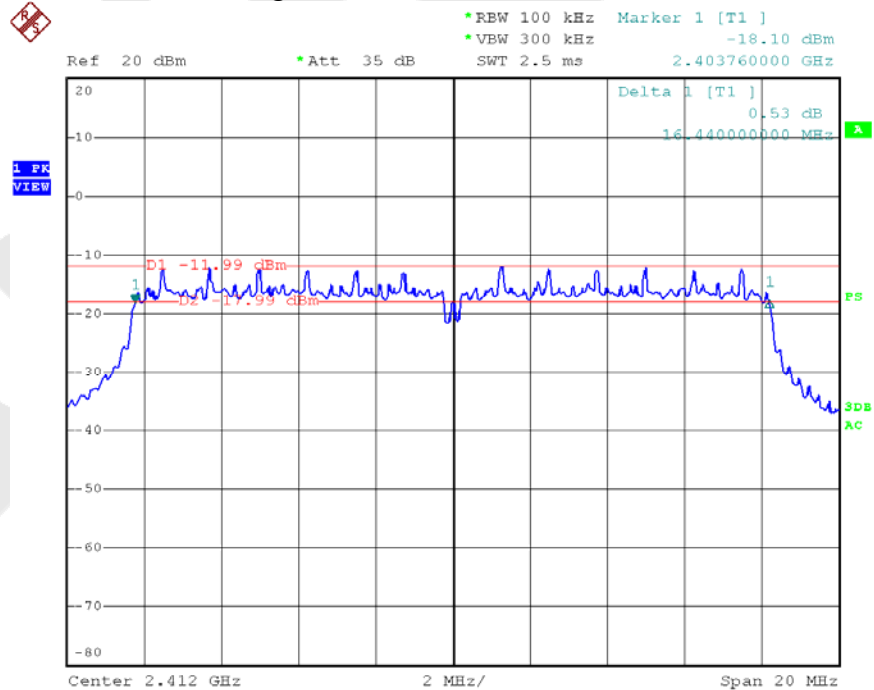
Test Mode: 802.11b---Mid



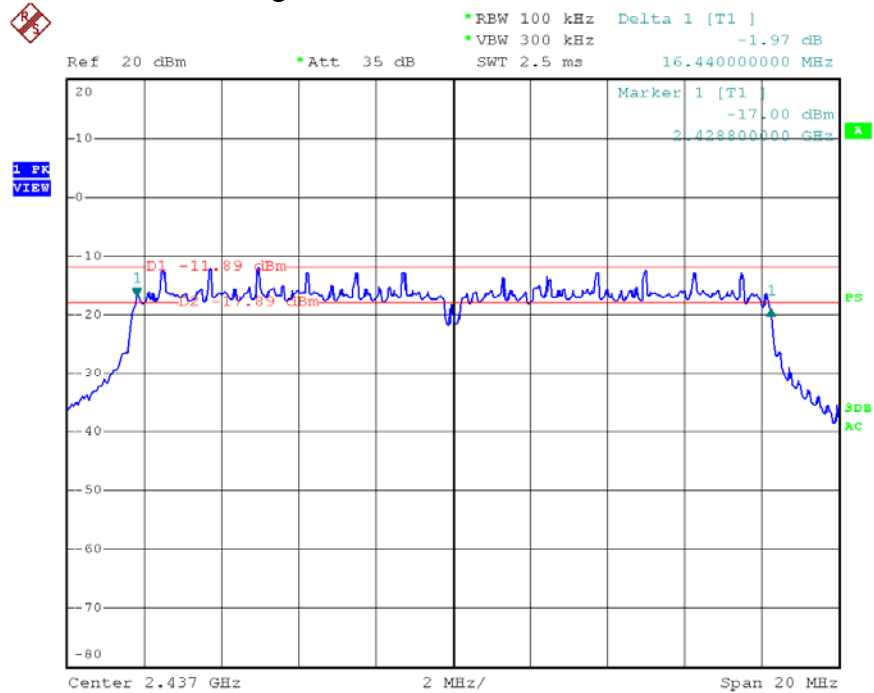
Test Mode: 802.11b---High



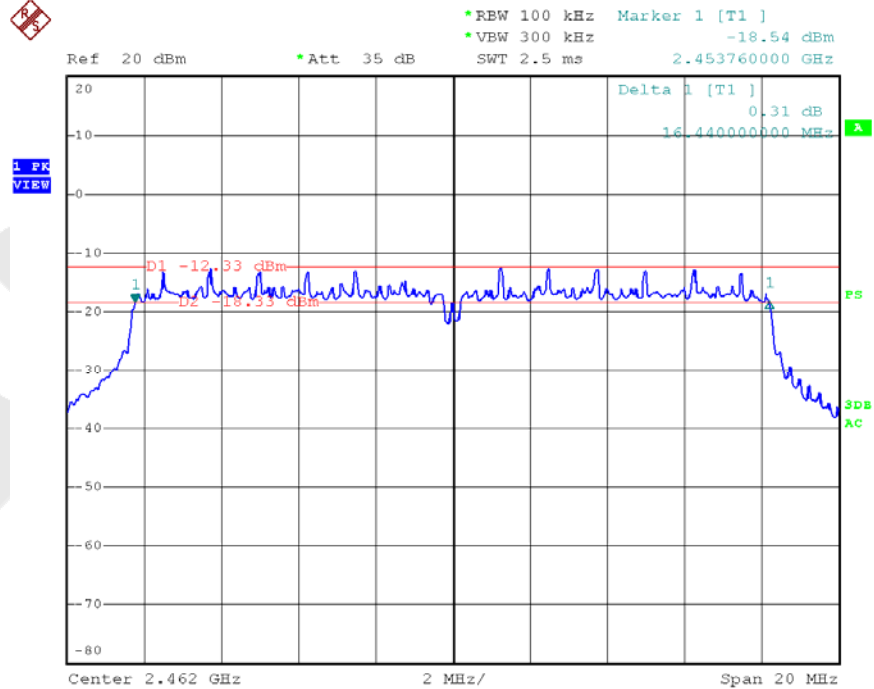
Test Mode: 802.11g---Low



Test Mode: 802.11g---Mid



Test Mode: 802.11g---High



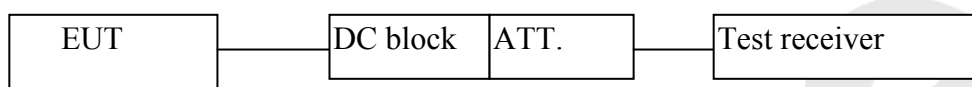
### 4.3. Maximum Peak output power test

#### a. Limit

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

1. For systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 watt (30dBm).
2. Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antenna of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### b. Configuration of Measurement



#### c. Data Rates

IEEE802.11b: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 1 Mbps data rate (worst case) are chosen for the final testing.

IEEE802.11g: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 6 Mbps data rate (the worst case) are chosen for the final testing.

#### d. Test Procedure

**This test was according the kDB 558074 9.1.2:**

1. This procedure may be used when the maximum available RBW of the measurement instrument is less than the DTS bandwidth.
2. Set the RBW = 1 MHz.
3. Set the VBW  $\geq 3 \times \text{RBW} = 3 \text{ MHz}$ .
4. Set the span  $\geq 1.5 \times \text{DTS bandwidth}$ .
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select peak detector). If the instrument does not have a band power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS bandwidth.

#### e. Test Equipment

Same as the equipment listed in 4.2.

#### f. Test Results

Pass.

### g. Test Data

Test mode: IEEE 802.11b

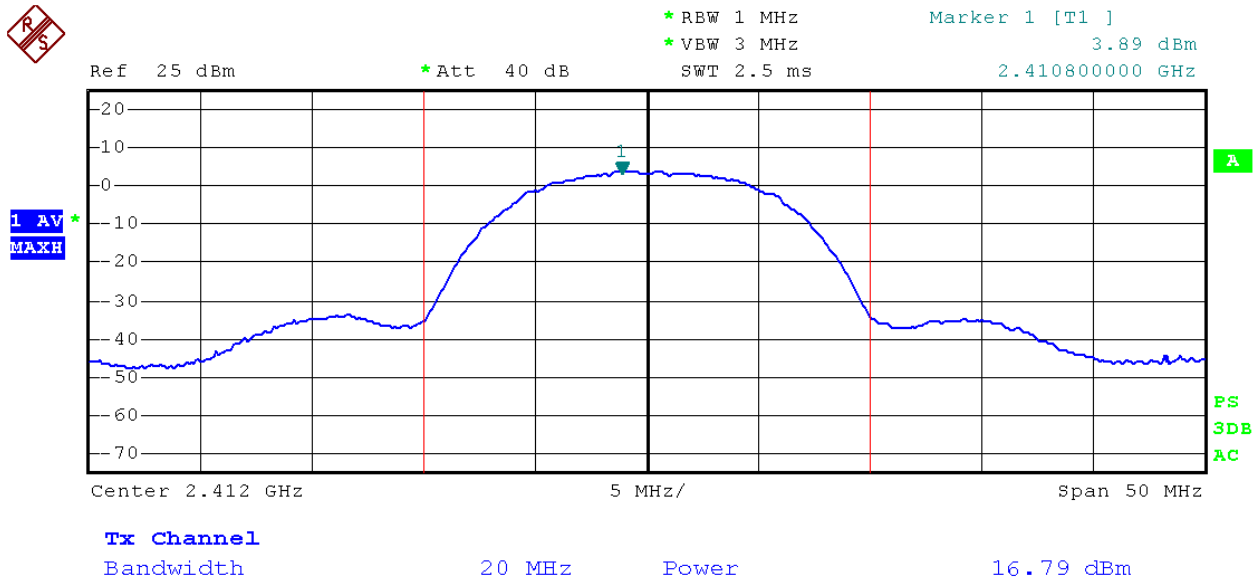
Channel	Frequency (MHz)	Maximum transmit power	Limit		Result
		(dBm)	(dBm)	(watts)	
Low	2412	16.79	30	1	Pass
Mid	2437	16.89			Pass
High	2462	16.68			Pass

Test mode: IEEE 802.11g

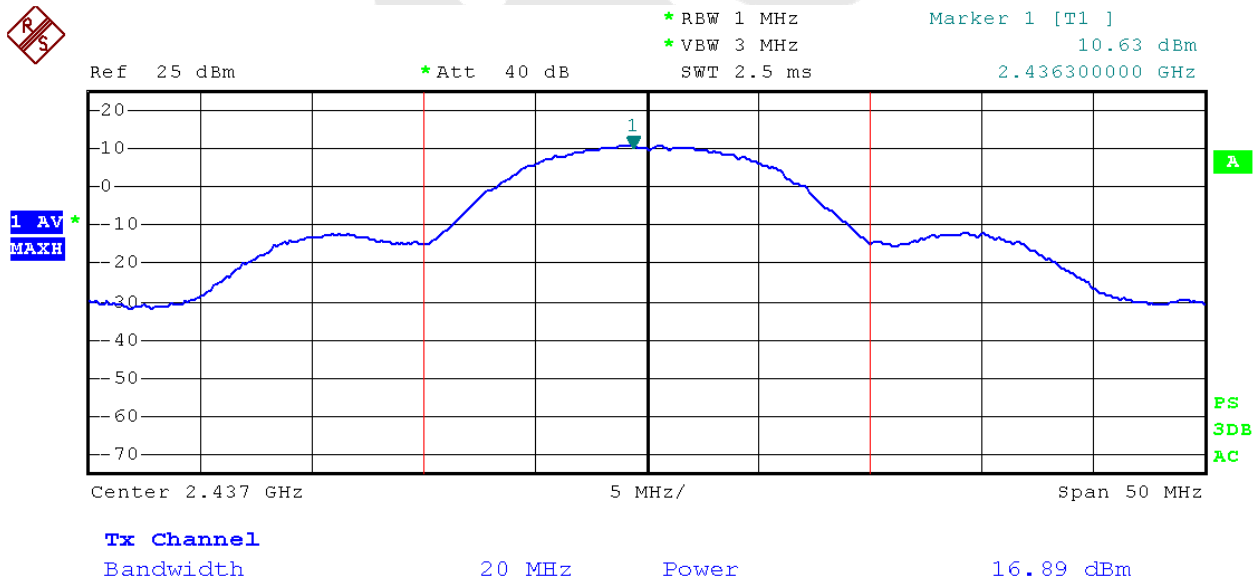
Channel	Frequency (MHz)	Maximum transmit power	Limit		Result
		(dBm)	(dBm)	(watts)	
Low	2412	16.39	30	1	Pass
Mid	2437	16.35			Pass
High	2462	16.37			Pass

Please refer to the following pages.

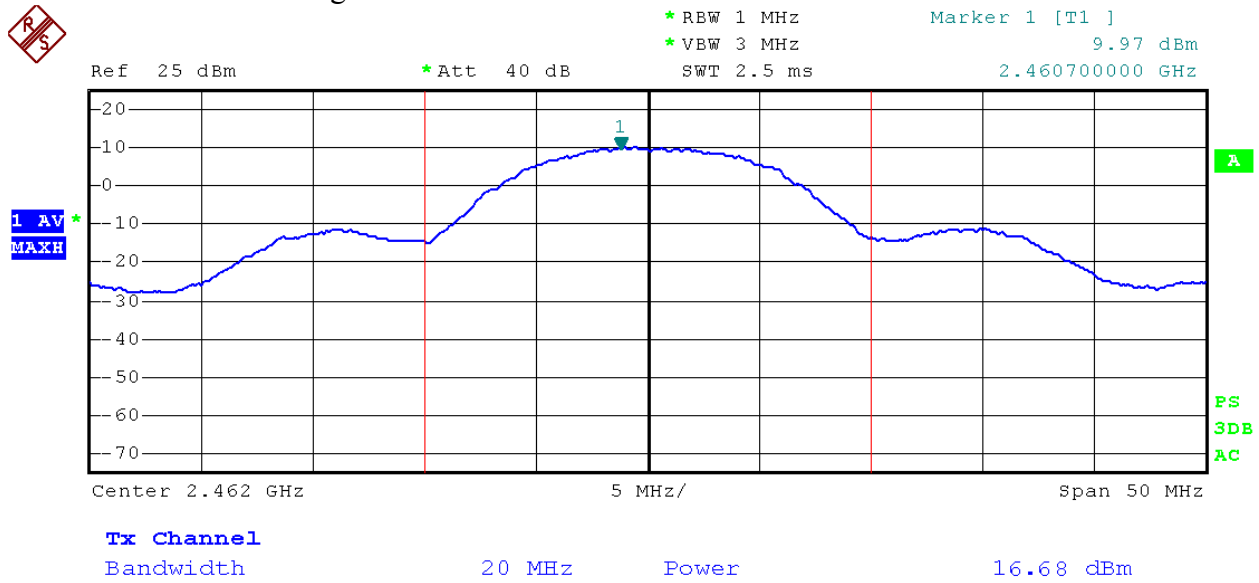
Test Mode: 802.11b ---Low



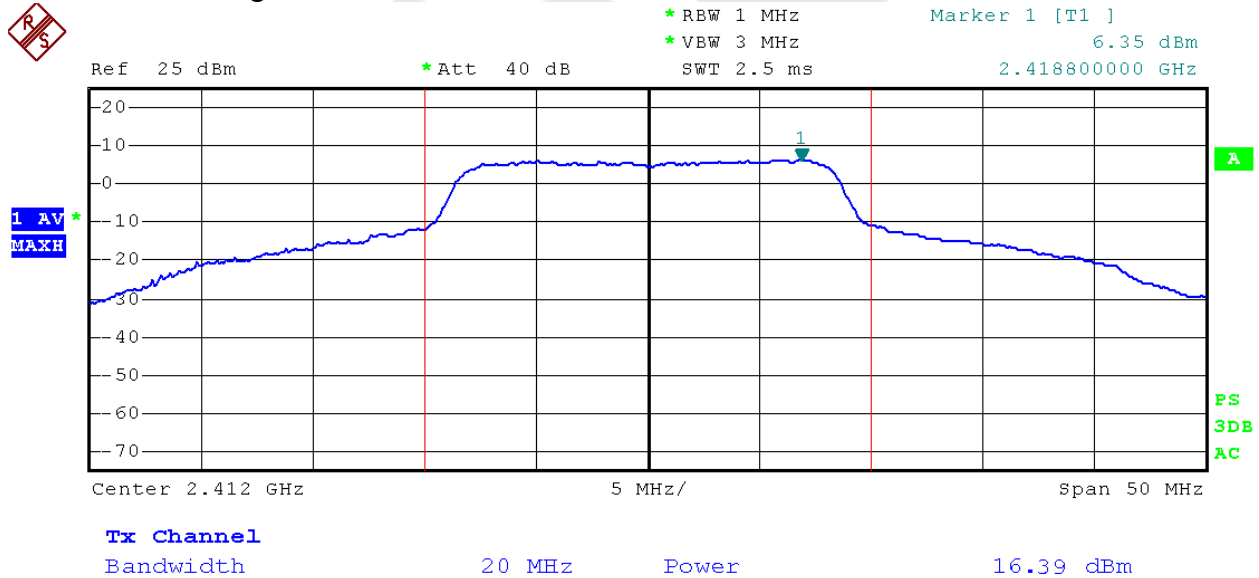
Test Mode: 802.11b---Mid



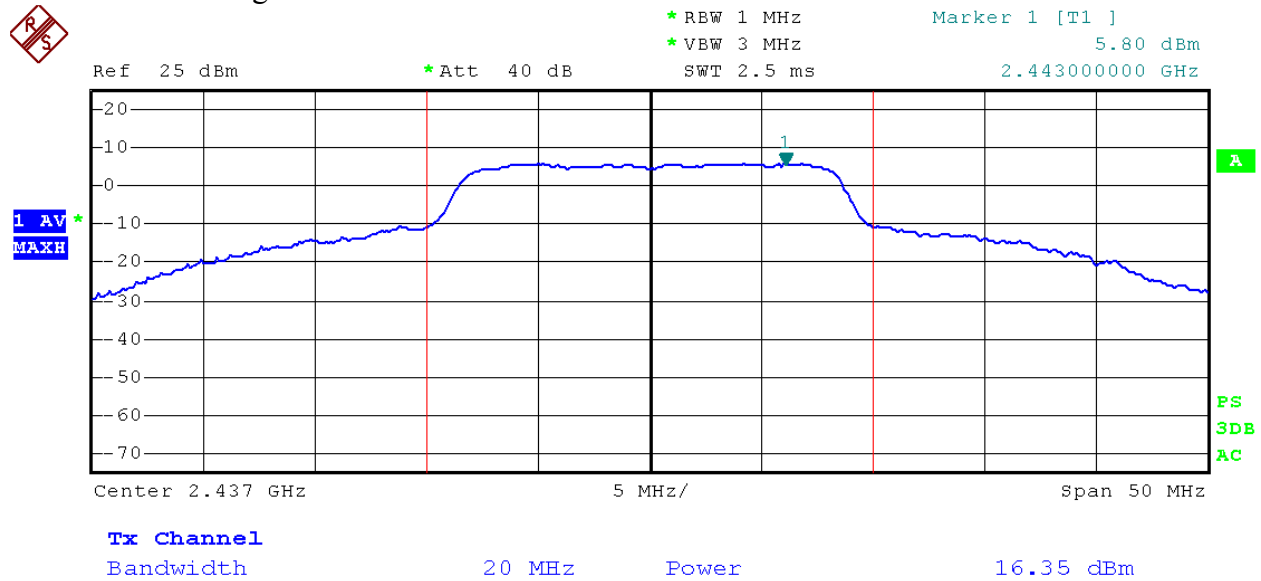
Test Mode: 802.11b---High



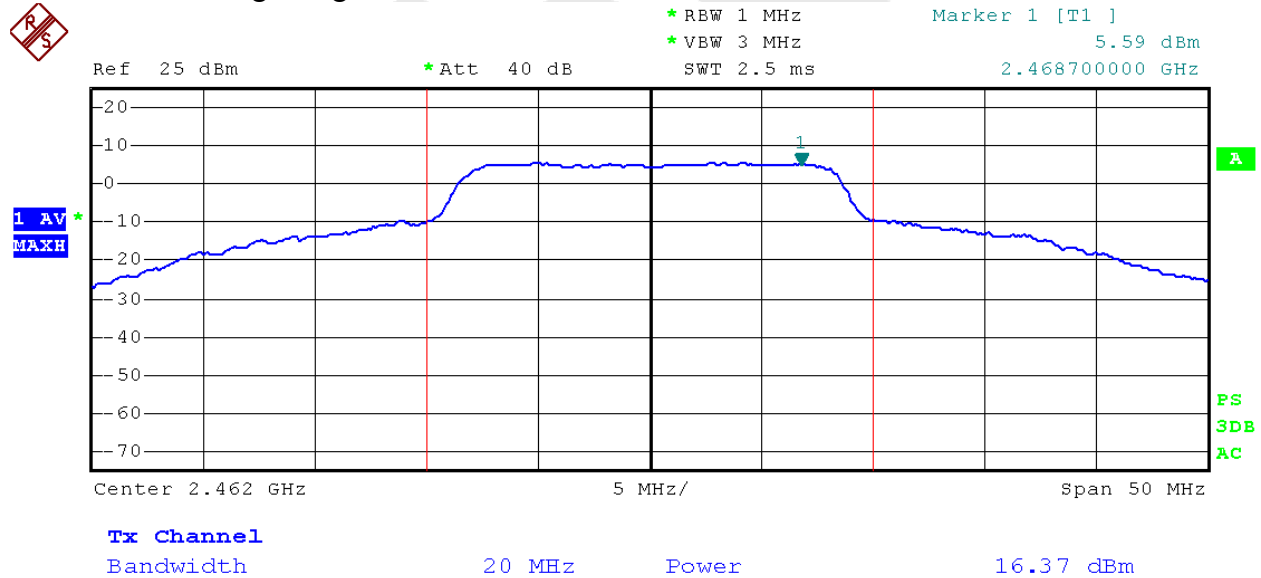
Test Mode: 802.11g ---Low



Test Mode: 802.11g---Mid



Test Mode: 802.11g---High



#### 4.4. Band Edges Measurement

##### **a. Limit**

According to §15.247(c), 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. 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).

##### **b. Test Procedure**

1. Set RBW=100KHz, VBW=300KHz,
2. Detector=peak
3. Sweep time= auto
4. Trace mode=max hold.

##### **c. Test Equipment**

Same as the equipment listed in 4.2.

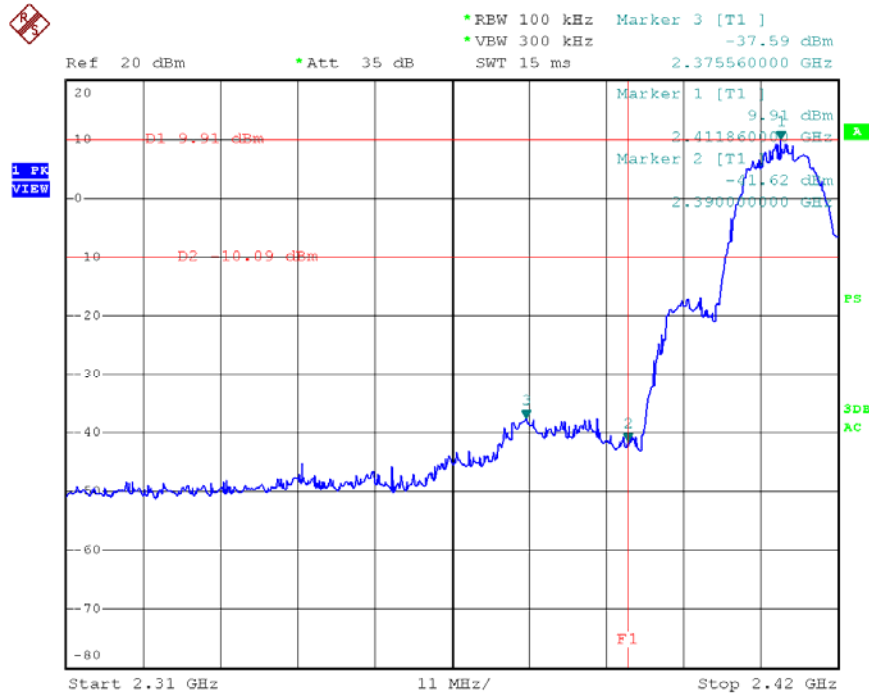
##### **d. Test Results**

Pass.

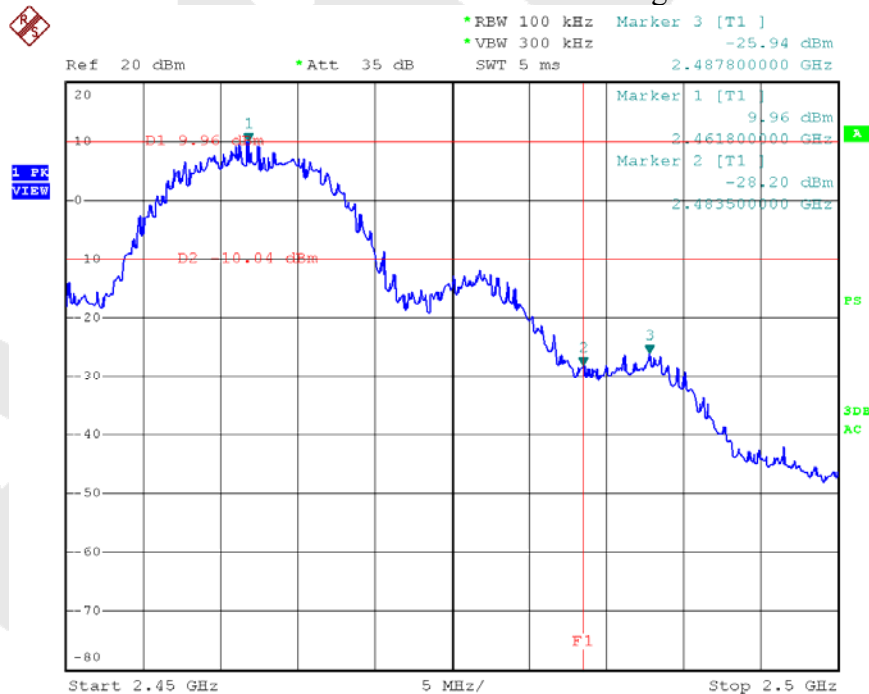
##### **e. Test Plots**

See the following page.

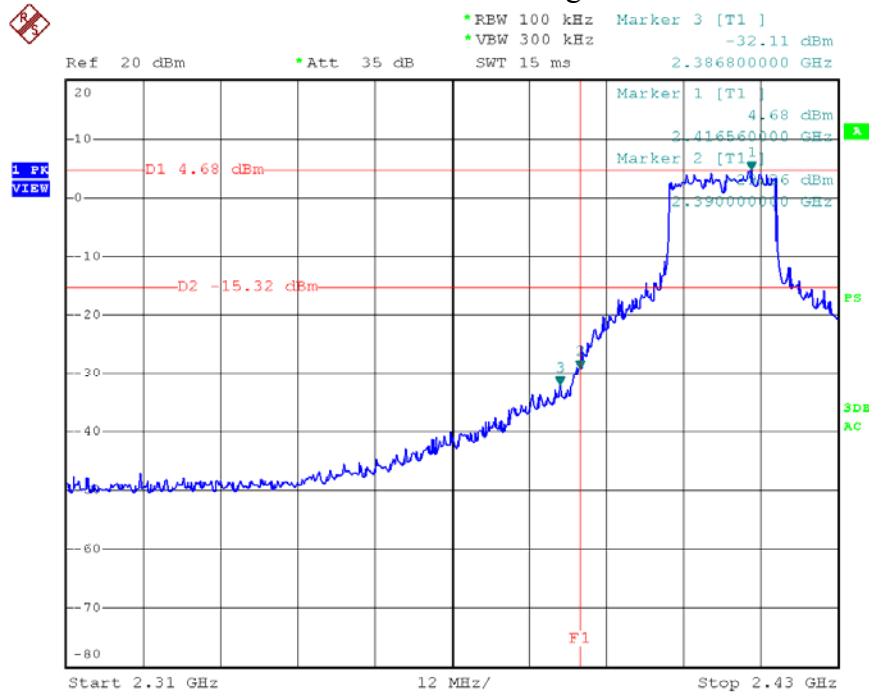
Test Mode: 802.11b ---Low



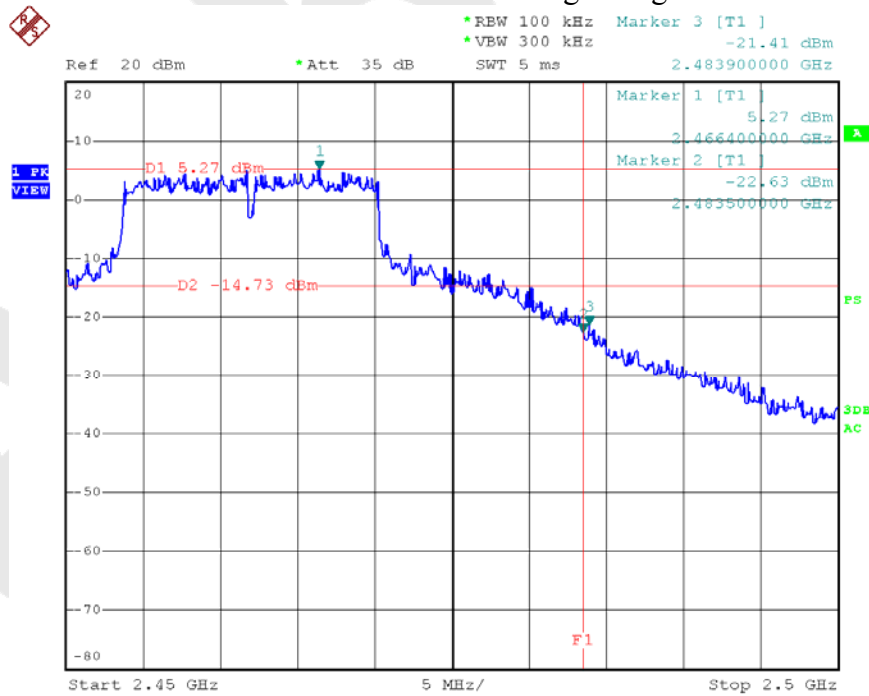
Test Mode: 802.11b ---High



Test Mode: 802.11g ---Low



Test Mode: 802.11g ---High



#### 4.5. Peak Power Spectral Density

##### a. Limit

1. For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.
2. The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

##### b. Test Procedure

1. Place the EUT on the table and set it in transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 1.5MHz, Sweep=500s
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.

##### c. Test Equipment

Same as the equipment listed in 4.2.

##### d. Test Setup

See 4.1

##### e. Test Results

Pass

##### f. Test Data

Please refer to the following data.

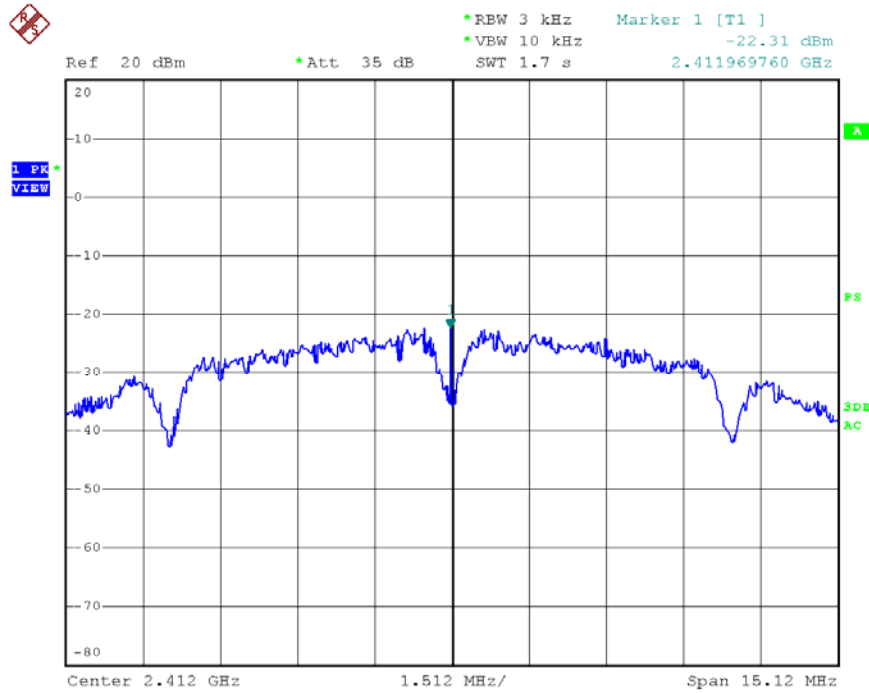
Test mode: IEEE 802.11b

Channel	Frequency (MHz)	PPSD (dBm/3KHz)	ΣPPSD (dBm/3KHz)	Limit (dBm)	Result
Low	2412	-22.31	-	8.00	Pass
Mid	2437	-22.58	-		Pass
High	2462	-22.63	-		Pass

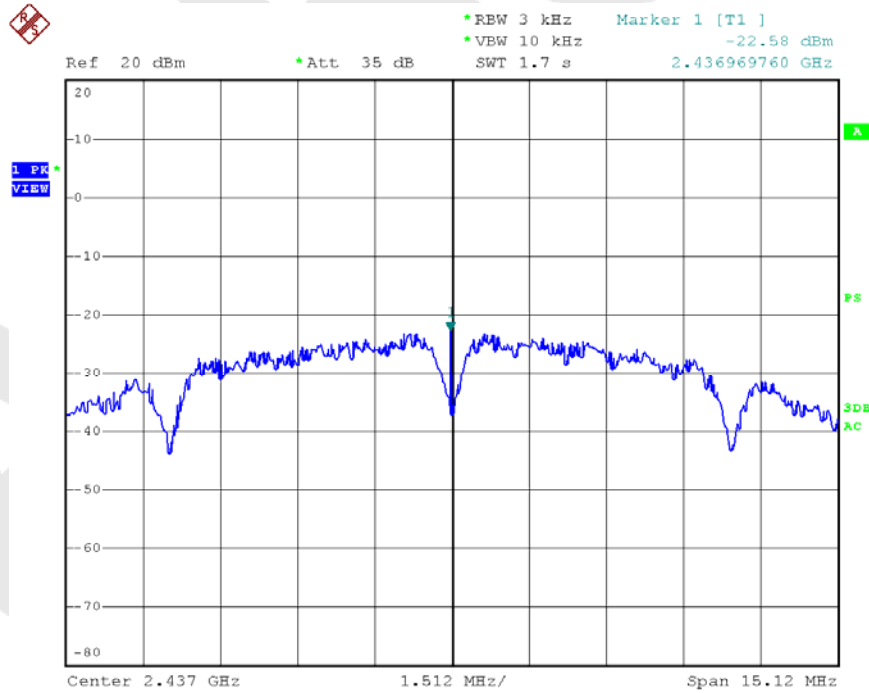
Test mode: IEEE 802.11g

Channel	Frequency (MHz)	PPSD (dBm)	ΣPPSD (dBm)	Limit (dBm)	Result
Low	2412	-22.34	-	8.00	Pass
Mid	2437	-22.57	-		Pass
High	2462	-22.80	-		Pass

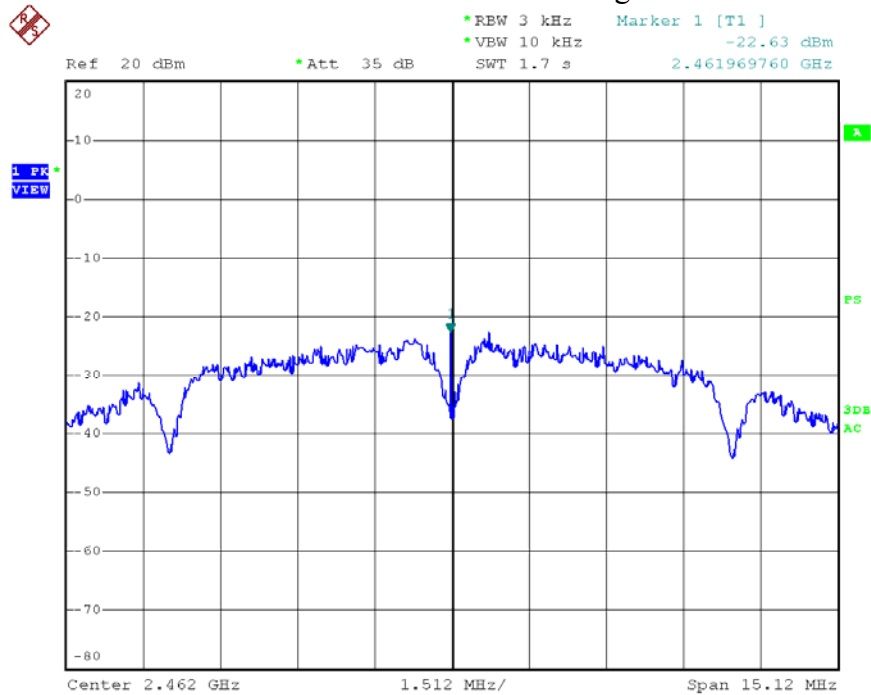
### 802.11 b CH--Low



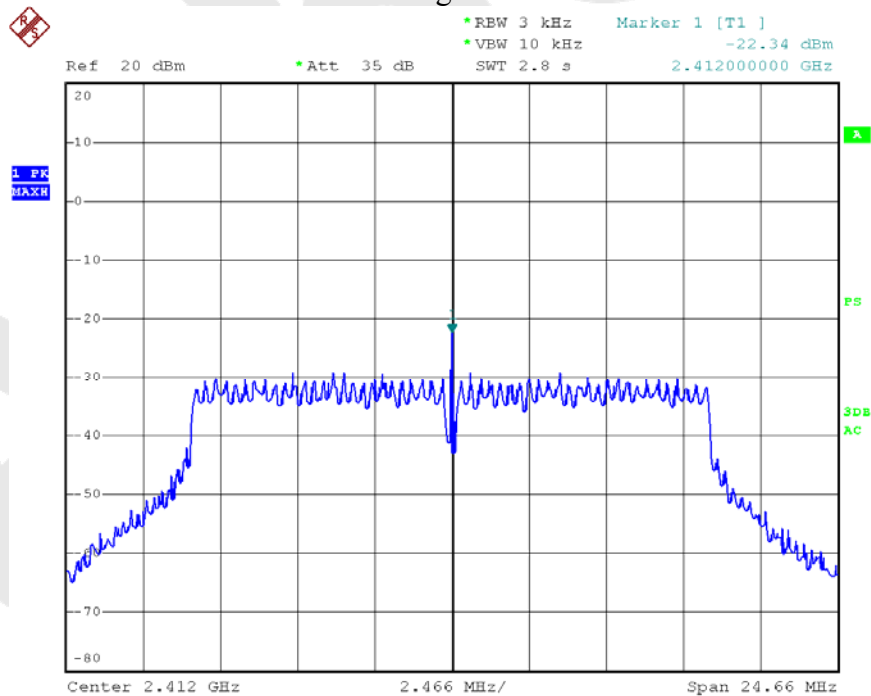
### 802.11 b CH--Mid

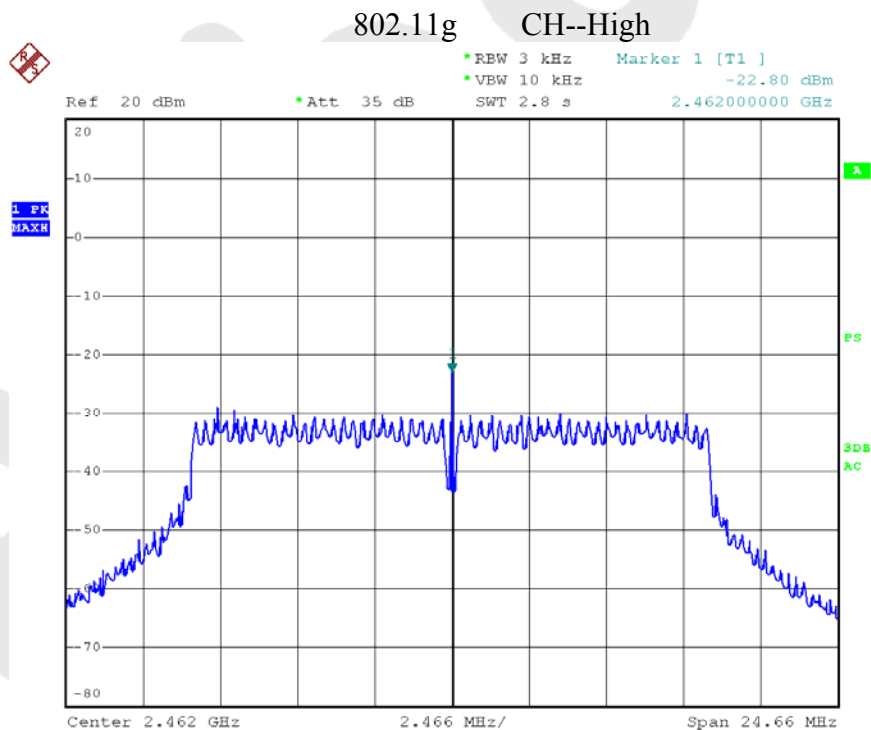
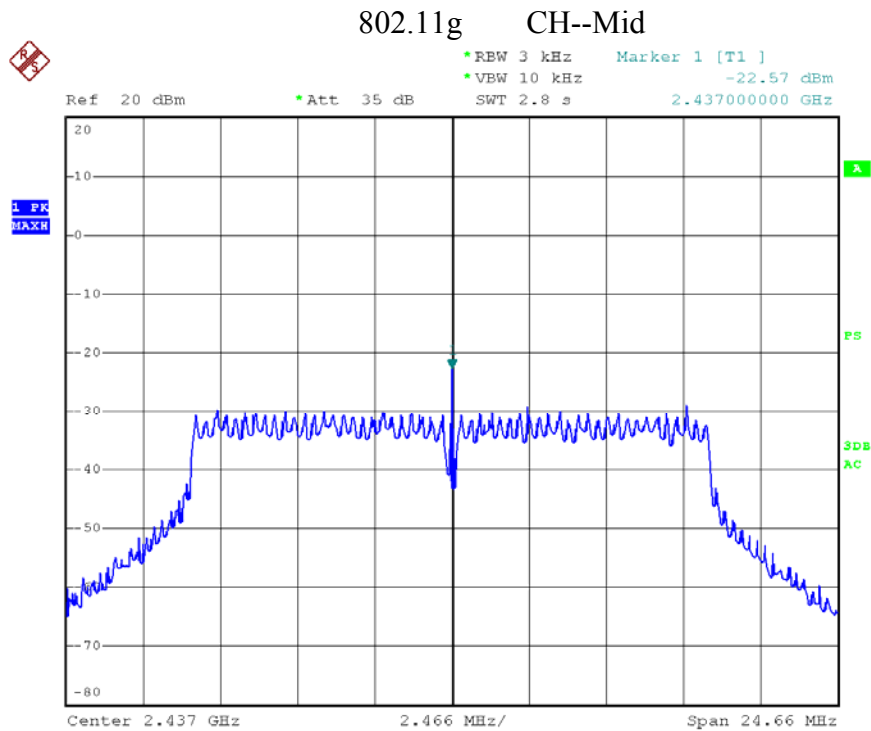


### 802.11 b CH--High



### 802.11g CH--Low





## 4.6. Radiated Emissions

### 4.6.1.1. Test Limits (< 30 MHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30

### 4.6.1.2. Test Limits ( $\geq$ 30 MHz)

FIELD STRENGTH of Fundamental: 902-928 MHz 2.4-2.4835 GHz 94 dB $\mu$ V/m @3m	FIELD STRENGTH of Harmonics 54 dB $\mu$ V/m @3m	S15.209 30 - 88 MHz 88 - 216 MHz 216 - 960 MHz ABOVE 960 MHz	40 dBuV/m @3M 43.5 46 54dBuV/m
---	---	--	---

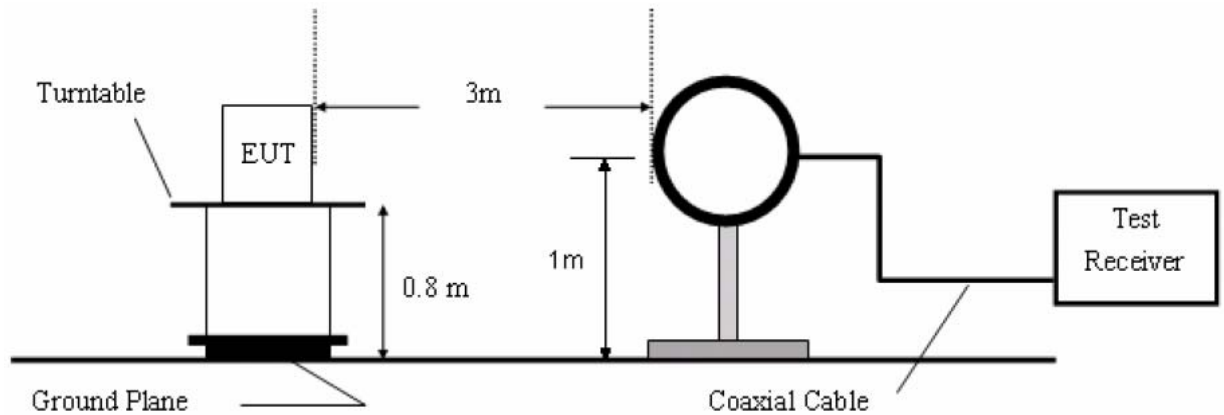
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the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

### Test Equipment

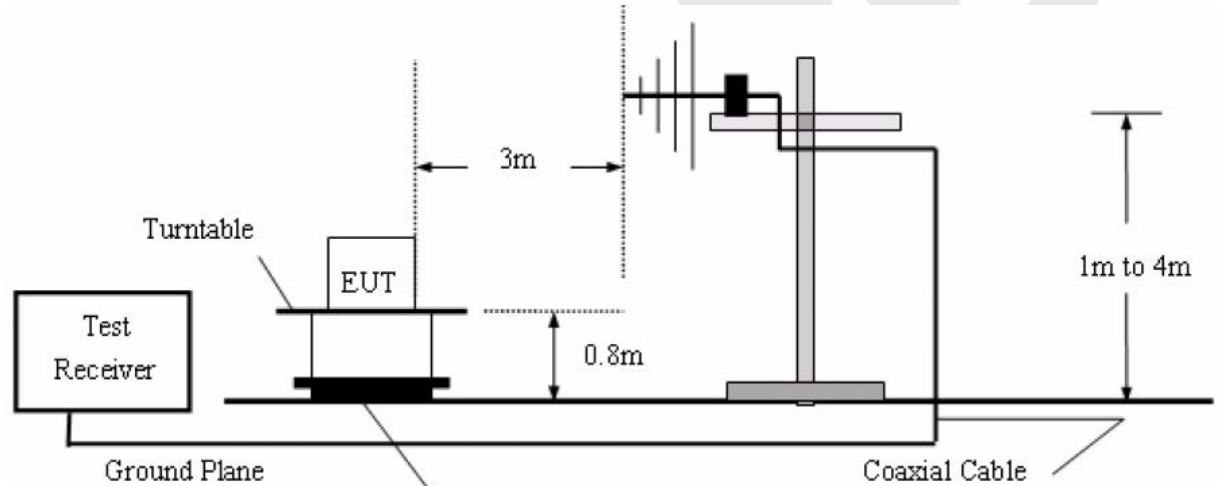
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 09, 2013	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 23, 2013	1 Year
3.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Aug. 09, 2013	3 Year
4.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 23, 2013	3 Year
5.	Pre-amplifier	SONOMA	310N	186860	Apr. 23, 2013	1 Year
6.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

#### 4.6.2. Test Configuration:

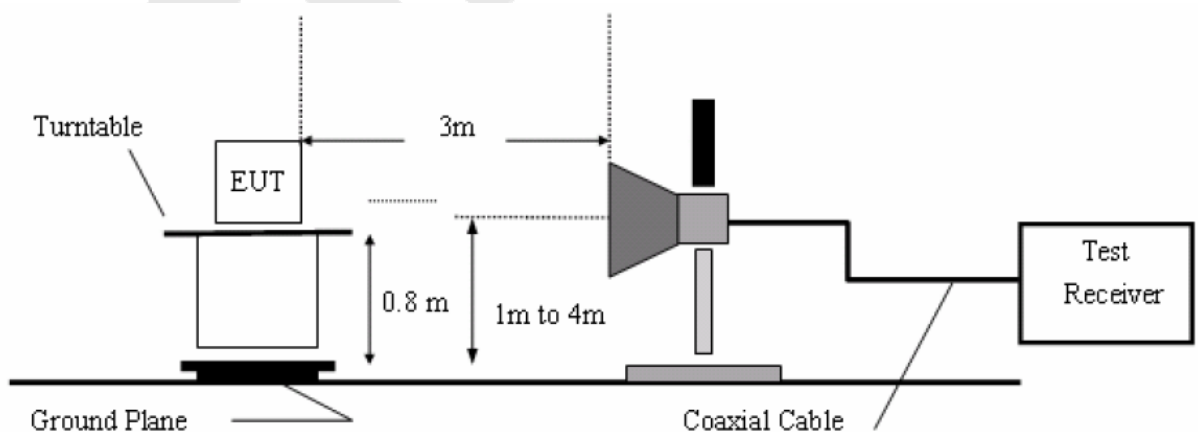
##### 4.6.2.1. 9k to 30MHz emissions:



##### 4.6.2.2. 30M to 1G emissions:



##### 4.6.2.3. 1G to 40G emissions:



#### 4.6.3. Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

Measurements are made on 9KHz to 30MHz and 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

All readings from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120kHz. All reading are above 1GHz, peak & average values with a resolution bandwidth of 1MHz. The EUT is tested in 9\*6\*6 Chamber.

The test results are listed in Section 4.6.4.

#### 5.6.4. Test Results

##### Below 30MHz

There is no emissions were detected below 30MHz

##### From 30MHz to 1 GHz

Operation Mode: Normal link

Temperature: 25°C

Humidity: 70 % RH

Test Date: Sep. 18, 2013

Tested by: Rock Zeng

Polarity: Ver. / Hor.

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV/m)	Factor (dB)	Actual FS (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)
74.210	V	Peak	37.48	-10.92	26.56	40.00	-13.44
124.560	V	Peak	41.19	-16.12	25.07	43.50	-18.43
258.790	V	Peak	43.69	-11.49	32.20	46.00	-13.80
468.330	V	Peak	46.57	-11.85	34.72	46.00	-11.28
581.690	V	Peak	45.81	-9.49	36.32	46.00	-9.68
714.070	V	Peak	39.62	-8.34	31.28	46.00	-14.72
58.960	H	Peak	32.65	-10.42	22.23	43.50	-21.27
156.790	H	Peak	38.33	-13.78	24.55	46.00	-21.45
373.980	H	Peak	42.51	-12.17	30.34	46.00	-15.66
479.620	H	Peak	44.09	-11.85	32.24	46.00	-13.76
491.760	H	Peak	42.18	-11.00	31.18	46.00	-14.82
748.080	H	Peak	44.78	-8.39	36.39	46.00	-9.61

##### Notes:

1. Measuring frequencies from 30 MHz to the 1GHz and the IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/Quasi-peak detector mode.
3. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

**Above 1 GHz (The worst Mode)**

Operation Mode: TX / IEEE 802.11g / CH Low  
Temperature: 25oC  
Humidity: 50 % RH

Test Date: Sep. 18, 2013  
Tested by: Rock Zeng  
Polarity: Ver. / Hor.

Item	Freq. (MHz)	Ant.Pol H/V	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level		Peak Limit (dBuV/)	AV Limit (dBuV/)	Margin (dB)	Remark
							Peak (dBuV/)	AV (dBuV/)				
1.	4824	H	57.22	35.76	4.58	34.94	62.62	---	74.00	54.00	-11.38	Peak
2.	4824	H	37.12	35.76	4.58	34.94	---	42.52	74.00	54.00	-11.48	AVG
3.	7240	H	42.95	37.85	5.63	35.25	51.18	---	74.00	---	-22.82	Peak
4.	9648	H	43.19	39.39	6.34	35.70	53.22	---	74.00	---	-20.78	Peak
5.	12060	H	---	---	---	---	---	---	---	---	---	---
6.	14472	H	---	---	---	---	---	---	---	---	---	---
7.	16884	H	---	---	---	---	---	---	---	---	---	---
8.	19296	H	---	---	---	---	---	---	---	---	---	---
9.	21708	H	---	---	---	---	---	---	---	---	---	---
10.	24120	H	---	---	---	---	---	---	---	---	---	---

Note: An item 3 and 4 are on un-restricted band, so the limit is -20dB for the field strength of the fundamental emission

1.	4824	V	53.19	35.13	4.58	34.94	57.96	---	74.00	54.00	-16.04	Peak
2.	4824	V	39.79	35.13	4.58	34.94	---	44.56	74.00	54.00	-9.44	AVG
3.	7240	V	41.31	36.90	5.63	35.25	48.59	---	74.00	---	-25.41	Peak
4.	9648	V	42.14	38.57	6.34	35.70	51.35	---	74.00	---	-22.65	Peak
5.	12060	V	---	---	---	---	---	---	---	---	---	---
6.	14472	V	---	---	---	---	---	---	---	---	---	---
7.	16884	V	---	---	---	---	---	---	---	---	---	---
8.	19296	V	---	---	---	---	---	---	---	---	---	---
9.	21708	V	---	---	---	---	---	---	---	---	---	---
10.	24120	V	---	---	---	---	---	---	---	---	---	---

Note: An item 3 and 4 are on un-restricted band, so the limit is -20dB for the field strength of the fundamental emission

Operation Mode: TX / IEEE 802.11b / CH Mid  
Temperature: 25°C  
Humidity: 50 % RH

Test Date: Sep. 18, 2013  
Tested by: Rock Zeng  
Polarity: Ver. / Hor.

Item	Freq. (MHz)	Ant.Pol H/V	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level		Peak Limit (dBuV/)	AV Limit (dBuV/)	Margin (dB)	Remark
							Peak (dBuV/)	AV (dBuV/)				
1.	4874	H	49.71	35.83	4.61	34.93	55.22	---	74.00	54.00	-18.78	Peak
2.	4874	H	41.19	35.83	4.61	34.93	---	46.70	74.00	54.00	-7.30	AVG
3.	7311	H	42.58	37.86	5.64	35.26	50.82	---	74.00	54.00	-23.18	Peak
4.	9748	H	41.77	39.51	6.36	35.70	51.94	---	74.00	---	-22.06	Peak
5.	12185	H	---	---	---	---	---	---	---	---	---	---
6.	14622	H	---	---	---	---	---	---	---	---	---	---
7.	17059	H	---	---	---	---	---	---	---	---	---	---
8.	19496	H	---	---	---	---	---	---	---	---	---	---
9.	21933	H	---	---	---	---	---	---	---	---	---	---
10.	24370	H	---	---	---	---	---	---	---	---	---	---

Note: An item 4 are on un-restricted band, so the limit is -20dB for the field strength of the fundamental emission.

1.	4874	V	52.20	35.18	4.61	34.93	57.06	---	74.00	54.00	-16.94	Peak
2.	4874	V	41.22	35.18	4.61	34.93	---	46.08	74.00	54.00	-7.92	AVG
3.	7311	V	42.79	36.92	5.64	35.26	50.09	---	74.00	54.00	-23.91	Peak
4.	9748	V	41.38	38.71	6.36	35.70	50.75	---	74.00	---	-23.25	Peak
5.	12185	V	---	---	---	---	---	---	---	---	---	---
6.	14622	V	---	---	---	---	---	---	---	---	---	---
7.	17059	V	---	---	---	---	---	---	---	---	---	---
8.	19496	V	---	---	---	---	---	---	---	---	---	---
9.	21933	V	---	---	---	---	---	---	---	---	---	---
10.	24370	V	---	---	---	---	---	---	---	---	---	---

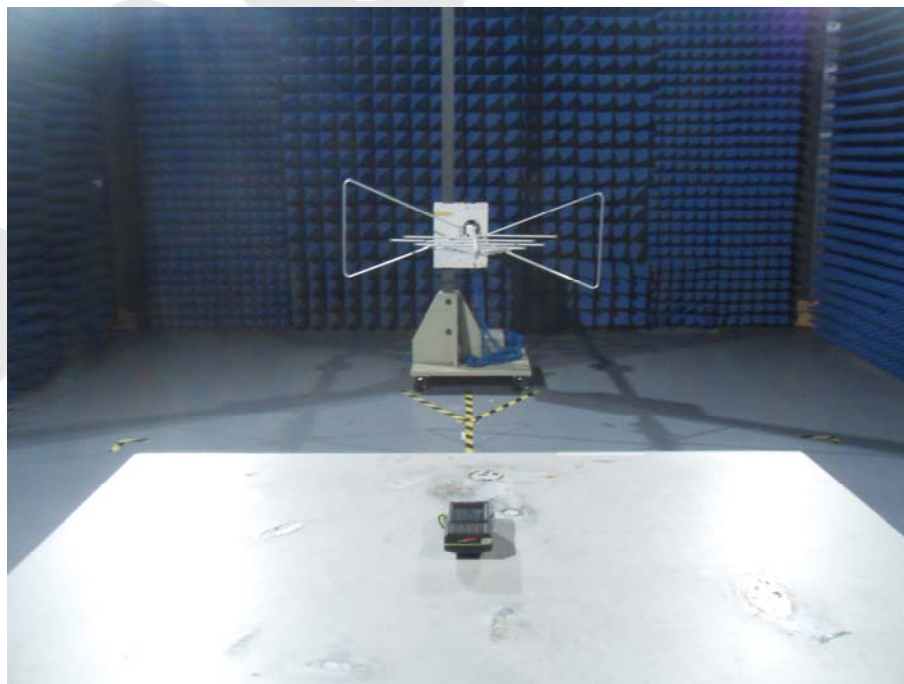
Note: An item 4 are on un-restricted band, so the limit is -20dB for the field strength of the fundamental emission.

## 5. PHOTOGRAPH

### 5.1. Photo of Conducted Emission Measurement



### 5.2. Photo of Radiation Emission Test



## APPENDIX II (EXTERNAL PHOTOS)

Figure 1  
The EUT-Overall View



Figure 2  
The EUT-Front View



Figure 3  
The EUT-Back View



Figure 4  
The Adapter-Label View



### APPENDIX III (INTERNALPHOTOS)

Figure 5  
The EUT-Inside View

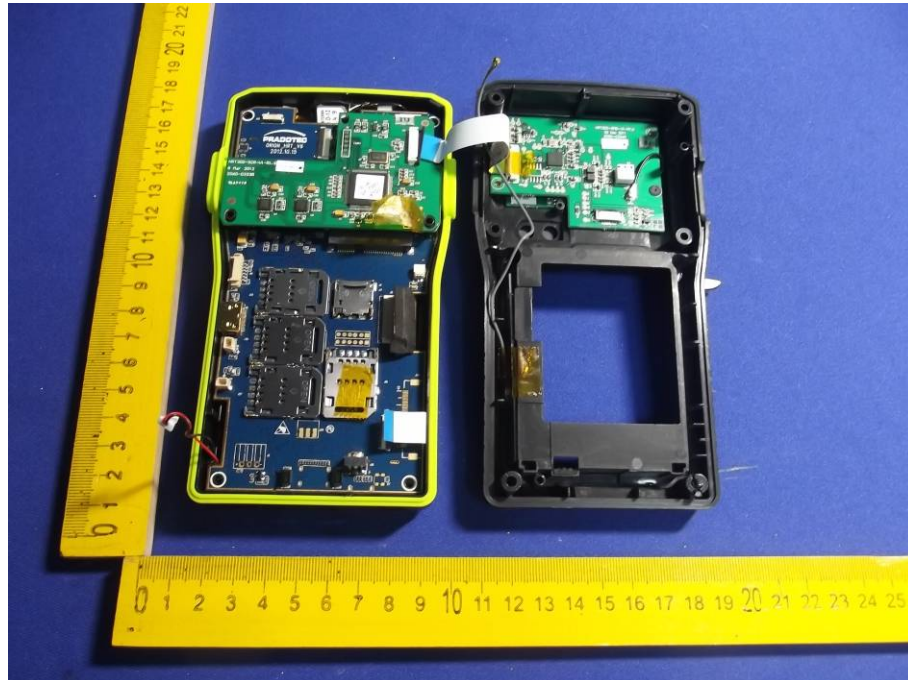


Figure 6  
The EUT-Battery View



Figure 7  
PCB of the EUT-Front View

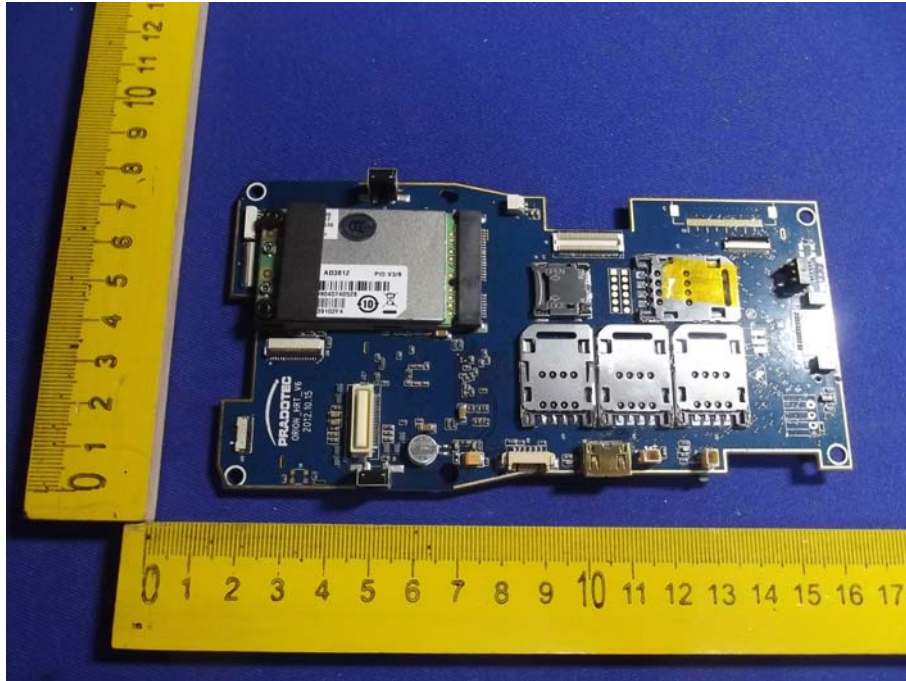


Figure 8  
PCB of the EUT-Back View (Shielding)

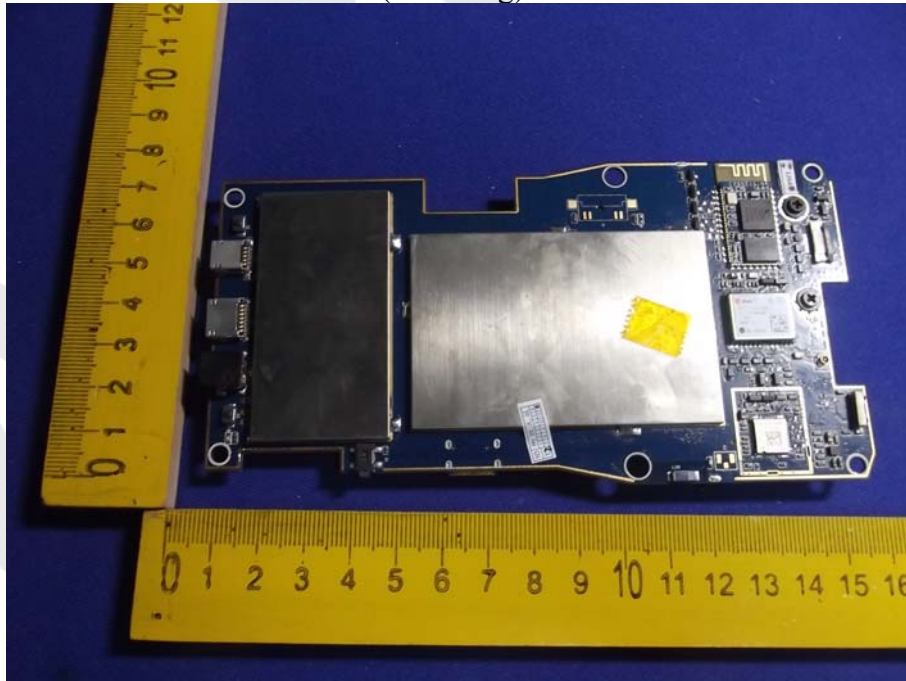


Figure 9  
PCB of the EUT-Back View (Non-Shielding)

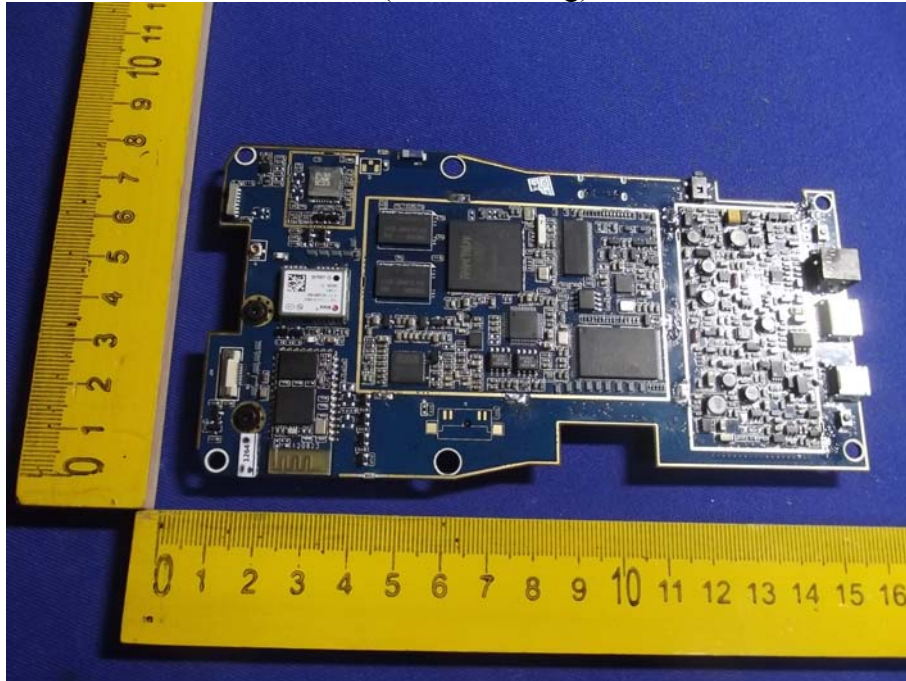


Figure 10  
PCB of the EUT View

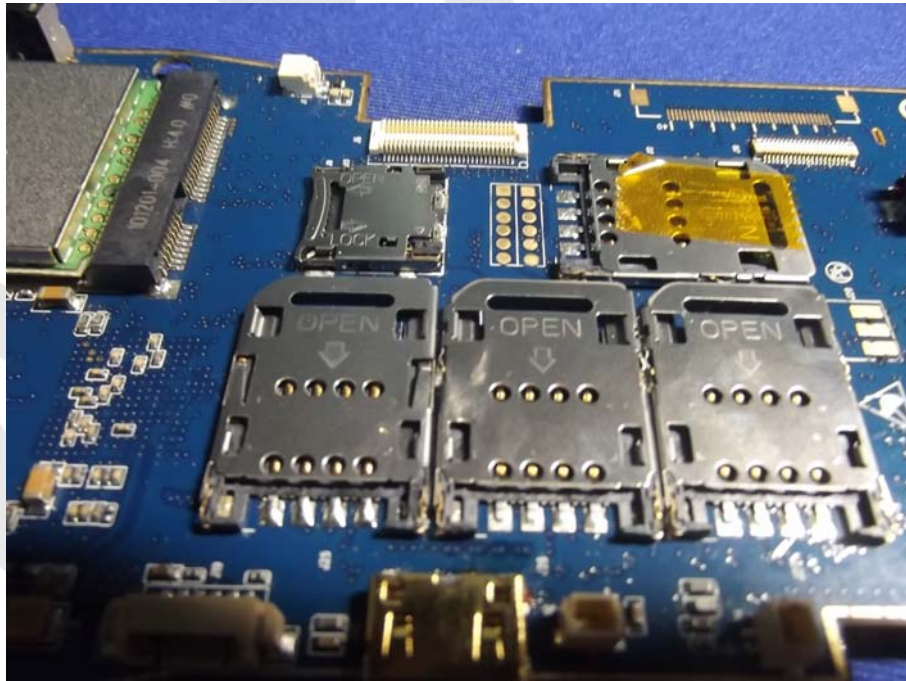


Figure 11  
PCB of the WIFI Module View



Figure 12  
PCB of the BT Module View



Figure 13

PCB of the 3G Module-Front View (Shielding)



Figure 14

PCB of the 3G Module-Front View (Shielding)

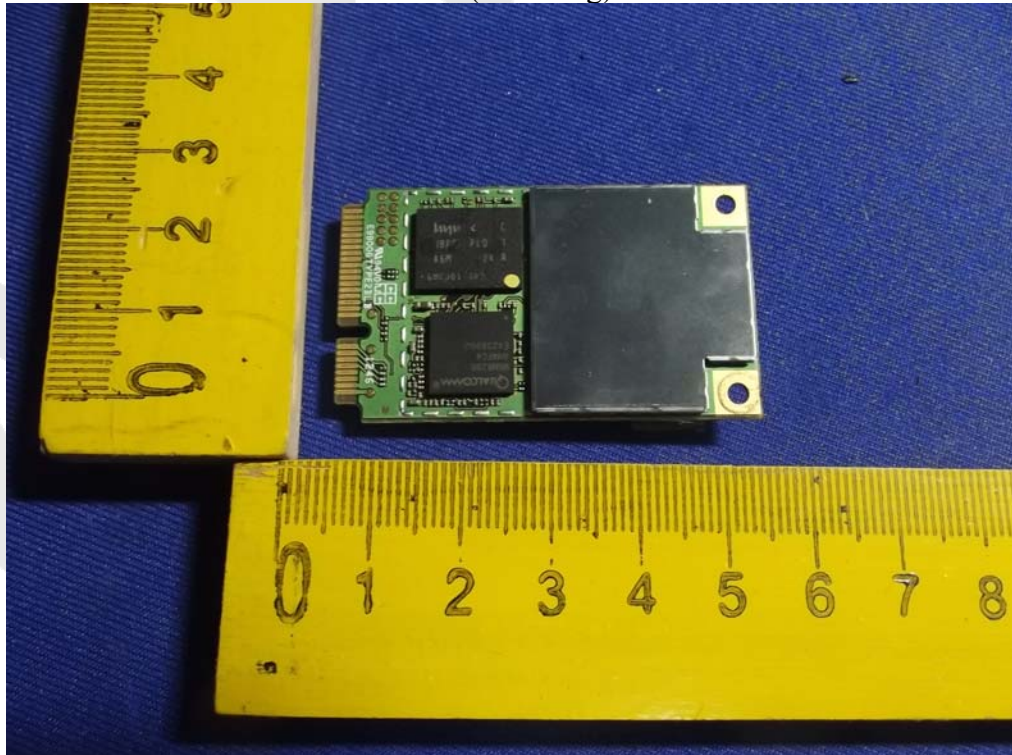


Figure 15  
PCB of the 3G Module-Front View (Non-Shielding)

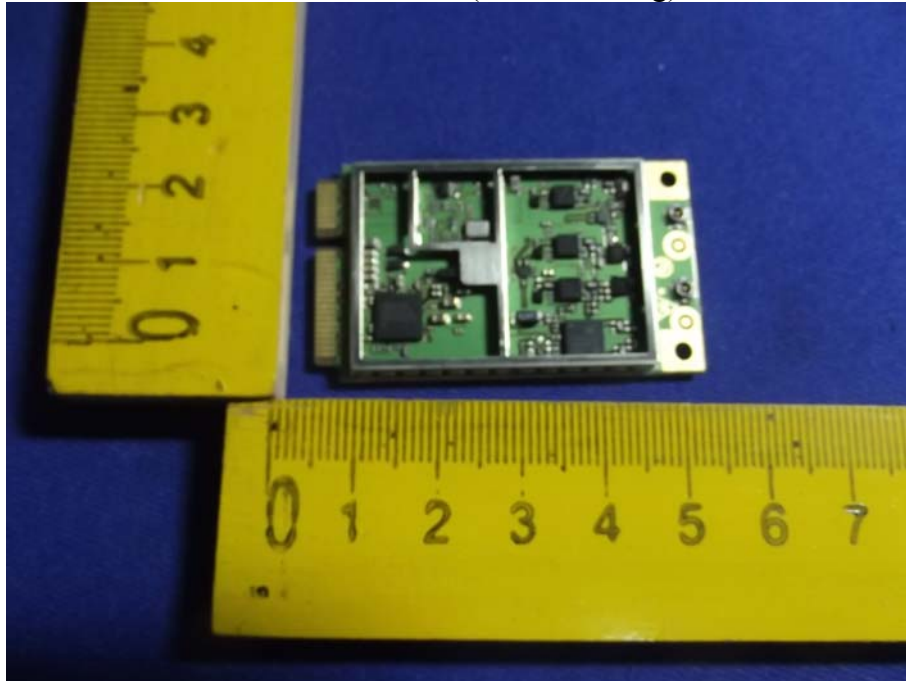


Figure 16  
PCB of the 3G Module-Front View (Non-Shielding)

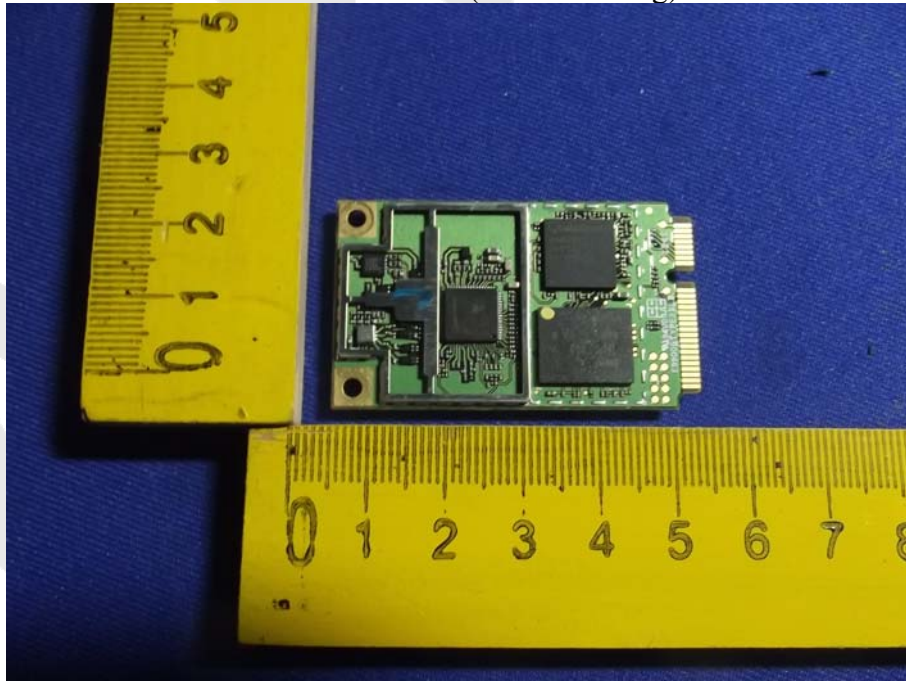


Figure 17  
PCB of the EUT-Front View

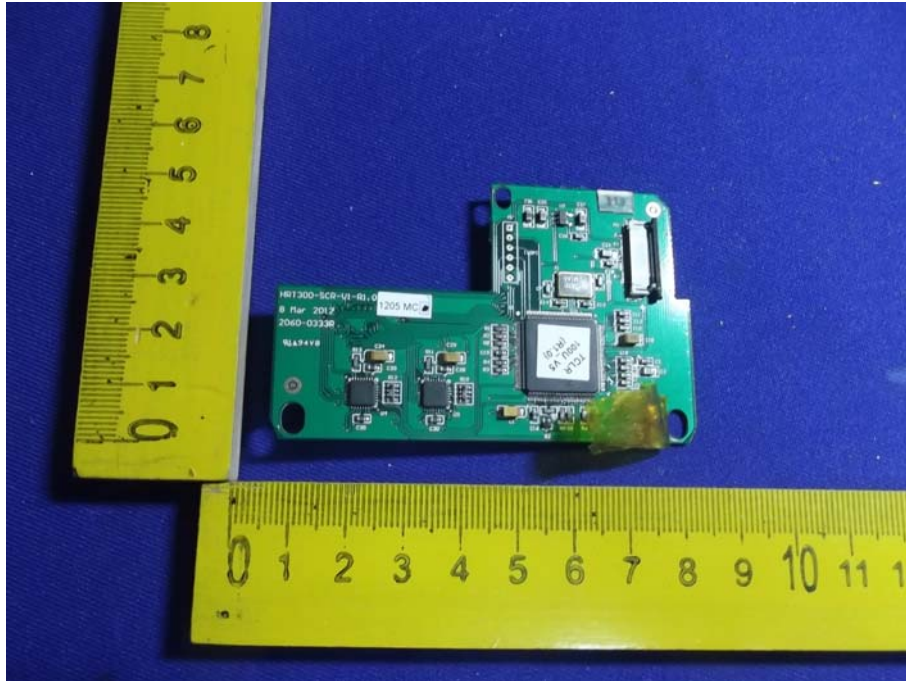


Figure 18  
PCB of the EUT-Back View

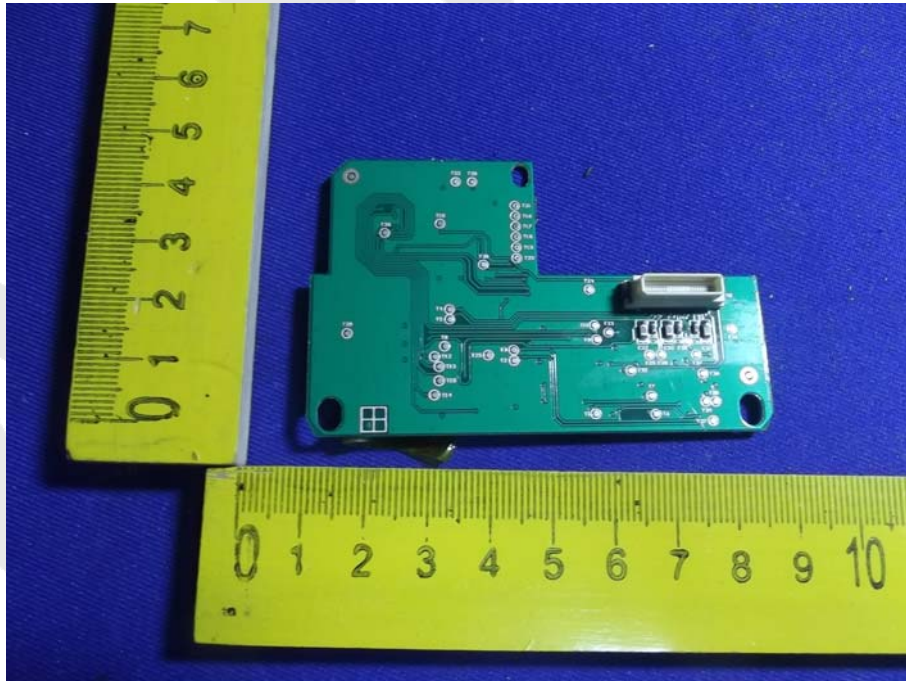


Figure 19  
PCB of the EUT-Front View

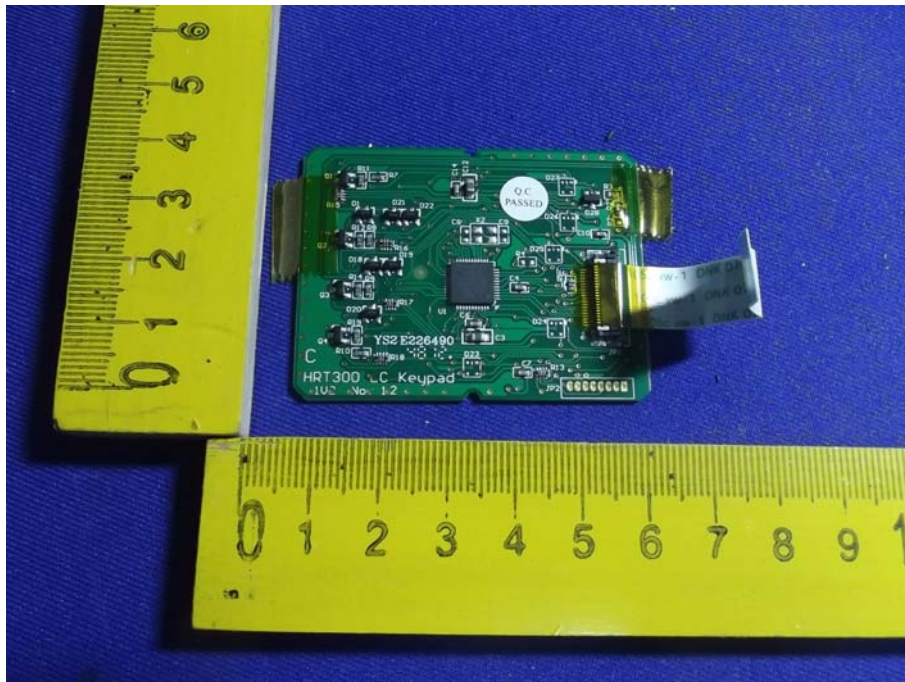


Figure 20  
PCB of the EUT-Back View

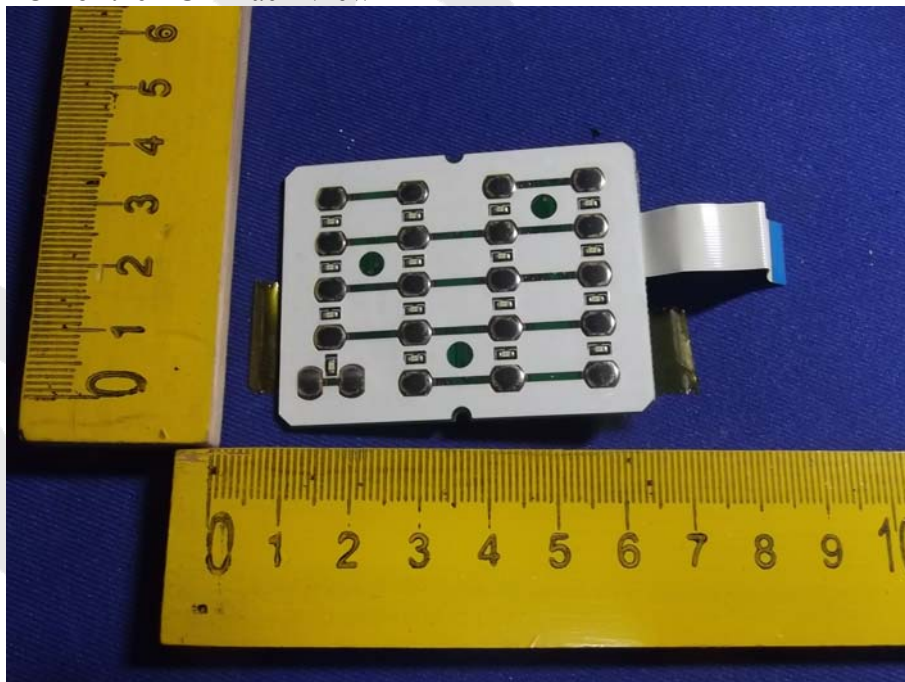


Figure 21  
PCB of the EUT-Front View

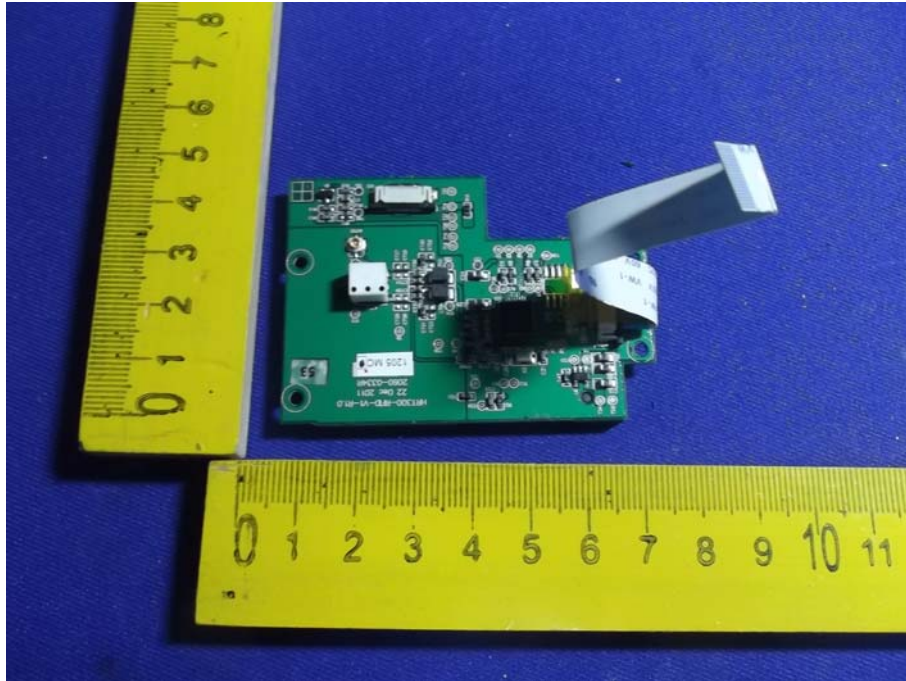


Figure 22  
PCB of the EUT-Back View

