

**CONFORMANCE TEST REPORT  
FOR****FCC Part 15, subpart D****Report No.: 09-01-MAS-054-01**

Client: OPENPEAK INC.  
Product: US DECT PHONE - BASE (FP)  
Model: OPOF3310  
FCC ID: VGBOPFB503310  
Manufacturer/supplier: OPENPEAK INC.

Date test item received: 2008/12/31  
Date test campaign completed: 2009/02/12  
Date of issue: 2009/02/16

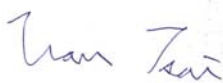


**The test result only corresponds to the tested sample. It is not permitted to copy this report, in part or in full, without the permission of the test laboratory.**

*Total number of pages of this test report: 55 pages*

*Total number of pages of photos: External photos 3 pages*

*Internal photos 11 pages*

*Setup photos 2 pages*

Test Engineer	Checked By	Approved By
		
Ivan Tsai	David You	Joe Hsieh

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# 1 GENARAL INFORMATION

## 1.1 Testing Laboratory

Name: Electronic Testing Center, Taiwan  
Address: No. 8, Lane 29, Wenming Rd., Leshan Tsuen, Guishan Shiang, Taoyuan Country, 33383, Taiwan, R.O.C.  
Telephone: 886-3-3280026  
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NVLAP lab registration #: 200133-0  
IC OATS registration #: IC 2949-1  
E-Mail: [hsieh@etc.org.tw](mailto:hsieh@etc.org.tw)

## 1.2 Client Information

Name: OPENPEAK INC.  
Address: 5355 Town Center Road, Suite 301 Boca Raton, FL 33486 USA  
Telephone: +1 561 281 8698  
Contact person: Yuval Shohet

## 1.3 Manufacturer

Name: OPENPEAK INC.  
Address: 5355 Town Center Road, Suite 301 Boca Raton, FL 33486 USA

## 2 TEST INFORMATION

### 2.1 Description of Tested Device(s)

The tested equipment is a DECT base station that complies with ETSI EN 300175. The frequencies have been reprogrammed to comply with the FCC and IC requirements to an Isochronous UPCS device after FCC Part 15D and RSS-213 Issue 2.

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

### 2.2 Test Environment

#### Normal test condition

Temperature:	20 - 25 °C
Relative humidity:	55 - 75%

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

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 checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cross Reference	15.309(b)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Labeling requirements	15.311,15.19(a)(3)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Power line Conducted Emission	15.315,15.207	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Antenna Requirement	15.317, 15.203	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Digital Modulation Techniques	15.319(b)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Peak transmit Power	15.319(c)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Power Spectral Density	15.319(d)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Antenna gain	15.319(e)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Automatic discontinuation of transmission	15.319(f)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Safety exposure levels	15.319(i)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Emission Bandwidth	15.323(a)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Emissions inside and outside the subband	15.323(d)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Frame period and jitter	15.323(e)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Carrier frequency stability	15.323(f)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

## 3.2 Other Comments

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 C63.17-1998 and ANSI C63.17-2006 Draft where applicable. Radiated tests were conducted in accordance with ANSI C63.4-2003.

Where a test method specified in this Standard cannot be followed, a test method given in ANSI C63.17 may be used by quoting the test section number. An equivalent alternative method may also be used provided that it is fully described in the test report.

Where a test is not practicable (e.g. the test for an access protocol of Section 4.3.4), the certification applicant may submit to Industry Canada the manufacturer's declaration that the access protocol has nevertheless been met in the design and prototype tests. Full justification as to why testing is not practicable should be given for Industry Canada's consideration.

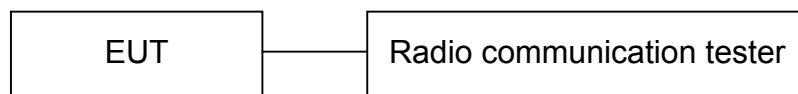
A mid-band carrier frequency should normally be used for tests.

When an antenna conducted measurement is used to determine the RF output power of the device, the effective gain of the antenna intended for the device must be stated, based on measurement or on data from the antenna manufacturer. Any antenna gain in excess of 3 dBi (3 dB above isotropic gain) shall be added to the measured RF output power before using the power limits specified in this standard.

Accessories and peripheral equipment that are normally required to be connected to the device in actual use, shall be so connected with representative cable lengths for the tests. Only one test using representative peripherals and accessories is required. The emission tests shall be performed with the device and accessories configured in a manner which tends to produce the maximum level of emissions within the range of variations that can be expected under normal operating conditions.

## 4 TEST SETUP

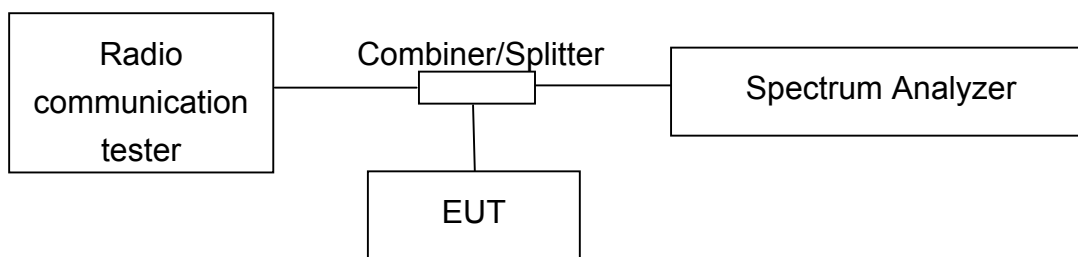
### 4.1 Frequency and Timing Measurements



#### Test Set-up 1

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

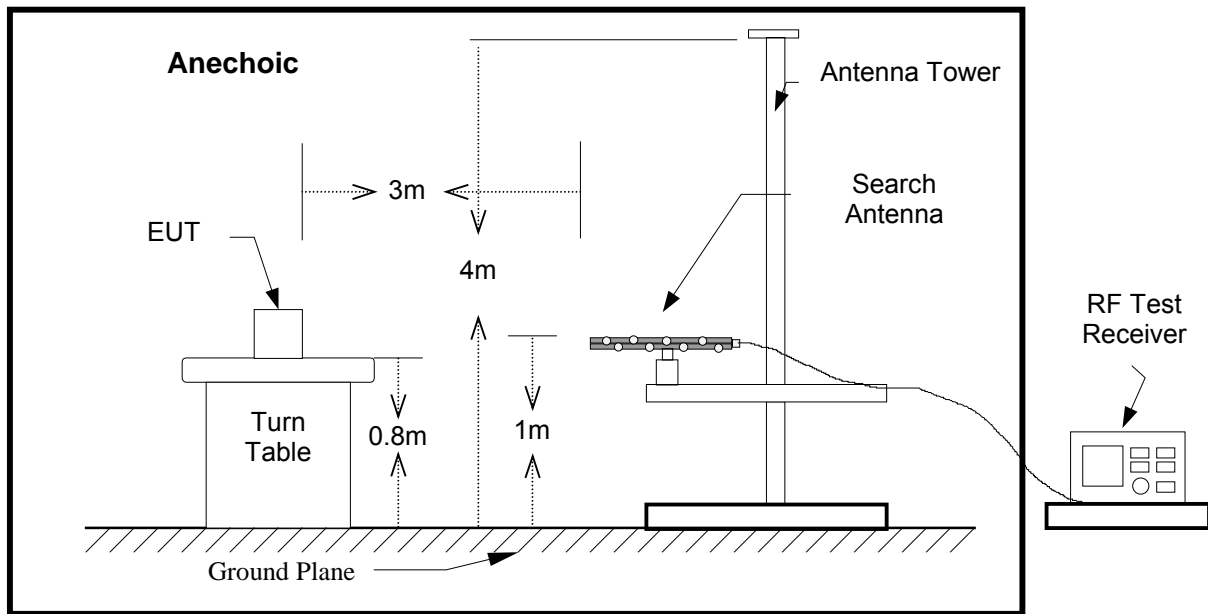
### 4.2 Conducted Emission Tests



#### Test Set-up 2

This setup is used for all conducted emission tests.

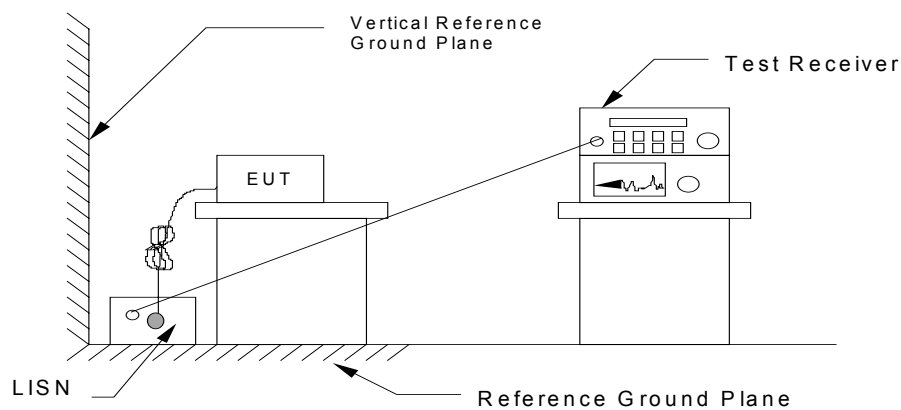
### 4.3 Radiated Emission Tests



#### 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 other frequencies it is 3 m. Emissions above 1 GHz were measured with the Spectrum Analyzer, Horn Antenna and the preamplifier after the antenna.

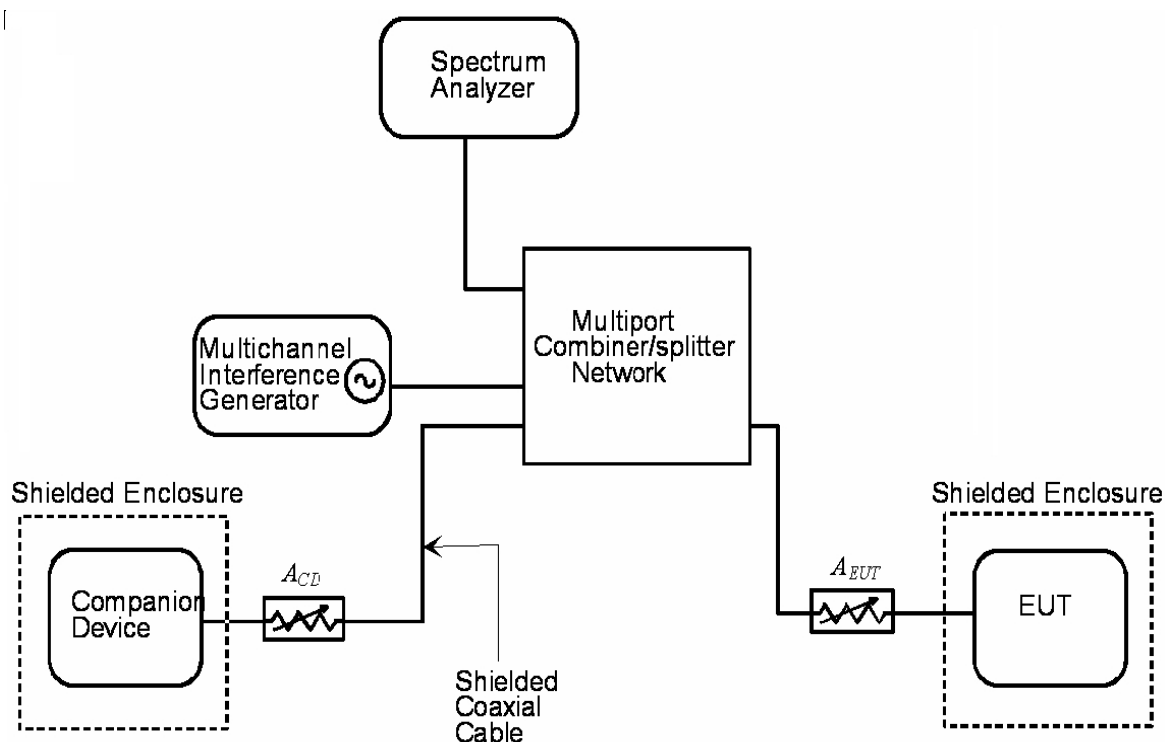
### 4.4 Power line Conducted Tests



#### Test Set-Up 4



## 4.5 Monitoring Tests



### Test Set-Up 5

This test setup is used for all Monitoring and Time and Spectrum Access Procedure tests.

Companion Device	$A_{CD}$ (dB)	EUT	$A_{EUT}$ (dB)
Base	50	Handset	0
Handset	30	Base	0

## 5 TEST EQUIPMENT LIST

To facilitate inclusion on each page of the test equipment used for related tests, 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 Calibration Date (MM/DD/YY)</b>
EMI Test Receiver	Rohde & Schwarz	ESU	07/17/2009
BiLog Antenna	Schaffner	CBL 6112B	07/03/2009
Horn Antenna	EMCO	3115	06/12/2009
Horn Antenna	EMCO	3116	07/22/2009
Preamplifier	Hewlett-Packard	8449B	10/08/2009
Spectrum Analyzer	Hewlett-Packard	8564EC	10/13/2009
Spectrum Analyzer	Rohde & Schwarz	FSU46	11/24/2009
LISN	EMCO	3825	03/30/2009
Test Receiver	Rohde & Schwarz	ESCS30	08/07/2009
Radio Communication Tester	Rohde & Schwarz	CTS60	03/04/2009
Vector Signal Generator	National Instruments	PXI-5670	03/07/2009
Spectrum Analyzer	National Instruments	PXI-5660	03/06/2009
Scope 1	National Instruments	PXI-5114	03/05/2009
Scope 2	National Instruments	PXI-5114	03/05/2009

## 6 TEST RESULT

### 6.1 Coordination 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:

#### FCC 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 direct associated with the radio transmitter also is subject to the requirements for unintentional radiators in Subpart B.

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

Note: For radiated test, if EUT is a handset, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission as a worse case.

**Radiated Emission Test**

**File:** ivan      **Data:** #70      **Date:** 2009/02/12      **Temperature:** 24 °C  
**Time:** AM 09:31:27      **Humidity:** 59 %  
**Condition:** FCCPART15      **Polarization:** Horizontal  
**EUT:**      **Distance:** 3m  
**Model:**  
**Test Mode:** Worse case of all operation modes

No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBuV/m)		Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)
1	265.2104	18.40	peak	16.07	34.47	46.00	-11.53
2	366.2926	16.22	peak	19.22	35.44	46.00	-10.56
3	531.5230	21.39	peak	22.90	44.29	46.00	-1.71
4	644.2685	14.59	peak	24.21	38.80	46.00	-7.20
5	830.8818	13.45	peak	26.59	40.04	46.00	-5.96
6	900.8617	11.49	peak	27.61	39.10	46.00	-6.90

**Condition:** FCCPART15      **Polarization:** Vertical  
**EUT:**      **Distance:** 3m  
**Model:**  
**Test Mode:** Worse case of all operation modes

No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBuV/m)		Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)
1	49.4389	26.38	peak	10.09	36.47	40.00	-3.53
2	166.0721	20.01	peak	12.12	32.13	43.50	-11.37
3	533.4669	20.30	peak	22.94	43.24	46.00	-2.76
4	766.7335	14.36	peak	25.70	40.06	46.00	-5.94
5	830.8818	15.19	peak	26.59	41.78	46.00	-4.22
6	900.8617	9.63	peak	27.61	37.24	46.00	-8.76

**Note:**

- Place of Measurement: Measuring site of the ETC.
- If the data table appeared symbol of "\*\*\*\*" means the value was too low to be measured.
- The symbol of "#" means the noise was too low, so record the peak value.
- The estimated measurement uncertainty of the result measurement is
  - ±4.6dB (30MHz ≤ f < 300MHz).
  - ±4.4dB (300MHz ≤ f < 1000MHz).
  - ±4.1dB (1GHz ≤ f < 18GHz).
  - ±4.4dB (18GHz ≤ f ≤ 40GHz).

## 6.3 Labeling Requirements

### 6.3.1 Standard Applicable: FCC 15.19, RSS-213 3

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:

*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 equipment.

### 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:

#### FCC 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.

#### FCC 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 150 kHz to 30 MHz 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.

### RSS-213 4.2 AC Power Line Conducted Emissions

This is a test for unwanted emissions conducted back onto the AC power lines for devices equipped to operate from the public utility AC power supply. See Radio Standards Specification 212, Test Facilities and Test Methods for Radio Equipment (RSS-212) for method of measurement.

### RSS-213 6.3 AC Power Line Conducted Emissions Limits

The limits of AC power line conducted emissions are given in RSS-Gen, Section 7.

### 6.4.2 Measurement procedure

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

### 6.4.3 Test Results: Complies

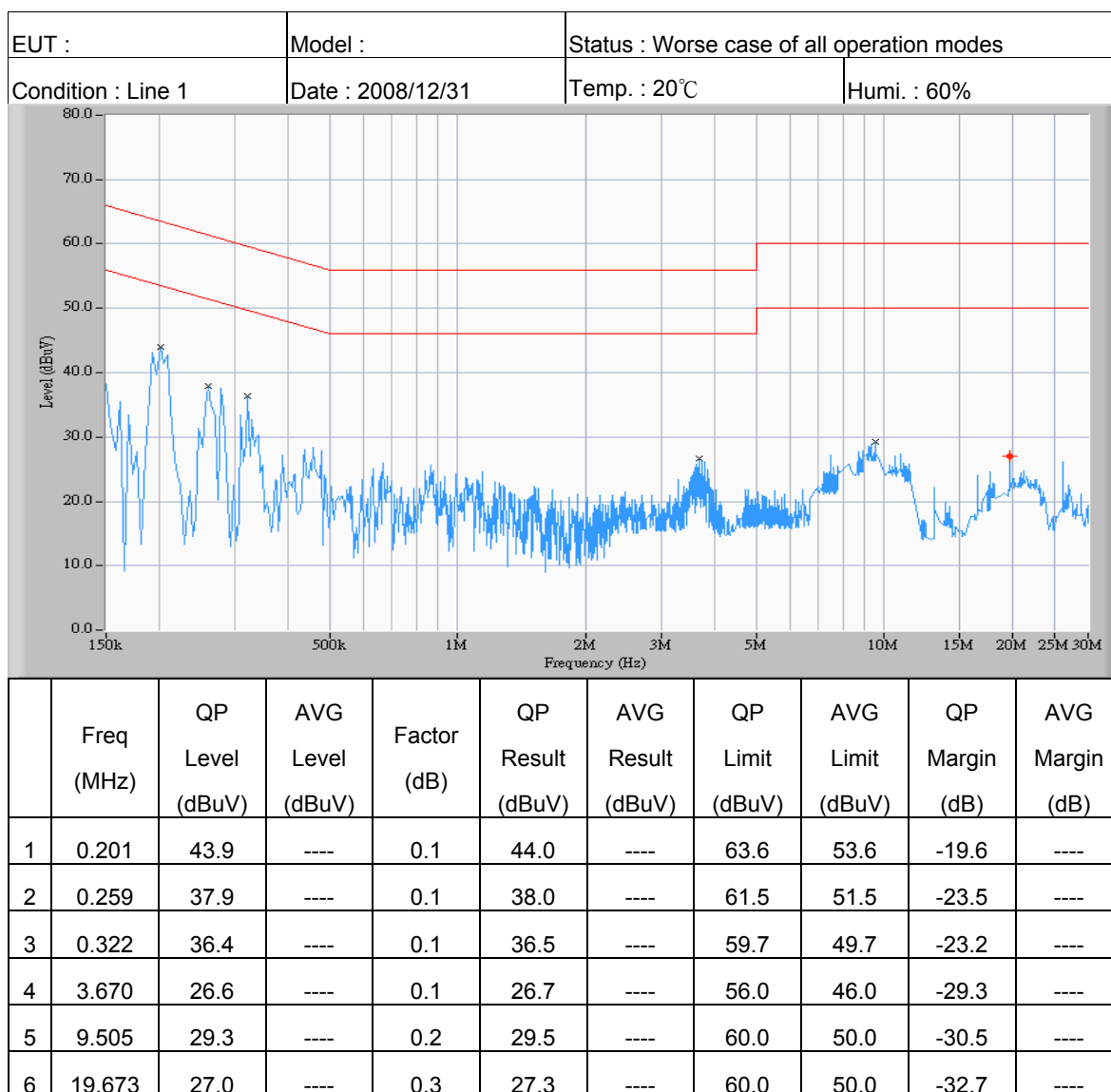
**Measurement Data: See attached graph, (Peak detector).**

Highest measured value (L1 and L2):

All emissions were below the QP and Average limits when measured with Peak detector.

The test was performed with the EUT in standby charging and repeated with the EUT transmitting in speakerphone mode and charging.

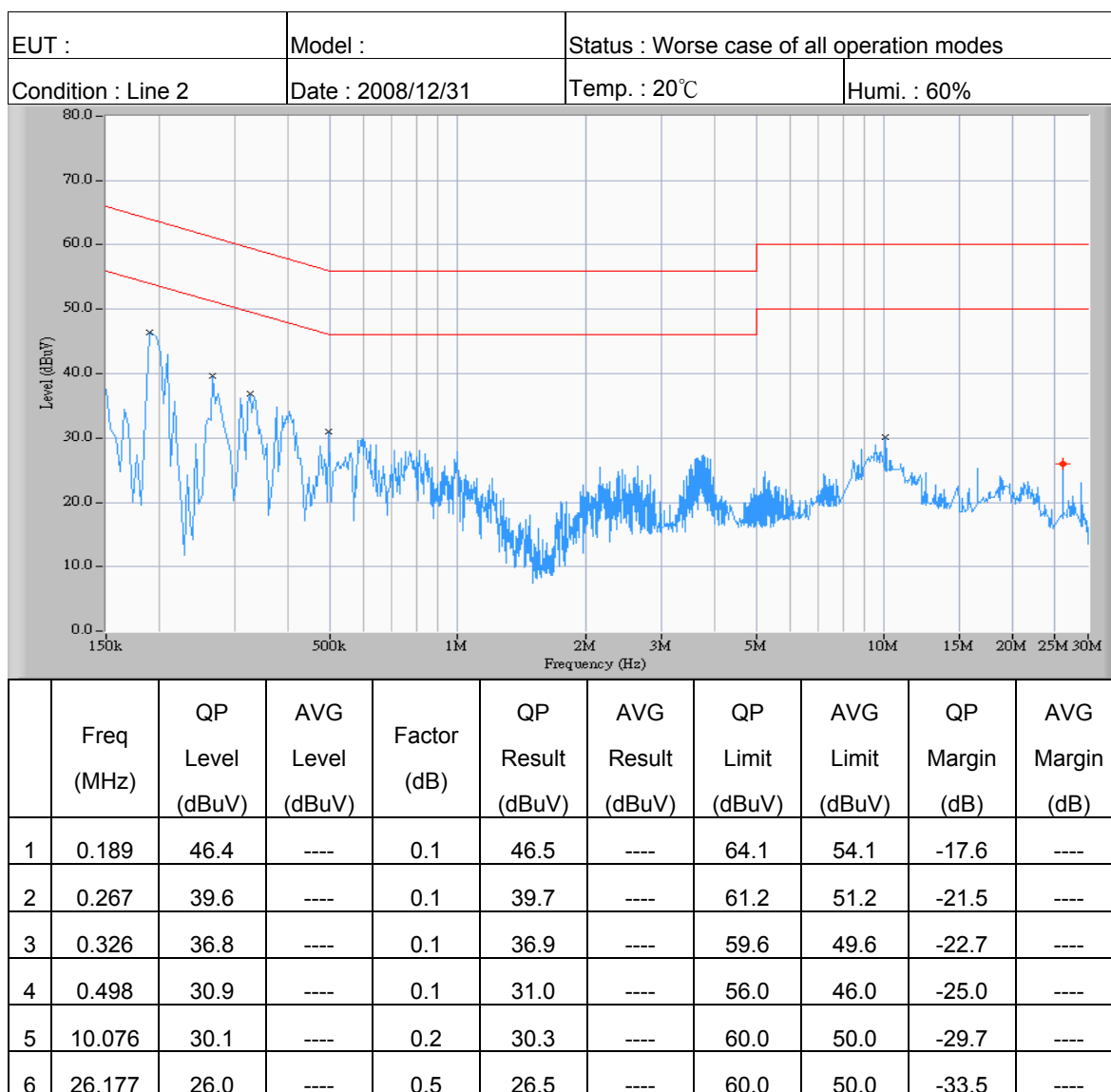
## Conducted Emission Test



## Note:

1. "\*\*\*\*" means the value was too low to be measured.
2. If the data table appeared symbol of "----" means the Q.P. value is under the limit of AVG. so, the AVG. value doesn't need to be measured.
3. The estimated measurement uncertainty of the result measurement is  $\pm 2.5$ dB.





## Note:

1. "\*\*\*\*" means the value was too low to be measured.
2. If the data table appeared symbol of "----" means the Q.P. value is under the limit of AVG. so, the AVG. value doesn't need to be measured.
3. The estimated measurement uncertainty of the result measurement is  $\pm 2.5$ dB.

## 6.5 Antenna Requirement

### 6.5.1 Standard Applicable: FCC 15.317, 15.203. RSS-213 4.1(e)

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 connector.

## 6.6 Digital Modulation Techniques

### 6.6.1 Standard Applicable: FCC 15.319(b), RSS-213 6.1

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 Transmit Power

### 6.7.1 Standard Applicable: FCC 15.319(c) & (e) same as RSS-213 6.5

(c) Peak transmit power shall not exceed 100 microwatts multiplied by the square root of the emission bandwidth in hertz. Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

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

### RSS-213 4.3.1 Peak Transmit Power

The transmitter shall be modulated with digital sequence(s) representative of those encountered in a real system operation. The peak transmit power shall be measured and recorded.

### 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:

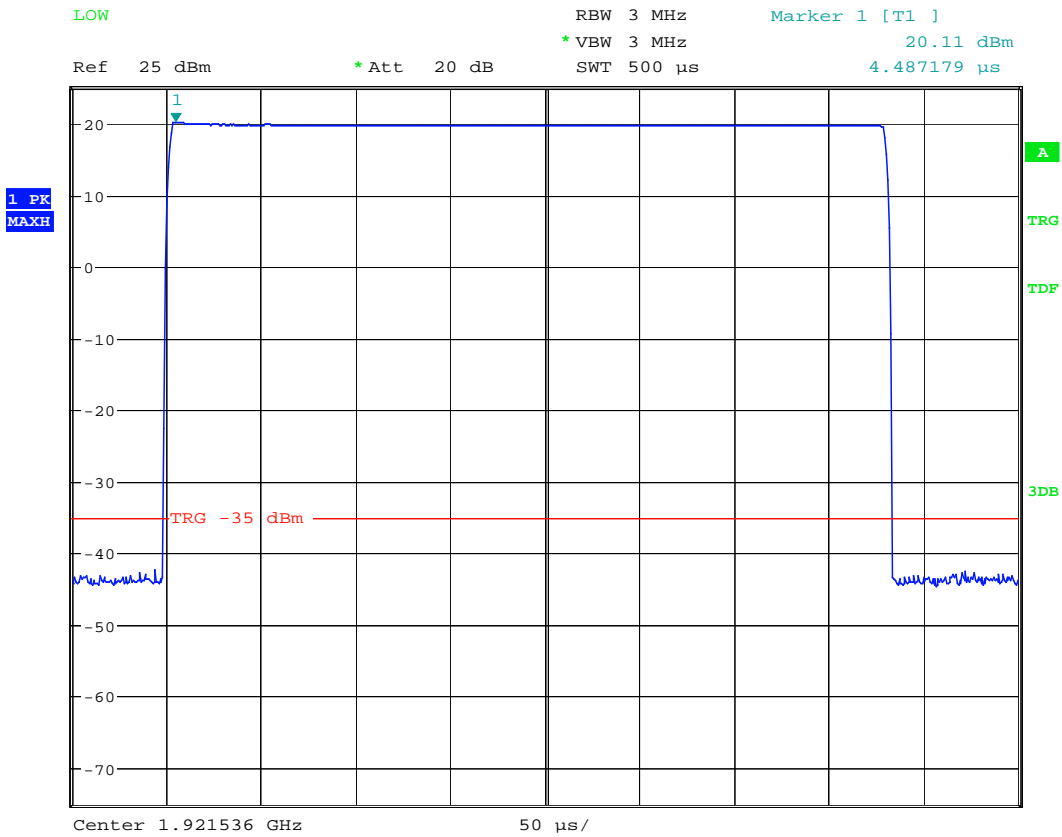
Channel	Frequency (MHz)	Maximum Peak Output Power (dBm)	Limit (dBm)
F <sub>L</sub>	1921.536	20.11	26.517
F <sub>M</sub>	1924.992	20.13	26.517
F <sub>H</sub>	1928.448	20.24	26.517

#### Limit:

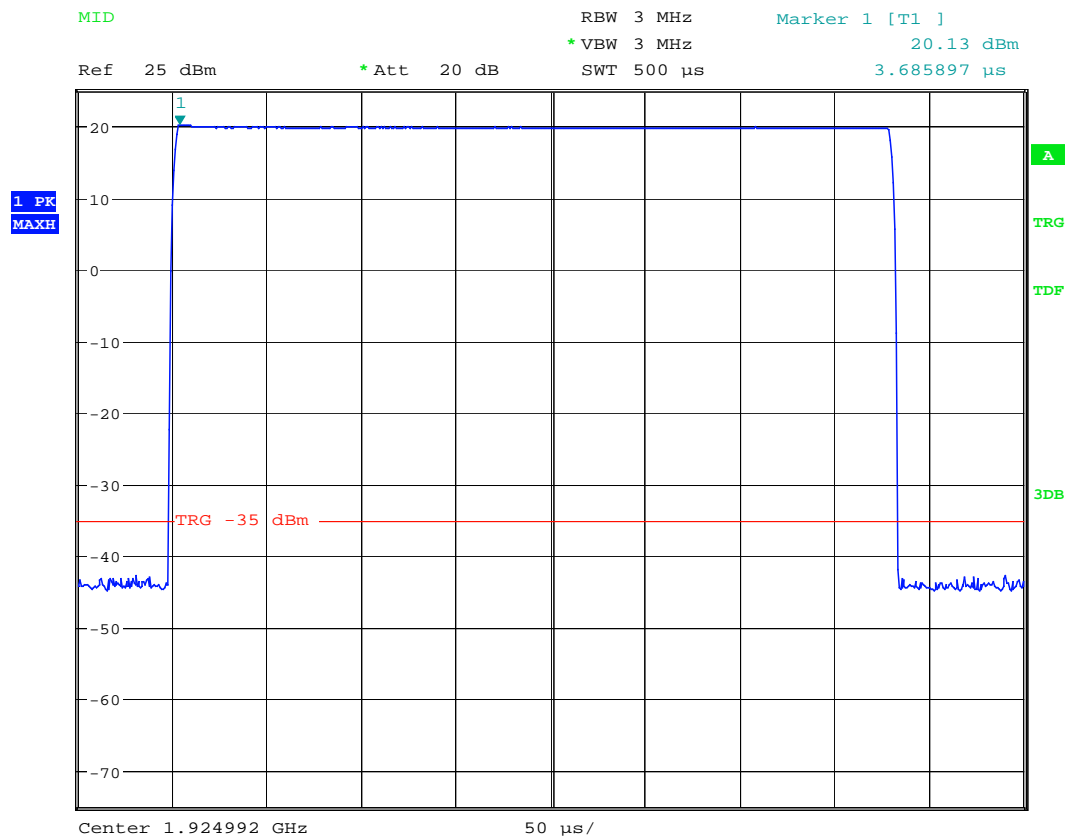
Conducted:  $5 \log(B) - 10 = 26.517 \text{ dBm}$

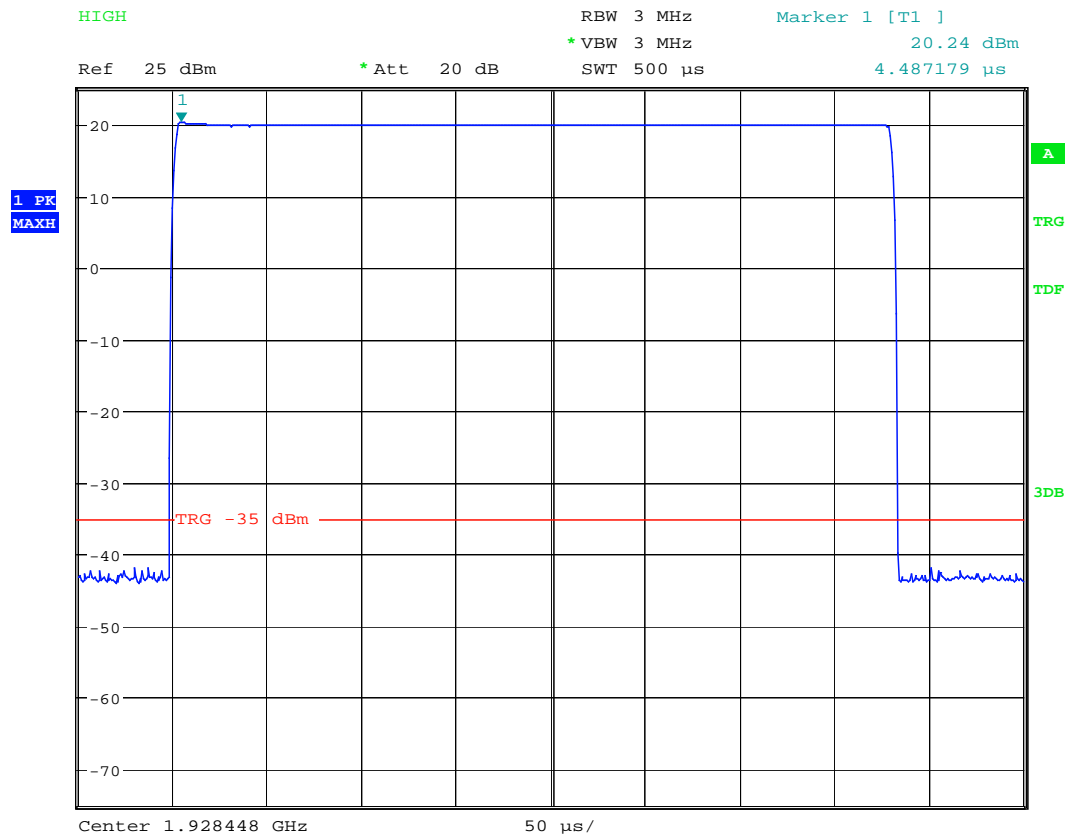
Where B is the emission bandwidth in Hz measured at 26 dBm.

Maximum Peak Output Power: CH FL



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



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

## 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.

#### RSS-213 4.3.2.1 Peak Power Spectral Density Test

This test is to measure the occupied bandwidth and the maximum power spectral density.

With the transmitter modulated as in Section 4.3.1, obtain spectrum plots.

Record the maximum spectral level of the modulated signal as the reference spectral level (dBs).

Measure and record the 99% bandwidth. Measure and record the power spectral density per 3 kHz.

#### RSS-213 6.6 Power Spectral Density

The peak-hold power spectral density shall not exceed 12 milliwatts per any 3 kHz bandwidth.

As an alternative to the peak-hold power spectral density, the time-averaged power spectral density may be measured and it shall not exceed 3 milliwatts per any 3 kHz bandwidth.

### 6.8.2 Measurement procedure

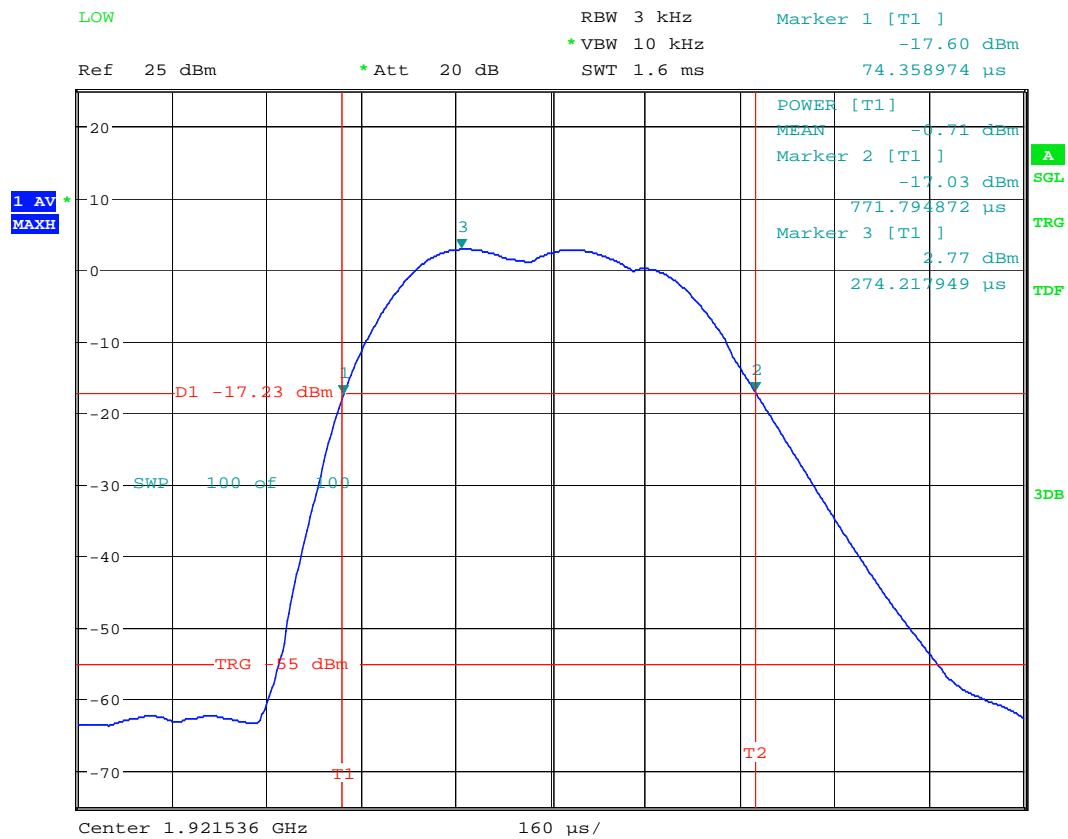
Measurement method according to ANSI C63.17 2006 paragraph 6.1.5

### 6.8.3 Test Results: Complies

#### Measurement Data:

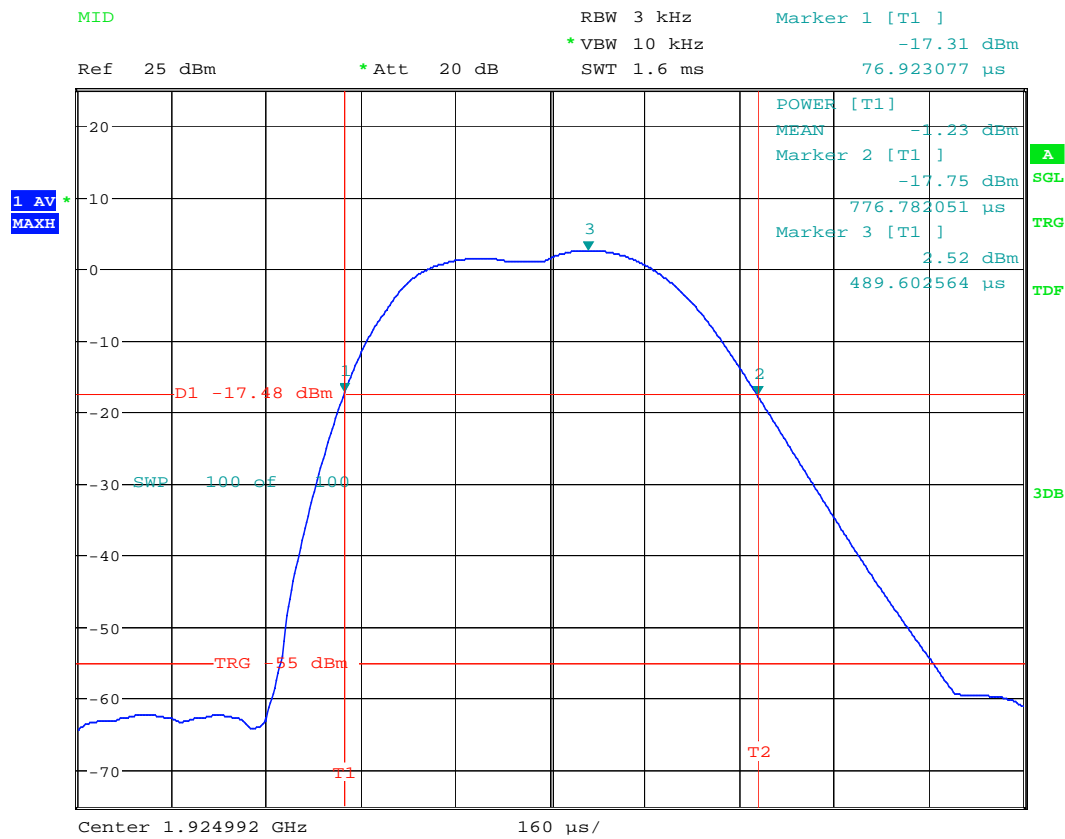
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm)
FL	1921.536	-0.71	4.77
FM	1924.992	-1.23	4.77
FH	1928.448	-0.26	4.77

Power Spectral Density: CH FL

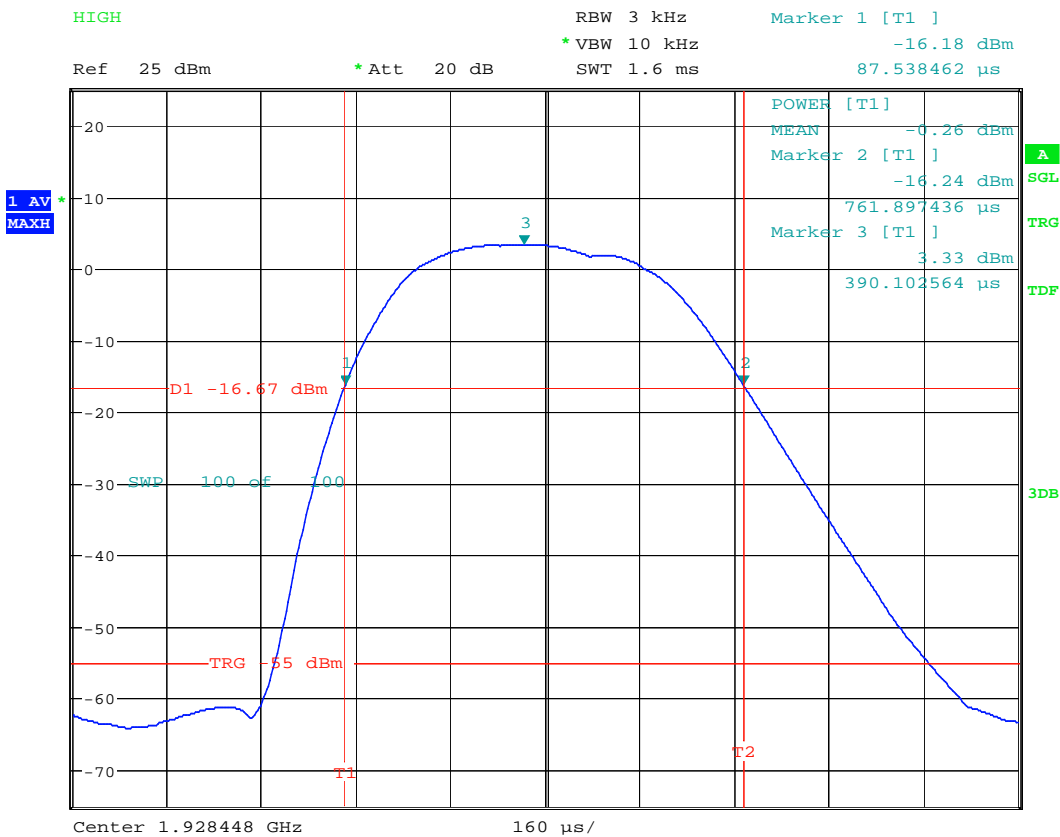




Power Spectral Density: CH F<sub>M</sub>



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



## 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 2 dBi.

## 6.10 Automatic discontinuation of transmission

### 6.10.1 Standard Applicable: FCC 15.319(f) same as 4.3.4 (a)

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, if applicable.

### 6.11.2 Measurement procedure

Consideration of radio frequency radiation exposure for EUT is done as

SAR test according IEEE1528 (for PP)	<input type="checkbox"/>
MPE calculation as below (for FP, Repeater)	<input checked="" type="checkbox"/>

SAR test results: not applicable

MPE calculation:

The EUT is considered as a mobile device according to OET Bulletin 65, Edition -97-01. Therefore distance to human body of min. 20 cm is determined.

The limit of Power density for General Population / Uncontrolled Exposure is 1.0 mW/cm<sup>2</sup>.

Formula:

$$S = \text{EIRP} / 4\pi R^2$$

Calculation:

EIRP	Radiated Power (dBm)	22.24
EIRP	Radiated Power (mW)	167.494
R	Distance (cm)	20
S	Power Density (mW/cm <sup>2</sup> )	0.03331

### 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.

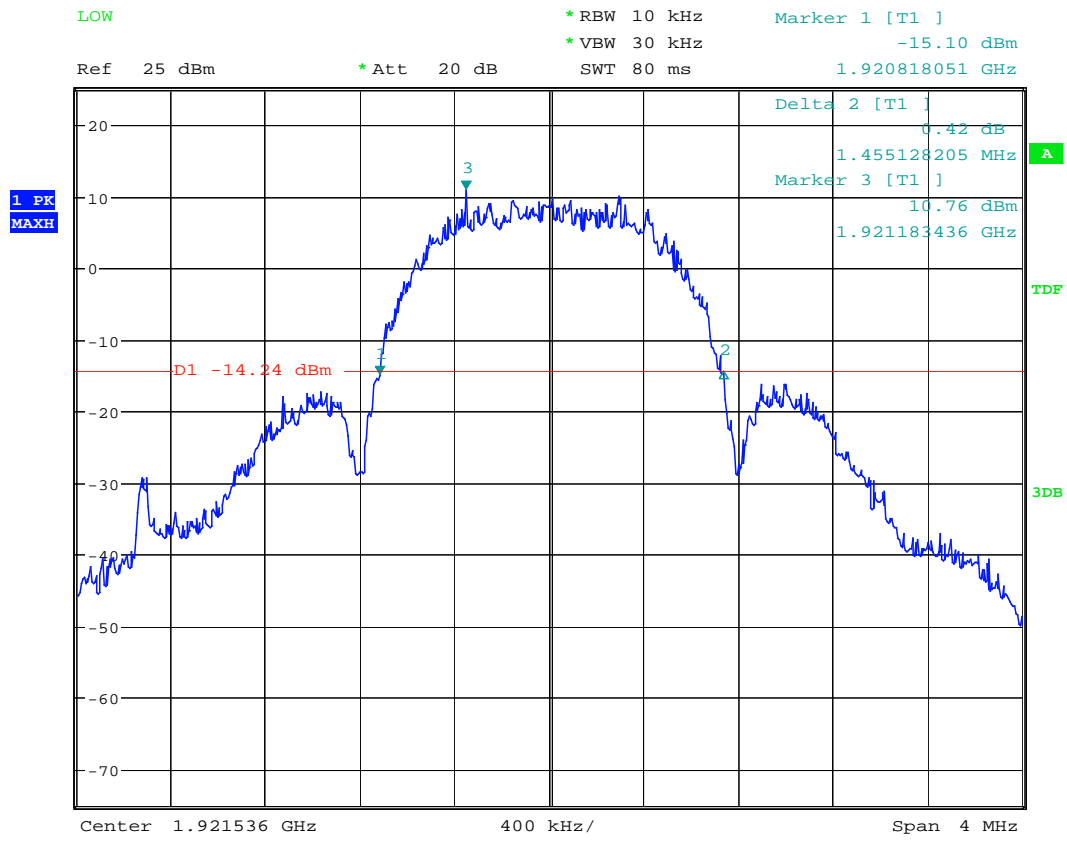
### 6.12.2 Measurement procedure

Measurement method according to ANSI C63.17 2006 paragraph 6.1.3

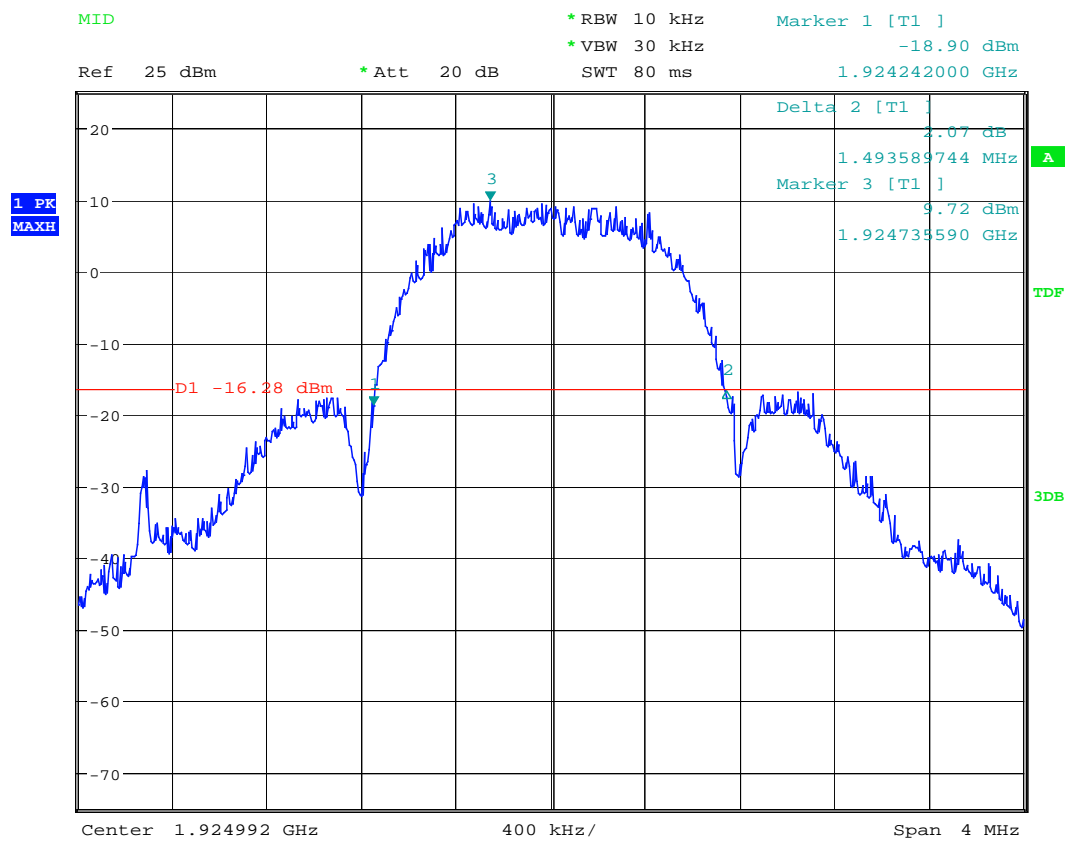
### 6.12.2 Results: Complies

#### Measurement Data:

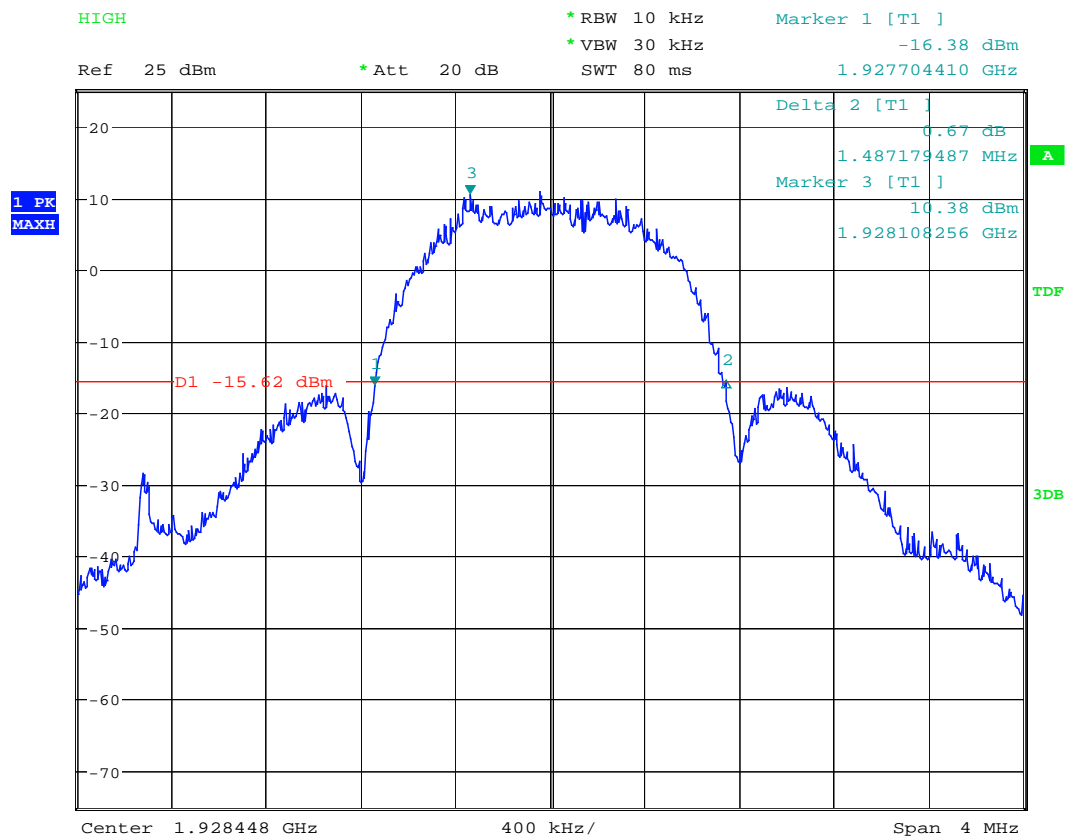
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
FL	1921.536	1.455
FM	1924.992	1.494
FH	1928.448	1.487

**26 dB Bandwidth B: CH FL**

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



26 dB Bandwidth B: CH FH





## 6.13 Emissions inside and outside the subband

### 6.13.1 Standard Applicable: FCC 15.323(d)

#### Emissions inside the subband same as RSS-213 6.7.2

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

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

$3B < f \leq$  UPCS Band Edge: less than or equal to 60 dB below the maximum permitted peak power level

Where B is the occupied bandwidth in hertz.

#### Emissions outside the subband same as RSS-213 6.7.1

$f \leq 1.25\text{MHz}$  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:  $\leq -39.5\text{ dBm}$

### 6.13.2 Measurement procedure

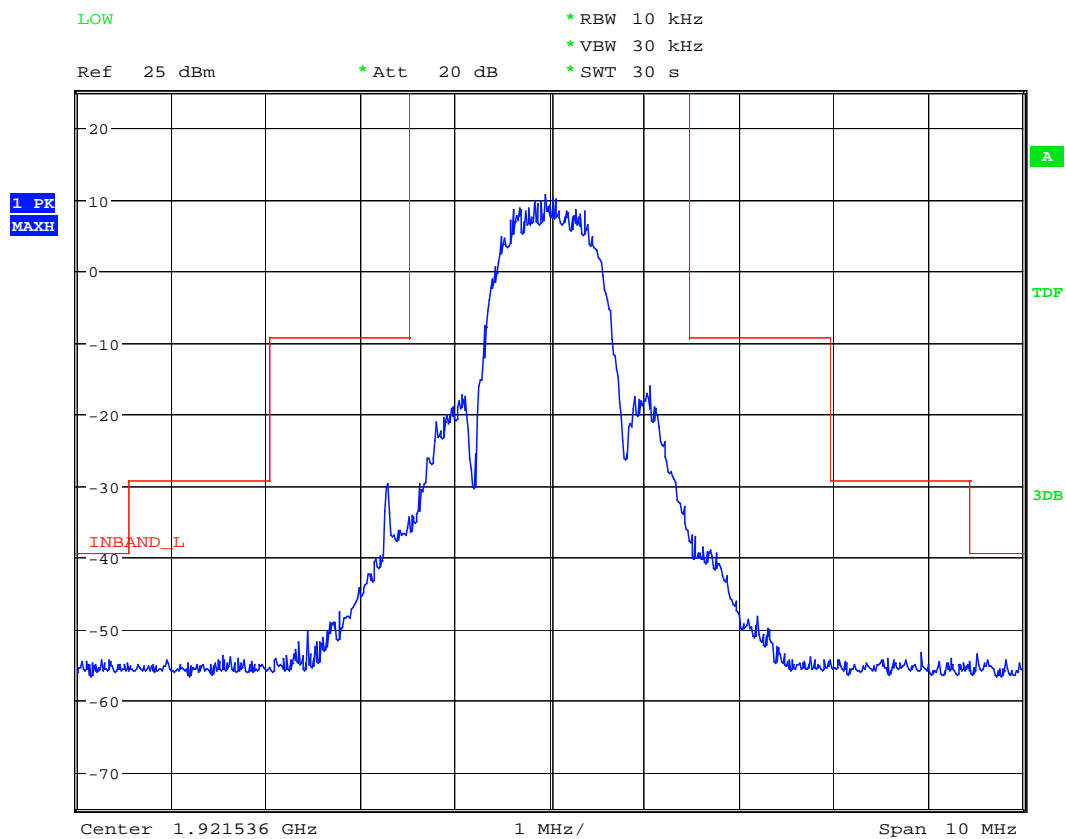
Measurement method according to ANSI C63.17 2006 paragraph 6.1.6

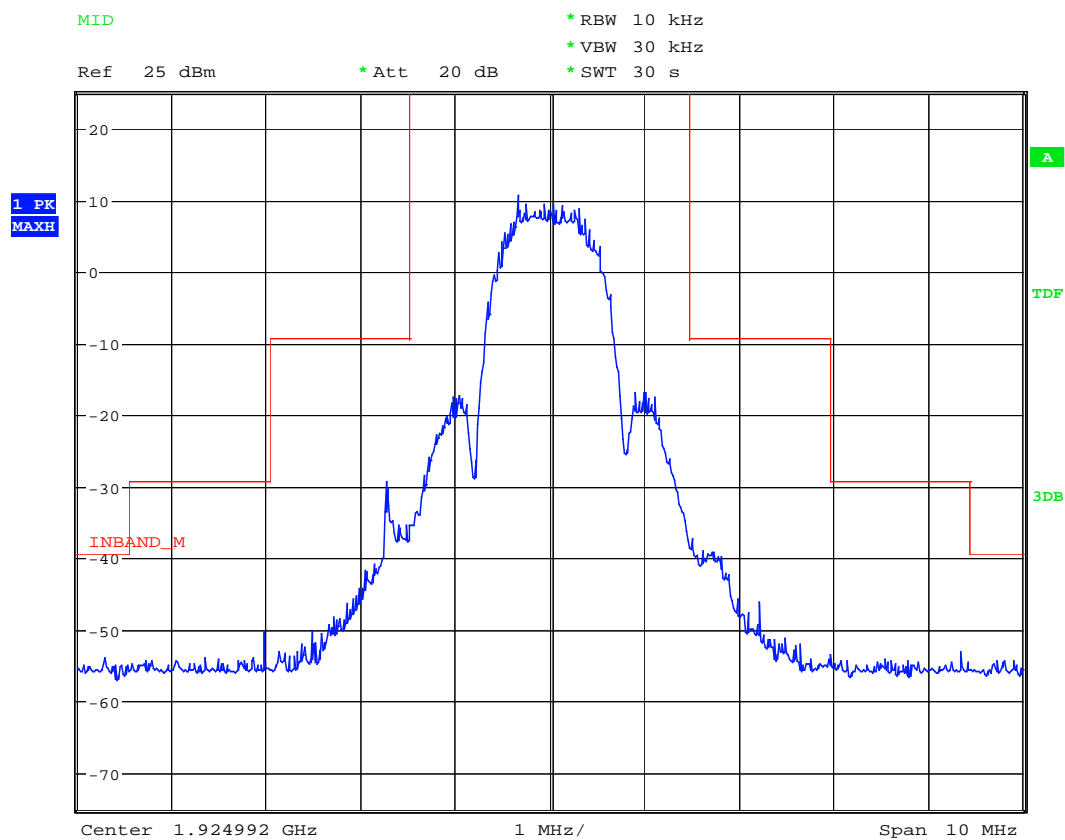
### 6.13.3 Results: Complies

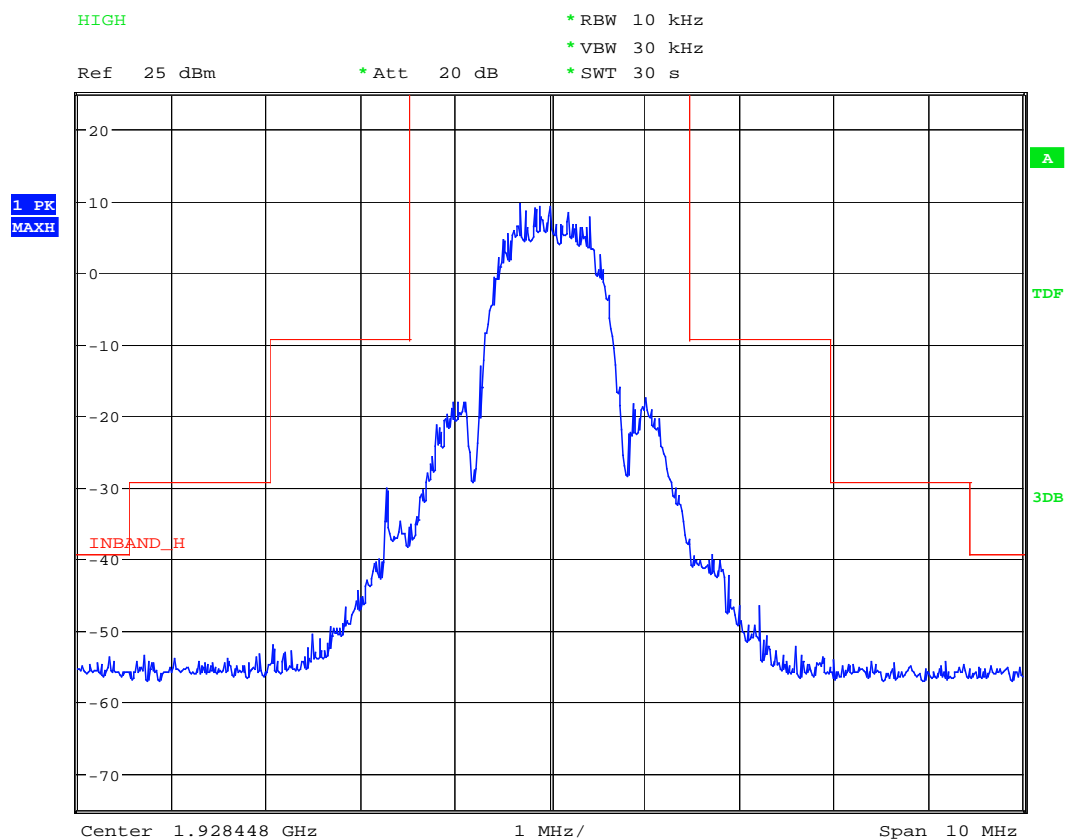
#### Measurement Data:

See plots.

Note: Photos of worst-case display follow:

**In-band Unwanted Emissions: CH FL**

**In-band Unwanted Emissions: CH F<sub>M</sub>**

**In-band Unwanted Emissions: CH F<sub>H</sub>**

**Out-of-band Unwanted Emission:****a) CH FL****Out-of-band Unwanted Emissions (below 1GHz): CH FL**

File: ivan

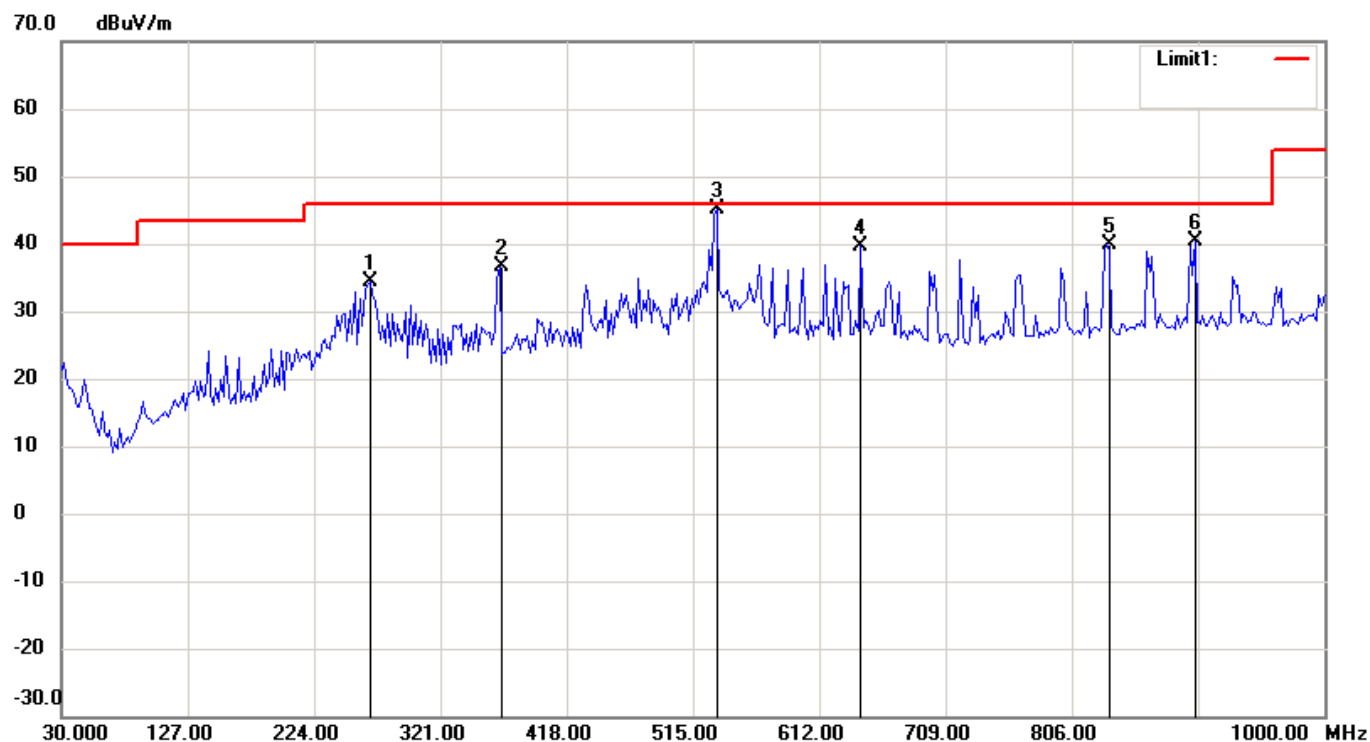
Data: #66

Date: 2009/02/12

Temperature: 24 °C

Time: AM 09:24:46

Humidity: 59 %



Condition: FCCPART15

Polarization: Horizontal

EUT:

Distance: 3m

Model:

Test Mode: TX CH Low

No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBuV/m)		Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)
1	267.1543	18.38	peak	16.11	34.49	46.00	-11.51
2	366.2926	17.29	peak	19.22	36.51	46.00	-9.49
3	533.4669	22.23	peak	22.94	45.17	46.00	-0.83
4	644.2685	15.33	peak	24.21	39.54	46.00	-6.46
5	832.8257	13.14	peak	26.63	39.77	46.00	-6.23
6	900.8617	12.72	peak	27.61	40.33	46.00	-5.67

File: ivan

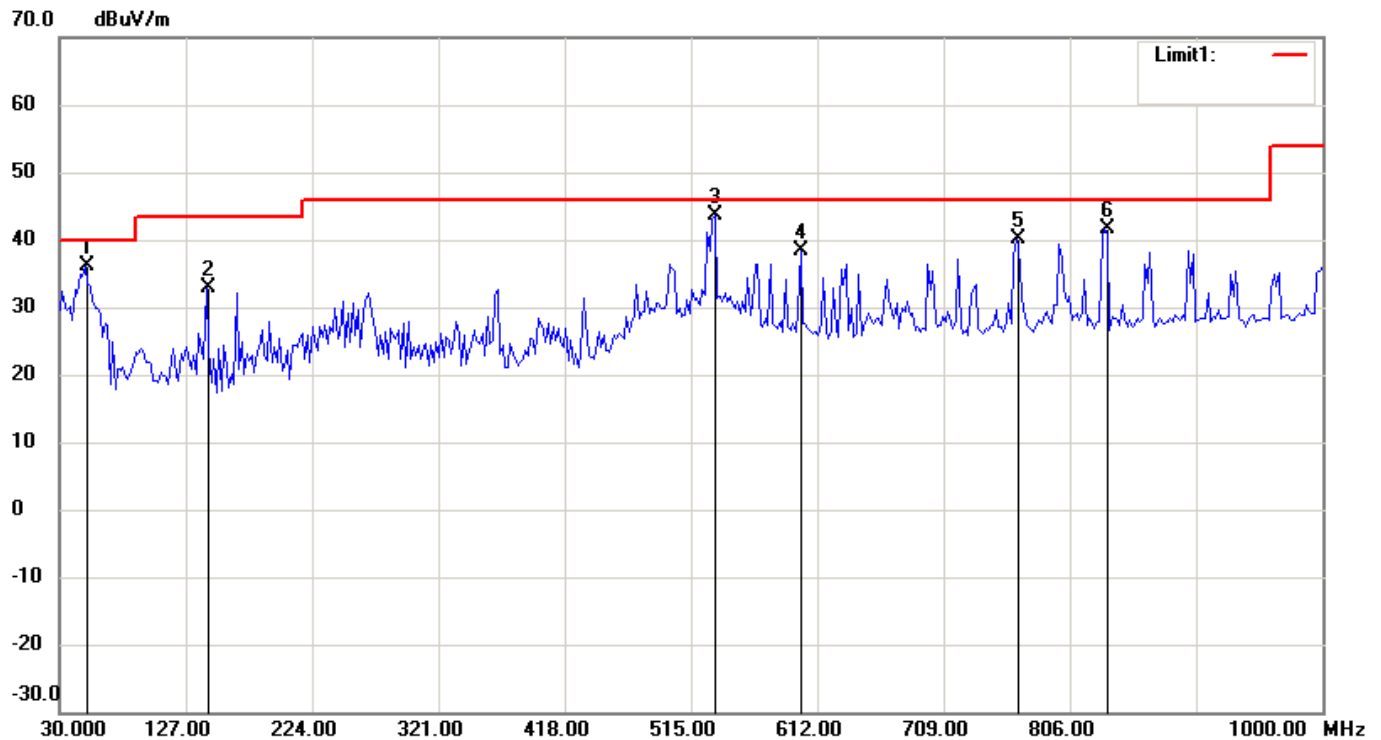
Data: #67

Date: 2009/02/12

Temperature: 24 °C

Time: AM 09:26:42

Humidity: 59 %



Condition: FCCPART15

Polarization: Vertical

EUT:

Distance: 3m

Model:

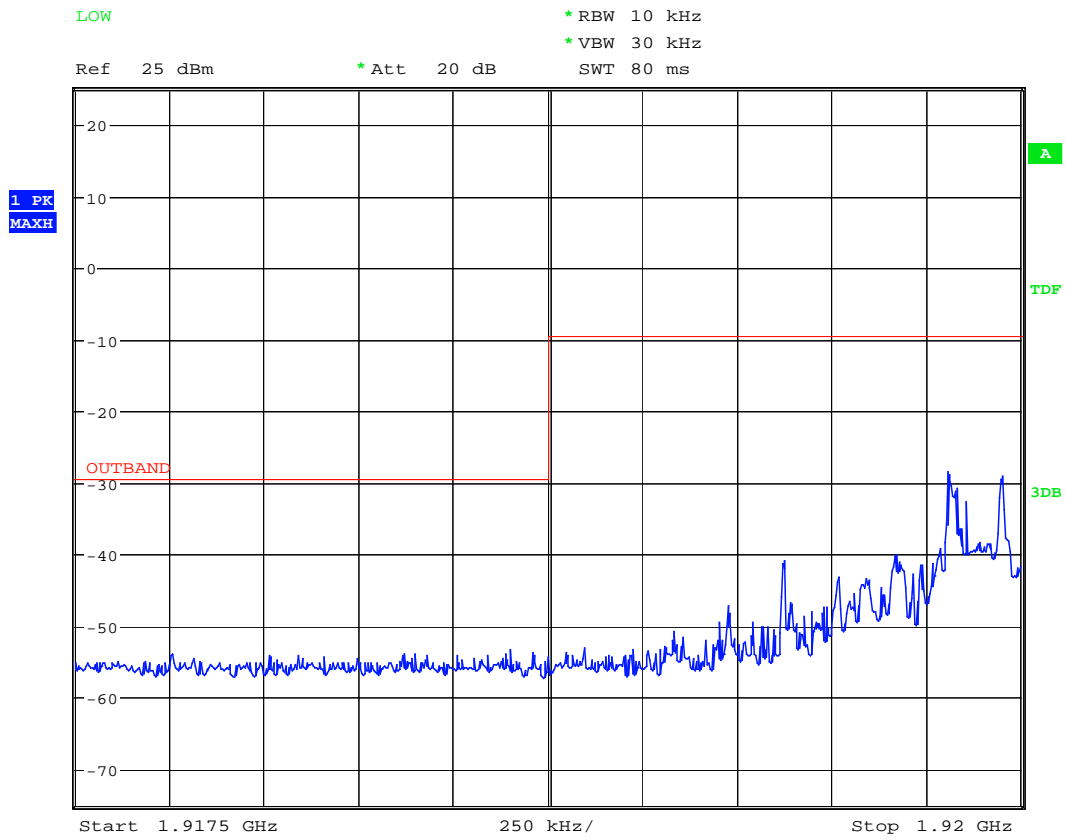
Test Mode: TX CH Low

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	49.4389	26.08	peak	10.09	36.17	40.00	-3.83
2	142.7455	19.32	peak	13.58	32.90	43.50	-10.60
3	533.4669	20.70	peak	22.94	43.64	46.00	-2.36
4	599.5591	14.87	peak	23.50	38.37	46.00	-7.63
5	764.7896	14.35	peak	25.68	40.03	46.00	-5.97
6	832.8257	14.89	peak	26.63	41.52	46.00	-4.48

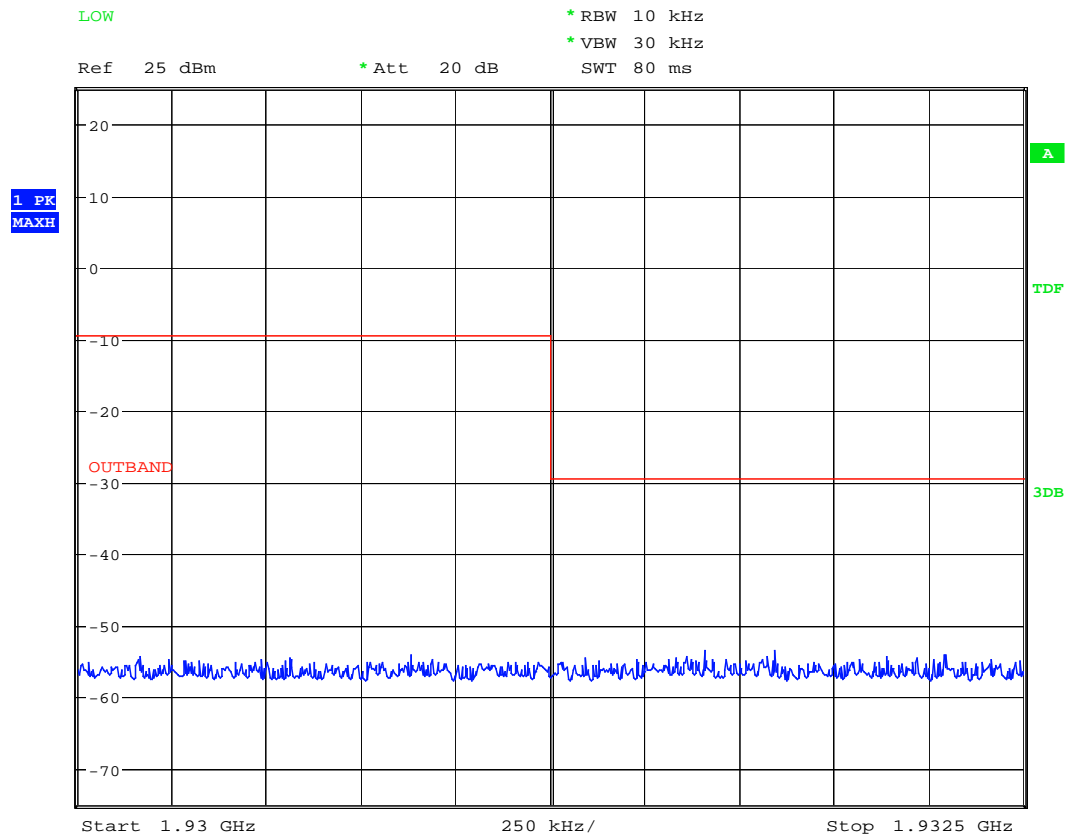
Note:

1. Place of Measurement: Measuring site of the ETC.
2. If the data table appeared symbol of "\*\*\*\*" means the value was too low to be measured.
3. The estimated measurement uncertainty of the result measurement is  
 $\pm 4.6\text{dB}$  ( $30\text{MHz} \leq f < 300\text{MHz}$ ).  
 $\pm 4.4\text{dB}$  ( $300\text{MHz} \leq f < 1000\text{MHz}$ ).

Out-of-band Unwanted Emissions: CH FL

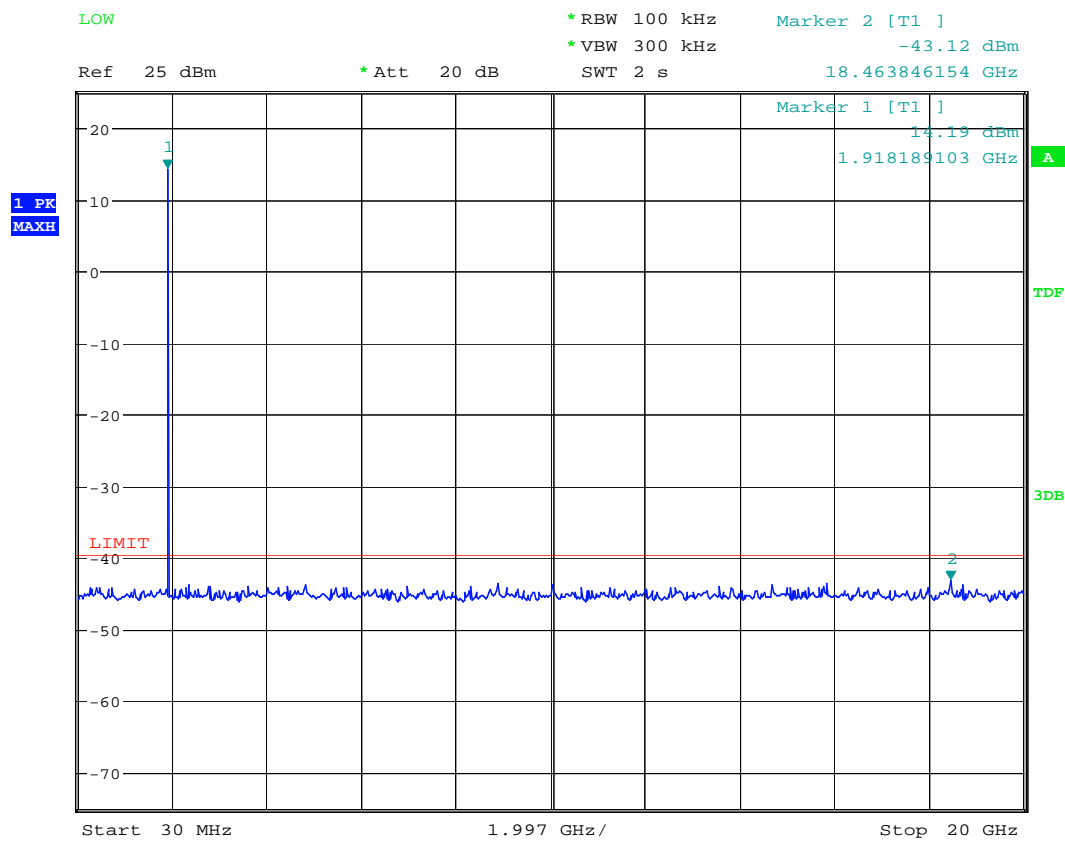


Out-of-band Unwanted Emissions: CH FL





Out-of-band Unwanted Emissions: CH FL



b) CH F<sub>M</sub>Out-of-band Unwanted Emissions (below 1GHz): CH F<sub>M</sub>

File: ivan

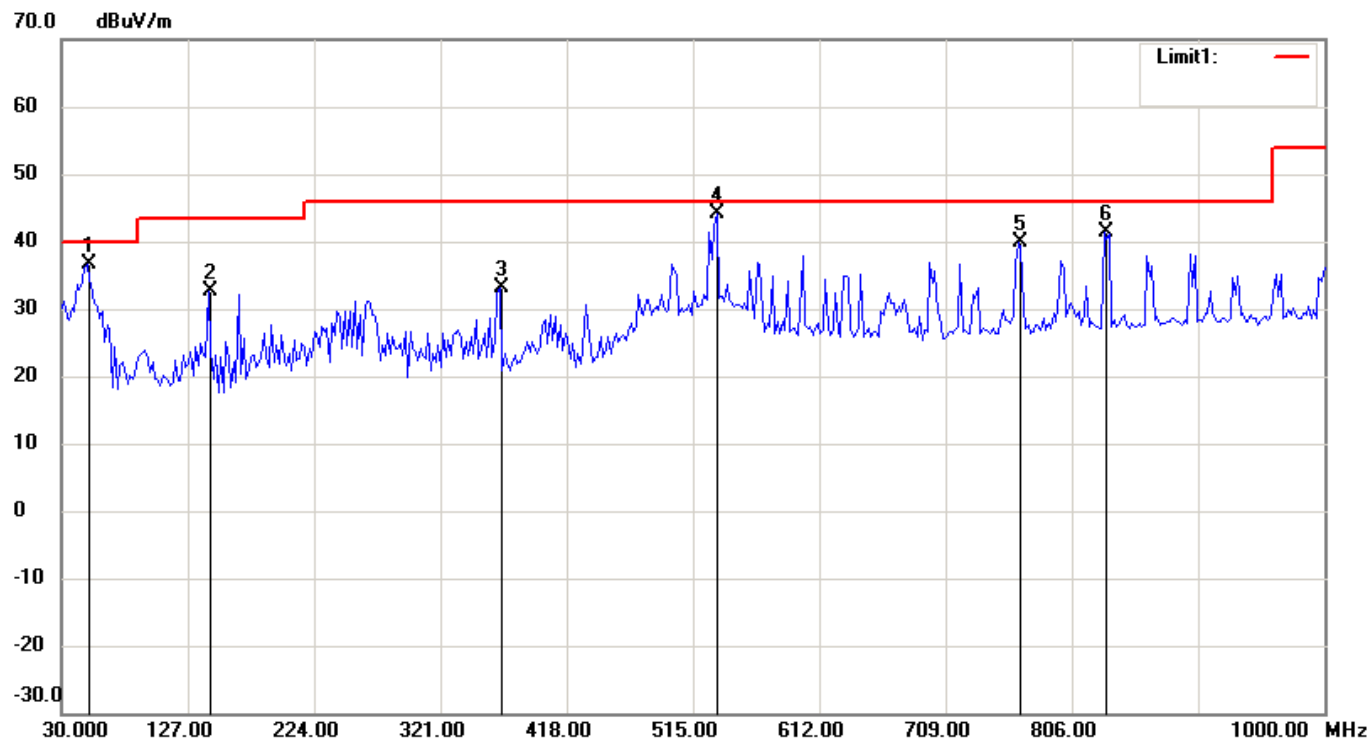
Data: #68

Date: 2009/02/12

Temperature: 24 °C

Time: AM 09:28:20

Humidity: 59 %



Condition: FCCPART15

Polarization: Vertical

EUT:

Distance: 3m

Model:

Test Mode: TX CH Mid

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	49.4389	26.57	peak	10.09	36.66	40.00	-3.34
2	142.7455	19.15	peak	13.58	32.73	43.50	-10.77
3	366.2926	13.92	peak	19.22	33.14	46.00	-12.86
4	533.4669	21.19	peak	22.94	44.13	46.00	-1.87
5	764.7896	14.10	peak	25.68	39.78	46.00	-6.22
6	830.8818	14.75	peak	26.59	41.34	46.00	-4.66

File: ivan

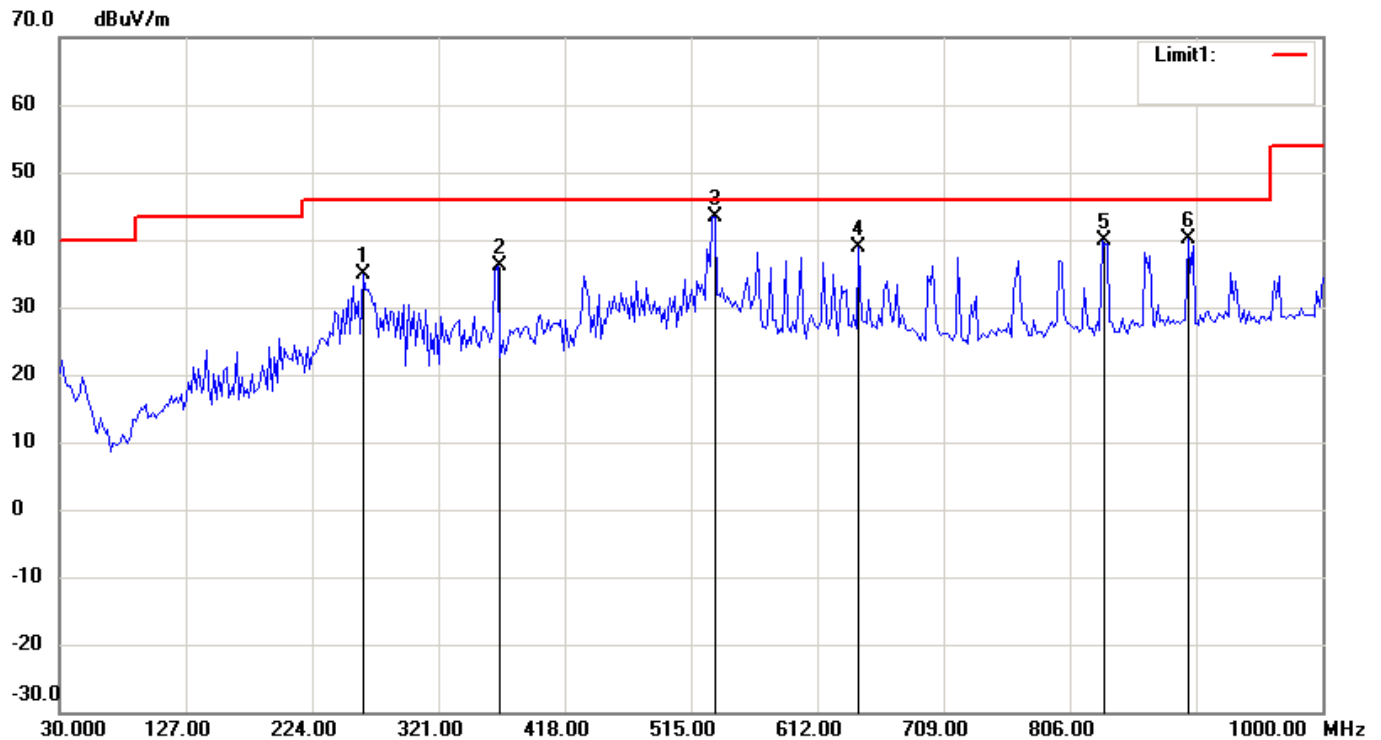
Data: #69

Date: 2009/02/12

Temperature: 24 °C

Time: AM 09:29:56

Humidity: 59 %



Condition: FCCPART15

Polarization: Horizontal

EUT:

Distance: 3m

Model:

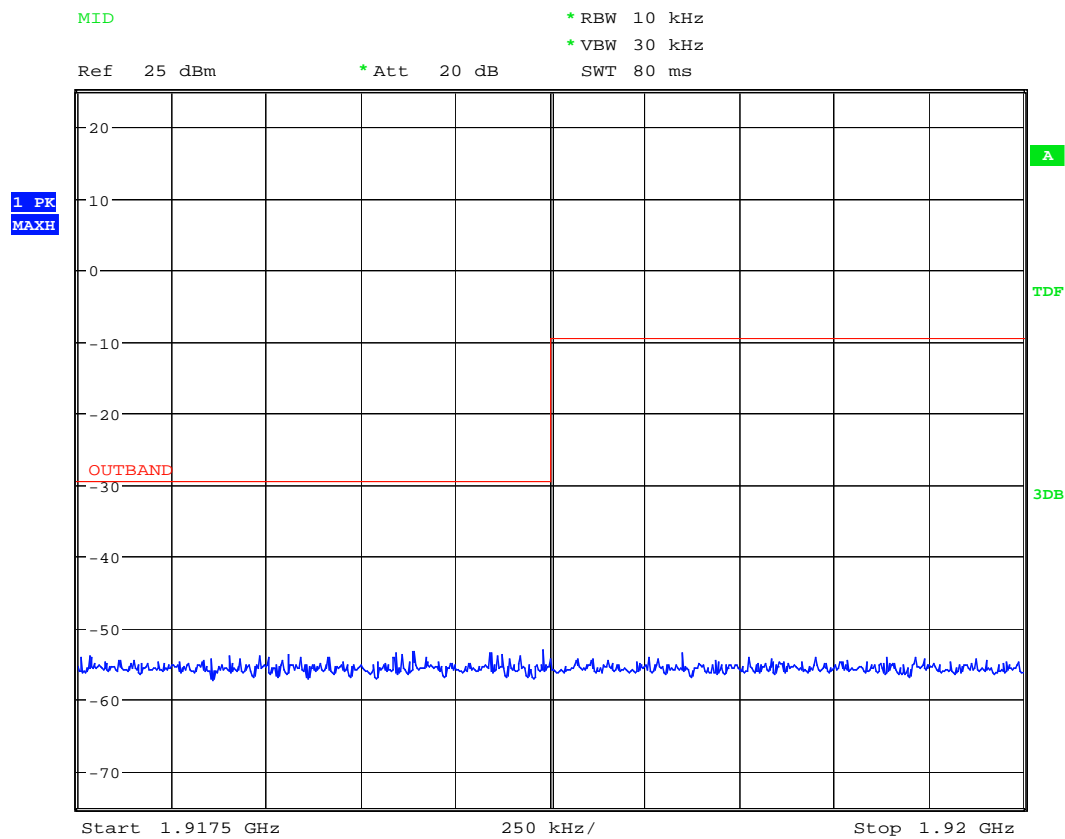
Test Mode: TX CH Mid

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	263.2665	18.86	peak	16.02	34.88	46.00	-11.12
2	366.2926	16.79	peak	19.22	36.01	46.00	-9.99
3	533.4669	20.49	peak	22.94	43.43	46.00	-2.57
4	644.2685	14.62	peak	24.21	38.83	46.00	-7.17
5	830.8818	13.26	peak	26.59	39.85	46.00	-6.15
6	896.9739	12.59	peak	27.55	40.14	46.00	-5.86

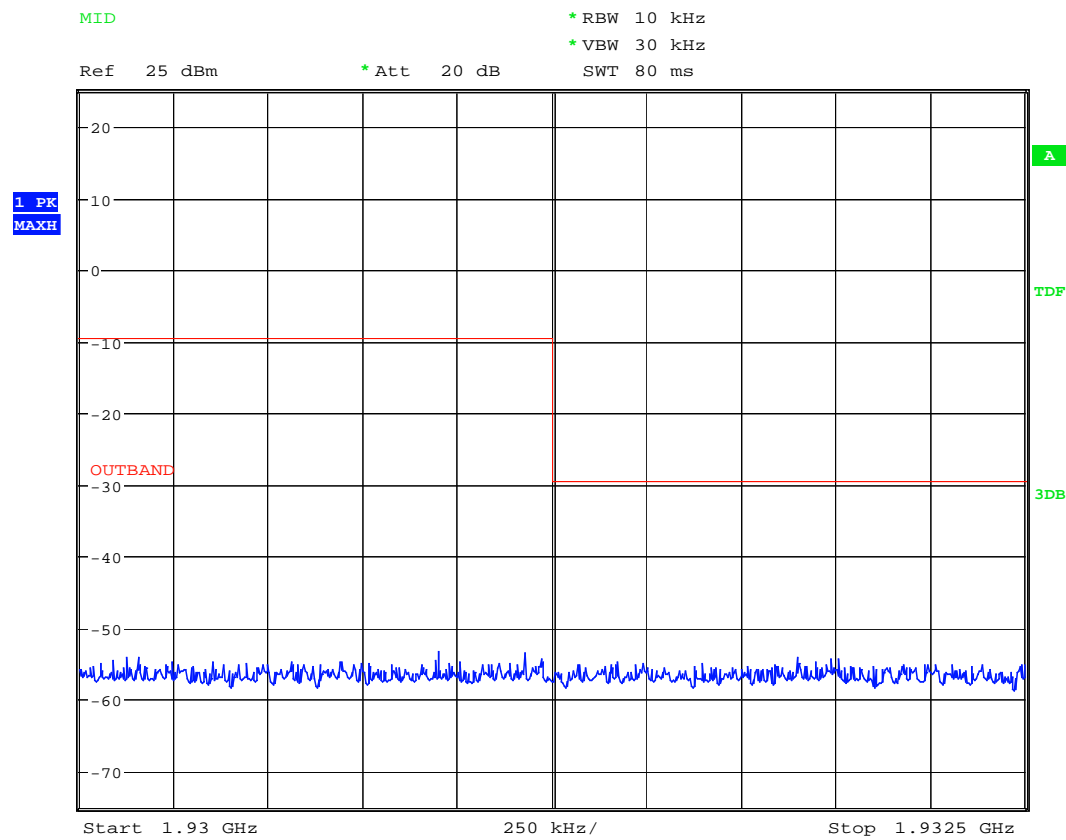
Note:

1. Place of Measurement: Measuring site of the ETC.
2. If the data table appeared symbol of "\*\*\*\*" means the value was too low to be measured.
3. The estimated measurement uncertainty of the result measurement is  
 $\pm 4.6\text{dB}$  ( $30\text{MHz} \leq f < 300\text{MHz}$ ).  
 $\pm 4.4\text{dB}$  ( $300\text{MHz} \leq f < 1000\text{MHz}$ ).

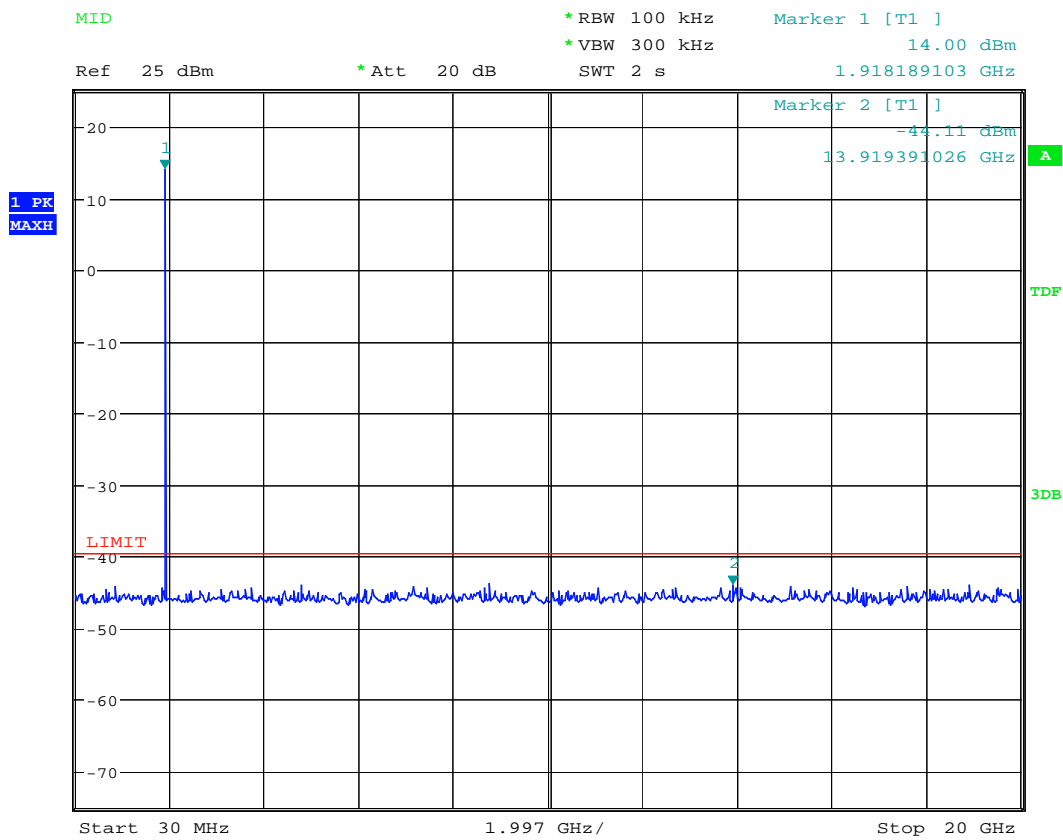
Out-of-band Unwanted Emissions: CH F<sub>M</sub>



Out-of-band Unwanted Emissions: CH F<sub>M</sub>



Out-of-band Unwanted Emissions: CH F<sub>M</sub>



## c) CH FH

## Out-of-band Unwanted Emissions (below 1GHz): CH FH

File: ivan

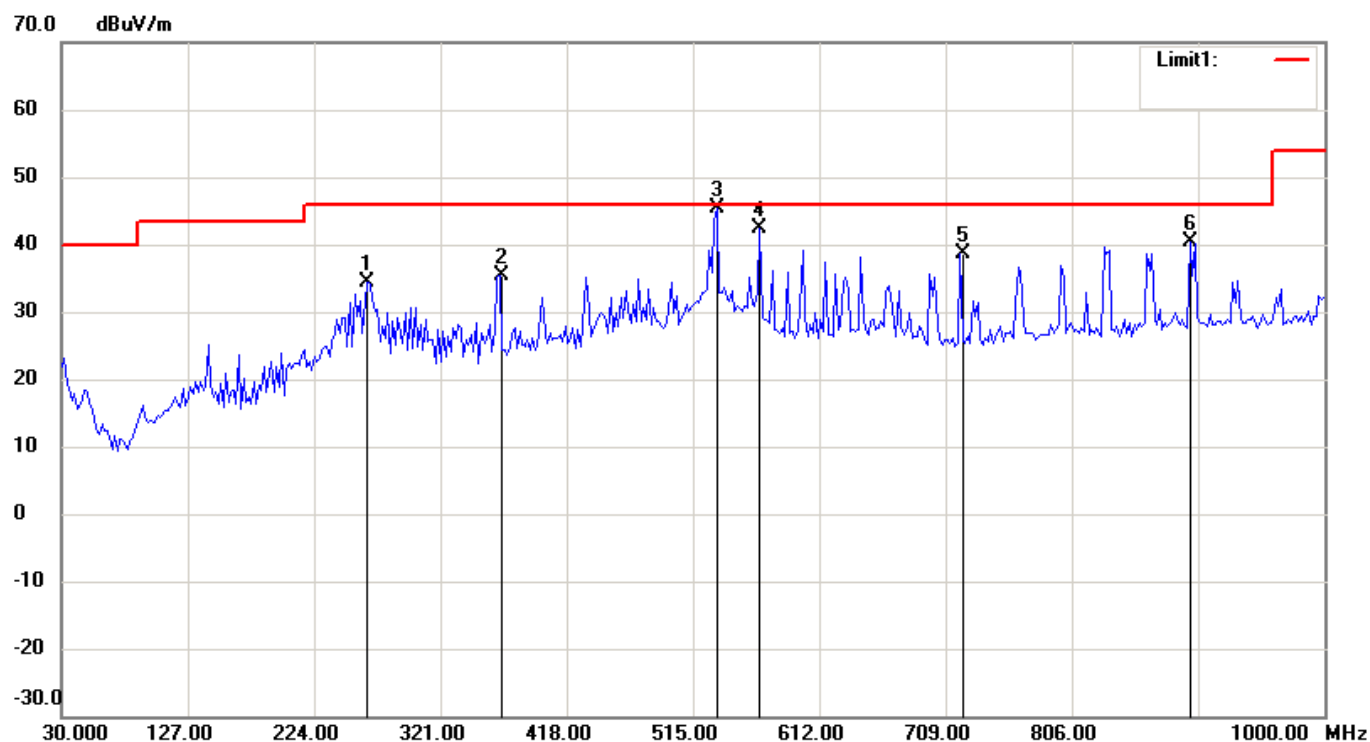
Data: #65

Date: 2009/02/12

Temperature: 24 °C

Time: AM 09:22:50

Humidity: 59 %



Condition: FCCPART15

Polarization: Horizontal

EUT:

Distance: 3m

Model:

Test Mode: TX CH High

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	265.2104	18.33	peak	16.07	34.40	46.00	-11.60
2	366.2926	16.08	peak	19.22	35.30	46.00	-10.70
3	533.4669	22.39	peak	22.94	45.33	46.00	-0.67
4	566.5130	19.22	peak	23.27	42.49	46.00	-3.51
5	720.0802	13.65	peak	25.04	38.69	46.00	-7.31
6	896.9739	12.75	peak	27.55	40.30	46.00	-5.70

File: ivan

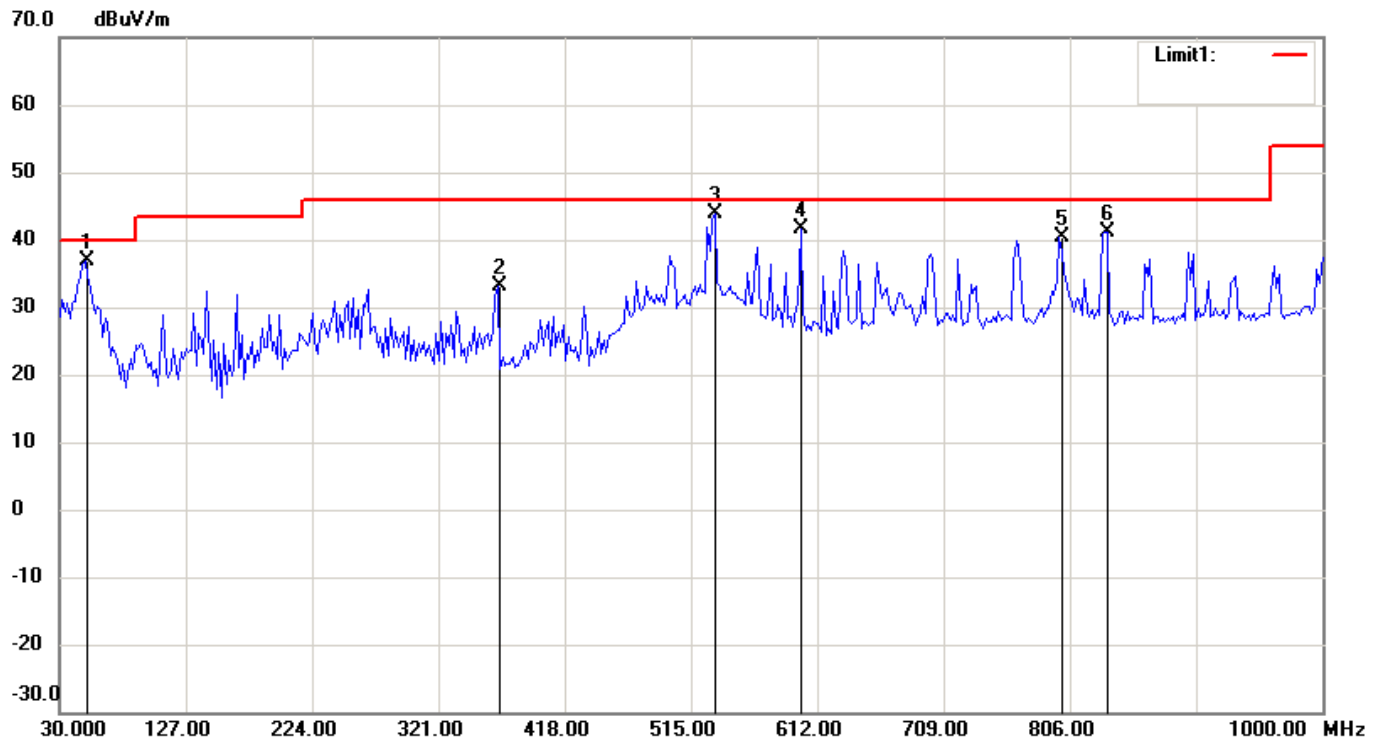
Data: #64

Date: 2009/02/12

Temperature: 24 °C

Time: AM 09:21:02

Humidity: 59 %



Condition: FCCPART15

Polarization: Vertical

EUT:

Distance: 3m

Model:

Test Mode: TX CH High

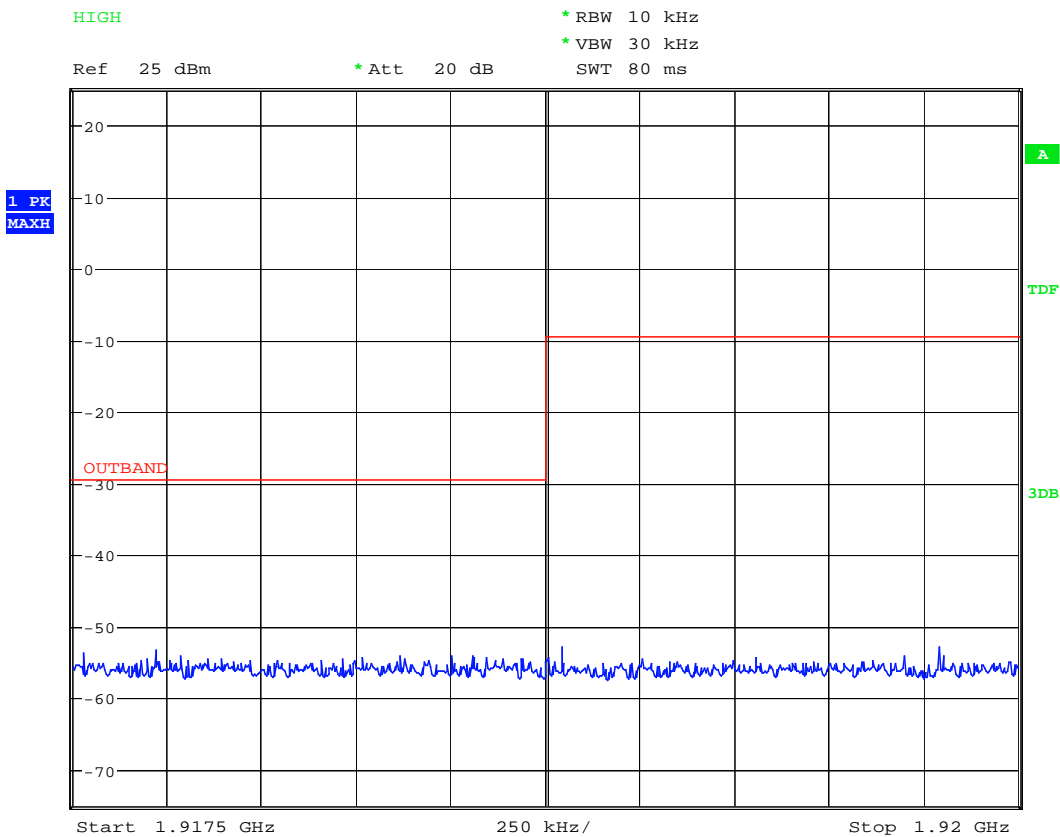
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	49.4389	26.68	peak	10.09	36.77	40.00	-3.23
2	366.2926	13.87	peak	19.22	33.09	46.00	-12.91
3	533.4669	21.00	peak	22.94	43.94	46.00	-2.06
4	599.5591	18.19	peak	23.50	41.69	46.00	-4.31
5	797.8357	14.30	peak	26.17	40.47	46.00	-5.53
6	832.8257	14.51	peak	26.63	41.14	46.00	-4.86

Note:

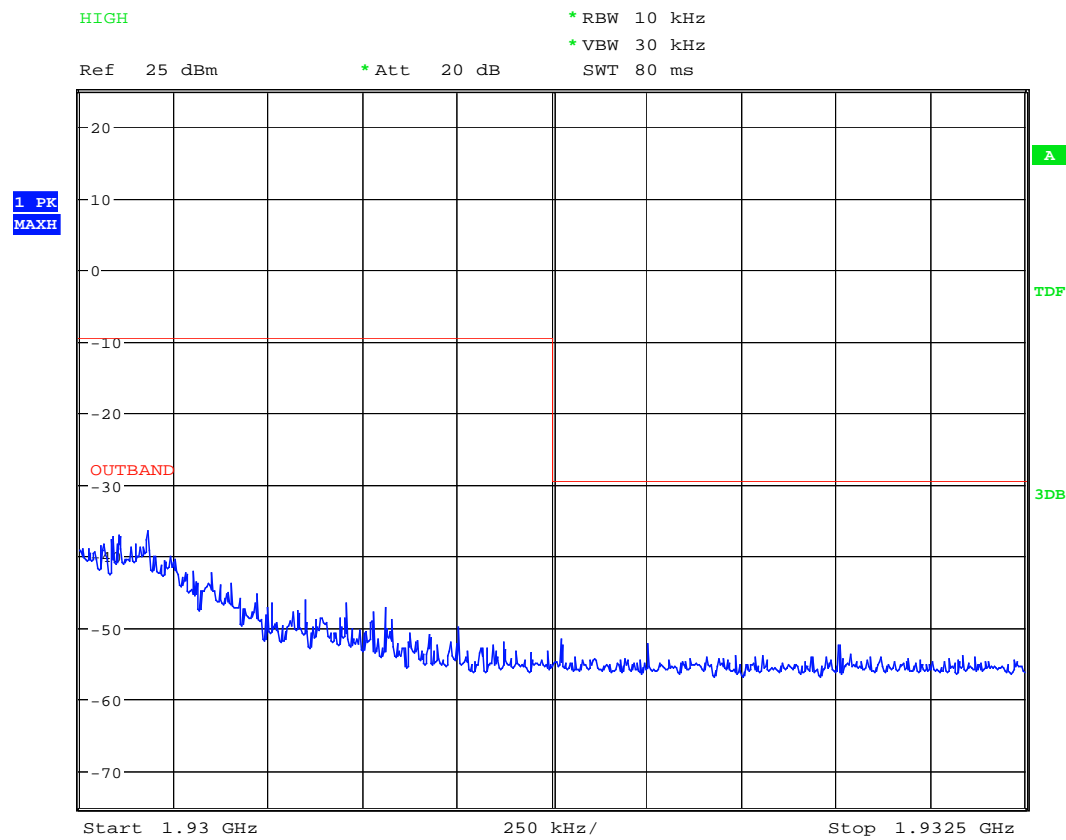
1. Place of Measurement: Measuring site of the ETC.
2. If the data table appeared symbol of "\*\*\*\*" means the value was too low to be measured.
3. The estimated measurement uncertainty of the result measurement is  
 $\pm 4.6\text{dB}$  ( $30\text{MHz} \leq f < 300\text{MHz}$ ).  
 $\pm 4.4\text{dB}$  ( $300\text{MHz} \leq f < 1000\text{MHz}$ ).



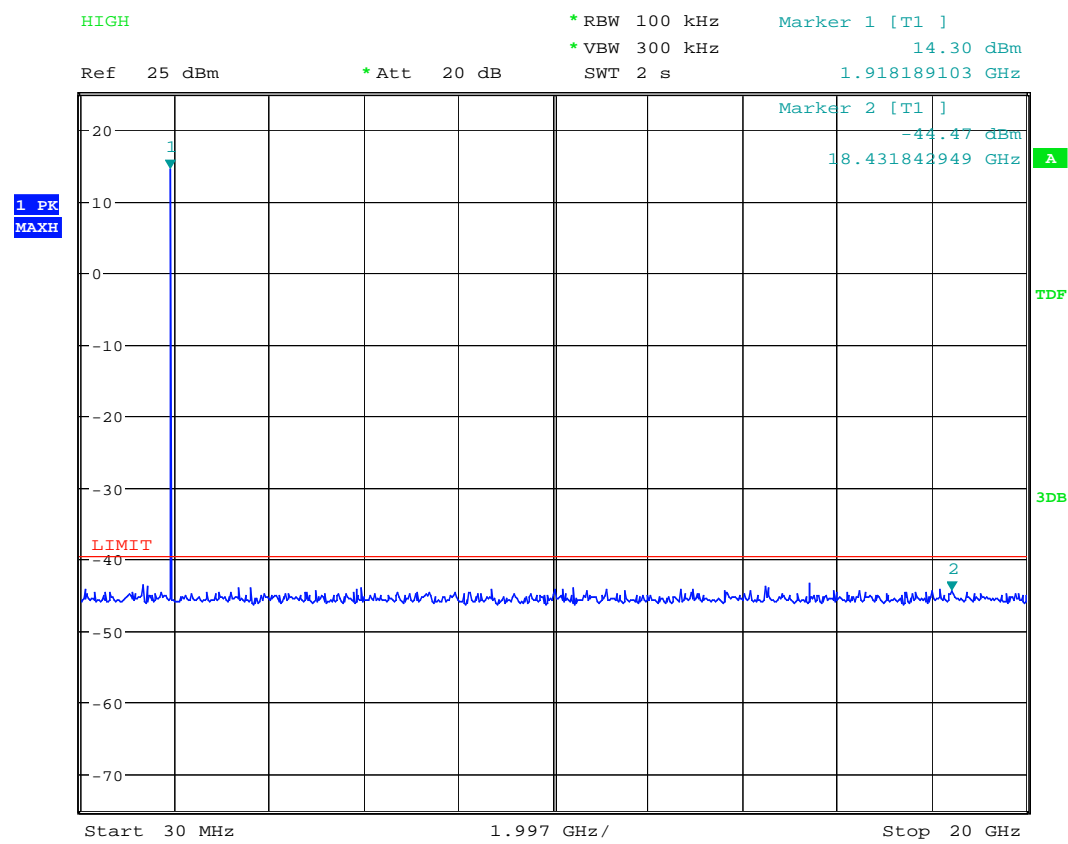
Out-of-band Unwanted Emissions: CH FH



Out-of-band Unwanted Emissions: CH F<sub>H</sub>



Out-of-band Unwanted Emissions: CH F<sub>H</sub>



## 6.14 Frame period and jitter

### 6.14.1 Standard Applicable: FCC 15.323(e) same as RSS-213 4.3.4 (C)

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 millions (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 Requirement:

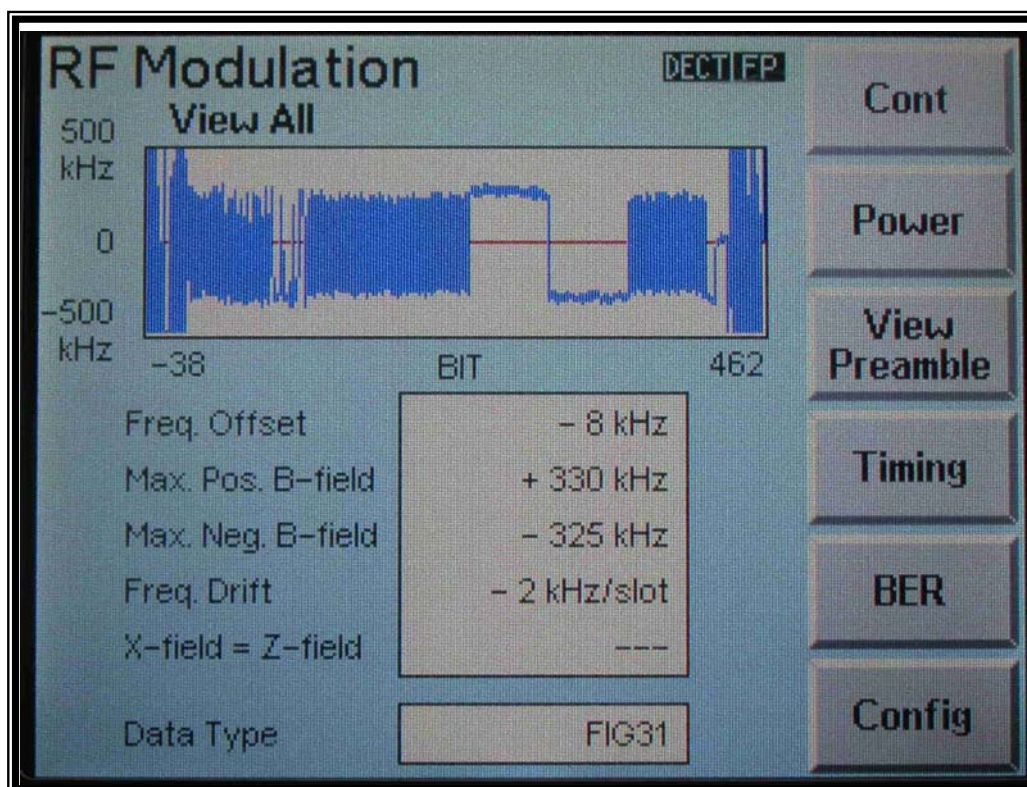
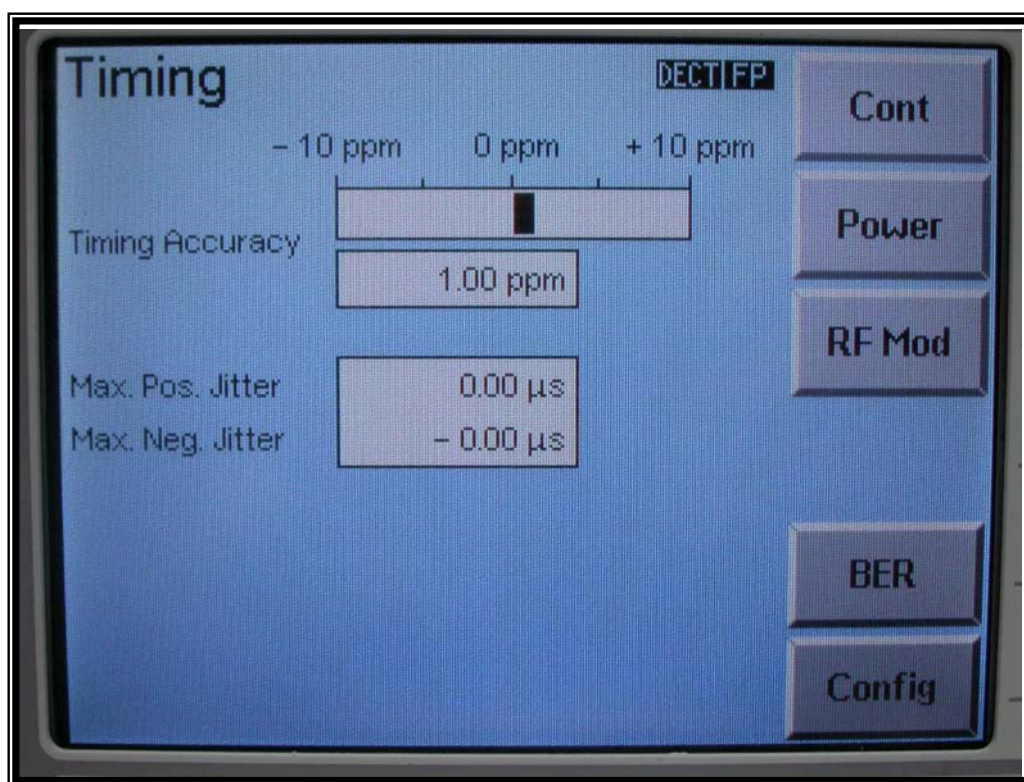
- Frame frequency stability  $\leq 50$  ppm
- TDMA frame frequency stability  $\leq 10$  ppm (That translates to frequency drift of 19.2 kHz/slot for 1920 MHz carrier)
- Frame jitter  $\leq 25$   $\mu$ s

### 6.14.3 Test Results: Complies

#### Measurement Data:

Channel No.	Frequency (KHz/slot)		Jitter (us)	
	Drift	Limit	Result	Limit
F <sub>L</sub>	0	$\pm 19.2$	0	$\pm 25$
F <sub>M</sub>	-2	$\pm 19.2$	0	$\pm 25$
F <sub>H</sub>	0	$\pm 19.2$	0	$\pm 25$

Photos of worst-case display follow:

**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  $+50^{\circ}\text{C}$  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.

### RSS-213 6.2 Frequency Stability

The carrier frequency stability shall be maintained within  $\pm 10$  ppm ( $\pm 0.001\%$ ).

### 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)
	Voltage x 85%	Normal voltage	Voltage x 115%	
<b>F<sub>L</sub></b>	-6	-4	-7	$\pm 19.2$
<b>F<sub>M</sub></b>	-6	-2	-5	$\pm 19.2$
<b>F<sub>H</sub></b>	-5	-4	-5	$\pm 19.2$



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

Channel No.	Frequency Offset (kHz)			Limit (kHz)
	5 °C	20 °C	40 °C	
<b>F<sub>L</sub></b>	8	-4	-10	±19.2
<b>F<sub>M</sub></b>	8	-2	-10	±19.2
<b>F<sub>H</sub></b>	8	-4	-11	±19.2

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

