

# FCC Part 15 Subpart D Test Report of

E.U.T. : Digital Cordless Telephone (Handset  
Unit)

MODEL : C1001LX; C1002LX; C1003LX;  
C1004LX

FCC ID. : VLJC100-LX-HS

for

APPLICANT : Binatone Electronics International Limited

ADDRESS : Floor 23A, 9 Des Voeux Road West, Sheung Wan,  
Hong Kong

Test Performed by

**ELECTRONICS TESTING CENTER, TAIWAN**

NO. 34. LIN 5. DINGFU, LINKOU DIST.,  
NEW TAIPEI CITY, TAIWAN, 24442, R.O.C.

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Report Number : 14-02-RBF-009-02

# TEST REPORT CERTIFICATION

Applicant : Binatone Electronics International Limited  
Floor 23A, 9 Des Voeux Road West, Sheung Wan, Hong Kong

Manufacturer : Shenzhen Guo Wei Electronics Co., Ltd.  
No.3038, Luosha Road, Liantang, Luohu District, Shenzhen,  
Guangdong, China

## Description of EUT

- a) Type of EUT : Digital Cordless Telephone (HandsetUnit)
- b) Trade Name : Motorola
- c) Model No. : C1001LX; C1002LX; C1003LX; C1004LX
- d) Power Supply : Battery: 2.4V, 300mAh
- e) Frequency Range : 1921.536-1928.448MHz

Regulation Applied : FCC Rules and Regulations Part 15 Subpart D

I HEREBY CERTIFY THAT: The data shown in this report were made in accordance with the procedures given in ANSI C63.17-2006/ ANSI C63.4-2003, and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

- Note: 1. The result of the testing report relate only to the item tested.  
2. The testing report shall not be reproduced expect in full, without the written approval of ETC.

Date Test Item Received : Feb. 12, 2014  
Date Test Campaign Completed : Feb. 25, 2014  
Date of Issue : Apr. 17, 2014

Test Engineer :                     *Jiapeng Chen*                      
(Jiapeng Chen, Engineer )

Approve & Authorized Signer :                     *S. S. Liou*                      
S. S. Liou, Section Manager  
EMC Dept. II of ELECTRONICS  
TESTING CENTER, TAIWAN

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## 1 GENERAL INFORMATION

### 1.1 Testing Laboratory

Name : Electronics Testing Center, Taiwan  
Address : NO. 34. LIN 5. DINGFU, LINKOU DIST., NEW TAIPEI CITY, TAIWAN, 24442, R.O.C.  
Telephone : 886-2-26023052  
Fax : 886-2-26010910  
NVLAP lab registration# : 200133-0  
IC OATS registration# : 2949A-1

### 1.2 Client Information

Name : Binatone Electronics International Limited  
Address : Floor 23A, 9 Des Voeux Road West, Sheung Wan, Hong Kong  
Telephone : (852) 2802 7388  
Contact person : Karl Heinz Muller

### 1.3 Manufacturer

Name : Shenzhen Guo Wei Electronics Co., Ltd.  
Address : No.3038, Luosha Road, Liantang, Luohu District, Shenzhen, Guangdong, China

## 2 TEST INFORMATION

### 2.1 Descriptino of Tested Device(s)

The tested equipment is a DECT base station which complies with ETSI EN 300175. The frequencies have been reprogrammed to comply with the FCC requirements to an Isochronous UPCS device after FCC Part 15D.

The EUT is a responding device as described in ANSI C63.17 and is designed to operate together with a DECT handset, which is then the initiating device.

Frequency Channel	Frequency	Test Frequency
CH4	1928.448 MHz	F <sub>L</sub>
CH3	1926.720 MHz	-
CH2	1924.992 MHz	F <sub>M</sub>
CH1	1923.264 MHz	-
CH0	1921.536 MHz	F <sub>H</sub>

Serial model C1002LX, C1003LX and C1004LX are identical with main model C1001LX and the difference is the amount of handset to be packaged when marketing.

Model	Base Unit	Handset
C1001LX	1	1
C1002LX	1	2
C1003LX	1	3
C1004LX	1	4

### 2.2 Test Environment

#### Normal test condition

Temperature:	20 – 25 °C
Relative humidty:	55 – 75%

#### Extreme test condition (declared by manufacture)

Please see the manufacturer declaration form.

### 3 TEST REPORT SUMMARY

#### 3.1 Test Summary

Requirement	FCC Paragraph #	Required	Customer Declaration	Test Pass
Coordination with fixed microwave	15.307(b)	■	■	<input type="checkbox"/>
Cross Reference	15.309(b)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Labeling requirements	15.311 15.19(a)(3)	■	■	<input type="checkbox"/>
Power line Conducted Emission	15.315 , 15.207	■	<input type="checkbox"/>	■
Antenna Requirement	15.317, 15.203	■	■	<input type="checkbox"/>
Digital Modulation Techniques	15.319(b)	■	■	<input type="checkbox"/>
Peak transmit Power	15.319(c)	■	<input type="checkbox"/>	■
Power spectral Density	15.319(d)	■	<input type="checkbox"/>	■
Antenna gain	15.319(e)	■	■	<input type="checkbox"/>
Automatic discontinuation of transmission	15.319(f)	■	■	<input type="checkbox"/>
Safety exposure levels	15.319(i)	■	<input type="checkbox"/>	■
Emission Bandwidth	15.323(a)	■	<input type="checkbox"/>	■
Emissions inside and outside the subband	15.323(d)	■	<input type="checkbox"/>	■
Frame period and jitter	15.323(e)	■	<input type="checkbox"/>	■
Carrier frequency stability	15.323(f)	■	<input type="checkbox"/>	■

#### 3.2 Devices for Tested System

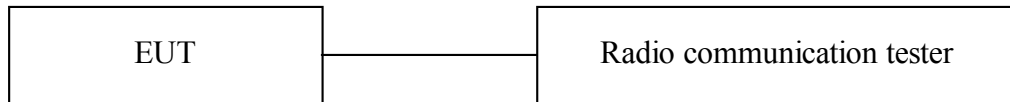
All measurements are traceable to national standards.

The tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC CFR47 Part 15, Paragraph 15.323 for Isochronous UPCS Devices and Industry Canada RSS-213 Issue 2.

The conducted test methods have been in accordance with ANSI C63.17-2006 where applicable. Radiated tests were conducted in accordance with ANSI C63.4-2003.

## 4 TEST SETUP

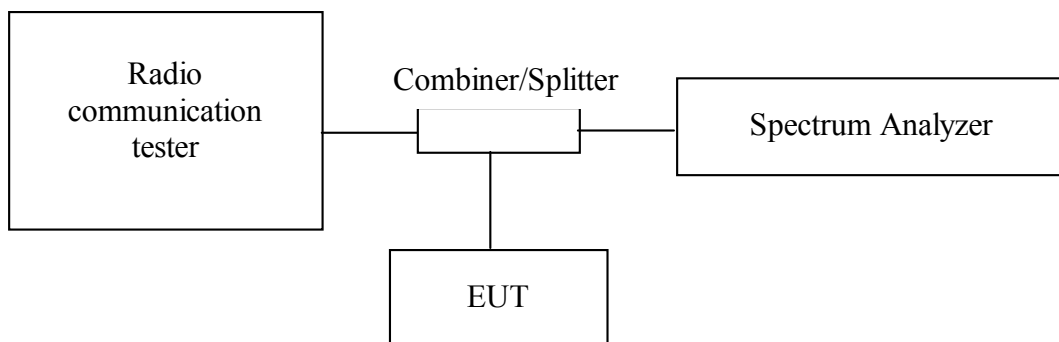
### 4.1 Frequency and Timing Measurements



#### Test Set-up 1

This setup is used for measuring Frame stability, Jitter, Carrier frequency stability at normal and extremet temperatures.

### 4.2 Conducted Emission Tests

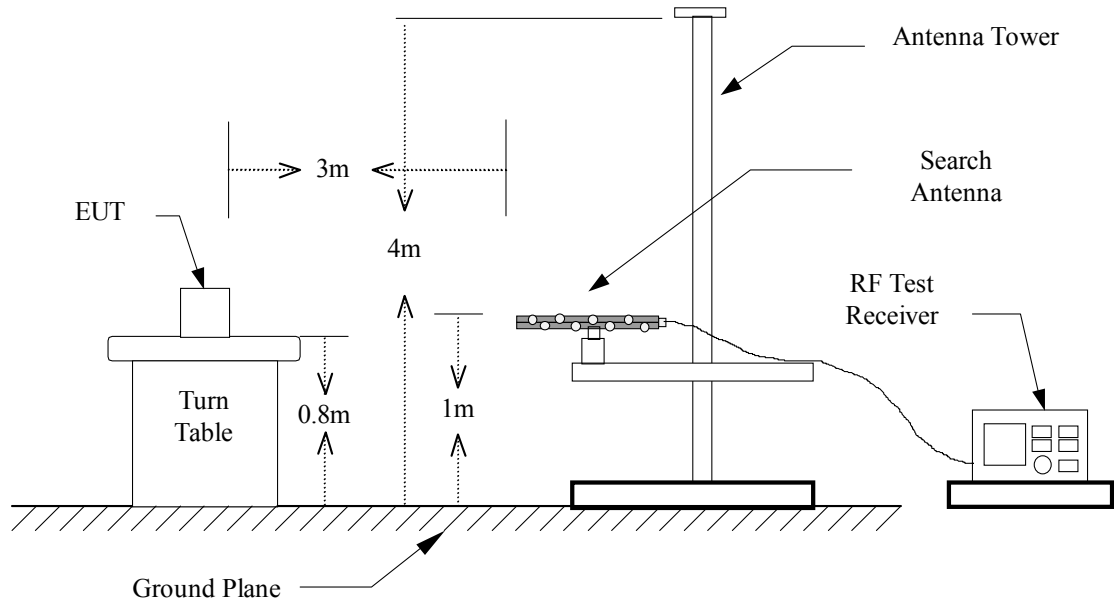


#### Test Set-up 2

This setup is used for all conducted emission tests.



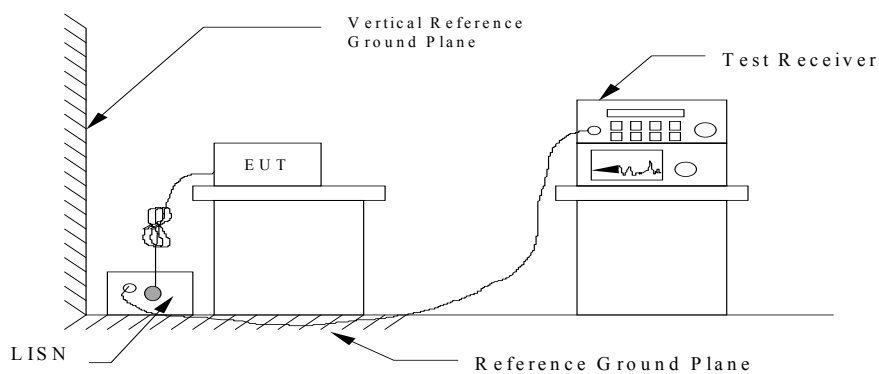
### 4.3 Radiated Emission Tests



#### Test Set-up 3

This test setup is used for all radiated emissions tests. For frequencies below 30 MHz the measuring distance is 10 m, for all toher frequencies it is 3m. Emissions above 1 GHz were measured with the Spectrum Analyzer, Horn Antenna and the preamplifier after the antenna.

### 4.4 Power Line Conducted Tests



#### Test Set-up 4

**5 TEST EQUIPMENT LIST**

To facilitate inclusion on each page of the test equipment used for related test, each item of test equipment and ancillaries are identified (numbered) by the Test Laboratory.

<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Next Cal. Due</b>
EMI Test Receiver	Rohde & Schwarz	ESL	2014/09/10
Amplifier	HP	8447D	2014/05/02
Bi-Log Antenna	ETC	MCTD 2786	2014/05/08
Log-periodic Antenna	EMCO	3146	2014/10/24
Biconical Antenna	EMCO	3110	2014/10/24
EMI Test Receiver	Rohde & Schwarz	ESCI	2014/08/01
Spectrum Analyzer	R&S	FSP3	2014/08/07
Signal generator	HP	8656B	2014/09/13
Double Ridged Antenna	EMCO	3115	2014/08/01
Double Ridged Antenna	EMCO	3116	2015/01/14
Amplifier	HP	8449B	2015/01/14
Amplifier	HP	83051A	2014/05/05
Spectrum	R&S	FSP40	2015/01/20
CTS60 DIGITAL RADIO TEST	R&S	CTS60	2014/04/28
Line Impedance Stabilization network	EMCO	3625/2	2014/05/06
Line Impedance Stabilization network	Rohde & Schwarz	ESH2-Z5	2014/04/11
Monitor	IBM	E54	N.C.R.
Printer	HP	LaserJet 1000	N.C.R.
Shielded Room	Riken	----	N.C.R.
Computer	Acer	Veriton	N.C.R.

## 6 TEST RESULT

### 6.1 Corrdination with fixed microwave

#### 6.1.1 Standard Applicable

##### **FCC 15.307 (b)**

Each application for certification of equipment operating under the provisions of this Subpart must be accompanied by an affidavit from UTAM, Inc. certifying that the applicant is a participating member of UTAM, Inc. In the event a grantee fails to fulfill the obligations attendant to participation in UTAM, Inc., the Commission may invoke administrative sanctions as necessary to preclude continued marketing and installation of devices covered by the grant of certification, including but not limited to revoking certification.

##### **Result**

The affidavit from UTAM, Inc. is included in the documentation supplied by the applicant:

**Yes**

**No**

## 6.2 Cross Reference

### 6.2.1 Standard Applicable

#### 15.309(b)

The requirements of Subpart D apply only to the radio transmitter contained in the PCS device. Other aspects of the operation of a PCS device may be subject to requirements contained elsewhere in this Chapter. In particular, a PCS device that includes digital circuitry not directly associated with the radio transmitter also is subject to the requirements for unintentional radiators in Subpart B.

#### 15.109(a)

For unintentional device, according to FCC §15.109(a), the field strength of radiated emissions from unintentional except for class A digital device radiators at a distance of 3 meters shall not exceed the following values:

Frequency MHz	Distance Meters	Radiated $\mu$ V/m	Radiated dB $\mu$ V/m
30 - 88	3	100	40.0
88 - 216	3	150	43.5
216 - 960	3	200	46.0
Above 960	3	500	54.0

### 6.2.2 Test Results

This requirement is not applicable because test sample do not included digital circuitry which is not directly associated with the radio transmitter	<input checked="" type="checkbox"/>
For test results according to FCC 15 subpart B, see the EMC report as attached	<input type="checkbox"/>
For test results according to FCC 15 subpart B, see the measurement data as follow	<input type="checkbox"/>
This requirement is covered by results of power line conducted emission test according to FCC 15.315	<input type="checkbox"/>

## **6.3 Labeling Requirements**

### **6.3.1 Standard Applicable**

#### **FCC 15.19**

The FCC Identifier shall be displayed on the label, and the device(s) shall bear the following statement in a conspicuous location on the device or in the user manual if the device is too small:

*This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.*

The label itself shall be of a permanent type, not a paper label, and shall last the lifetime of the equipments.

### **6.3.2 Result**

See separate documents showing the label design and the placement of the label on the EUT.

## 6.4 Power Line Conducted Emissions

### 6.4.1 Standard Applicable

#### 15.315

An unlicensed PCS device that is designed to be connected to the public utility (AC) power line must meet the limits specified in Section 15.207.

#### 15.207(a)

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency MHz	Quasi Peak dB $\mu$ V	Average dB $\mu$ V
0.15 - 0.5	66-56*	56-46*
0.5 - 5.0	56	46
5.0 - 30.0	60	50

\* Decreases with the logarithm of the frequency

### 6.4.2 Measurement procedure

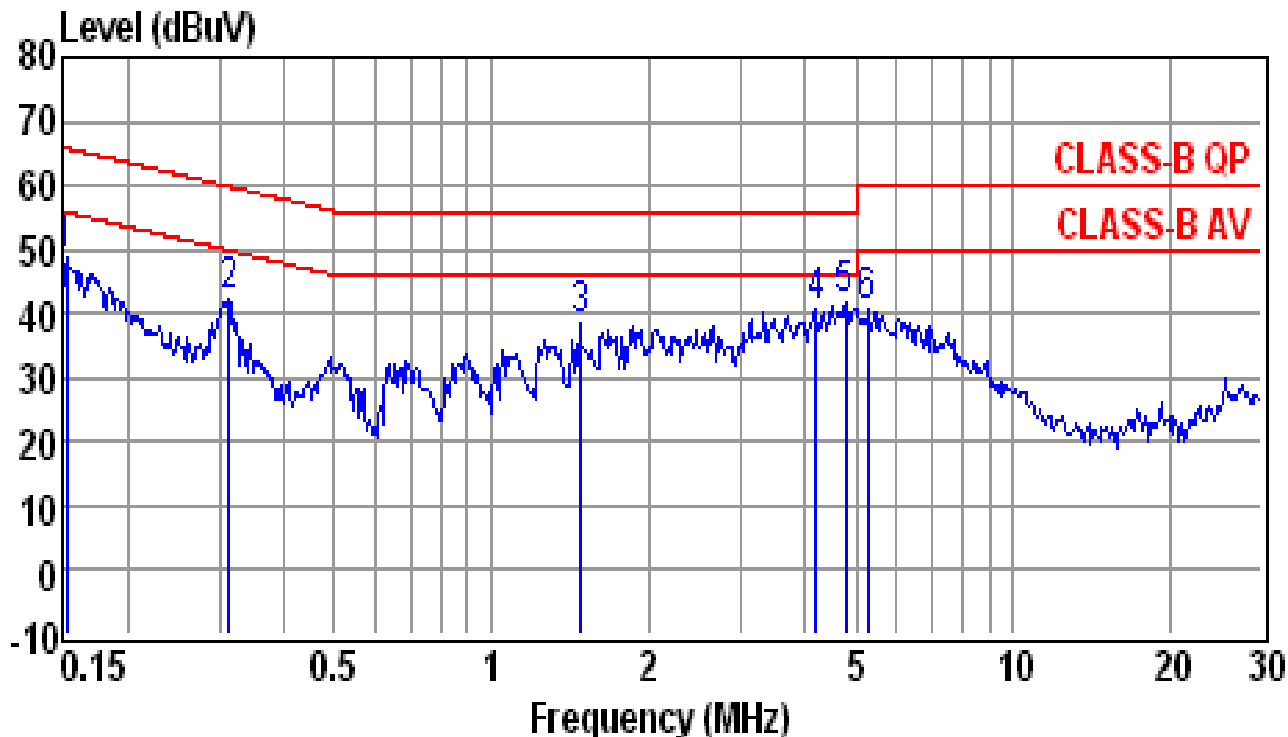
ANSI C63.4-2003 using 50  $\mu$ H/50 ohms LISN.

### 6.4.3 Test Results: Complies

**Measurement Data: See attached graph, (Peak detector)**

Highest measured value (L1 and L2):

All emissions were below the QP and Average limits.

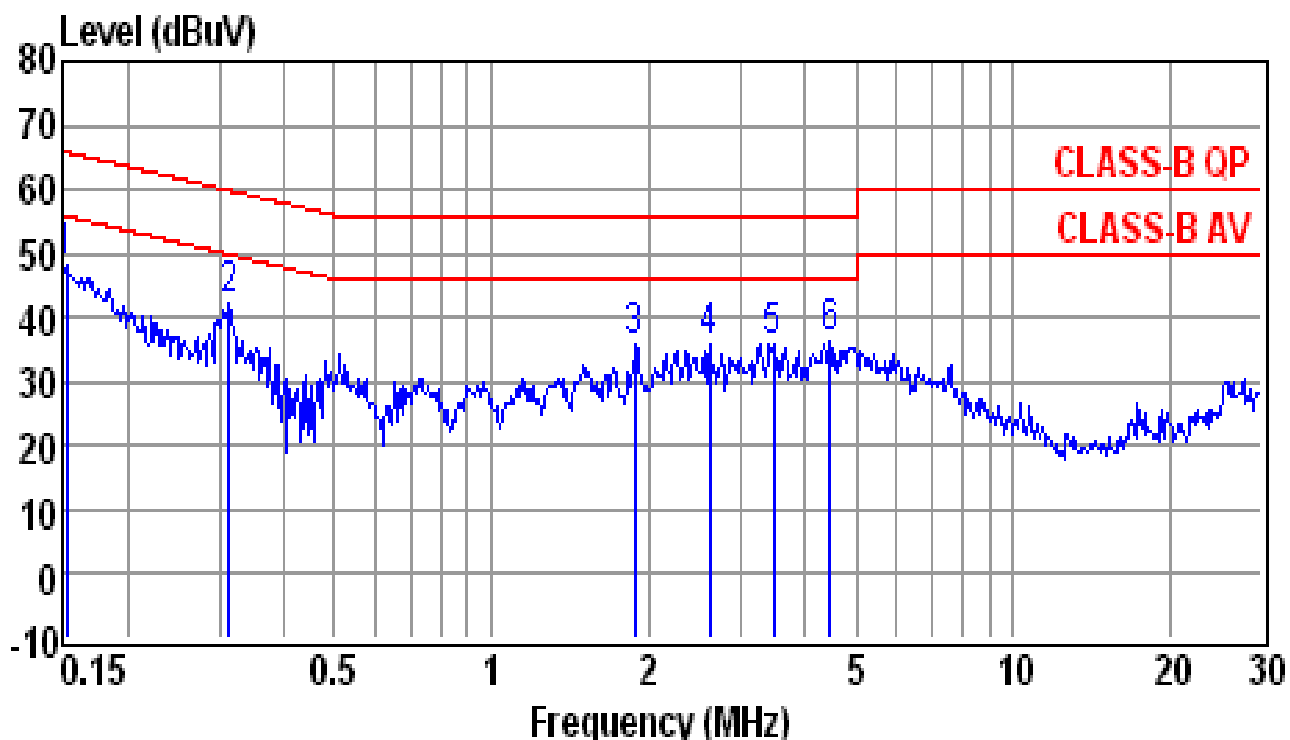


Site	: conducted #1	Date	: 02-23-2014
Condition	: CLASS-B QP	LISN	: NEUTRAL
Tem / Hum	: 20 °C / 65%	Test Mode	: Charge & Standby
EUT	: C1001LX	Power Rating	: 120V/60Hz
Memo	:	Memo	:

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.1532	38.2	10.3	48.5	65.8	-17.3	QP
0.3133	31.9	10.3	42.2	59.9	-17.7	QP
1.4800	28.1	10.5	38.6	56.0	-17.4	QP
4.2020	30.0	10.5	40.5	56.0	-15.5	QP
4.7720	31.2	10.5	41.7	56.0	-14.3	QP
5.2770	30.0	10.5	40.5	60.0	-19.5	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss



Site	: conducted #1	Date	: 02-23-2014
Condition	: CLASS-B QP	LISN	: LINE
Tem / Hum	: 20 °C / 65%	Test Mode	: Charge & Standby
EUT	: C1001LX	Power Rating	: 120V/60Hz
Memo	:	Memo	:

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.1532	37.9	10.3	48.2	65.8	-17.6	QP
0.3133	32.1	10.3	42.4	59.9	-17.5	QP
1.8880	25.2	10.5	35.7	56.0	-20.3	QP
2.6220	25.2	10.5	35.7	56.0	-20.3	QP
3.4720	25.3	10.5	35.8	56.0	-20.2	QP
4.4540	26.0	10.5	36.5	56.0	-19.5	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss



### 6.4.4 Photos of Conduction Measuring Setup



## 6.5 Antenna Requirement

### 6.5.1 Standard Applicable

#### FCC 15.317, 15.203

Does the EUT have detachable antenna?

Yes

No

If detachable, is the antenna connector non-standard?

Yes

No

The tested equipment has only integral antennas. The conducted tests were performed on a sample with a temporary antenna connects.

## 6.6 digital Modulation Techniques

### 6.6.1 Standard Applicable

#### FCC 15.319(b)

All transmissions must use only digital modulation techniques.

### 6.6.2 Result: Meets the requirement

Please see the declaration provided by applicant

## 6.7 Peak Power Output

### 6.7.1 Standard Applicable

#### FCC 15.319(c)(f)

Peak transmit power shall not exceed 100 microwatts multiplied by the square root of the emission bandwidth in Hz.

The peak transmit power shall be reduced by the amount in decibels that the maximum directional gain of the antenna exceeds 3 dBi.

### 6.7.2 Measurement procedure

Measurement method according to ANSI C63.17 2006 paragraph 6.1.2

### 6.7.3 Test Results: Complies

#### Measurement Data:

Channel	Frequency (MHz)	Maximum Peak Output Power (dBm)	Maximum Peak Output Power (mw)	FCC Limit (dBm)
F <sub>L</sub>	1921.536	20.09	102.094	20.85
F <sub>L</sub>	1924.992	20.09	102.094	20.85
F <sub>H</sub>	1928.448	20.18	104.232	20.85

#### Limit:

Peak Transmit Power =  $100 \mu\text{W} \times \sqrt{\text{BW}}$

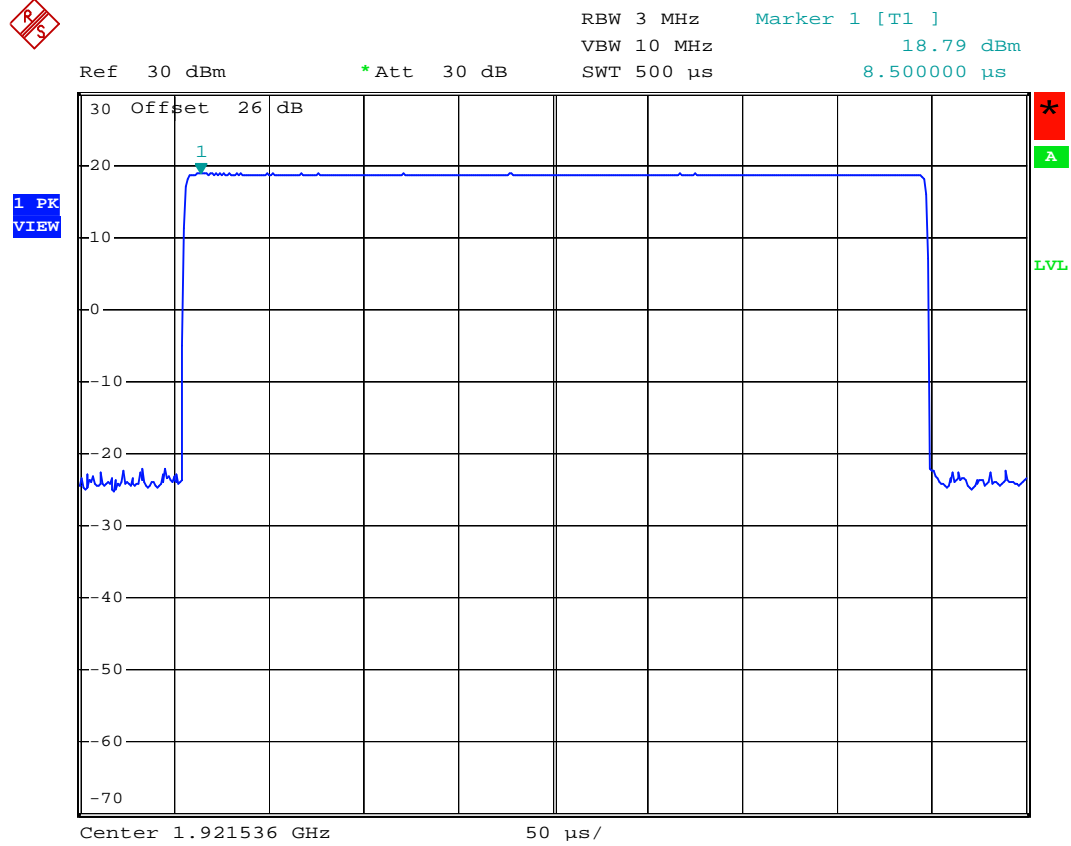
BW = Emission Bandwidth in Hz.

The antenna gain value provided by manufacturer is 0 dBi. Hence the peak transmit power shall not be reduced.

#### Note:

Output Power Rating is 20.0dBm +/- 0.5dB tolerance.

### Maximum Peak Output Power: CH F<sub>L</sub>

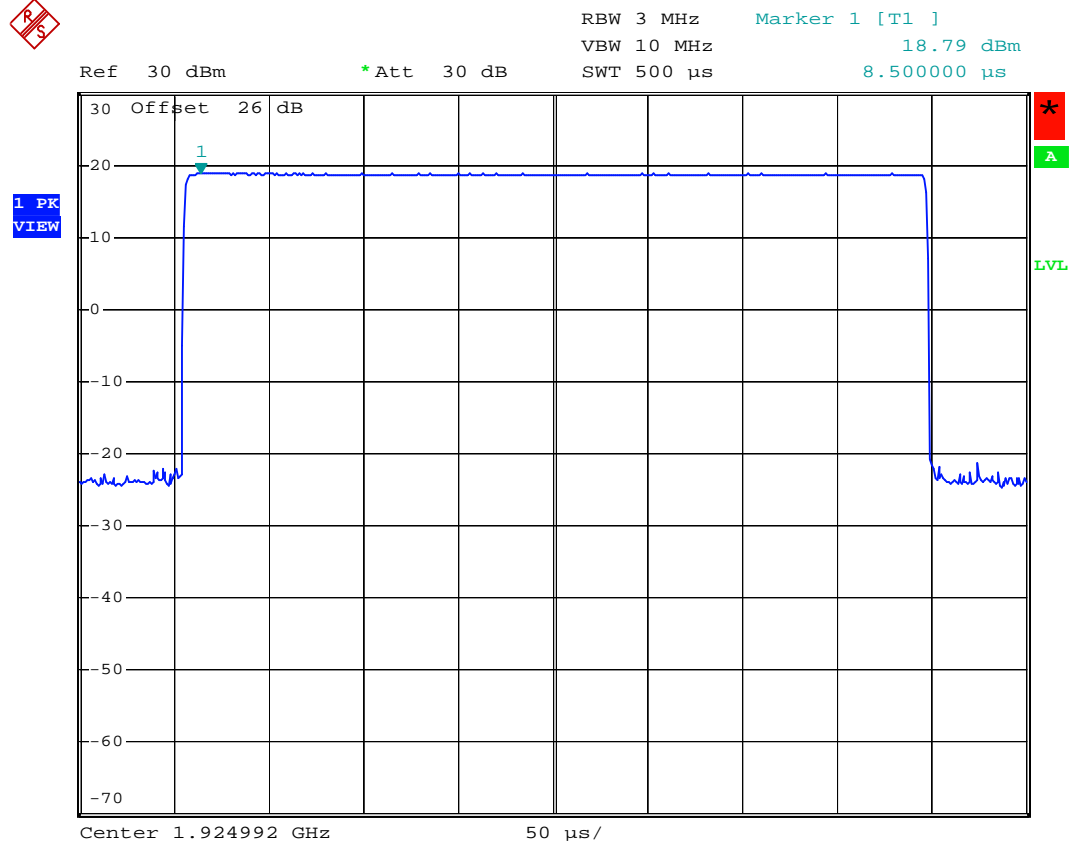


Date: 21.FEB.2014 15:44:14

#### Peak Output Power Calculation:

$$P = \text{Reading} + \text{Corrected Factor(Cable loss)}$$
$$= 18.79 + 1.3 = 20.09 \text{ dBm}$$

### Maximum Peak Output Power: CH F<sub>M</sub>

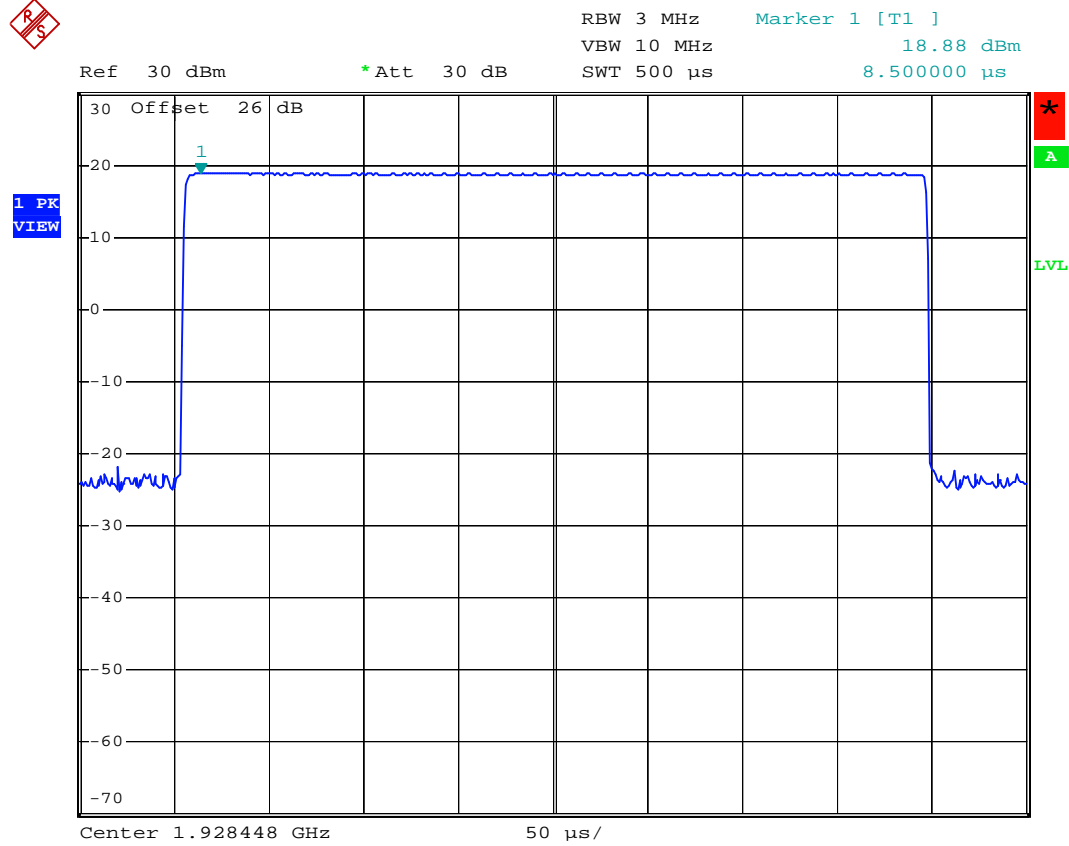


Date: 21.FEB.2014 15:43:34

#### Peak Output Power Calculation:

$$P = \text{Reading} + \text{Corrected Factor(Cable loss)}$$
$$= 18.79 + 1.3 = 20.09 \text{ dBm}$$

### Maximum Peak Output Power: CH F<sub>H</sub>



Date: 21.FEB.2014 15:42:35

### Peak Output Power Calculation:

$$P = \text{Reading} + \text{Corrected Factor}(\text{Cable loss})$$
$$= 18.88 + 1.3 = 20.18 \text{ dBm}$$

## 6.8 Power Spectral Density

### 6.8.1 Standard Applicable

#### FCC 15.319(d)

Power spectral density shall not exceed 3 milliwatts in any 3 kHz bandwidth as measured with a spectrum analyzer having a resolution bandwidth of 3 kHz.

### 6.8.2 Measurement procedure

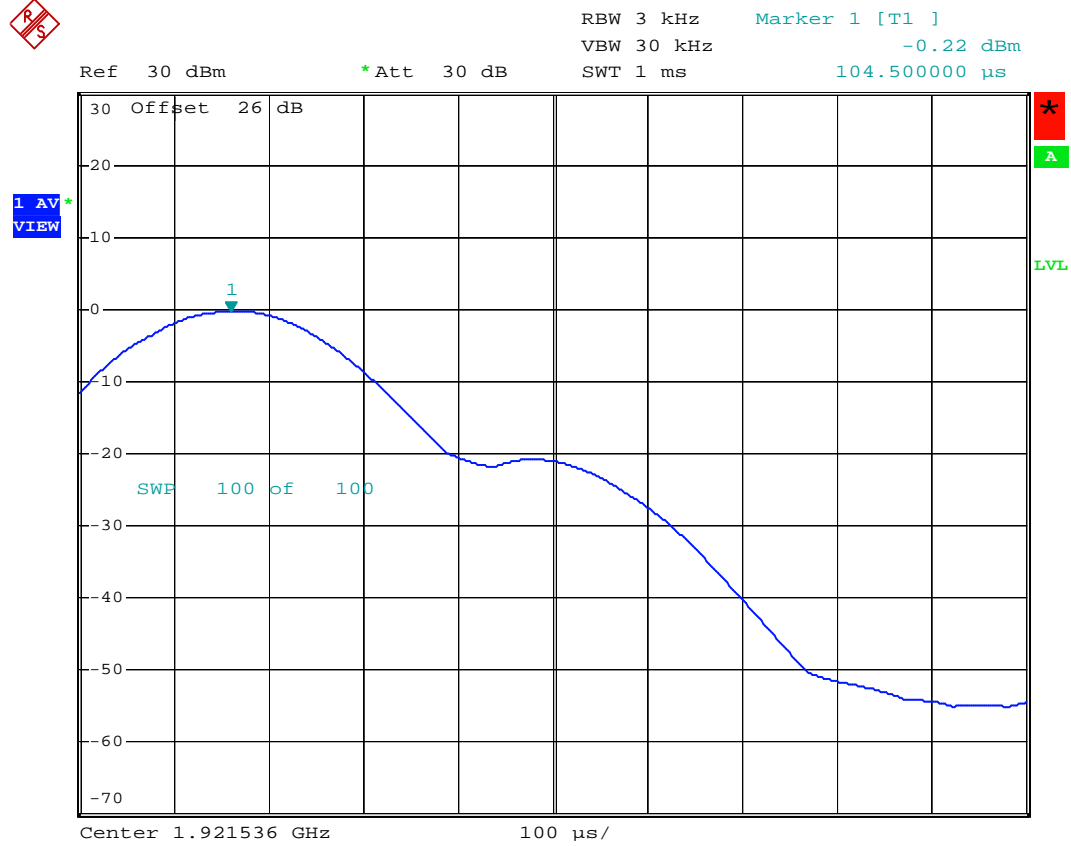
Measurement method according to ANSI C63.17 2006 paragraph 6.1.5

### 6.8.3 Test Results: Complies

#### Measurement Data:

Channel	Frequency (MHz)	Power spectral Density (dBm)	FCC Limit (dBm)
F <sub>L</sub>	1921.536	1.08	4.77
F <sub>M</sub>	1924.992	1.13	4.77
F <sub>H</sub>	1928.448	0.73	4.77

### Power Spectral Density: CH F<sub>L</sub>



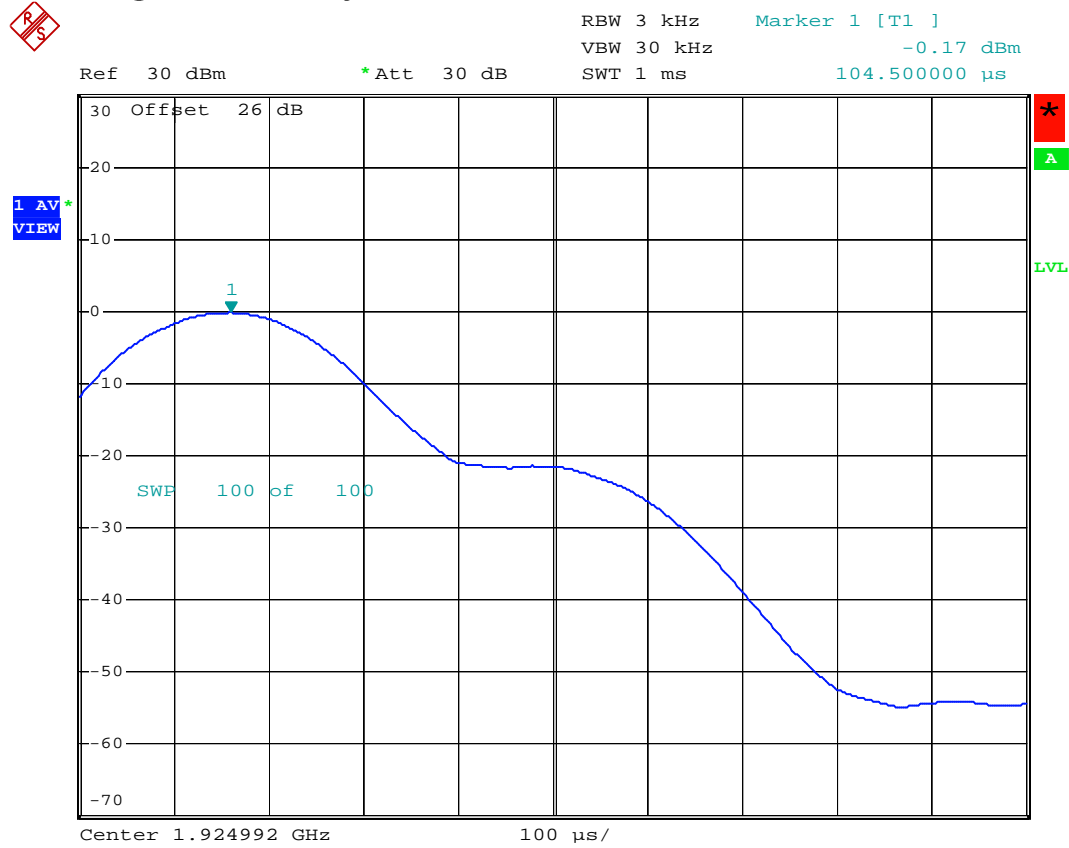
Date: 21.FEB.2014 15:39:56

#### Power Spectral Density Calculation:

$$\begin{aligned} \text{PSD} &= \text{Reading} + \text{Corrected Factor(Cable loss)} \\ &= -0.22 + 1.3 = 1.08 \text{ dBm} \end{aligned}$$



### Power Spectral Density: CH F<sub>M</sub>

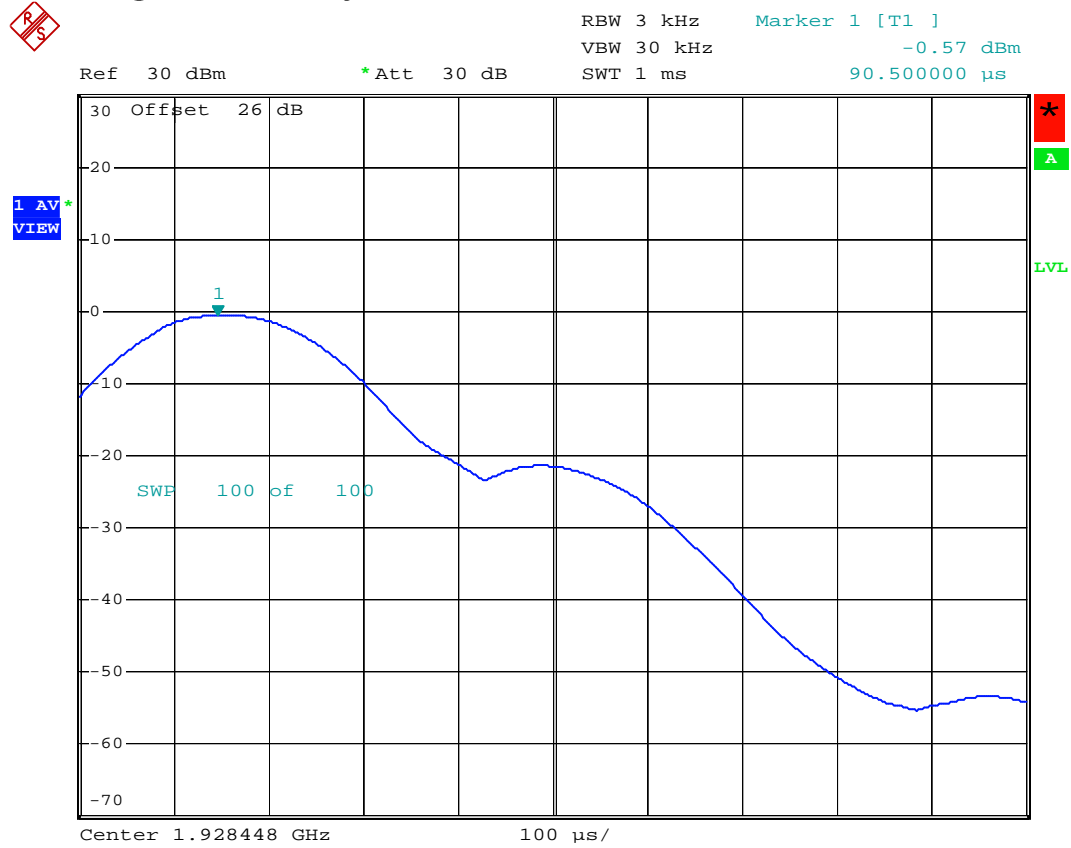


Date: 21.FEB.2014 15:40:39

#### Power Spectral Density Calculation:

$$\begin{aligned} \text{PSD} &= \text{Reading} + \text{Corrected Factor(Cable loss)} \\ &= -0.17 + 1.3 = 1.13 \text{ dBm} \end{aligned}$$

### Power Spectral Density: CH F<sub>H</sub>



Date: 21.FEB.2014 15:41:24

#### Power Spectral Density Calculation:

$$\begin{aligned} \text{PSD} &= \text{Reading} + \text{Corrected Factor(Cable loss)} \\ &= -0.57 + 1.3 = 0.73 \text{ dBm} \end{aligned}$$

## **6.9 Antenna Gain**

### **6.9.1 Standard Applicable**

#### **FCC 15.323(e)**

The peak transmit power shall be reduced by the amount in decibels that the maximum directional gain of the antenna exceeds 3 dBi.

### **6.9.2 Results: Meets the requirement**

The antenna gain value provided by manufacturer is 0dBi. Hence the peak transmit power shall not be reduced.

## **6.10 Automatic discontinuation of transmission**

### **6.10.1 Standard Applicable**

#### **FCC 15.319(f)**

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude transmission of control and signaling information or use of repetitive codes used by certain digital technologies to complete frame or burst intervals.

### **6.10.2 Procedure**

Please see the declaration provided by applicant.

### **6.10.3 Results: Meets the requirement**

## 6.11 Safety exposure levels

### 6.11.1 Standard Applicable

#### FCC 15.319(i)

UPCS devices are subject to the radio frequency radiation exposure requirements specified in FCC parts 1.1307 (b), 2.1091 and 2.1093, as appropriate. All equipment shall be considered to operate in a “general population / uncontrolled environment. For portable devices tests according to IEEE 1528 are requested, applicable.

### 6.11.2 Measurement procedure

Consideration of radio frequency radiation exposure for EUT is done as

SAR test according IEEE 1528 (for PP)	<input checked="" type="checkbox"/>
MPE calculation as below (for FP, Repeater)	<input type="checkbox"/>

SAR test results: See SAR test report.

### 6.11.3 Results: Complies

## 6.12 Emission Bandwidth B

### 6.12.1 Standard Applicable

#### FCC 15.323(a)

The 26 dB Bandwidth B shall be larger than 50 kHz and less than 2.5 MHz.

### 6.12.2 Measurement procedure

Measurement method according to ANSI C63.17 2006 paragraph 6.1.3

### 6.12.3 Test Results: Complies

#### Measurement Data:

##### A. 26dB BW

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
F <sub>L</sub>	1921.536	1.48
F <sub>M</sub>	1924.992	1.48
F <sub>H</sub>	1928.448	1.48

##### B. 99% BW

Channel	Frequency (MHz)	99% Bandwidth (MHz)
F <sub>L</sub>	1921.536	1.18
F <sub>M</sub>	1924.992	1.18
F <sub>H</sub>	1928.448	1.18

### 26 dB Bandwidth B: CH F<sub>L</sub>

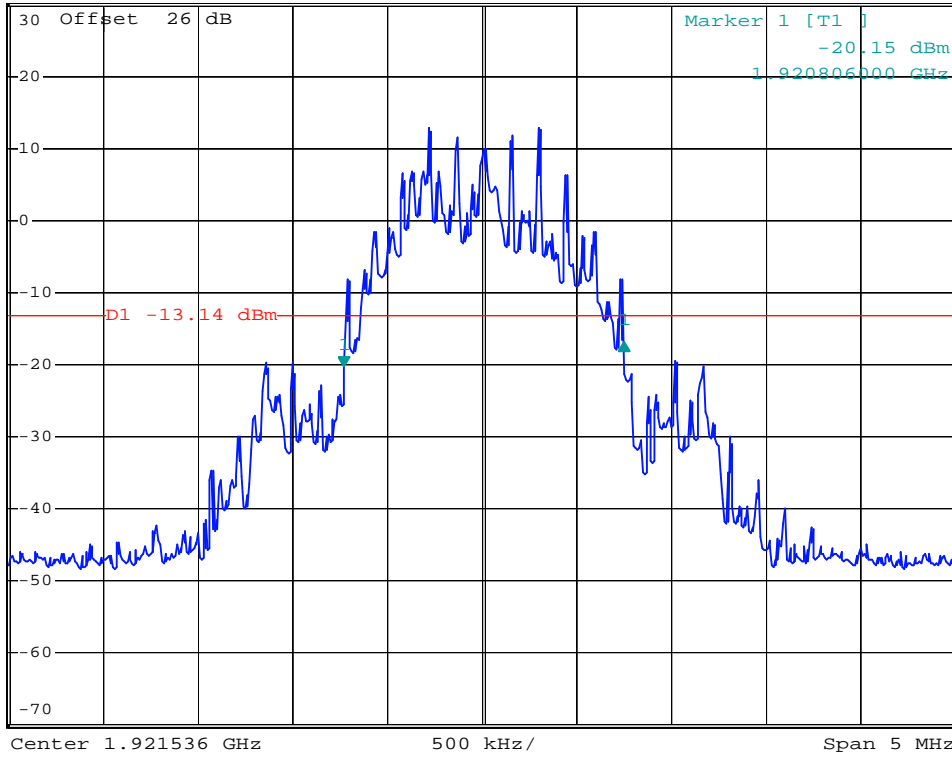


\*RBW 10 kHz    Delta 1 [T1 ]  
VBW 30 kHz                    3.36 dB  
SWT 50 ms                      1.480000000 MHz

Ref 30 dBm

\*Att 30 dB

1 PK  
VIEW



Date: 21.FEB.2014 15:38:18

### 26 dB Bandwidth B: CH F<sub>M</sub>

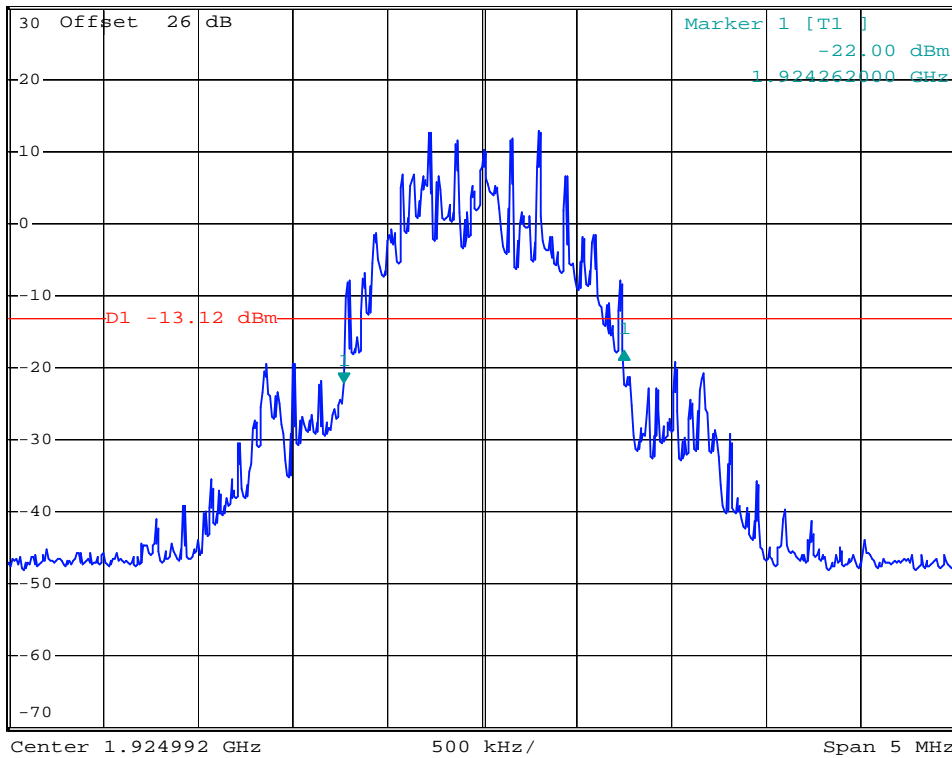


\*RBW 10 kHz    Delta 1 [T1 ]  
VBW 30 kHz                    4.36 dB  
SWT 50 ms                    1.480000000 MHz

Ref 30 dBm

\*Att 30 dB

1 PK  
VIEW



Date: 21.FEB.2014 15:33:15

### 26 dB Bandwidth B: CH F<sub>H</sub>

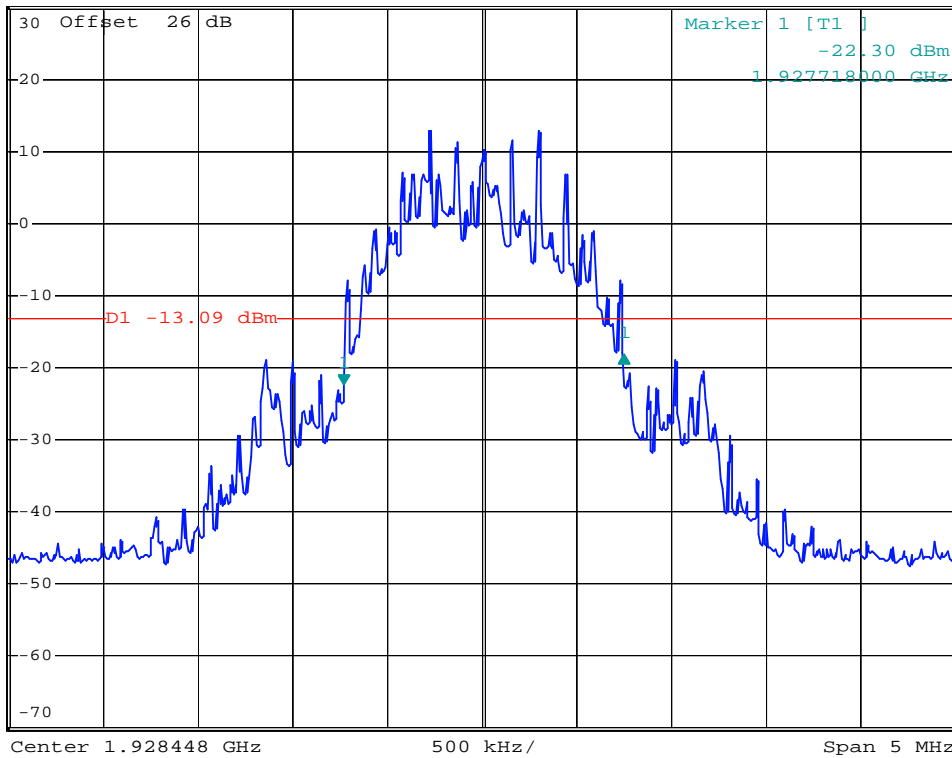


\*RBW 10 kHz    Delta 1 [T1 ]  
VBW 30 kHz                    4.02 dB  
SWT 50 ms                    1.480000000 MHz

Ref 30 dBm

\*Att 30 dB

1 PK  
VIEW



Date: 21.FEB.2014 15:30:00



### 99% Bandwidth: CH F<sub>L</sub>

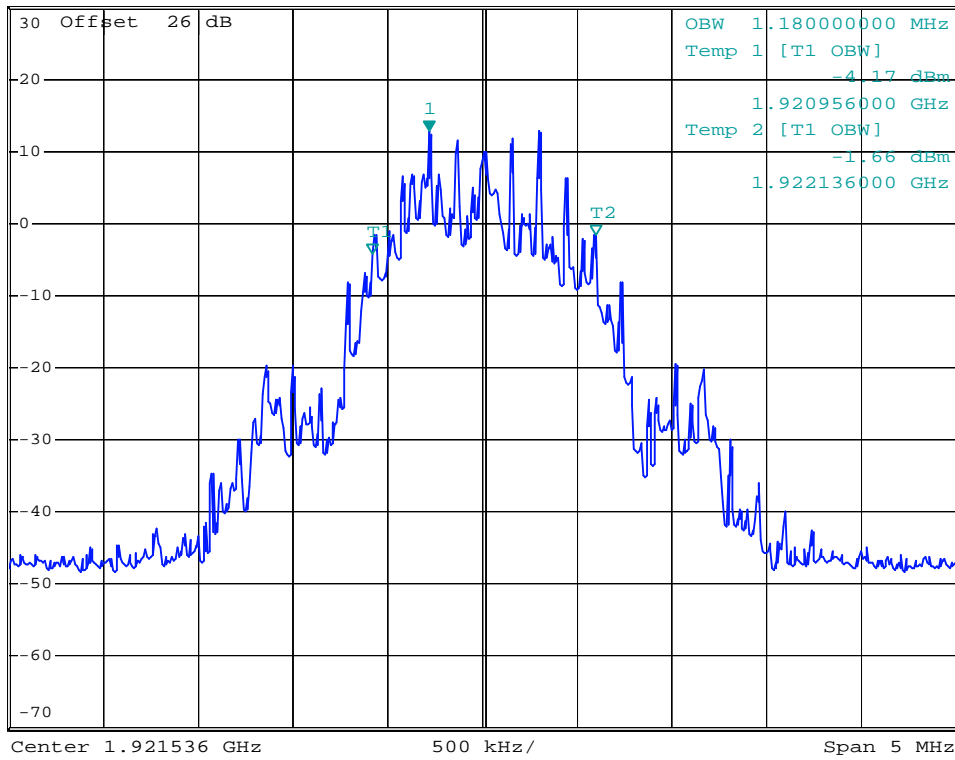


\*RBW 10 kHz    Marker 1 [T1 ]  
VBW 30 kHz                    12.86 dBm  
SWT 50 ms                    1.921256000 GHz

Ref 30 dBm

\*Att 30 dB

1 PK  
VIEW



Date: 21.FEB.2014 15:35:33

### 99% Bandwidth: CH F<sub>M</sub>

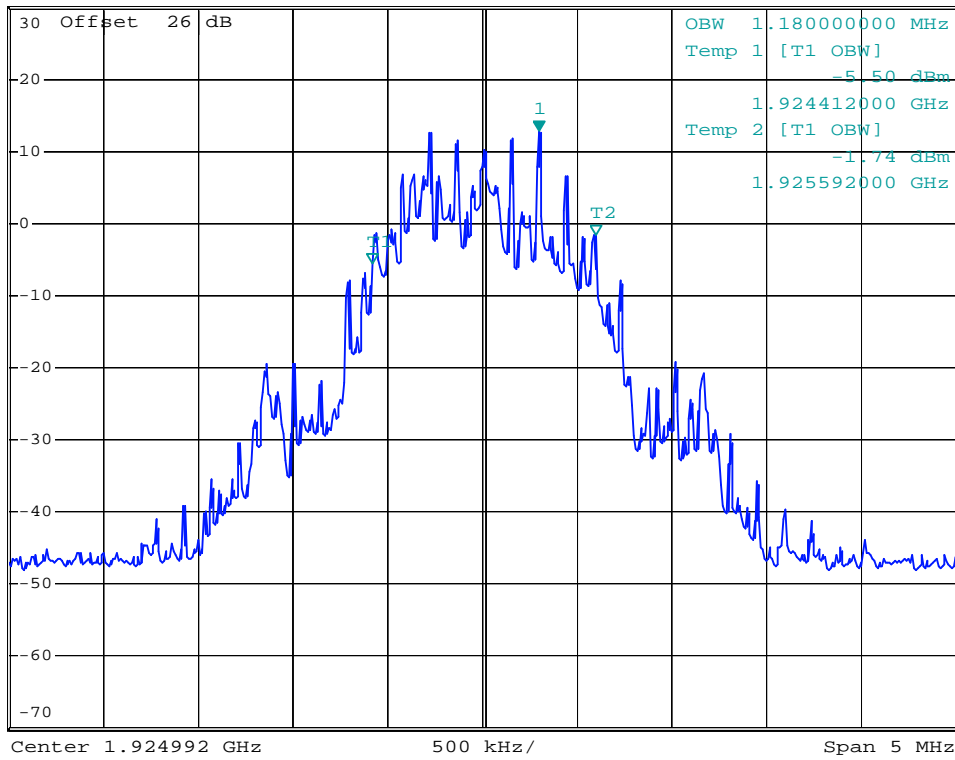


\*RBW 10 kHz    Marker 1 [T1 ]  
VBW 30 kHz                    12.88 dBm  
SWT 50 ms                    1.925292000 GHz

Ref 30 dBm

\*Att 30 dB

1 PK  
VIEW



Date: 21.FEB.2014 15:31:57

### 99% Bandwidth: CH F<sub>H</sub>

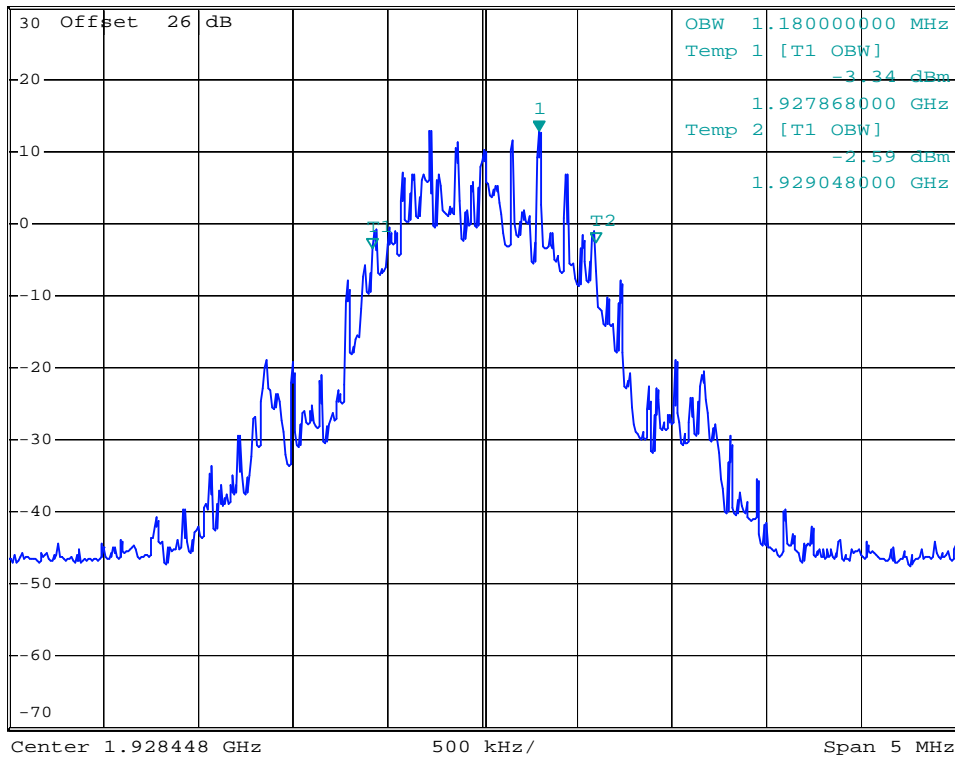


\*RBW 10 kHz    Marker 1 [T1 ]  
VBW 30 kHz                    12.91 dBm  
SWT 50 ms                    1.928748000 GHz

Ref 30 dBm

\*Att 30 dB

1 PK  
VIEW



Date: 21.FEB.2014 15:28:49

### 6.13 Emissions inside and outside the subband

#### 6.13.1 Standard Applicable

##### FCC 15.323(d)

##### Emissions inside the subband

$B < f \leq 2B$ : less than or equal to 30dB below max. permitted peak power level

$2B < f \leq 3B$ : less than or equal to 50 dB below max. permitted peak power level



$3B < f \leq$  UPCs Band Edge: less than or equal to 60 dB below max. permitted peak power level

##### Emissions outside the subband

$f \leq 1.25\text{MHz}$  outside UPCS band:  $\leq -9.5\text{dBm}$

$1.25\text{MHz} \leq f \leq 2.5\text{MHz}$  outside UPCS band:  $\leq -29.5\text{dBm}$

$f \geq 2.5\text{MHz}$  outside UPCS band: The EUT shall pass the test either a) or b) as follow:

a) In the region at 2.5 MHz or greater below and above the lower and upper band edges respectively, the measured emission level shall not exceed $-39.5\text{ dBm}$	
b) In the region at 2.5MHz or greater below and above the lower and upper band edges respectively, the measured emission level shall not exceed the limits of 47CFR15.209. Measurement shall be made as a radiated test.	

#### 6.13.2 Measurement procedure

Measurement method according to ANSI C63.17 2006 paragraph 6.1.6

#### 6.13.3 Results: Complies

##### Measurement Data:

See plots.

### In-band Unwanted Emission: CH F<sub>L</sub>

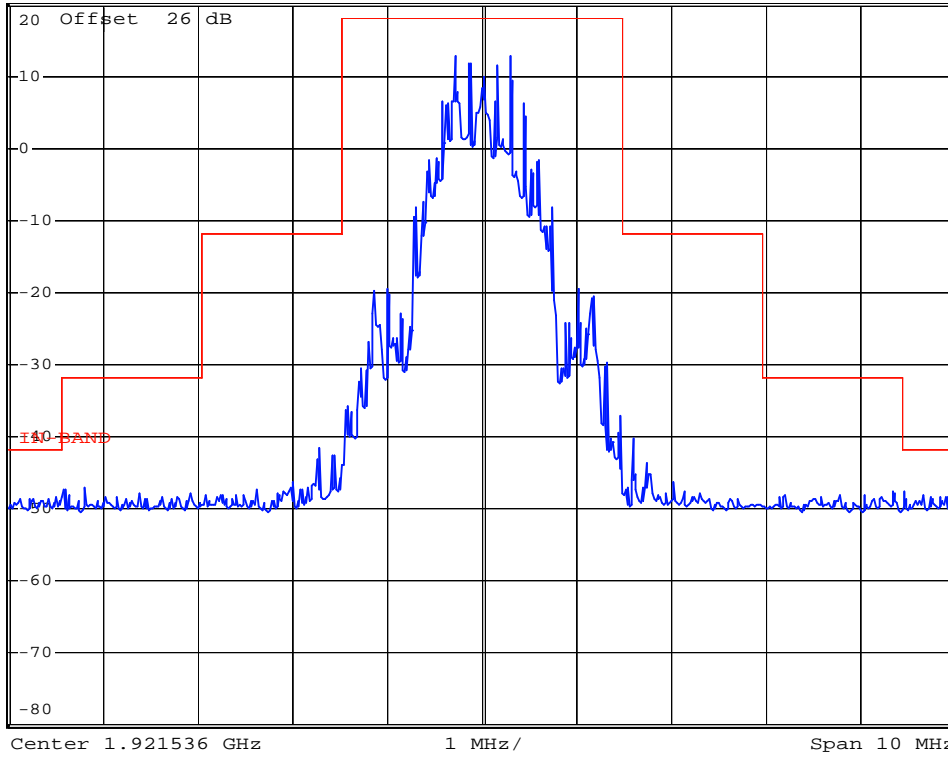


\* RBW 10 kHz  
VBW 30 kHz  
SWT 100 ms

Ref 20 dBm

\* Att 30 dB

1 PK  
VIEW



Date: 21.FEB.2014 15:50:47

### In-band Unwanted Emission: CH F<sub>M</sub>

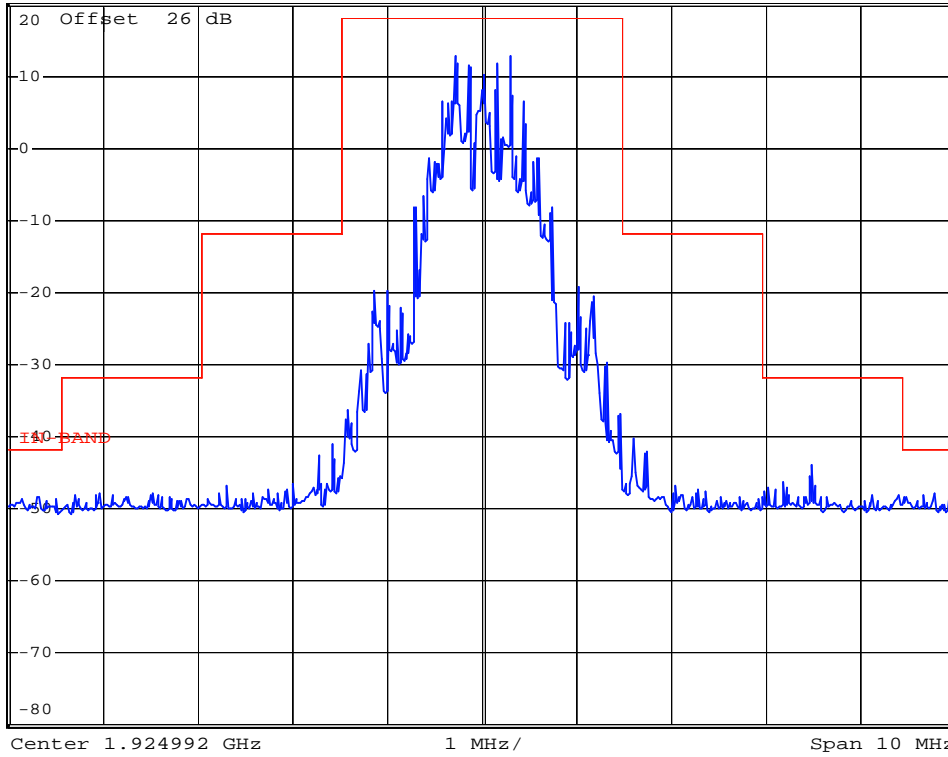


\* RBW 10 kHz  
VBW 30 kHz  
SWT 100 ms

Ref 20 dBm

\* Att 30 dB

1 PK  
VIEW



Date: 21.FEB.2014 15:48:55

### In-band Unwanted Emission: CH F<sub>H</sub>

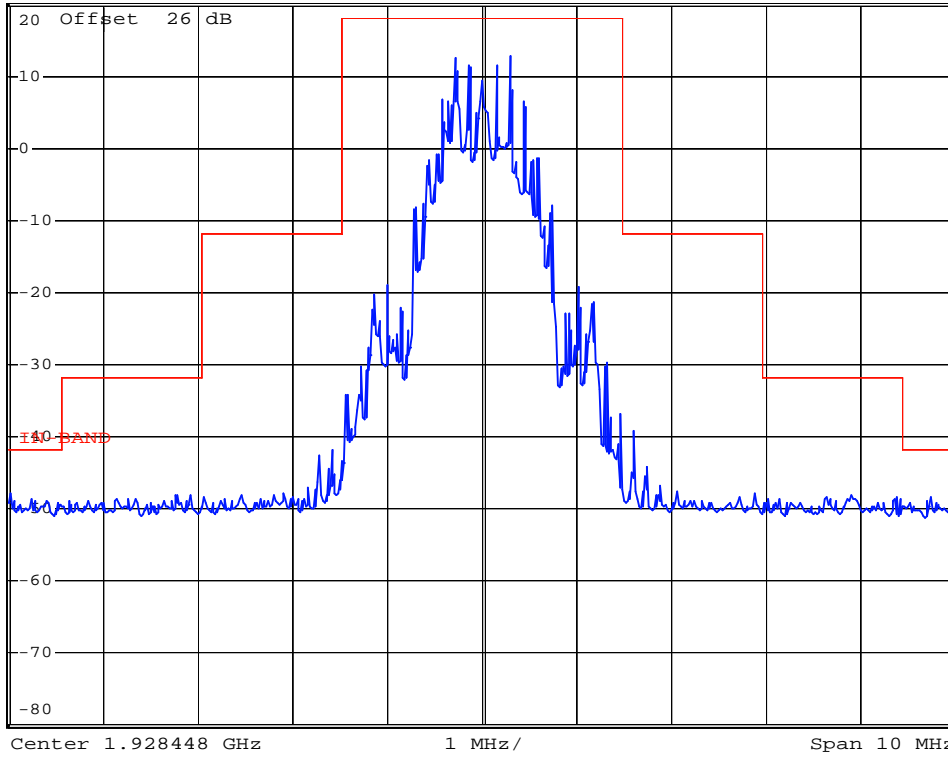


\* RBW 10 kHz  
VBW 30 kHz  
SWT 100 ms

Ref 20 dBm

\* Att 30 dB

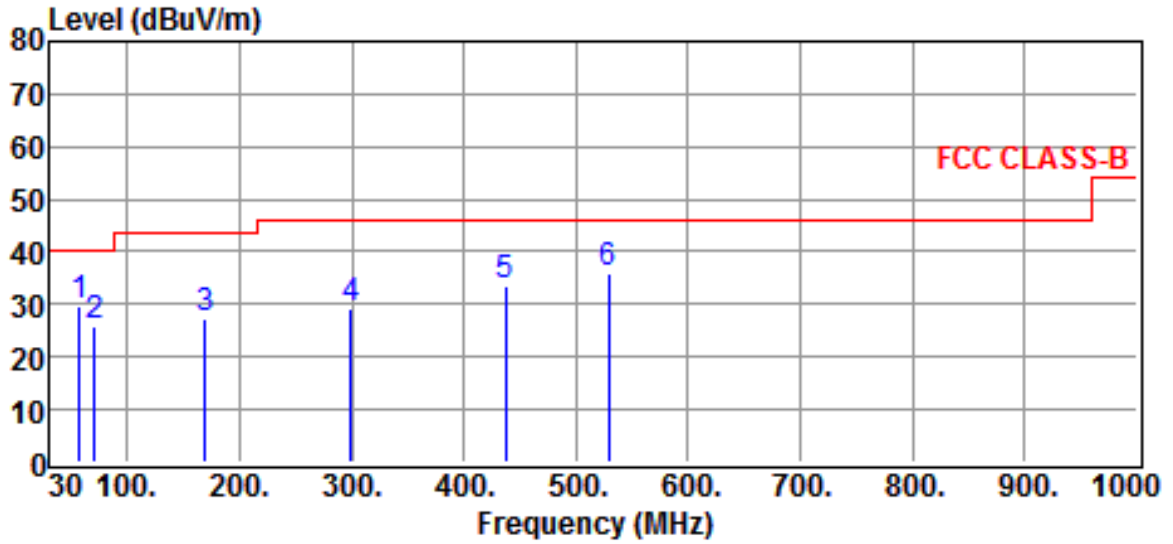
1 PK  
VIEW



Date: 21.FEB.2014 15:45:58

Out-of -band Unwanted Emission:

A. Out-of -band Unwanted Emission (below 1GHz)



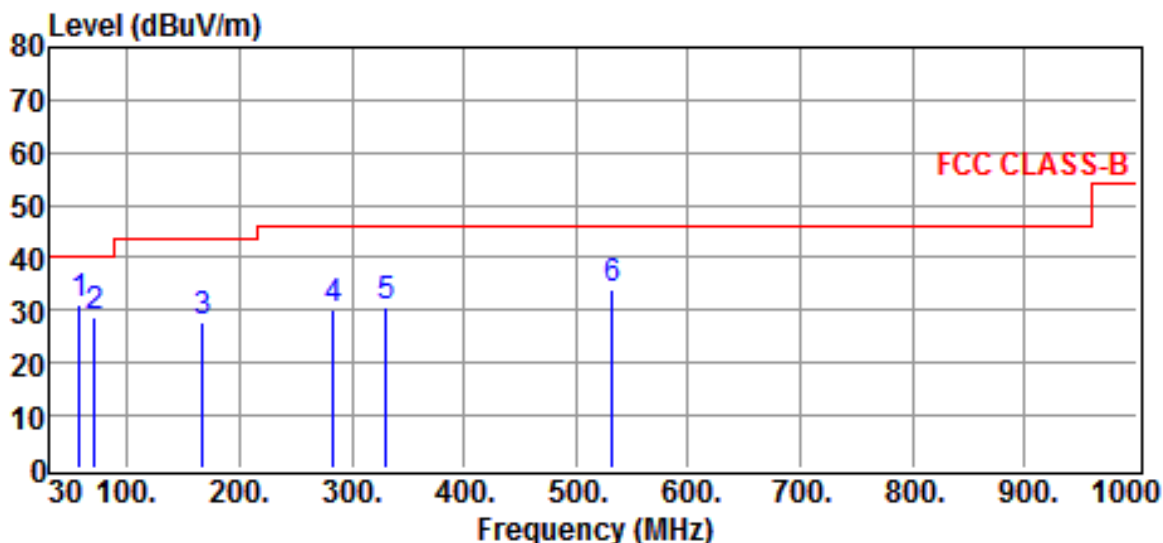
Site	:Open Site	Date	:2014-04-17
Limit	:FCC CLASS-B	Ant. Pol.	:HORIZONTAL
EUT	:DECT	Temp.	:22
Power Rating	:120V	Humi.	:58
Model	:C1001LX	Engineer.	:Jiapeng
Test Mode	:DECT MODE		
Test Mode	:Channel Low		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
57.1600	18.1	11.6	29.7	40.0	-10.3	QP
70.7400	15.3	10.8	26.1	40.0	-13.9	QP
169.6800	12.9	14.4	27.3	43.5	-16.2	QP
299.6600	11.6	17.4	29.0	46.0	-17.0	QP
437.4000	13.5	20.1	33.6	46.0	-12.4	QP
528.5800	13.8	22.0	35.8	46.0	-10.2	QP

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The expanded uncertainty of the radiated emission tests is 3.53 dB.
4. The margin value=Limit - Result



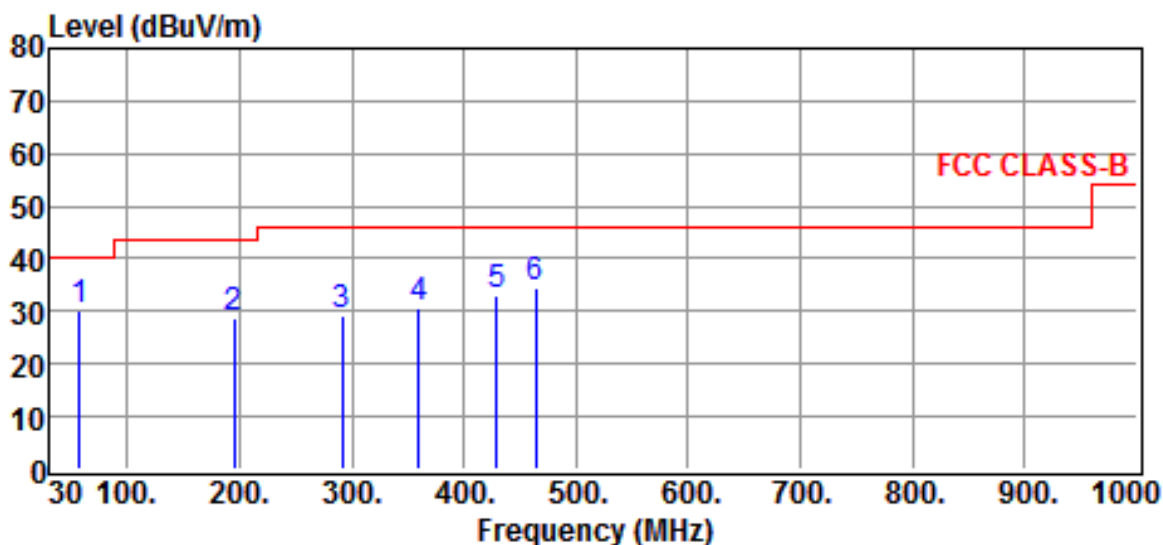


Site	:Open Site	Date	:2014-04-17
Limit	:FCC CLASS-B	Ant. Pol.	:VERTICAL
EUT	:DECT	Temp.	:22
Power Rating	:120V	Humi.	:58
Model	:C1001LX	Engineer.	:Jiapeng
Test Mode	:DECT MODE		
Test Mode	:Channel Low		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
57.1600	19.7	11.6	31.3	40.0	-8.7	QP
70.7400	17.8	10.8	28.6	40.0	-11.4	QP
167.7400	13.3	14.4	27.7	43.5	-15.8	QP
284.1400	13.8	16.4	30.2	46.0	-15.8	QP
330.7000	12.8	17.7	30.5	46.0	-15.5	QP
532.4600	12.1	22.0	34.1	46.0	-11.9	QP

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The expanded uncertainty of the radiated emission tests is 3.53 dB.
4. The margin value=Limit - Result

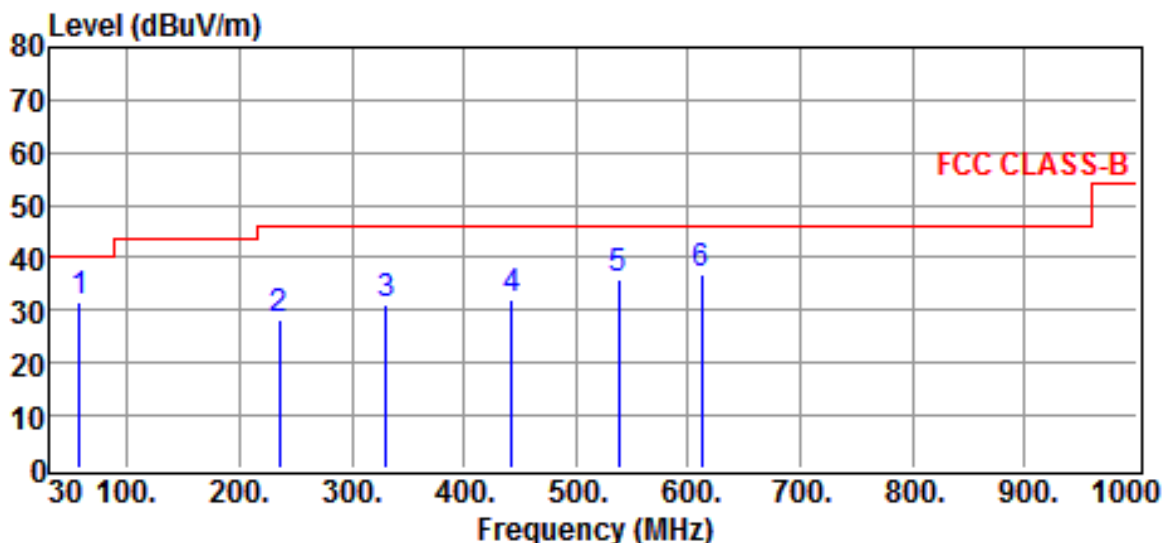


Site	:Open Site	Date	:2014-04-17
Limit	:FCC CLASS-B	Ant. Pol.	:HORIZONTAL
EUT	:DECT	Temp.	:22
Power Rating	:120V	Humi.	:58
Model	:C1001LX	Engineer.	:Jiapeng
Test Mode	:DECT MODE		
Test Mode	:Channel Middle		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
57.1600	18.8	11.6	30.4	40.0	-9.6	QP
194.9000	12.1	16.5	28.6	43.5	-14.9	QP
291.9000	12.3	16.9	29.2	46.0	-16.8	QP
359.8000	12.5	18.0	30.5	46.0	-15.5	QP
429.6400	13.1	19.9	33.0	46.0	-13.0	QP
464.5600	13.7	20.7	34.4	46.0	-11.6	QP

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The expanded uncertainty of the radiated emission tests is 3.53 dB.
4. The margin value=Limit - Result

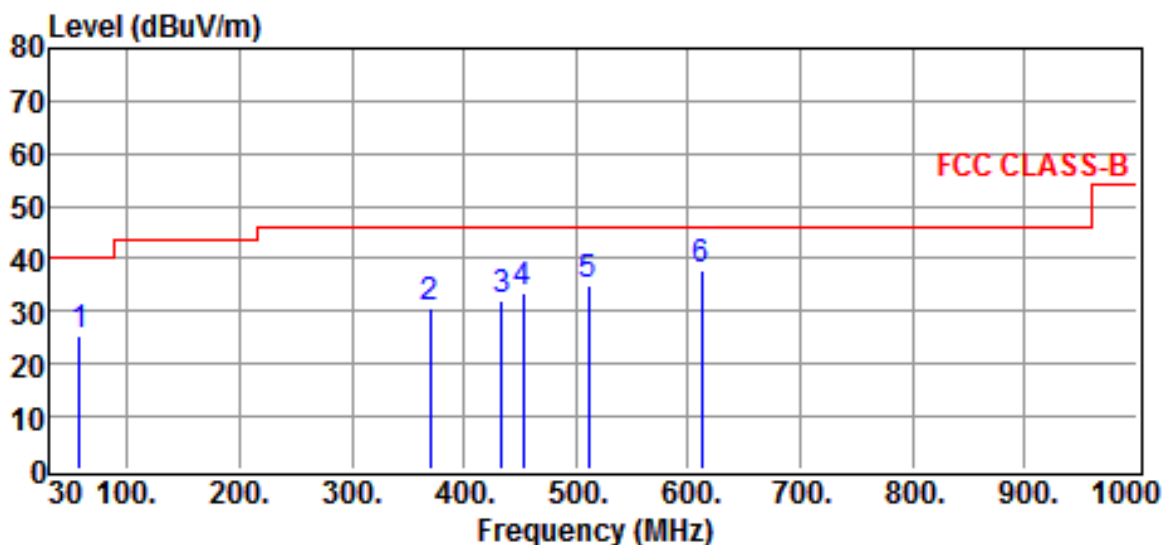


Site	:Open Site	Date	:2014-04-17
Limit	:FCC CLASS-B	Ant. Pol.	:VERTICAL
EUT	:DECT	Temp.	:22
Power Rating	:120V	Humi.	:58
Model	:C1001LX	Engineer.	:Jiapeng
Test Mode	:DECT MODE		
Test Mode	:Channel Middle		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
57.1600	20.2	11.6	31.8	40.0	-8.2	QP
235.6400	14.5	13.8	28.3	46.0	-17.7	QP
330.7000	13.4	17.7	31.1	46.0	-14.9	QP
443.2200	11.7	20.2	31.9	46.0	-14.1	QP
538.2800	13.9	22.1	36.0	46.0	-10.0	QP
612.0000	13.9	23.2	37.1	46.0	-8.9	QP

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The expanded uncertainty of the radiated emission tests is 3.53 dB.
4. The margin value=Limit - Result

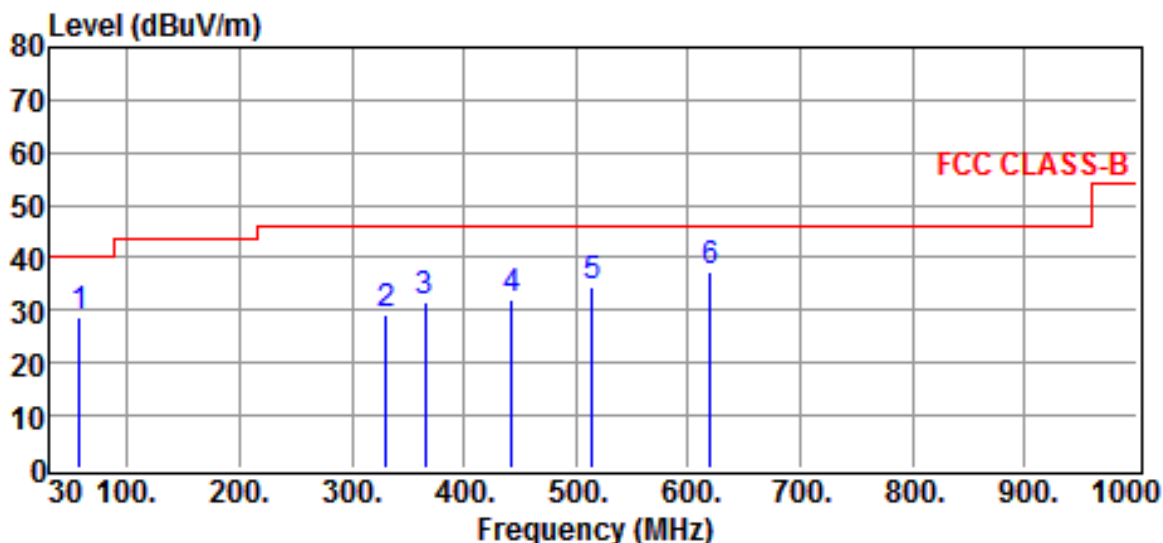


Site	:Open Site	Date	:2014-04-17
Limit	:FCC CLASS-B	Ant. Pol.	:HORIZONTAL
EUT	:DECT	Temp.	:22
Power Rating	:120V	Humi.	:58
Model	:C1001LX	Engineer.	:Jiapeng
Test Mode	:DECT MODE		
Test Mode	:Channel High		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
57.1600	13.8	11.6	25.4	40.0	-14.6	QP
369.5000	12.6	18.3	30.9	46.0	-15.1	QP
433.5200	11.9	20.0	31.9	46.0	-14.1	QP
452.9200	13.0	20.5	33.5	46.0	-12.5	QP
511.1200	13.3	21.7	35.0	46.0	-11.0	QP
612.0000	14.8	23.2	38.0	46.0	-8.0	QP

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The expanded uncertainty of the radiated emission tests is 3.53 dB.
4. The margin value=Limit - Result



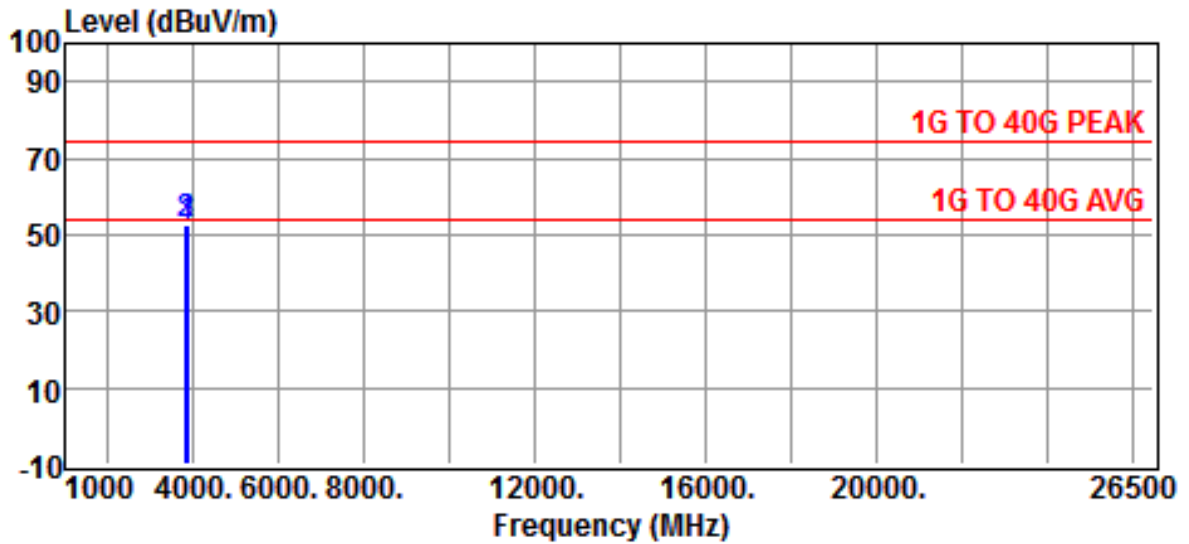
Site	:Open Site	Date	:2014-04-17
Limit	:FCC CLASS-B	Ant. Pol.	:VERTICAL
EUT	:DECT	Temp.	:22
Power Rating	:120V	Humi.	:58
Model	:C1001LX	Engineer.	:Jiapeng
Test Mode	:DECT MODE		
Test Mode	:Channel High		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
57.1600	16.9	11.6	28.5	40.0	-11.5	QP
330.7000	11.7	17.7	29.4	46.0	-16.6	QP
365.6200	13.4	18.2	31.6	46.0	-14.4	QP
443.2200	11.7	20.2	31.9	46.0	-14.1	QP
515.0000	13.0	21.7	34.7	46.0	-11.3	QP
619.7600	14.2	23.3	37.5	46.0	-8.5	QP

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The expanded uncertainty of the radiated emission tests is 3.53 dB.
4. The margin value=Limit - Result

B. Out-of -band Unwanted Emission (above 1GHz):

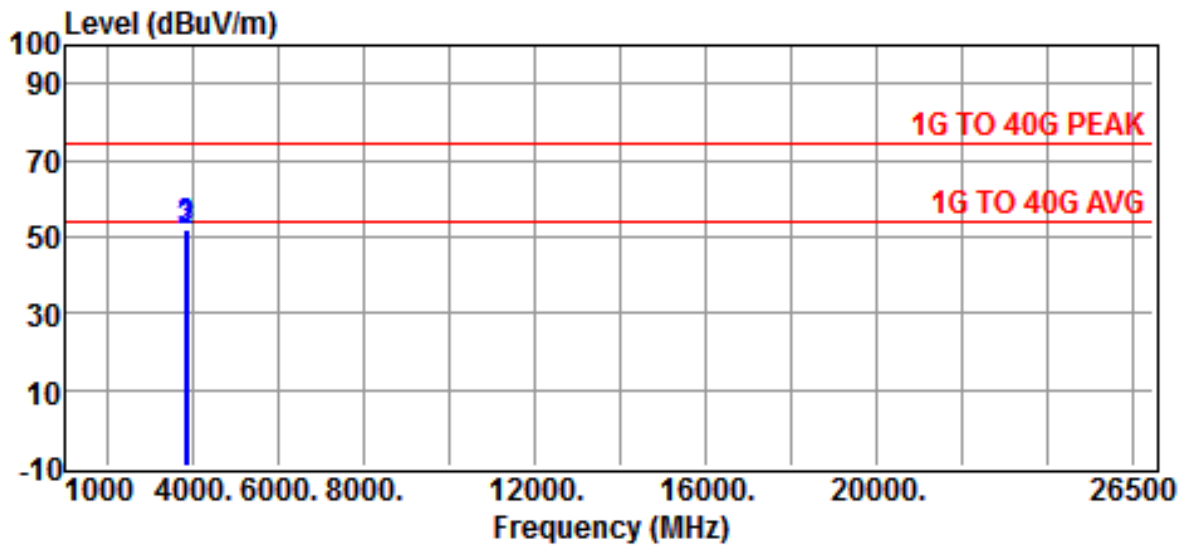


Site	:CHAMBER #2	Date	:2014-02-25
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:DECT	Temp.	:20
Power Rating	:120V/60Hz	Humi.	:62
Model	:C1001LX	Engineer.	:Jiapeng
Test Mode	: CH L : 1921.536MHz ; CH M : 1924.992MHz		
Test Mode	: CH H : 1928.448MHz		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
3843.0720	52.7	-0.6	52.1	74.0	-21.9	Peak
3849.9840	52.9	-0.5	52.4	74.0	-21.6	Peak
3856.8960	53.0	-0.5	52.5	74.0	-21.5	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The expanded uncertainty of the radiated emission tests is 3.53 dB.
4. The margin value=Limit - Result
5. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.



Site	:CHAMBER #2	Date	:2014-02-25
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:DECT	Temp.	:20
Power Rating	:120V/60Hz	Humi.	:62
Model	: C1001LX	Engineer.	:Jiapeng
Test Mode	: CH L : 1921.536MHz ; CH M : 1924.992MHz		
Test Mode	: CH H : 1928.448MHz		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
3843.0720	52.6	-0.6	52.0	74.0	-22.0	Peak
3849.9840	51.9	-0.5	51.4	74.0	-22.6	Peak
3856.8960	52.3	-0.5	51.8	74.0	-22.2	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The expanded uncertainty of the radiated emission tests is 3.53 dB.
4. The margin value=Limit - Result
5. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.

### Out-of-band Unwanted Emission: Channel Low

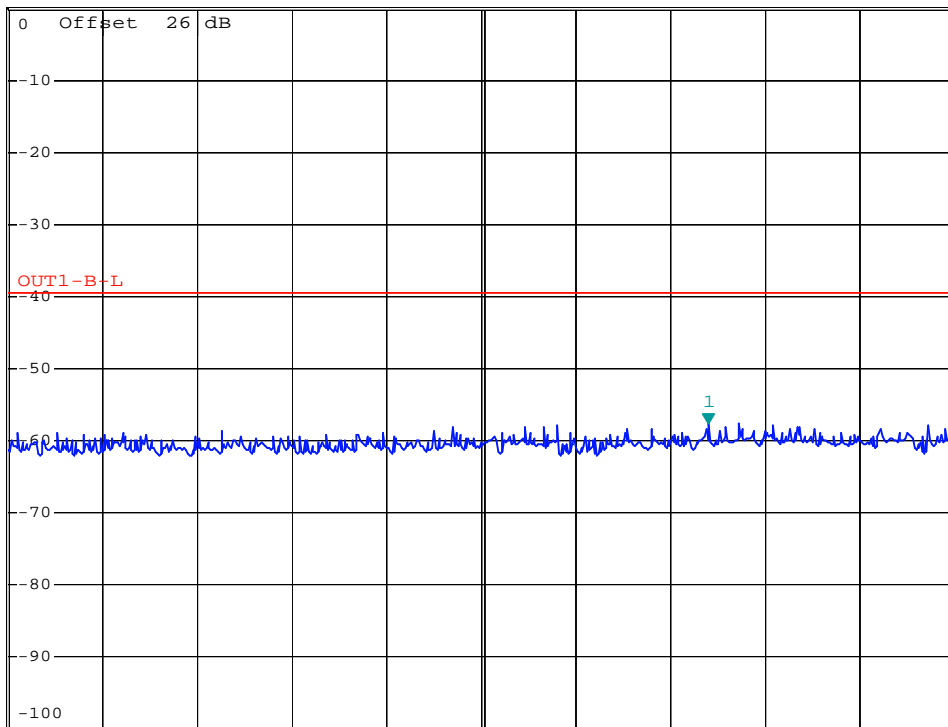


\*RBW 100 kHz    Marker 1 [T1 ]  
VBW 300 kHz        -57.64 dBm  
SWT 100 ms        747.800000000 MHz

Ref 0 dBm

Att 10 dB

1 PK  
VIEW



Start 30 MHz

97 MHz/

Stop 1 GHz



### Out-of-band Unwanted Emission: Channel Low

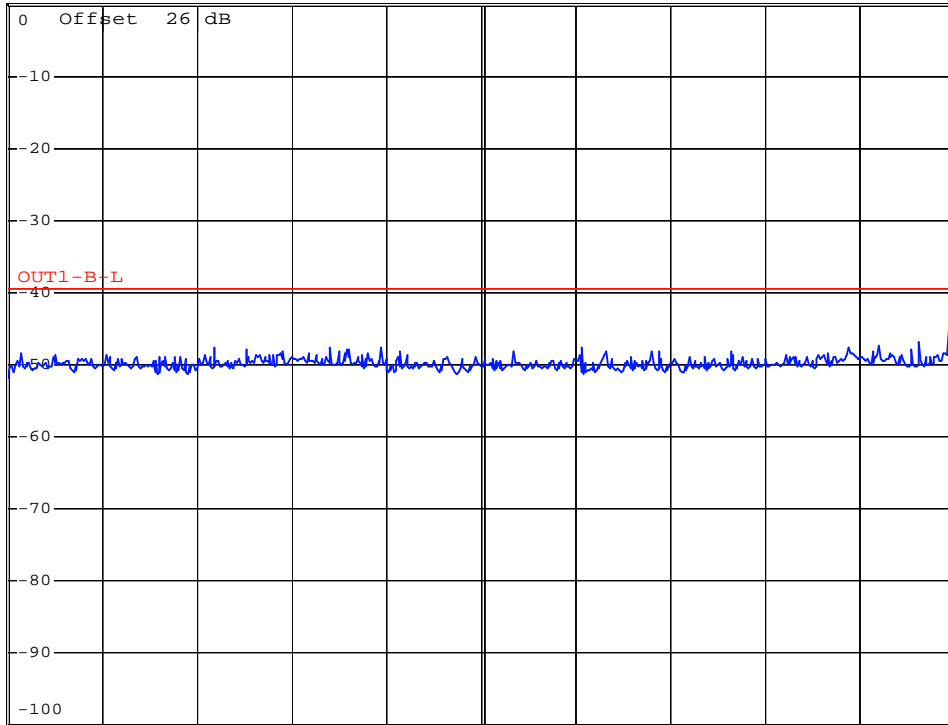


\*RBW 1 MHz      Marker 1 [T1 ]  
VBW 3 MHz      -43.14 dBm  
SWT 5 ms      1.915000000 GHz

Ref 0 dBm

Att 10 dB

1 PK  
VIEW



Start 1 GHz

91.5 MHz/

Stop 1.915 GHz

### Out-of-band Unwanted Emission: Channel Low

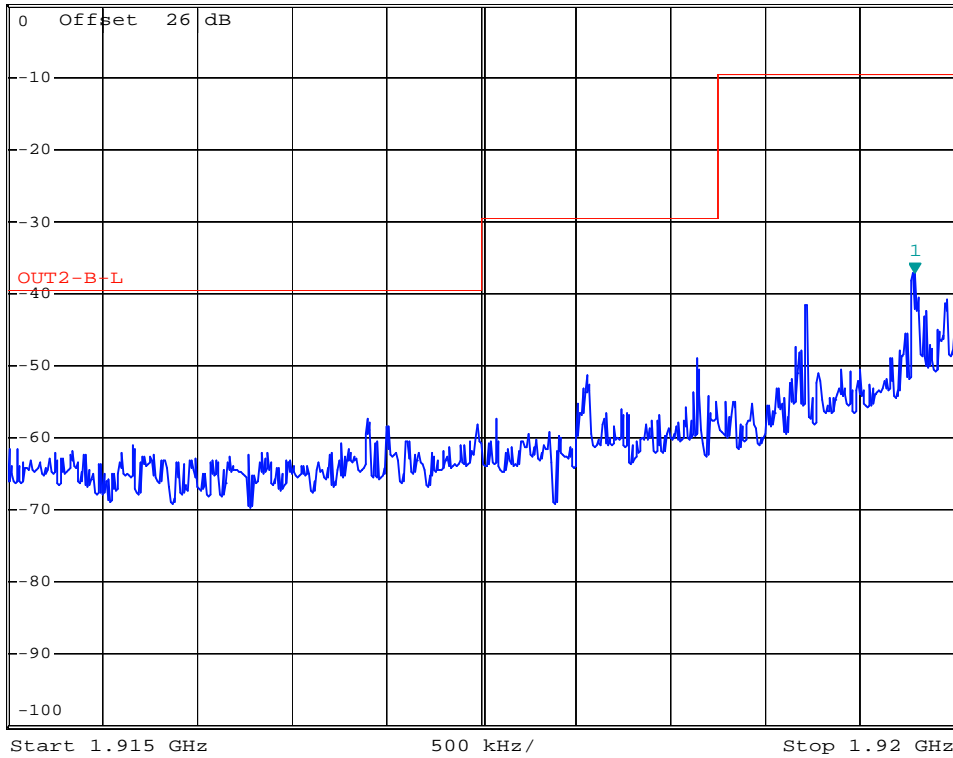


\*RBW 10 kHz    Marker 1 [T1 ]  
VBW 30 kHz                    -37.06 dBm  
SWT 50 ms                      1.919790000 GHz

Ref 0 dBm

Att 10 dB

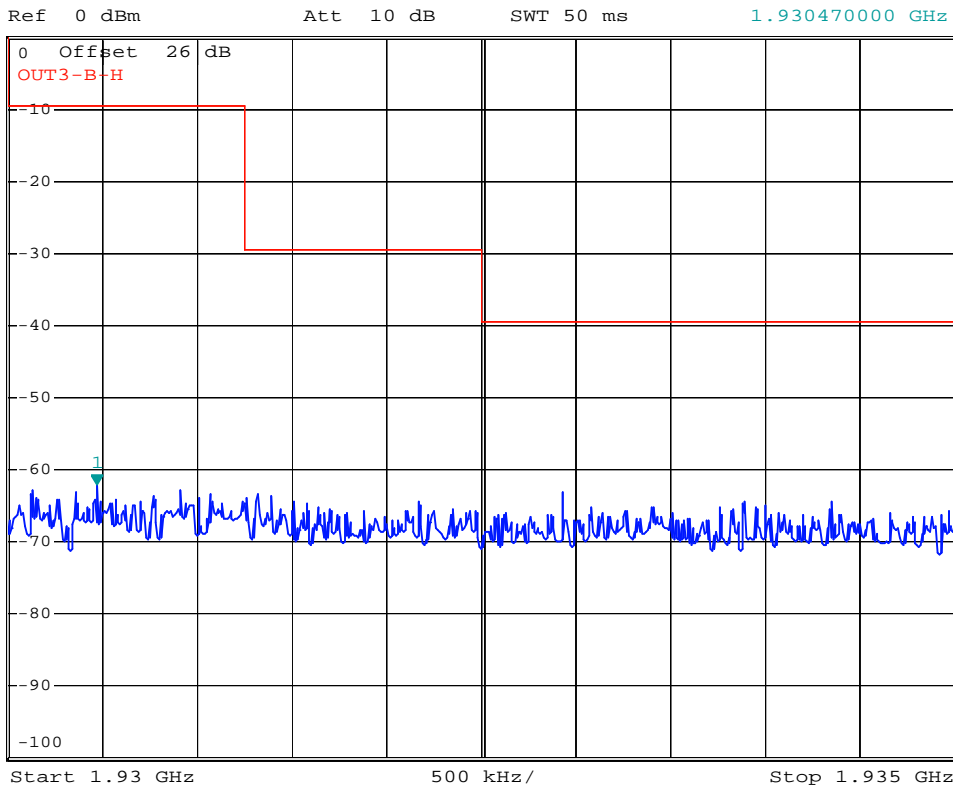
1 PK  
VIEW



### Out-of-band Unwanted Emission: Channel Low



\*RBW 10 kHz    Marker 1 [T1 ]  
VBW 30 kHz                    -62.14 dBm  
SWT 50 ms                    1.930470000 GHz



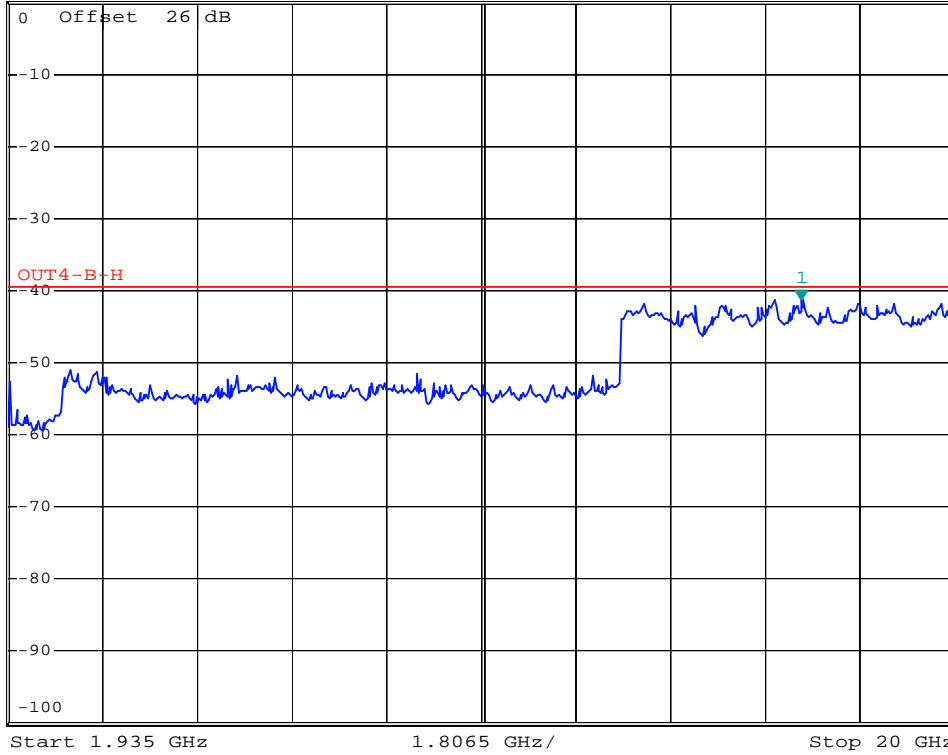
### Out-of-band Unwanted Emission: Channel Low



\*RBW 1 MHz      Marker 1 [T1 ]  
VBW 3 MHz      -41.29 dBm  
SWT 370 ms      17.073470000 GHz

Ref 0 dBm      \*Att 0 dB

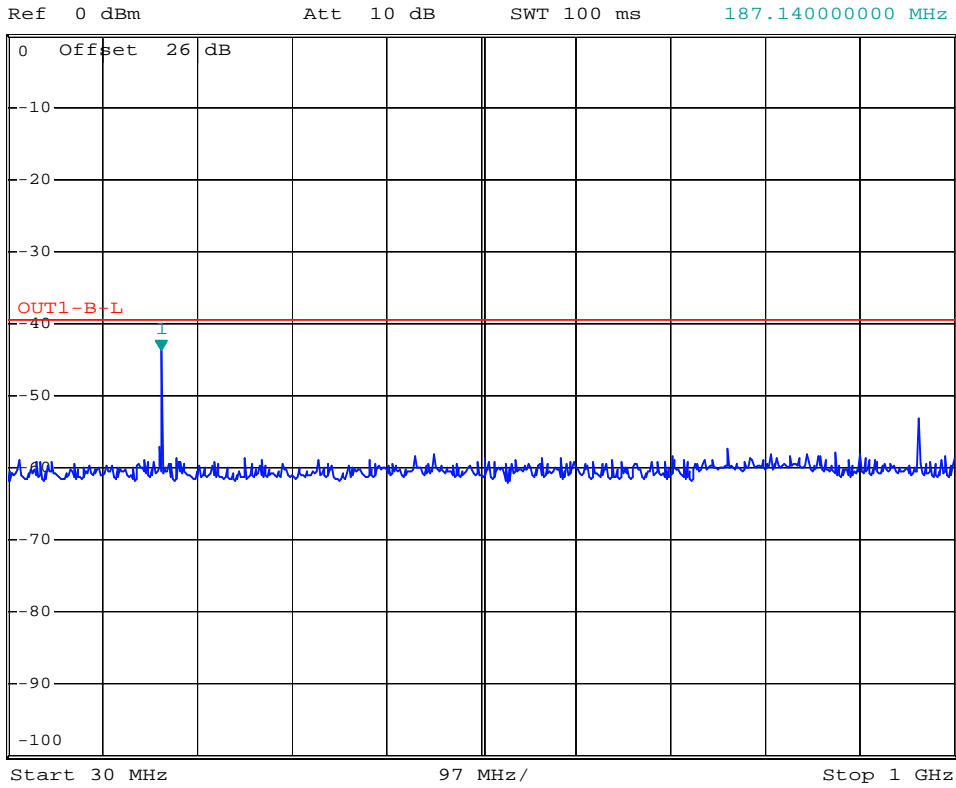
1 PK  
VIEW



### Out-of-band Unwanted Emission: Channel Middle



\*RBW 100 kHz Marker 1 [T1 ]  
VBW 300 kHz -43.80 dBm  
SWT 100 ms 187.140000000 MHz



### Out-of-band Unwanted Emission: Channel Middle

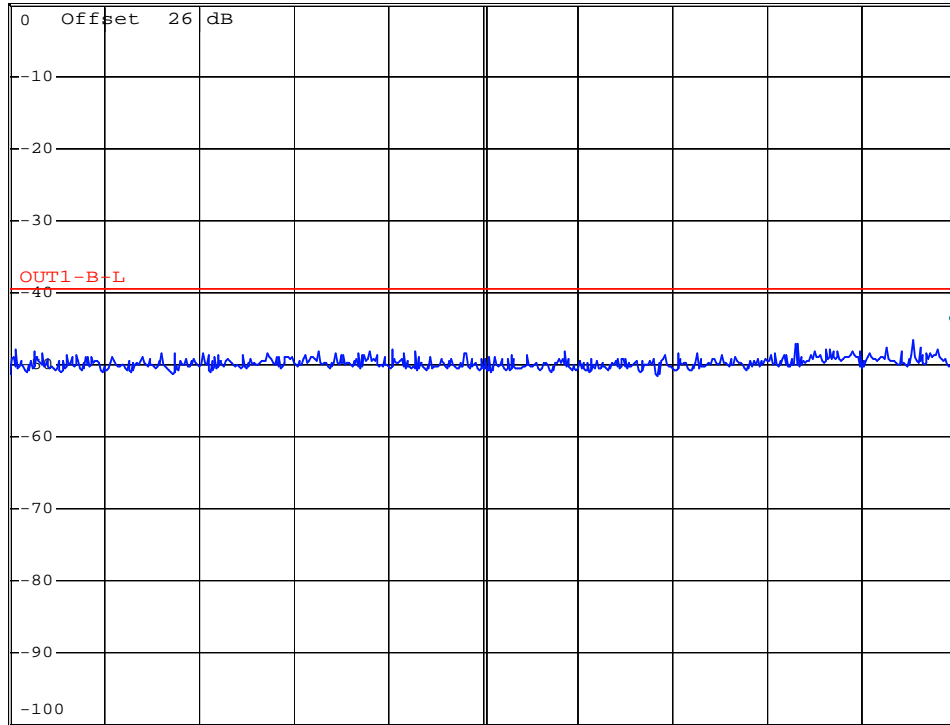


\*RBW 1 MHz      Marker 1 [T1 ]  
VBW 3 MHz      -44.68 dBm  
SWT 5 ms      1.913170000 GHz

Ref 0 dBm

Att 10 dB

1 PK  
VIEW



Start 1 GHz

91.5 MHz/

Stop 1.915 GHz

### Out-of-band Unwanted Emission: Channel Middle

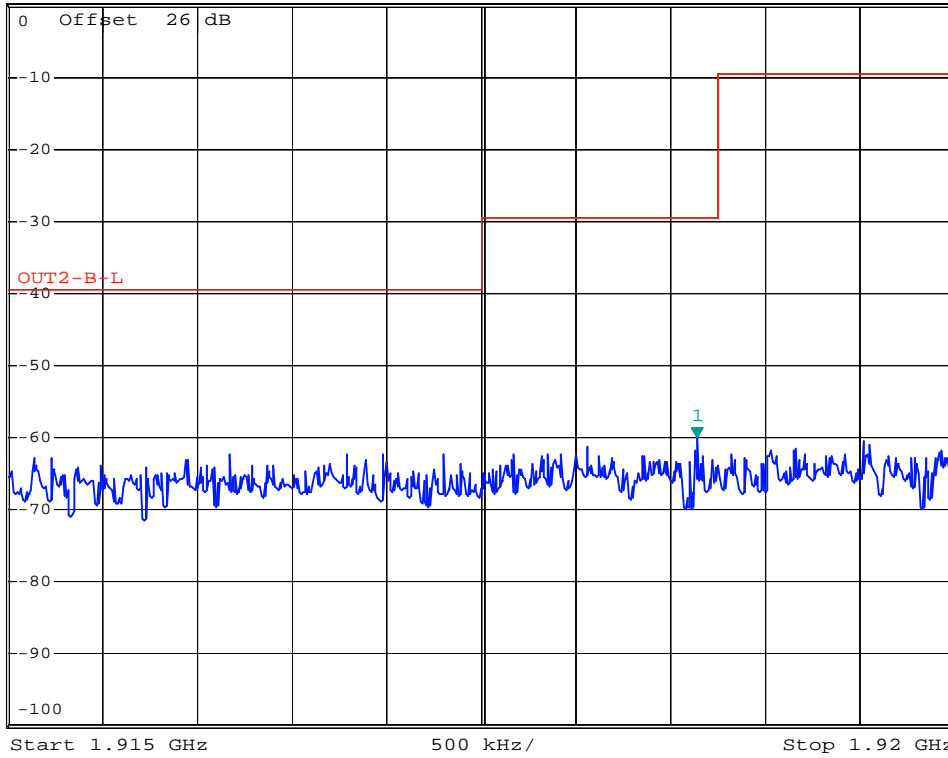


\*RBW 10 kHz    Marker 1 [T1 ]  
VBW 30 kHz                    -60.10 dBm  
SWT 50 ms                      1.918640000 GHz

Ref 0 dBm

Att 10 dB

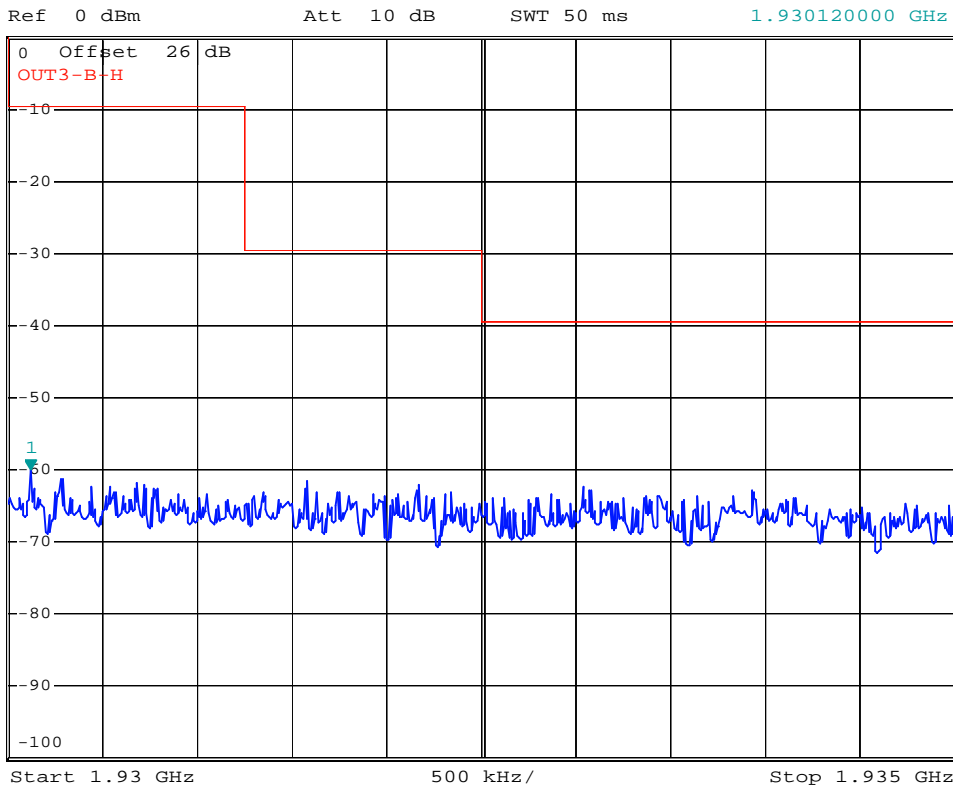
1 PK  
VIEW



### Out-of-band Unwanted Emission: Channel Middle



\*RBW 10 kHz    Marker 1 [T1 ]  
VBW 30 kHz                    -59.94 dBm  
SWT 50 ms                      1.930120000 GHz





### Out-of-band Unwanted Emission: Channel Middle

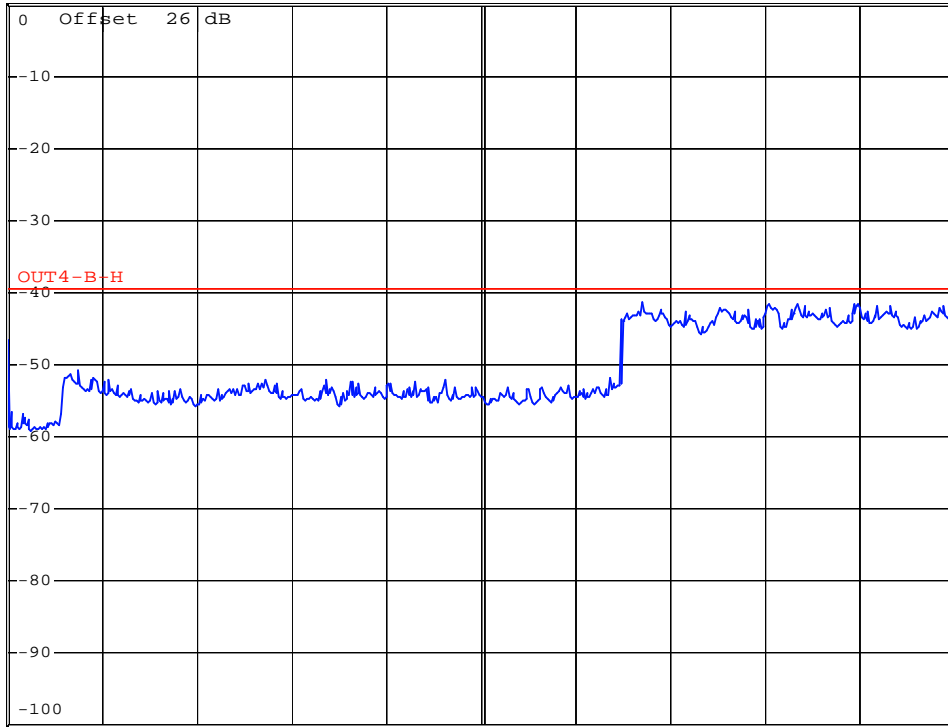


\*RBW 1 MHz    Marker 1 [T1 ]  
VBW 3 MHz    -41.19 dBm  
SWT 370 ms    20.000000000 GHz

Ref 0 dBm

\*Att 0 dB

1 PK  
VIEW



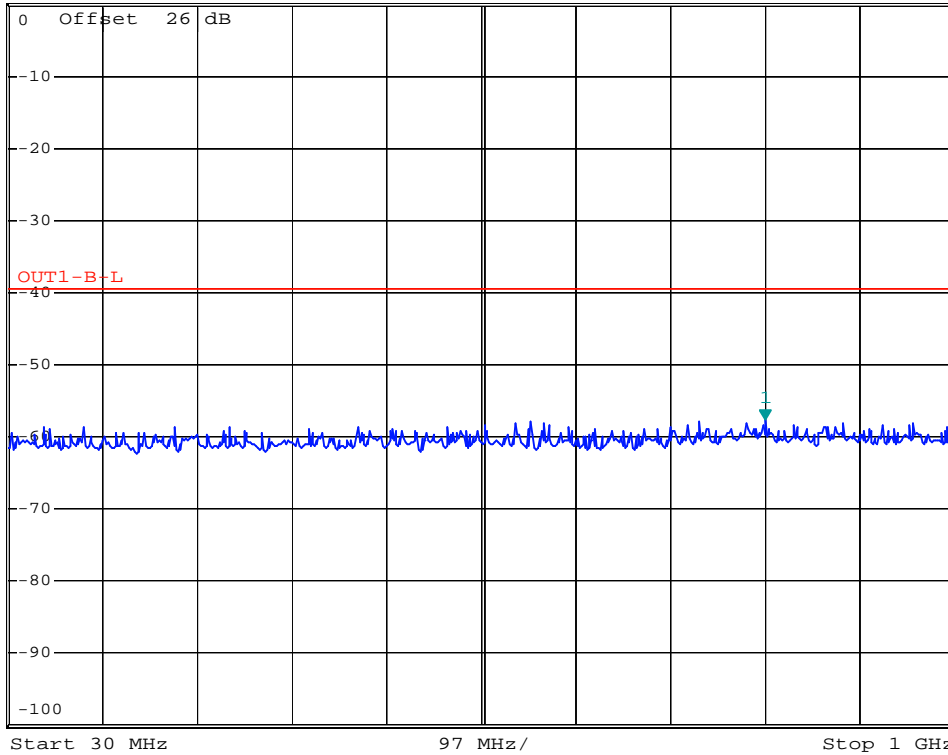
# Out-of-band Unwanted Emission: Channel High



\*RBW 100 kHz Marker 1 [T1 ]  
VBW 300 kHz -57.70 dBm  
SWT 100 ms 806.000000000 MHz

Ref 0 dBm

Att 10 dB



# Out-of-band Unwanted Emission: Channel High

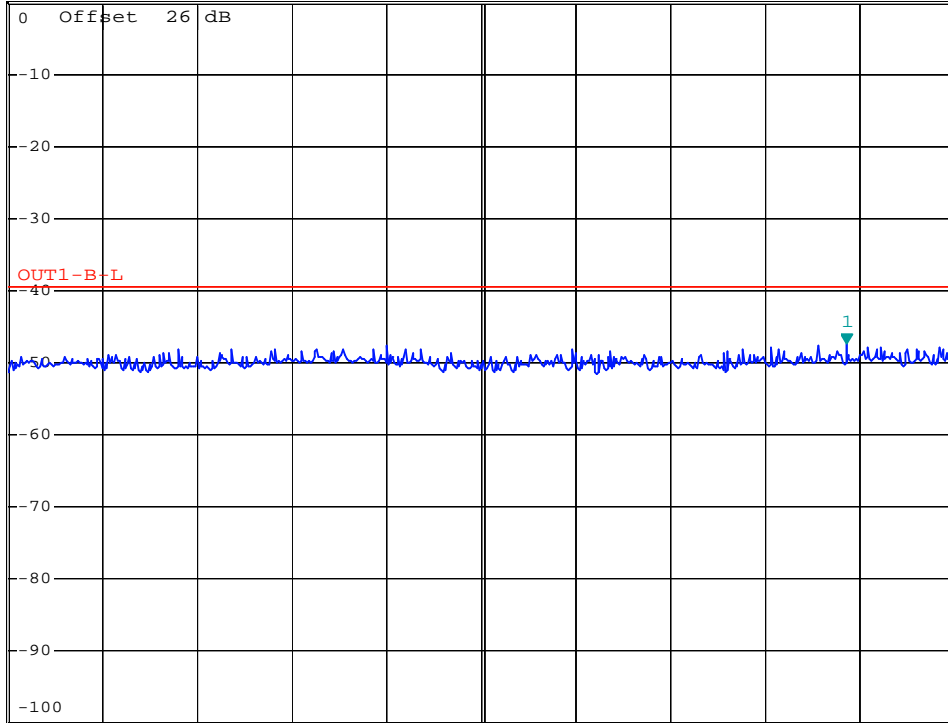


\*RBW 1 MHz      Marker 1 [T1 ]  
VBW 3 MHz      -47.40 dBm  
SWT 5 ms      1.810690000 GHz

Ref 0 dBm

Att 10 dB

1 PK  
VIEW



Start 1 GHz

91.5 MHz/

Stop 1.915 GHz

### Out-of-band Unwanted Emission: Channel High

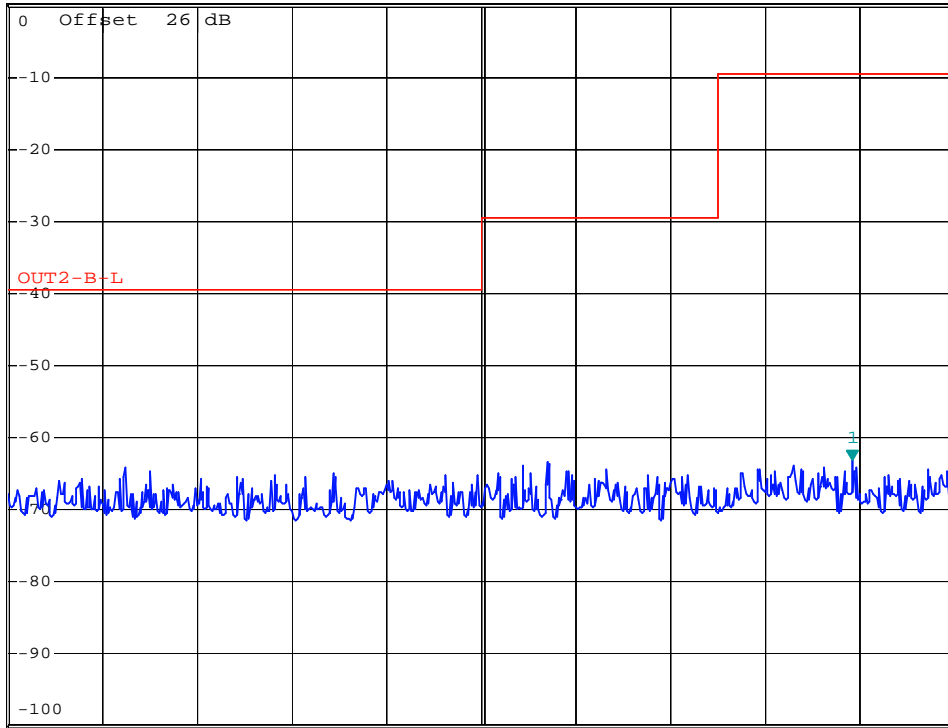


\*RBW 10 kHz    Marker 1 [T1 ]  
VBW 30 kHz                    -63.10 dBm  
SWT 50 ms                      1.919460000 GHz

Ref 0 dBm

Att 10 dB

1 PK  
VIEW



Start 1.915 GHz

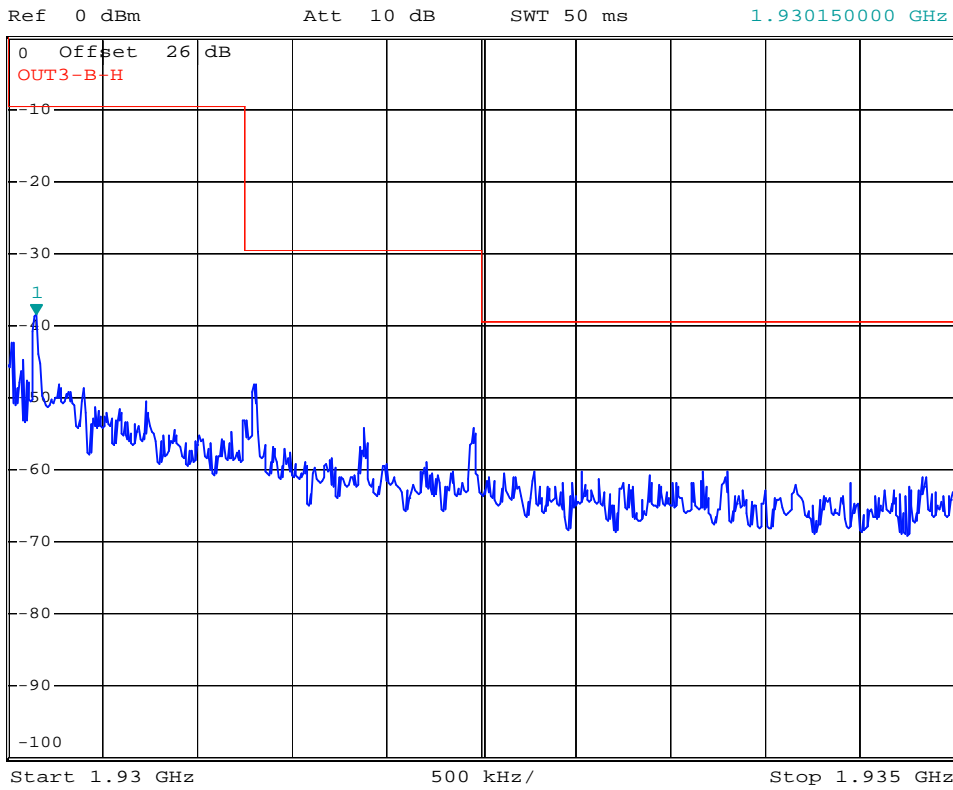
500 kHz/

Stop 1.92 GHz

# Out-of-band Unwanted Emission: Channel High



\*RBW 10 kHz    Marker 1 [T1 ]  
VBW 30 kHz                    -38.46 dBm  
SWT 50 ms                    1.930150000 GHz



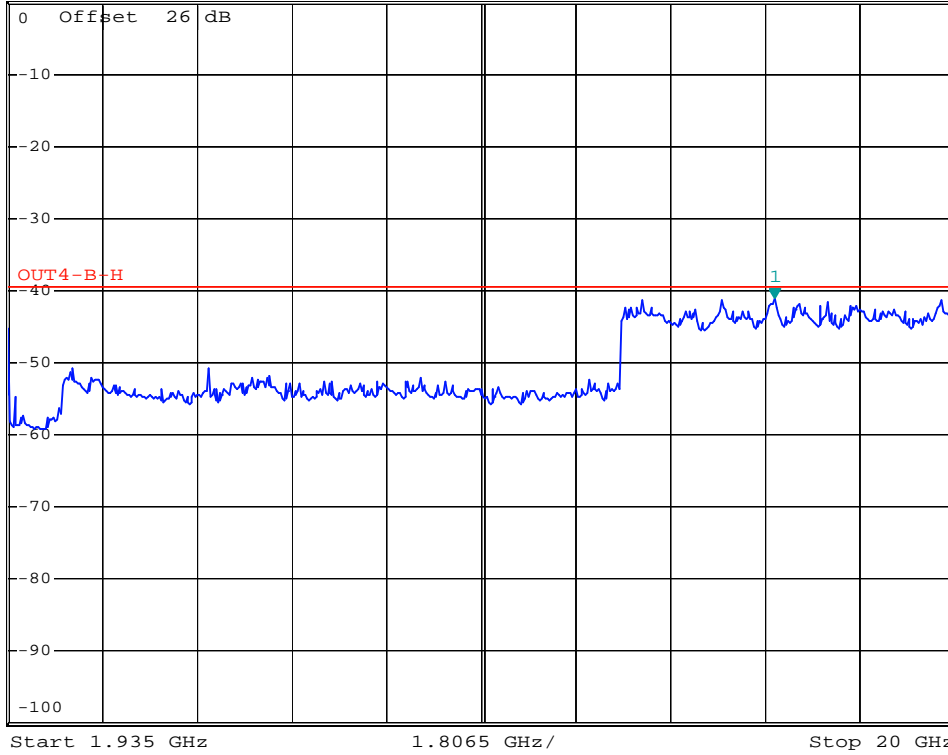
### Out-of-band Unwanted Emission: Channel High



\*RBW 1 MHz      Marker 1 [T1 ]  
VBW 3 MHz      -41.16 dBm  
SWT 370 ms      16.567650000 GHz

Ref 0 dBm      \*Att 0 dB

1 PK  
VIEW



### 6.13.4 Photos of Radiation Measuring Setup



## 6.14 Frame period and jitter

### 6.14.1 Standard Applicable

#### FCC 15.323(e)

The frame period (a set of consecutive time slots in which the position of each time slot can be identified by reference to a synchronizing source) of an intentional radiator operating in these subbands shall be 20 milliseconds/X where X is a positive whole number. Each device that implements time division for the purposes of maintaining a duplex connection on a given frequency carrier shall maintain a frame repetition rate with a frequency stability of at least 50 parts per million (ppm). Each device which further divides access in time in order to support multiple communication links on a given frequency carrier shall maintain a frame repetition rate with a frequency stability of at least 10 ppm. The jitter (time-related, abrupt, spurious variations in the duration of the frame interval) introduced at the two ends of such a communication link shall not exceed 25 microseconds for any two consecutive transmissions. Transmissions shall be continuous in every time and spectrum window during the frame period defined for the device.

### 6.14.2 Measurement procedure

- Frame frequency stability  $\leq 50$  ppm
- TDMA frame frequency stability  $\leq 10$  ppm (That translates to frequency drift of 19.2 kHz/slot for 1920 MHz carrier)
- Frame jitter  $\leq 25\mu\text{s}$

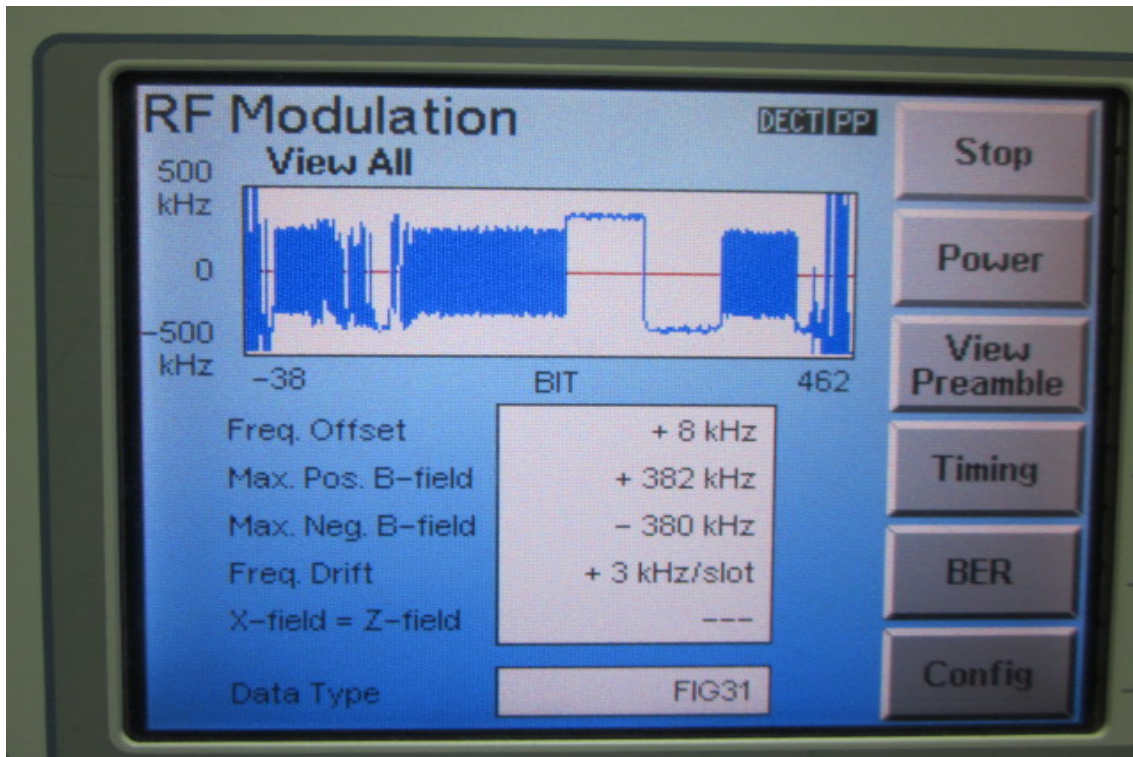


**6.14.3 Test Results: Complies****Measurement Data**

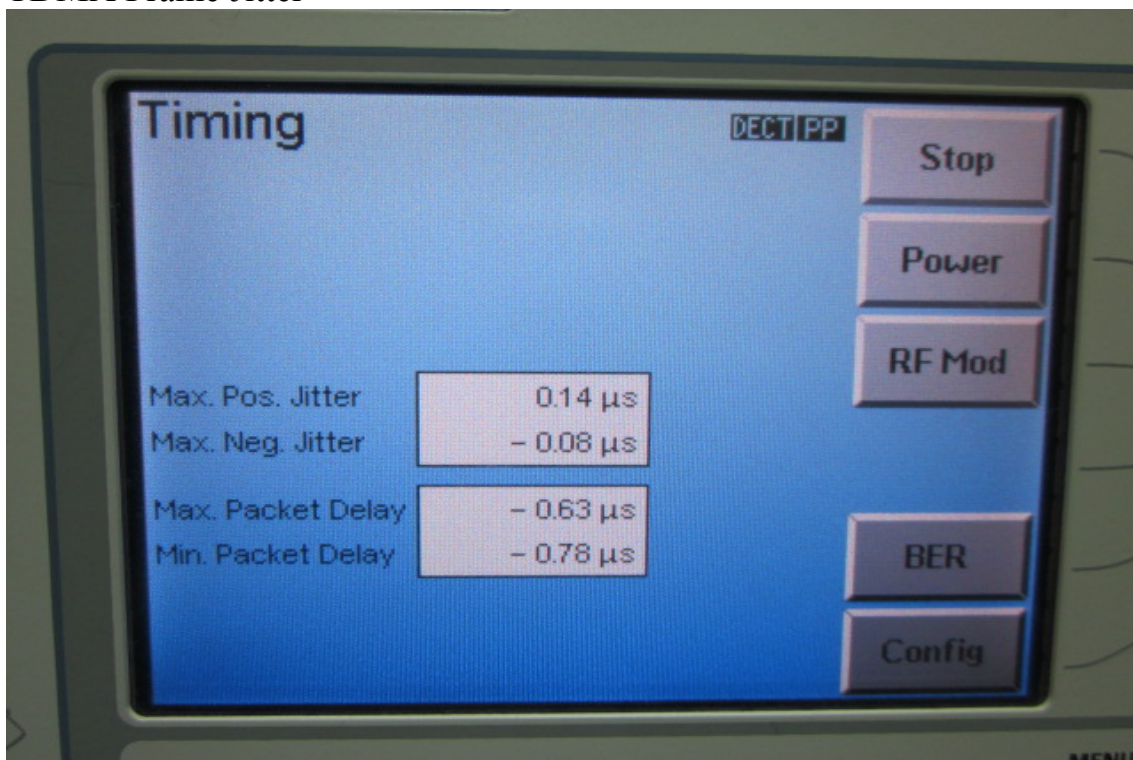
Channel No.	Frequency (KHz/slot)		Jitter (us)	
	Drift	Limit	Result	Limit
F <sub>L</sub>	8	19.2	0.14	25
F <sub>H</sub>	8	19.2	-0.15	25

Photos of worst-case display follow:

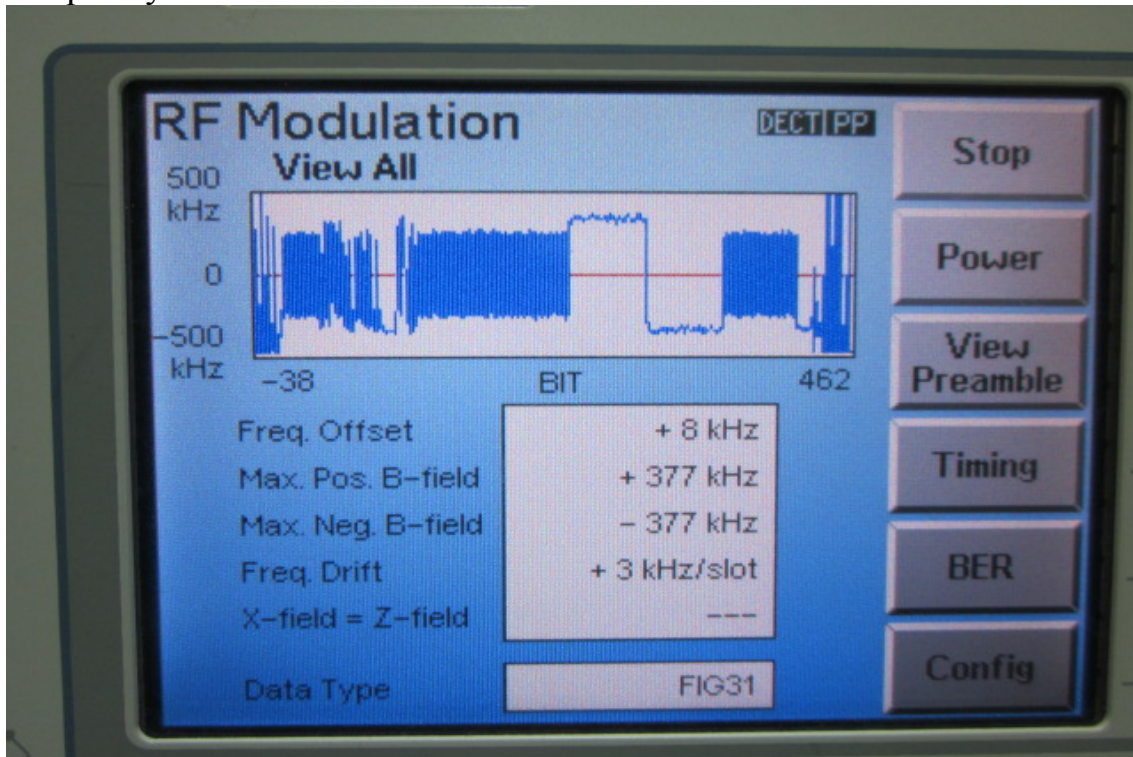
### Frequency Drift



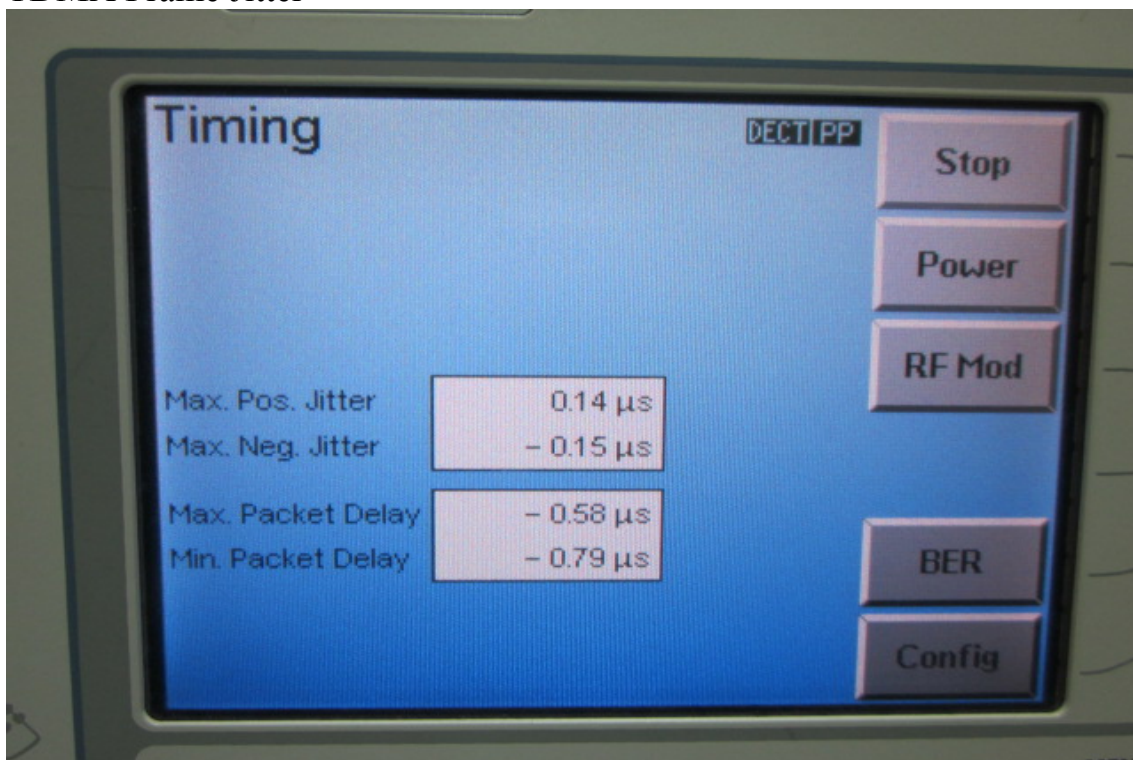
### TDMA Frame Jitter



### Frequency Drift



### TDMA Frame Jitter



## 6.15 Carrier frequency stability

### 6.15.1 Standard Applicable

#### FCC 15.323(f)

The frequency stability of the carrier frequency of the intentional radiator shall be maintained within  $\pm 10$  ppm over 1 hour or the interval between channel access monitoring, whichever is shorter. The frequency stability shall be maintained over a temperature variation of  $-20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  degrees C at normal supply voltage, and over a variation in the primary supply voltage of 85 percent to 115 percent of the rated supply voltage at a temperature of  $20^{\circ}\text{C}$ . For equipment that is capable only of operating from a battery, the frequency stability tests shall be performed using a new battery without any further requirement to vary supply voltage.

### 6.15.2 Measurement Requirement

- Carrier frequency stability  $\leq 10$  ppm over 1 hour or interval between channel access monitoring, whichever is shorter (That translates to frequency drift of 19.2 kHz for 1920 MHz carrier)
- Carrier frequency stability over  $-20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  at normal supply voltage, and over 85% to 115% of rated supply voltage (voltage variation not required for battery operated device)

**6.15.3 Test Results: Complies**

**Measurement Data**

**a) Carrier Frequency Stability with Supply Voltage**

Channel No.	Frequency Offset (KHz)			Limit (KHz)
	102V (85%)	120V (Normal)	138V (115%)	
F <sub>L</sub>	9	6	8	±19.2
F <sub>H</sub>	8	7	7	±19.2

**b) Carrier Frequency Stability with Temperature and Time**

Channel No.	Frequency Offset (KHz)			Limit (KHz)
	-20°C	20°C	50°C	
F <sub>L</sub>	9	7	4	±19.2
F <sub>H</sub>	8	5	2	±19.2

Test was conducted for duration longer than 1 hour. Photo of worst-case display follows:

