



**Nemko Test Report:** 27180RUS1Rev2

**Applicant:** TeleAlarm SA  
Rue du Pont 23  
La Chaux-de-Fonds  
CH-2300  
Switzerland

**Equipment Under Test:** MIYSD Wireless Smoke Detector (434.01)  
(E.U.T.)

**FCC Identifier:** W9N-MIYSD

**In Accordance With:** **FCC Part 15, Subpart C and RSS 210, Issue 7**  
For Low Power Transmitters Operating Periodically  
In The Band 40.66 - 40.77 MHz And Above 70 MHz

**Tested By:** Nemko USA, Inc.  
802 N. Kealy  
Lewisville, TX 75057-3136

**TESTED BY:**

David Light, Senior Wireless Engineer

**DATE:** 24 March 2009

**APPROVED BY:**

Tom Tidwell, Telecom Direct

**DATE:** 12 May 2009

**Total Number of Pages:** 17

**TABLE OF CONTENTS**

<b>SECTION 1.</b>	<b>SUMMARY OF TEST RESULTS</b>	<b>3</b>
<b>SECTION 2.</b>	<b>EQUIPMENT UNDER TEST (E.U.T.)</b>	<b>5</b>
<b>SECTION 3.</b>	<b>TRANSMISSION REQUIREMENTS</b>	<b>7</b>
<b>SECTION 4.</b>	<b>RADIATED EMISSIONS</b>	<b>9</b>
<b>SECTION 5.</b>	<b>OCCUPIED BANDWIDTH</b>	<b>11</b>
<b>SECTION 6.</b>	<b>BLOCK DIAGRAMS</b>	<b>13</b>
<b>SECTION 7.</b>	<b>TEST EQUIPMENT LIST</b>	<b>15</b>
<b>ANNEX A -</b>	<b>RESTRICTED BANDS</b>	<b>16</b>

**Section 1. Summary of Test Results**

Manufacturer: TeleAlarm SA

Model No.: MIYSD Wireless Smoke Detector (434.01)

Serial No.: 0710 (normal operation); 0661 (continuous mode)

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, Subpart C, Paragraph 15.231. All tests were conducted using measurement procedure ANSI C63.4-2003. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.



New Submission



Production Unit



Class II Permissive Change



Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.

See "Summary of Test Data".



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This report applies only to the items tested.

**Summary Of Test Data**

Name of Test	Paragraph No.	Results
Transmission Requirements	15.231(a), RSS 210 A1.1.1	Complies
Radiated Emissions	15.231(b), RSS 210 A1.1.2	Complies
Occupied Bandwidth	15.231(c), RSS 210 A1.1.3	Complies
Frequency Tolerance	15.231(d)	NA
Alternate Field Strength Requirements	15.231(e)	NA
Powerline Conducted Emissions	15.207, RSS GEN 7.2.2	NA

**Footnotes:**

- 1) The radio does not operate in the 40.66-40.70 MHz band
- 2) The radio does not operate with regular predetermined transmissions.
- 3) The radio is battery powered.

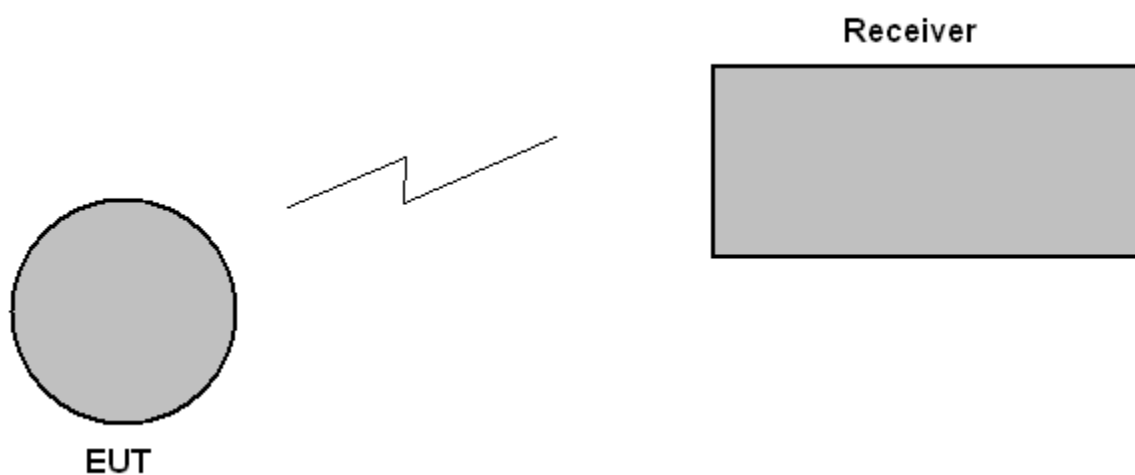
**Section 2. Equipment Under Test (E.U.T.)****General Equipment Information**

<b>Frequency Range:</b>	434.01 MHz
<b>Operating Frequency(ies) of Sample:</b>	434.01 MHz
<b>Type of Emission:</b>	FSK
<b>Emission Designator:</b>	F1D
<b>Supply Power Requirement:</b>	9 Vdc battery
<b>Duty Cycle Correction Factor:</b>	None

**Description of E.U.T.**

434 MHz wireless smoke detector.

**System Diagram**



**Section 3.          Transmission Requirements**

NAME OF TEST: Transmission Requirements	PARA. NO.: 15.231(a)
TESTED BY: David Light	DATE: 24 March 2009

- Minimum Standard:**      15.231(a) Continuous transmissions such as voice, video or data transmissions are not permitted.
- 15.231(a)(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds after being released.
- 15.231(a)(2) A transmitter activated automatically shall cease transmission within 5 seconds of activation.
- 15.231(a)(3) Periodic transmissions at regular pre-determined intervals are not permitted. However polling or supervisory transmissions to determine system integrity of transmitters used in security or safety applications are allowed if the periodic rate of transmission does not exceed one transmission of not more than one second duration per hour for each transmitter.
- 15.231(a)(4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm.

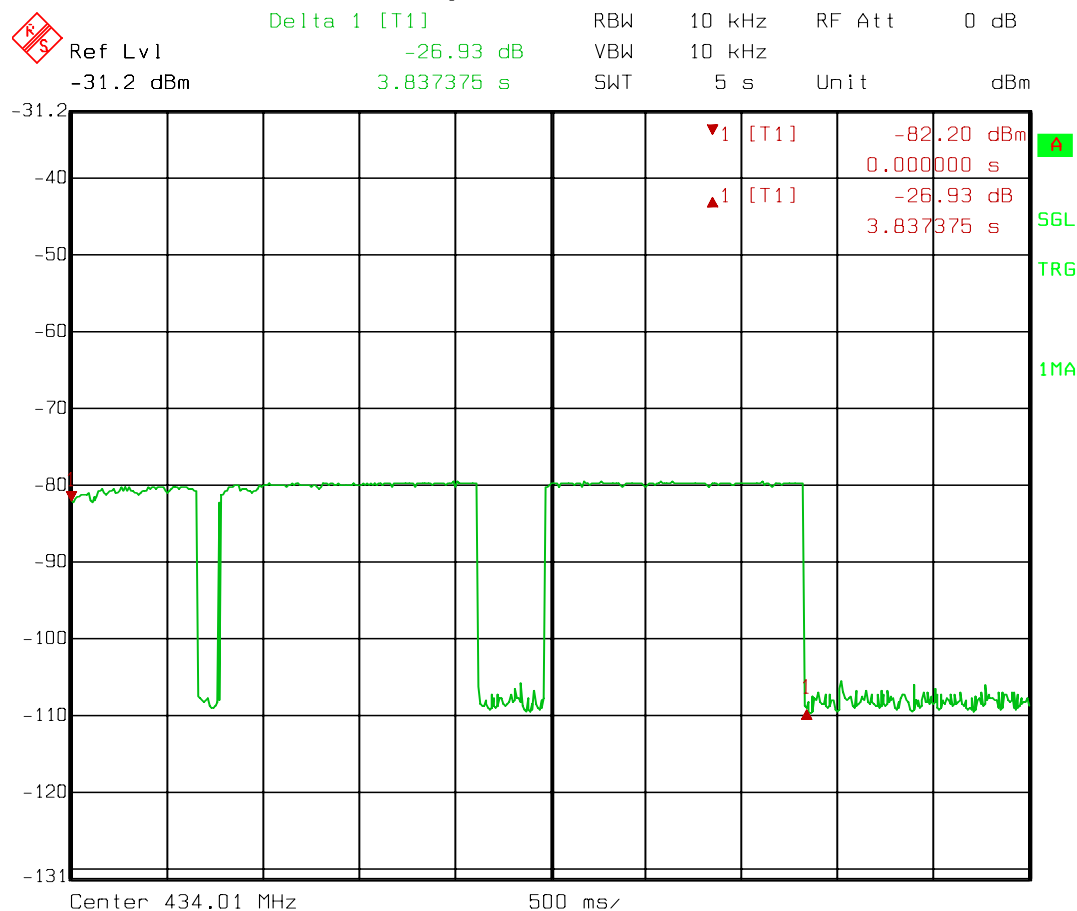
**Test Results:**              [Complies.](#)

**Test Data:**                [Compliance was determined by verification of technical specifications and a functional test on the equipment.](#)

## Rationale for Compliance with Transmission Requirements

<b>15.231(a)(1)</b> <b>15.231(a)(2) :</b>	<input type="checkbox"/> Manual activation <input checked="" type="checkbox"/> Automatic activation	TX deactivation time: 2.5msec.
<b>15.231(a)(3) :</b>	<input type="checkbox"/> Regular, predetermined transmissions <input checked="" type="checkbox"/> Polling or supervisory transmissions	TX rate and duration: 1.7sec. duration once each 24 hour period
<b>15.231(a)(4) :</b>	<input checked="" type="checkbox"/> Alarm device operating during the pendency of alarm condition <input type="checkbox"/> Non-alarm device	

## Test Data – Transmission Requirements



Date: 24.MAR.2009 14:49:40

## ALARM CRITERIA TRANSMISSION

**Test Equipment:** 1036-1082-802



**Section 4. Radiated Emissions**

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.231(b)
TESTED BY: David Light	DATE: 24 March 2009

**Minimum Standard:****Permissible Field Strength Limits (Momentarily Operated Devices)**

Fundamental Frequency (MHz)	Field Strength of Fundamental Microvolts/Meter at 3 meters; (watts)	Field Strength of Unwanted Emissions Microvolts/Meter at 3 meters; (watts)
40.66 - 40.70	2,250	225
70-130	1, 250	125
130-174	1,250 to 3,750*	125 to 375
174-260 (note 1)	3,750	375
260-470 (note 1)	3,750 to 12,500*	375 to 1,250
Above 470	12,500	1,250

**Notes:**

# Use quasi-peak or averaging meter.	For 130 - 174 MHz: $FS \text{ (microvolts/m)} = (56.82 \times F) - 6136$
* Linear interpolation with frequency F in MHz	For 260 - 470 MHz: $FS \text{ (microvolts/m)} = (41.67 \times F) - 7083$

Any emissions that fall within the restricted bands of 15.205 shall not exceed the following limits:

Frequency (MHz)	Field Strength ( $\mu\text{V/m}$ @ 3m)	Field Strength (dB @ 3m)
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

**Test Results:**

Complies. The worst-case emission level is 76.8 dB $\mu\text{V/m}$  @ 3m at 434.01 MHz. This is 4.0 dB below the specification limit.

**Test Data:**

See attached table.

Above 1 GHz a spectrum analyzer and low noise amplifier are used to measure emission levels. The spectrum analyzer resolution bandwidth was set to 1 MHz and video bandwidth was 3 MHz.

In the case of handheld equipment, the E.U.T. is rotated in three planes to obtain worst-case results.

**Test Data - Radiated Emissions**

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
434	V	0	57.2	17	2.6	0.0	76.8	80.8	-4.0	Pass	
434	H	0	52.8	17	2.6	0.0	72.4	80.8	-8.4	Pass	
868	V	0	36.1	23	3.7	27.6	35.2	60.8	-25.6	Pass	
868	H	0	48.1	23	3.7	27.6	47.2	60.8	-13.6	Pass	
2604.1	H	0	46.1	28.9	3.5	31.8	46.7	60.8	-14.1	Pass	
3472.1	H	0	43.3	29.8	4.3	31.7	45.7	60.8	-15.1	Pass	
1736	V	0	45.1	24.8	3.0	31.5	41.4	60.8	-19.4	Pass	

- 1) The spectrum was searched from 30 MHz to 5 GHz.
- 2) The device was tested with a fresh battery.
- 3) The device was tested on three axis'.
- 4) All readings are PEAK unless otherwise stated.

**Analyzer Settings:** <1000 MHz: RBW=VBW=100 kHz, Peak detector  
>1000 MHz: RBW=VBW=1 MHz, Peak detector

**Test Equipment:** 1763-1484-1485-1304-791-1016-1767

**Section 5. Occupied Bandwidth**

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 15.231(c)
TESTED BY: David Light	DATE: 24 March 2009

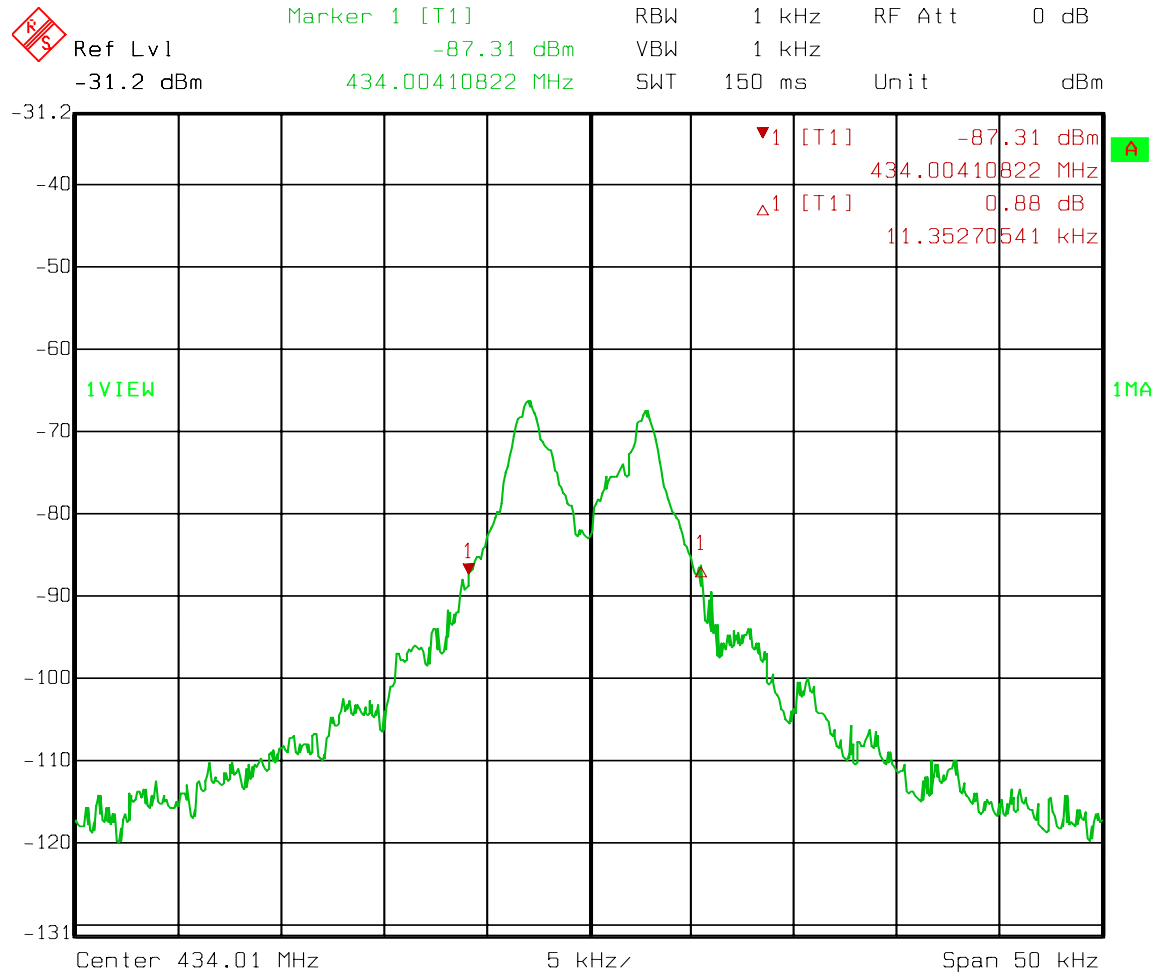
**Minimum Standard:** 15.231(c) The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

**Test Results:** [Complies. See attached graph.](#)

**Test Data:** See attached graph.

**Test Equipment:** 1036-802-1082

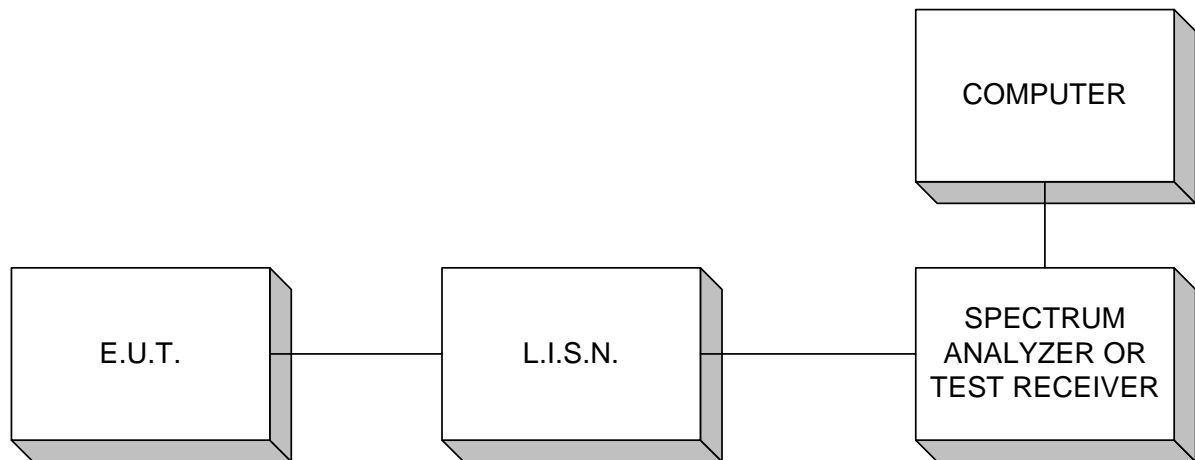
## Test Data – Occupied Bandwidth



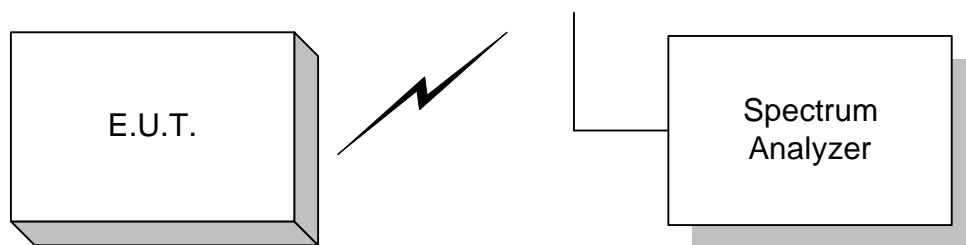
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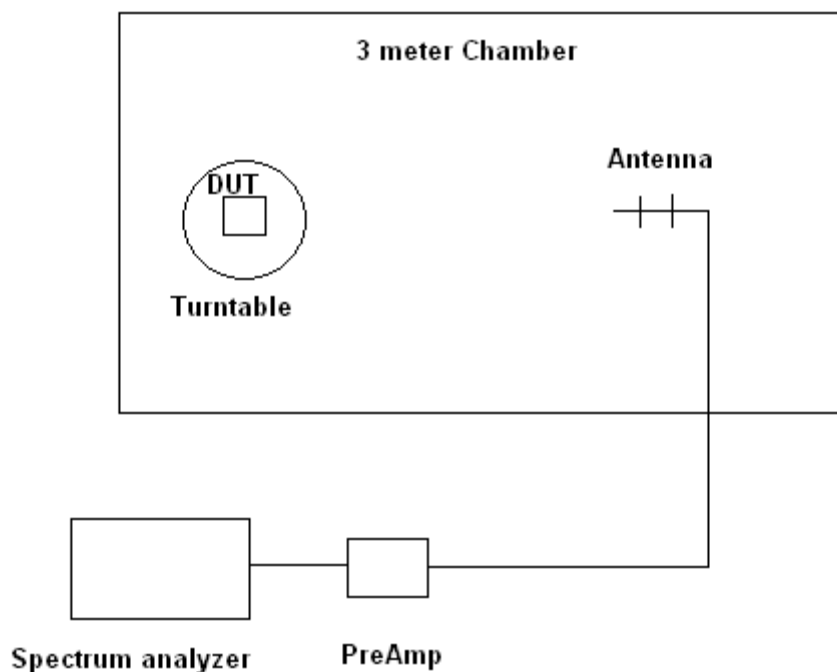
## Section 6. Block Diagrams

### Conducted Emissions



### Occupied Bandwidth, Duty Cycle





### **Radiated Emissions 30 MHz - 18 GHz**

The spectrum was searched up to the 10<sup>th</sup> harmonic of the fundamental frequency of operation.

**Section 7. Test Equipment List**

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	01/19/09	01/20/11
1082	CABLE 2m	Astrolab 32027-2-29094-72TC	N/A	CBU	N/A
802	Near Field Probe Set	EMCO 7405	103	N/A	N/A
1763	Bilog Antenna	Schaffner CBL 6111D	22926	11/04/08	11/04/09
1304	HORN ANTENNA	ELECTRO METRICS RGA-60	6151	09/09/08	09/10/10
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	05/07/08	05/07/09
791	PREAMP, 25dB	Nemko USA, Inc. LNA25	398	05/07/08	05/07/09
1484	Cable	Storm PR90-010-072	N/A	05/07/08	05/07/09
1485	Cable	Storm PR90-010-216	N/A	05/07/08	05/07/09
1767	EMI Test Receiver 20Hz - 26.5 GHz	ROHDE & SCHWARZ ESIB26	837491/0002	09/20/07	09/19/08

**Nemko USA, Inc.**

FCC PART 15, SUBPART C and RSS 210. Issue 7

PERIODICALLY OPERATED LOW POWER TRANSMITTERS

EQUIPMENT: MIYSD Wireless Smoke Detector

PROJECT NO.: **27180RUS1**

(434.01)

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## **ANNEX A - RESTRICTED BANDS**



**Annex A                      Restricted Bands of Operation**

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

<b>MHz</b>	<b>MHz</b>	<b>MHz</b>	<b>GHz</b>
0.090 - 0.110	16.42-16.423	399.9-410	4.5-5.15
0.49 - 0.51	16.69475-16.69525	608-614	5.35-5.46
2.1735 - 2.1905	16.80425-16.80475	960-1240	7.25-7.75
3.020 - 3.026	25.5-25.67	1300-1427	8.025-8.5
4.125 - 4.128	37.5-38.25	1435-1626.6	9.0-9.2
4.17725 - 4.17775	73-74.6	1645.5-1646.5	9.3-9.5
4.20725 - 4.20775	74.8-75.2	1660-1710	10.6-12.7
6.215 - 6.218	108-121.94	1718.8-1722.2	13.25-13.4
6.31175 - 6.31225	123-138	2220-2300	14.47-14.5
8.291 - 8.294	149.9-150.05	2310-2390	15.35-16.2
8.362 - 8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625 - 8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425 - 8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29 - 12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975 - 12.52025	240-285	3345.8-3358	36.43-36.5
12.57675 - 12.57725	322-335.4	3600-4400	Above 38.6
13.36 - 13.41			