FCC TEST REPORT

Part 15 Subpart C

FCC ID .....:	**L5CW209TX**
Report Reference No.....:	**WE09060001**
Compiled by (position+printed name+signature)..:	File administrators Wenliang Li
Supervised by (position+printed name+signature)..:	Test Engineer Cary Li
Approved by (position+printed name+signature)..:	Manager Jimmy Li
Date of issue.....:	Jun 11, 2009
Testing Laboratory Name .....:	**Shenzhen Huatongwei International Inspection Co., Ltd**
Address.....:	Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Applicant's name.....:	**Ansen Electronics Co**
Address.....:	Rm 78,2/F,Sino Industrial Plaza,9 Kai Cheung Rd,Kowloon Bay
Manufacturer's name .....:	**Ansen Electronics Company**
Address.....:	Chen Tung Industrial Zone,Ning Tau Administrative District,Qiao Tau Zhen,Dongguan,Guangdong
Test specification:	
Standard .....:	**FCC Part Subpart 15C 2008 – Intentional Radiators** **ANSI C63.4 - 2003**
TRF Originator.....:	Shenzhen Huatongwei International Inspection CO., Ltd
Master TRF.....:	Dated 2006-06

Equipment Under Test ..... :	Remote Sensor
Trade Mark .....:	/
Model/Type reference.....:	W209
Listed Models .....:	/
Result.....:	**Positive**

T E S T R E P O R T

Test Report No. :	WE09060001	June 11, 2009 Date of issue

Equipment under Test	:	Remote Sensor
Model /Type	:	W209
Listed Models	:	/
Applicant	:	Ansen Electronics Co
Address	:	Rm 78,2/F,Sino Industrial Plaza,9 Kai Cheung Rd,Kowloon Bay
Manufacturer		Ansen Electronics Company
Address		Chen Tung Industrial Zone,Ning Tau Administrative District,Qiao Tau Zhen,Dongguan,Guangdong

SUMMARY OF STANDARDS AND RUSELT

No.	Test Item	Test Standards and Procedure	Result
1	Radiated Emission	FCC Subpart 15C § 15.231(e) ANSI C63.4-2003 section 13.1.4	Complied
2	Deactivation Time	FCC Subpart 15C § 15.231(e)	Complied
3	20dB Bandwidth	FCC Subpart 15C § 15.231(c) ANSI C63.4-2003 section 13.1.7	Complied

NOTE: 1),The detailed test rusult please see section 4.
2),The test report merely corresponds to the test sample.
3),It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15 Subpart C (2008) - Intentional Radiators

ANSI C63.4 (2003) – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample : Jun 9, 2009

Testing commenced on : Jun 10, 2009

Testing concluded on : June 11, 2009

2.2. Equipment Under Test Power Supply

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

DC 3V (2x1.5V AAA Battery)

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

Product Name : Remote Sensor

Model Number : W209

Operation Frequency : 433.92MHz

Modulation Technology : FSK

Transmitter Type : Periodic Transmitter

Sample Type : Prototype

Channel Number : 3 (use the same TX frequency 433.92MHz)
Channel 1 : Transmit periodic time is 31s
Channel 2 : Transmit periodic time is 33s
Channel 3 : Transmit periodic time is 35s

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

2.4. EUT operation mode

The EUT has been tested under typical operating mode.

Test Item	Test Mode	Note
Radiated Emission	Tx mode(433.92MHz)	X-axis
Deactivation Time	Tx mode(channel1,2,3)	/
20dB Bandwidth	Tx mode(channel1,2,3)	/
Duty cycle	Tx mode(433.92MHz)	/

2.5. EUT configuration

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

☒ - supplied by the manufacturer

☐ - supplied by the lab

☒ Sensor Cable/Probe	Length : 300cm	
☐ AC Adaptor	MODEL : /	
	INPUT : /	
	OUTPUT : /	
☐ Adaptor Cable	Length : /	
	☐ Shield	☐ Unshield
	☐ Detachable	☐ Undetachable

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

This submittal(s) (test report) is intended for FCC ID: **L5CW209TX** filing to comply with the FCC Part 15 Subpart C 15.231(e) Rules 2008.

2.7. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

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

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2003) and CISPR Publication 22.

3.2. Test Facility

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

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: August 02, 2007. Valid time is until March 29, 2012.

A2LA-Lab Cert. No. 2243.01

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is from Aug 24, 2005 to Sept 30, 2009.

FCC-Registration No.: 662850

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 662850, Renewal date September, 2009.

IC-Registration No.: 5377

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377 on November 28th, 2005.

ACA

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

NEMKO-Aut. No.: ELA125

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025:2005 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10, the Authorization is valid through April 25, 2009.

VCCI

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) and Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2484. Date of Registration: December 20, 2006. Valid time is until December 19, 2009.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: December 20, 2006. Valid time is until December 19, 2009.

DNV

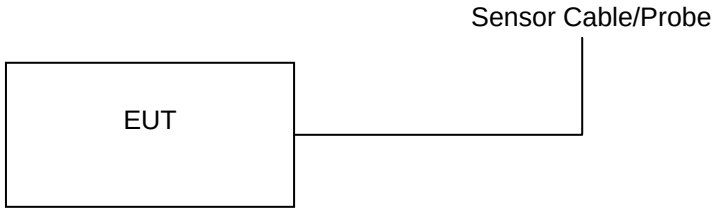
Shenzhen Huatongwei International Inspection Co Ltd has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025(2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until 09 July, 2010.

3.3. Environmental conditions

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

Temperature:	22 ° C
Humidity:	65 %
Atmospheric pressure:	950-1050mbar

3.4. Configuration of Tested System



Equipment Used in Tested System

No.	Equipment	Manufacturer	Model No.	Serial No.	Note
1	Sensor Cable/Probe	Ansen	-	-	-

Note: For actual sample please see test setup photos and EUT external photos.

3.5. Statement of the measurement uncertainty

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

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

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.22dB	(1)
Radiated Emission	1~12.75GHz	4.35dB	(1)
20dB Bandwidth	/	0.25dB	(1)
Deactivation Time	/	0.5ms	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.6. Equipments Used during the Test

Radiated Emissions					
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA-BROADBAND ANTENNA	ROHDE & SCHWARZ	HL562	100015	2008/11
2	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2008/11
3	RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	2008/11
4	TURNTABLE	ETS	2088	2149	2008/11
5	ANTENNA MAST	ETS	2075	2346	2008/11
6	EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	N/A	2008/11
7	HORN ANTENNA	ROHDE & SCHWARZ	HF906	N/A	2008/06/

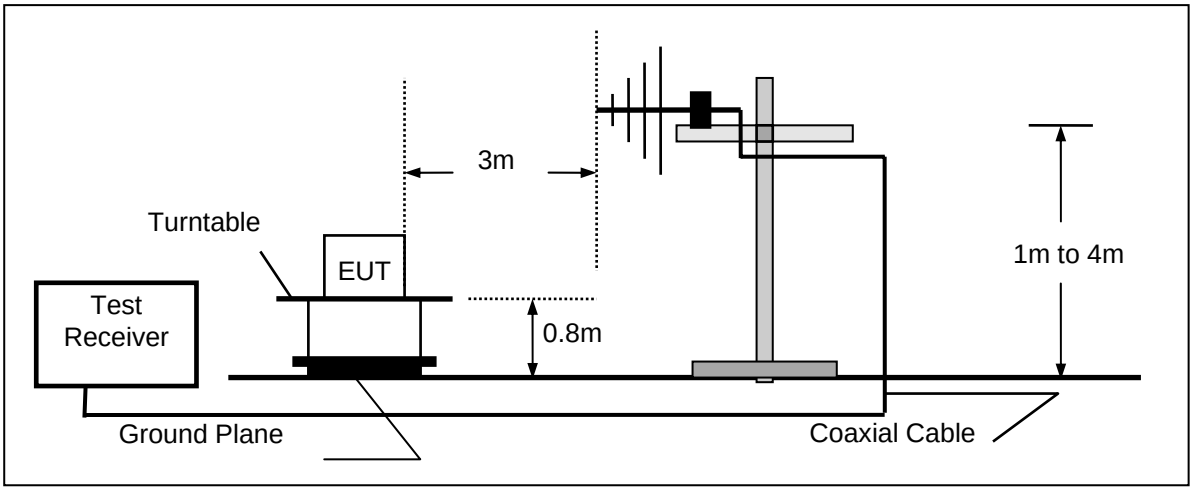
20dB Bandwidth & Deactivation Time & Duty Cycle					
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESCI	100106	2008/11
2	RECEIVER ANTENNA	/	/	/	/

4. TEST CONDITIONS AND RESULTS

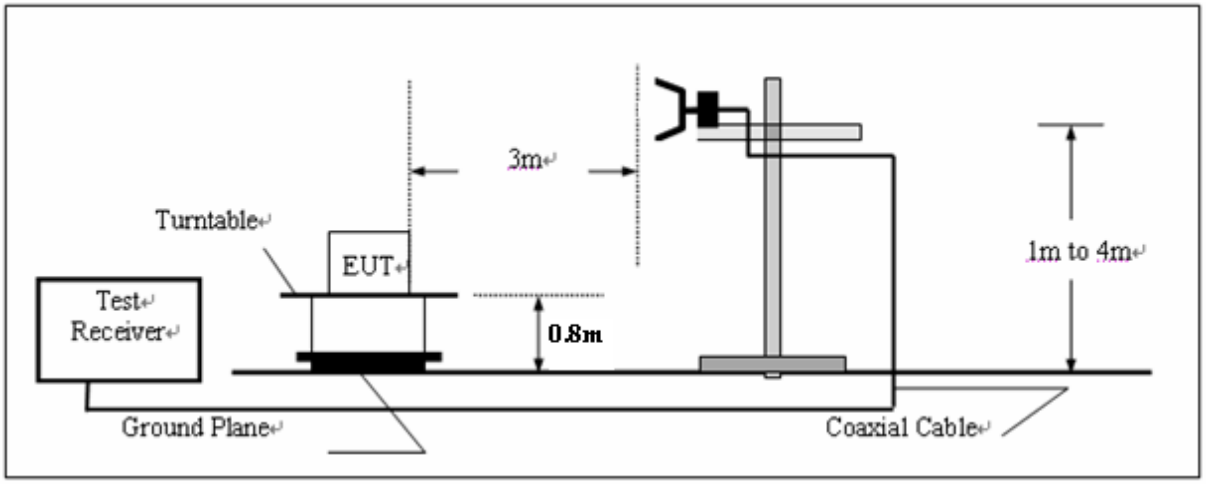
4.1. Radiated Emission

TEST CONFIGURATION

Radiated Emission Test Set-Up, Frequency range 30 - 1000MHz



Radiated Emission Test Set-Up, Frequency range 1GHz - 5GHz



TEST PROCEDURE

1 The EUT was placed on a turn table which is 0.8m above ground plane.
2 The test was beforehand scan carried out with EUT placement X-axis,Y-axis and Z-axis. X-axis was the worst status. So finally test was be carried out under this X-axis.
3 Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT.
4 And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5 Repeat above procedures until all frequency measurements have been completed.

RADIATION LIMIT

For periodic transmitter, according to § 15.231(e), the field strength of fundamental from device at a distance of 3 meters shall not exceed the following values：

Fundamental frequency (MHz)	Distance (Meters)	Field strength of fundamental (dBμV/m)	
		AV	Peak
433.92	3	72.87	92.87
Note: For the band 260-470MHz,uV/m at 3 meters = 16.6667(F) – 2833.333 Where F is fundamental frequency 433.92MHz			

For periodic transmitter, according to § 15.231(e), the field strength radiated emissions from device at a distance of 3 meters shall not exceed the following values：

Fundamental frequency (MHz)	Distance (Meters)	Field strength of spurious emission	
		(microvolts/meter)	(dBμV/m)
40.66-40.70	3	100	40
70-130	3	50	34
130-174	3	50 to 150	34 to 43.5
174-260	3	150	43.5
260-470	3	150 to 500	43.5 to 54
Above 470	3	500	54
Note: 1, For other bands limit pls refer 15.209 2, The limit beolw 1GHz based CISPR quasi-peak detector, the limit above 1GHz based average detector and peak limit is 74dBuV/m.			

TEST RESULTS

The emissions from 1GHz to 5GHz are peak measured and comply with average limit, detailed test data please see the following pages.

Field Strength Calculation

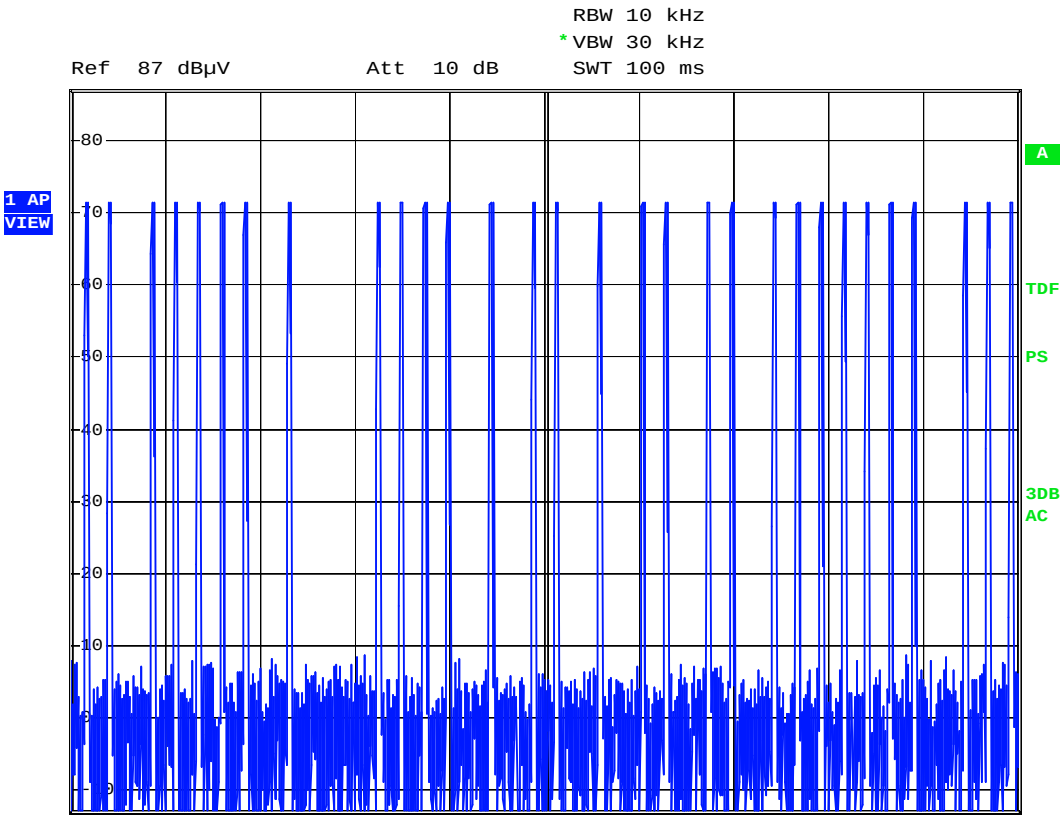
The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows: **FS = RA + AF + CL - AG**

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

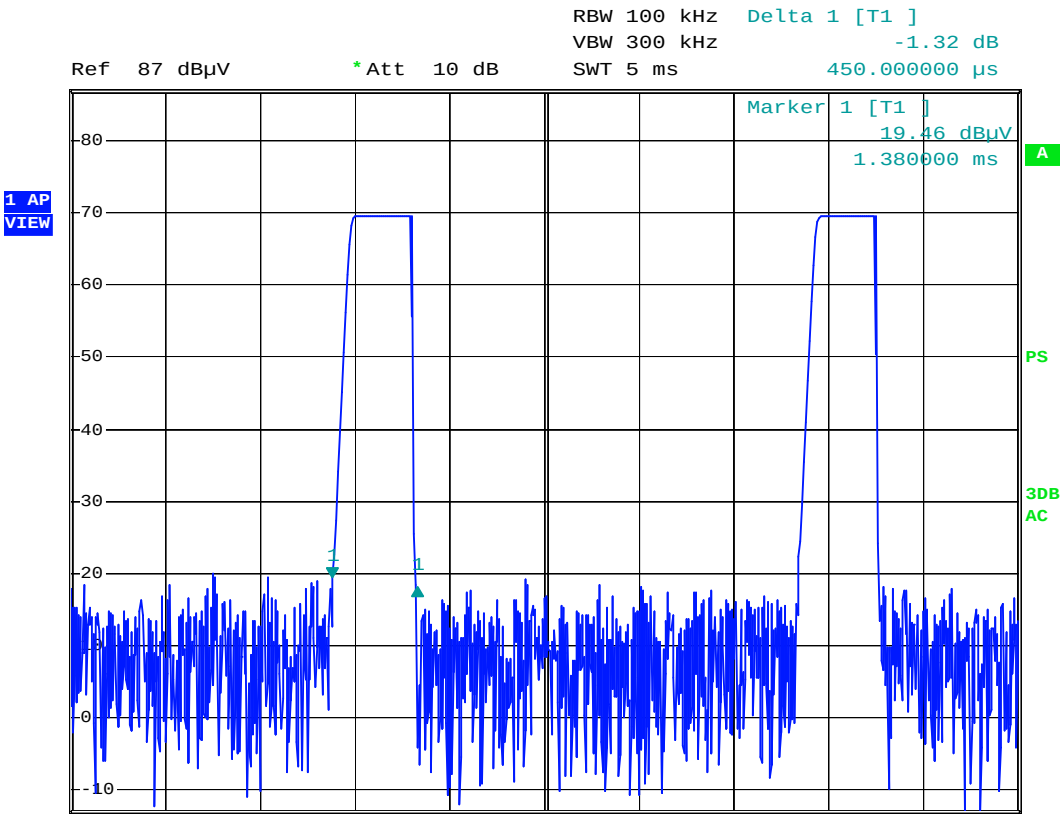
Duty Cycle Correction Factor

Duty Cycle = TX on/100ms X 100% = 30 X 0.45 ms/100ms X 100% = 13.5%

Duty Cycle Correction Factor = 20log(Duty Cycle) = -17.4



The pulses of 100ms = 30 times



Time of a pulse = 450us = 0.45ms

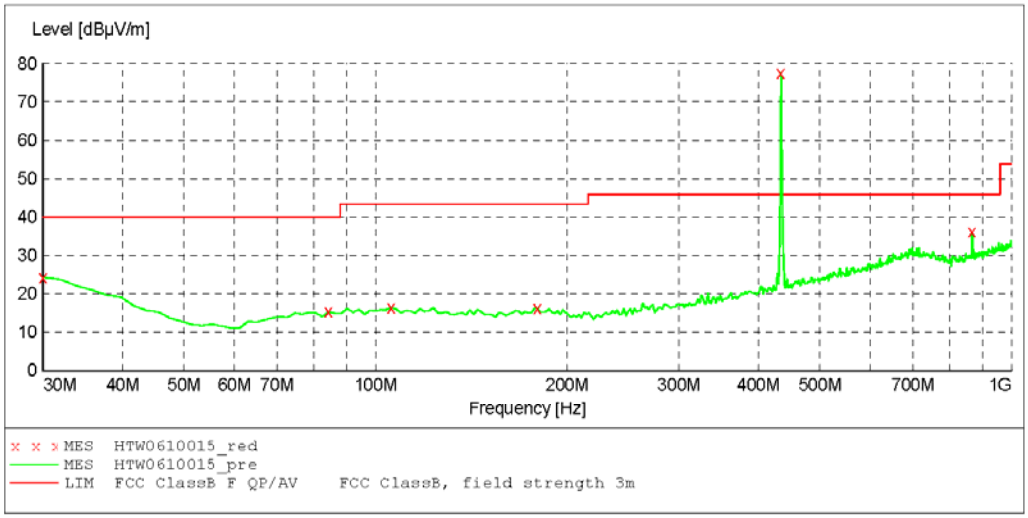
30MHz to 1GHz Test Data

RADIATED EMISSION FCC Part 15C

```
EUT:                    Remote Sensor
Manufacturer:           Ansen
Operating Condition:    TX Mode
Test Site:              3M CHAMBER
Operator:               Cary
Test Specification:     DC 3.0V
Comment:                X-axis
Start of Test:          6/10/2009 / 10:42:28AM
```

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

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	120 kHz	HL562 08



MEASUREMENT RESULT: "HTW0610015_red"

6/10/2009 10:45AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	24.30	21.2	40.0	15.7	QP	100.0	360.00	HORIZONTAL
84.428858	15.40	11.6	34.0	18.6	QP	100.0	104.00	HORIZONTAL
105.811623	16.50	11.8	34.5	18.0	QP	100.0	210.00	HORIZONTAL
179.679359	16.30	11.6	43.5	27.2	QP	100.0	54.00	HORIZONTAL
433.928657	77.60	18.3	92.8	15.2	peak	100.0	347.00	HORIZONTAL
867.815631	36.10	24.8	54.0	17.9	QP	100.0	253.00	HORIZONTAL

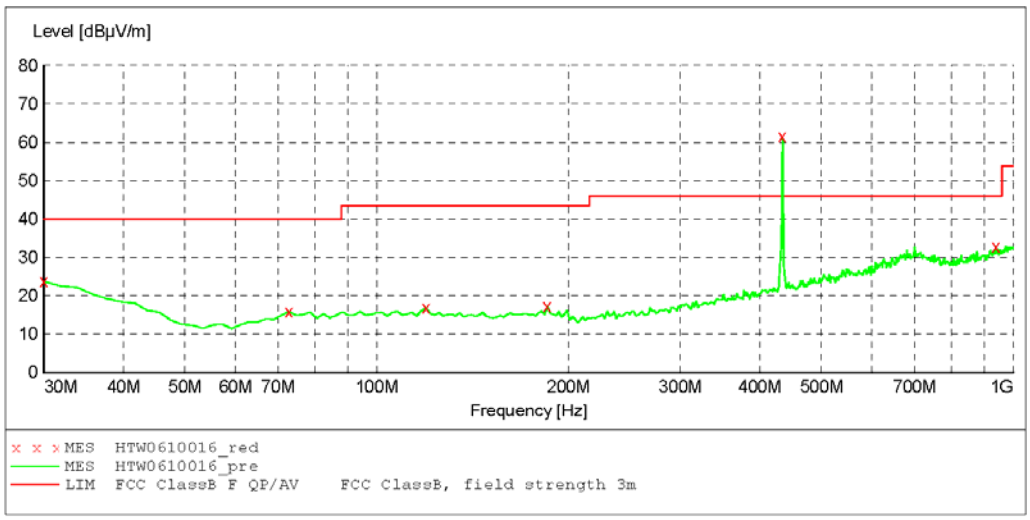
Frequency (MHz)	Field strength (dBµV/m)	AV Limit (dBµV/m)	Duty Cycle Correction Factor	Result (dB)	Margin (dB)	Det.
433.92	77.60	72.87	-17.4	60.20	12.67	AV
Note: Result = Field Strength + Duty Cycle Corrcetion Factor						

RADIATED EMISSION FCC Part 15C

```
EUT:                  Remote Sensor
Manufacturer:         Ansen
Operating Condition:  TX Mode
Test Site:            3M CHAMBER
Operator:             Cary
Test Specification:   DC 3.0V
Comment:              X-axis
Start of Test:        6/10/2009 / 10:46:36AM
```

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

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	120 kHz	HL562 08



MEASUREMENT RESULT: "HTW0610016_red"

6/10/2009 10:49AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	23.80	21.2	40.0	16.2	QP	100.0	356.00	VERTICAL
72.765531	15.90	10.9	34.0	18.1	QP	100.0	28.00	VERTICAL
119.418838	16.80	11.9	34.0	17.2	QP	100.0	207.00	VERTICAL
185.511022	17.30	11.3	43.5	26.2	QP	100.0	328.00	VERTICAL
433.928657	61.50	18.3	92.8	31.3	peak	100.0	292.00	VERTICAL
939.739479	32.90	26.2	54.0	21.1	QP	100.0	328.00	VERTICAL

Frequency (MHz)	Field strength (dBµV/m)	AV Limit (dBµV/m)	Duty Cycle Correction Factor	Result (dB)	Margin (dB)	Det.
433.92	61.50	72.87	-17.4	44.10	33.72	AV
Note: Result = Field Strength + Duty Cycle Corrcetion Factor						

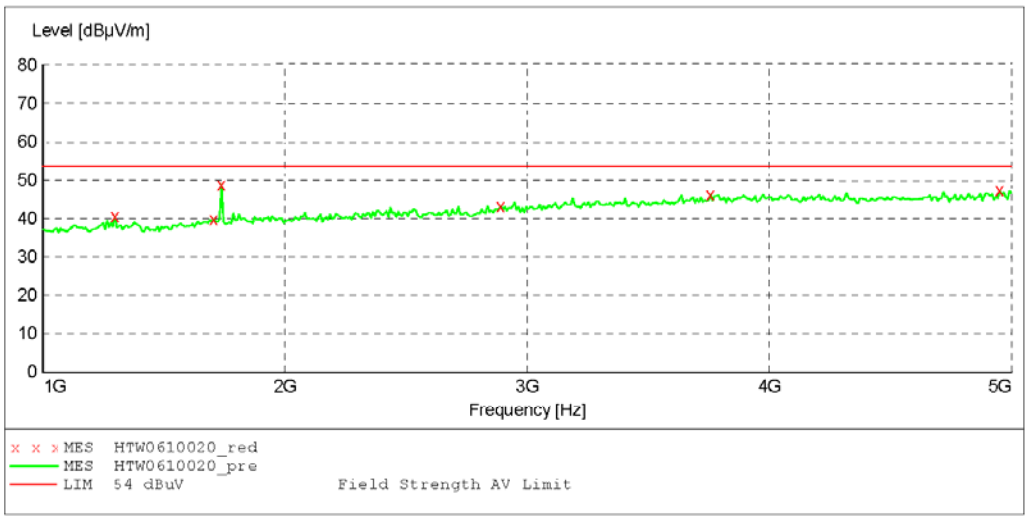
1GHz to 5GHz Test Data

RADIATED EMISSION FCC Part 15C

```
EUT:                  Remote Sensor
Manufacturer:         Ansen
Operating Condition:  TX Mode
Test Site:            3M CHAMBER
Operator:             Cary
Test Specification:   DC 3.0V
Comment:              X-axis
Start of Test:        6/10/2009 / 11:01:36AM
```

SWEEP TABLE: "test (1G-18G) P"

Short Description:			EN 55022 Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	HF906(2008)



MEASUREMENT RESULT: "HTW0610020_red"

6/10/2009 11:04AM

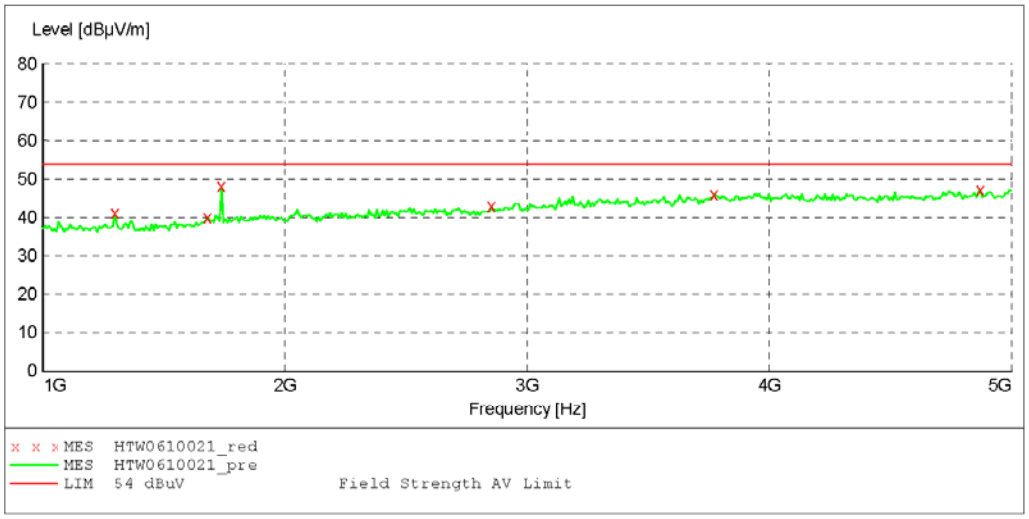
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1296.593186	40.70	-2.8	54.0	13.3	Peak	100.0	103.00	VERTICAL
1705.410822	39.80	-1.7	54.0	14.2	Peak	100.0	302.00	VERTICAL
1737.474950	48.80	-1.6	54.0	5.2	Peak	100.0	107.00	VERTICAL
2891.783567	43.30	2.2	54.0	10.7	Peak	100.0	39.00	VERTICAL
3757.515030	46.20	5.5	54.0	7.8	Peak	100.0	287.00	VERTICAL
4951.903808	47.30	7.2	54.0	6.7	Peak	100.0	298.00	VERTICAL

RADIATED EMISSION FCC Part 15C

```
EUT:                  Remote Sensor
Manufacturer:         Ansen
Operating Condition:  TX Mode
Test Site:            3M CHAMBER
Operator:             Cary
Test Specification:   DC 3.0V
Comment:              X-axis
Start of Test:        6/10/2009 / 11:06:05AM
```

SWEEP TABLE: "test (1G-18G) P"

```
  Short Description:           EN 55022 Field Strength
  Start      Stop       Detector  Meas.     IF        Transducer
  Frequency  Frequency            Time      Bandw.
  1.0 GHz    18.0 GHz   MaxPeak   Coupled   1 MHz     HF906(2008)
```



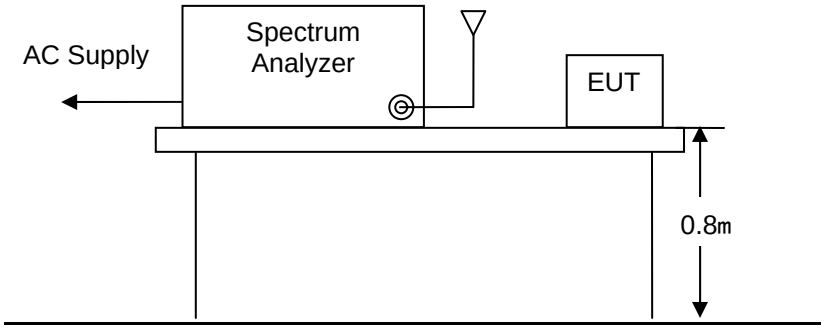
MEASUREMENT RESULT: "HTW0610021_red"

6/10/2009 11:09AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1296.593186	41.20	-2.8	54.0	12.8	Peak	100.0	301.00	HORIZONTAL
1681.362725	40.00	-1.9	54.0	14.0	Peak	100.0	309.00	HORIZONTAL
1737.474950	48.10	-1.6	54.0	5.9	Peak	100.0	50.00	HORIZONTAL
2851.703407	42.90	1.9	54.0	11.1	Peak	100.0	174.00	HORIZONTAL
3773.547094	46.00	5.5	54.0	8.0	Peak	100.0	202.00	HORIZONTAL
4871.743487	47.20	7.0	54.0	6.8	Peak	100.0	335.00	HORIZONTAL

4.2. Deactivation Time

TEST CONFIGURATION



TEST PROCEDURE

1 The EUT was placed on a wooded table which is 0.8m height and close to receiver antenna of spectrum analyzer.
2 The spectrum analyzer resolution bandwidth was set to 100kHz and video bandwidht was set to 300kHz to encompass all significant spectral components during the test. The spectrum analyzer was operated in linear scale and zero span mode after tuning to the transmitter carrier frequency.

Limit

For periodic transmitter, according to FCC Part 15C § 15.231(e)

Item	Limit (second)
One transmission time	not greater than 1 second
Transmission period	at least 30 times the duration of the transmssion but in no case less than 10 second

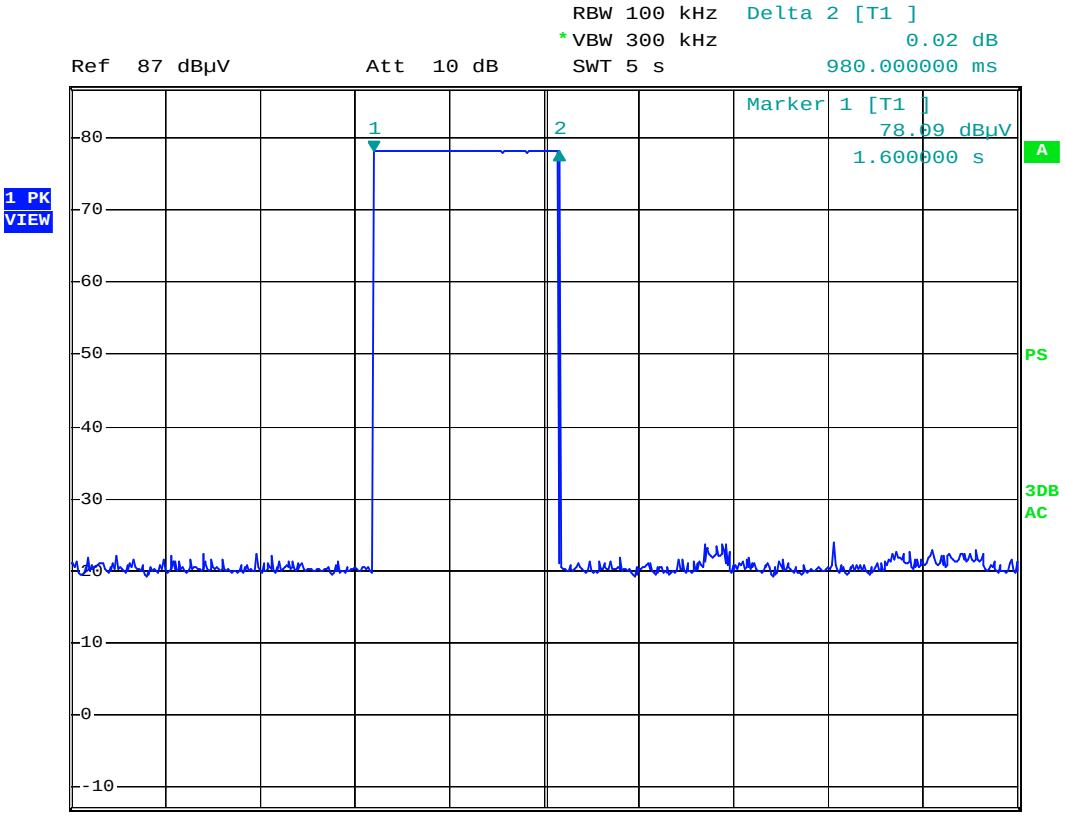
TEST RESULTS

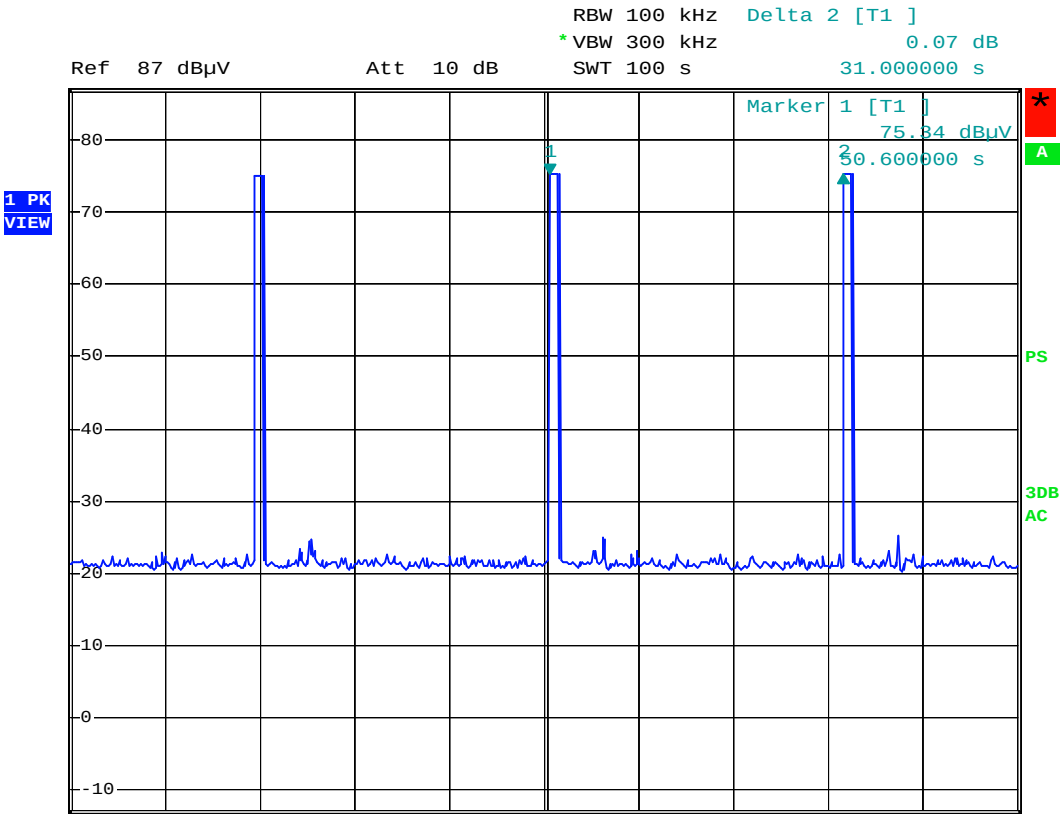
EUT statement: The transmitter was automatically activated, and there were 3 channels use same carrier frequency 433.92MHz:

Channel 1: transmission period was 31 second
Channel 2: transmission period was 33 second
Channel 3: transmission period was 35 second

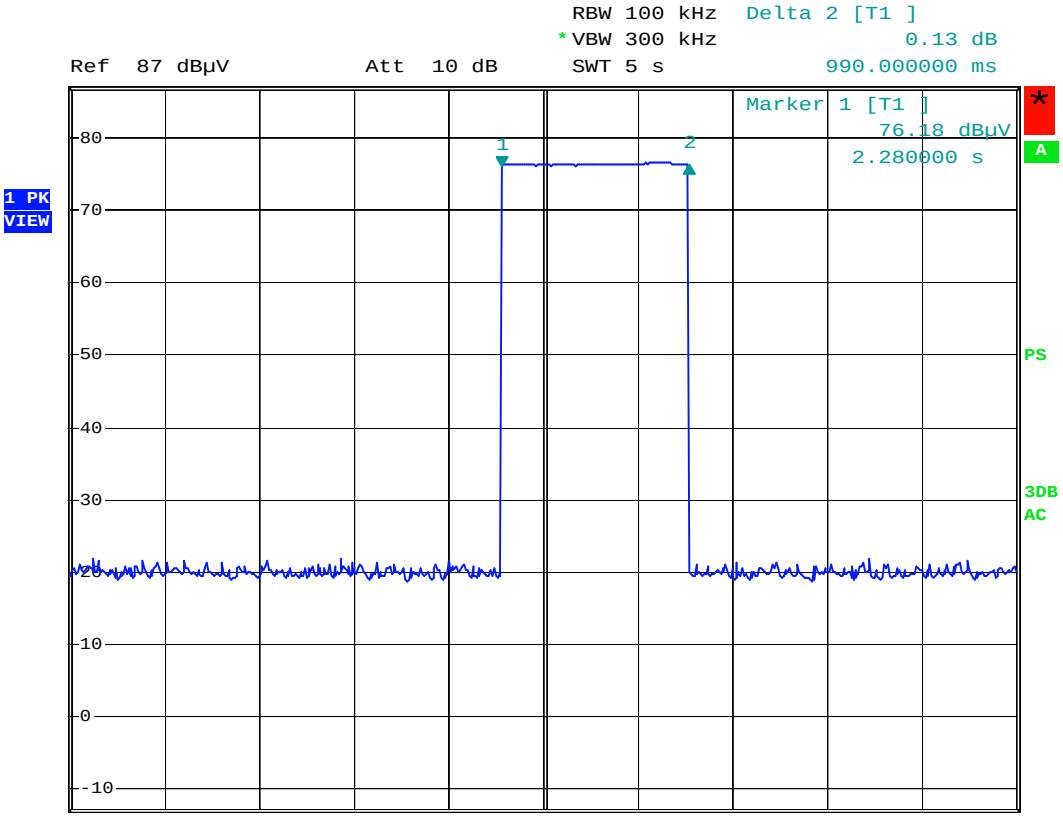
Channel	One transmission time (second)	Transmission period (second)	Result
1	0.98	31.0	Pass
2	0.99	33.2	Pass
3	1.00	35.0	Pass

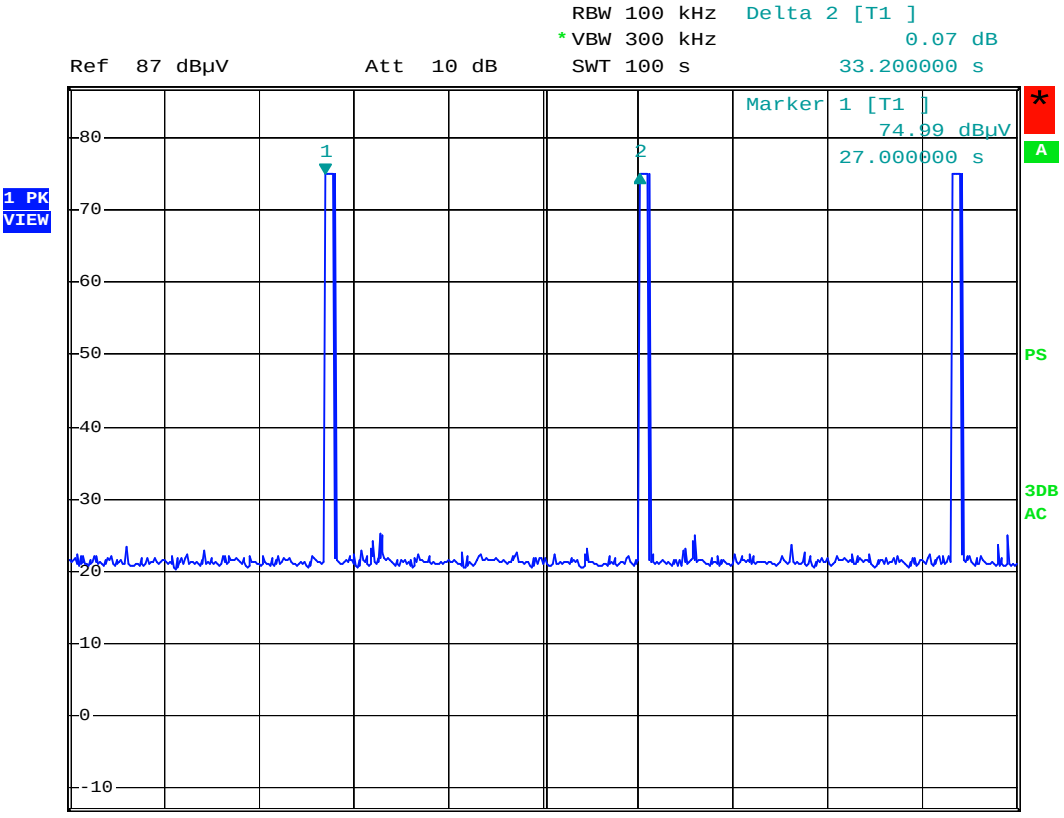
For channel 1



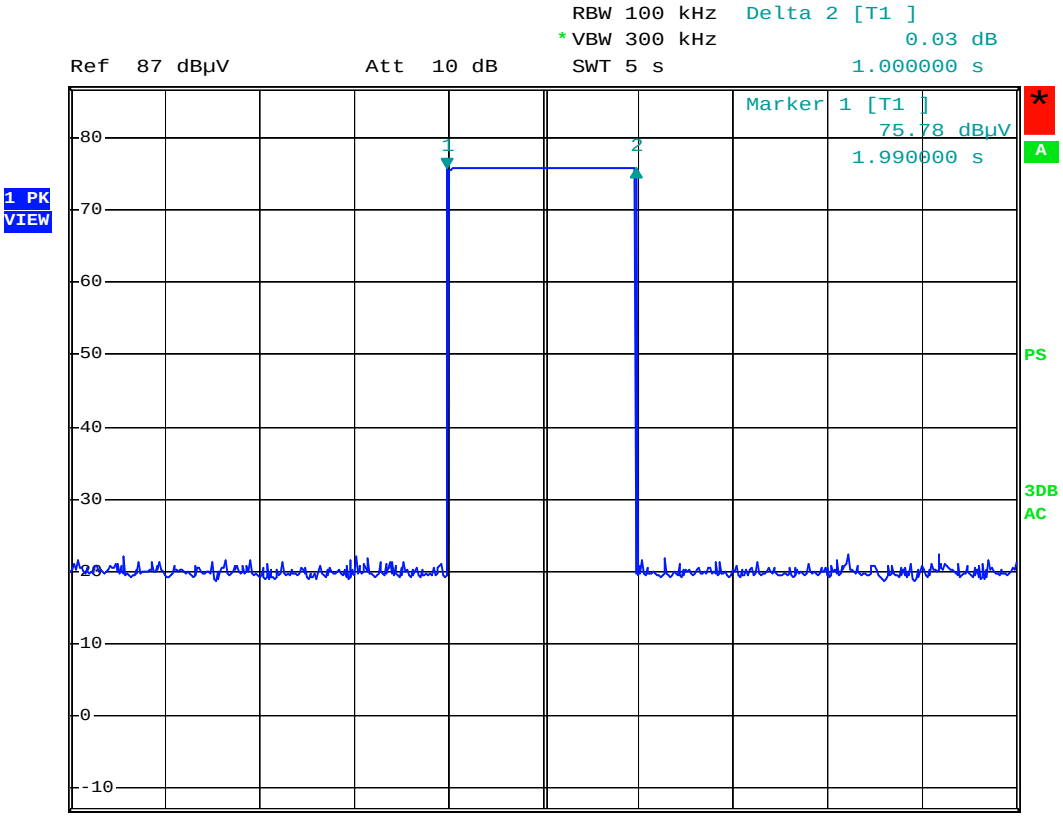


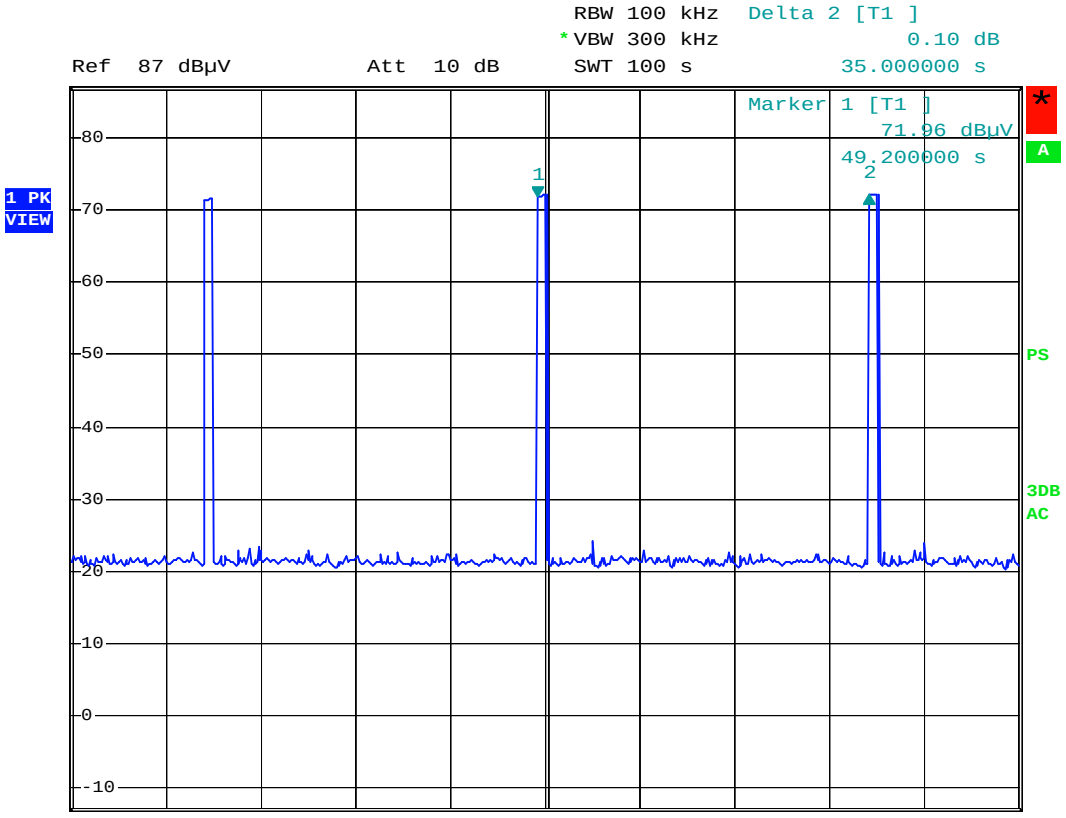
For channel 2





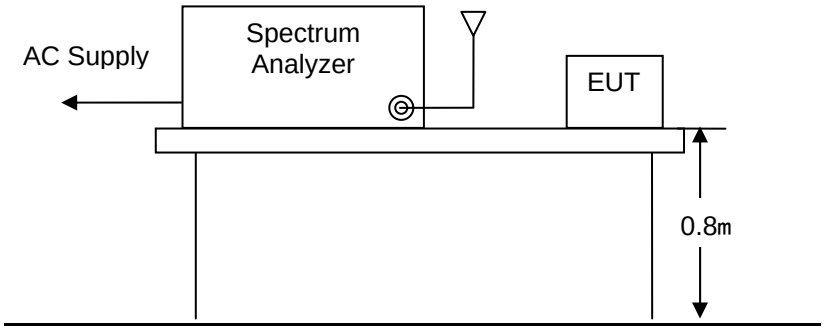
For channel 3





4.3. 20dB Bandwidth

TEST CONFIGURATION



TEST PROCEDURE

1 The EUT was placed on a wooded table which is 0.8m height and close to receiver antenna of spectrum analyzer.
2 The spectrum analyzer resolution bandwidth was set to 10kHz and video bandwidht was set to 30kHz to encompass all significant spectral components during the test. The detector was set to peak and hold mode to clearly observe the components.

Limit

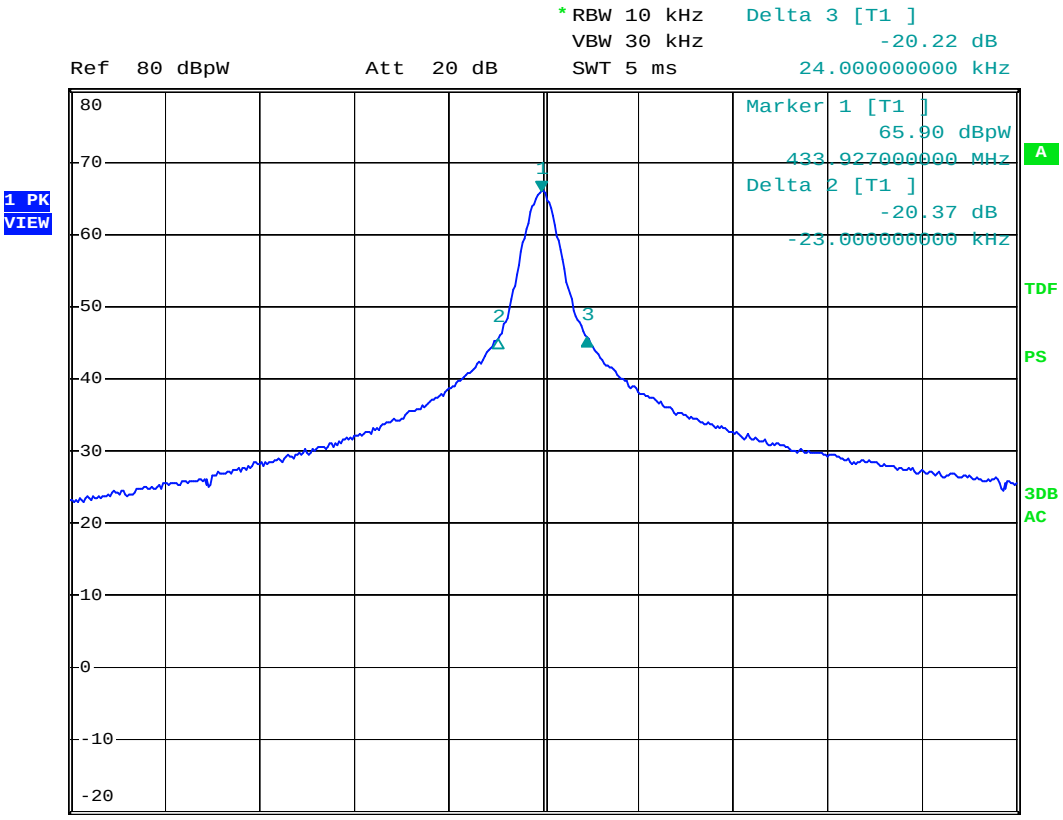
According to FCC Part 15C § 15.231(c)

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70MHz and below 900MHz.

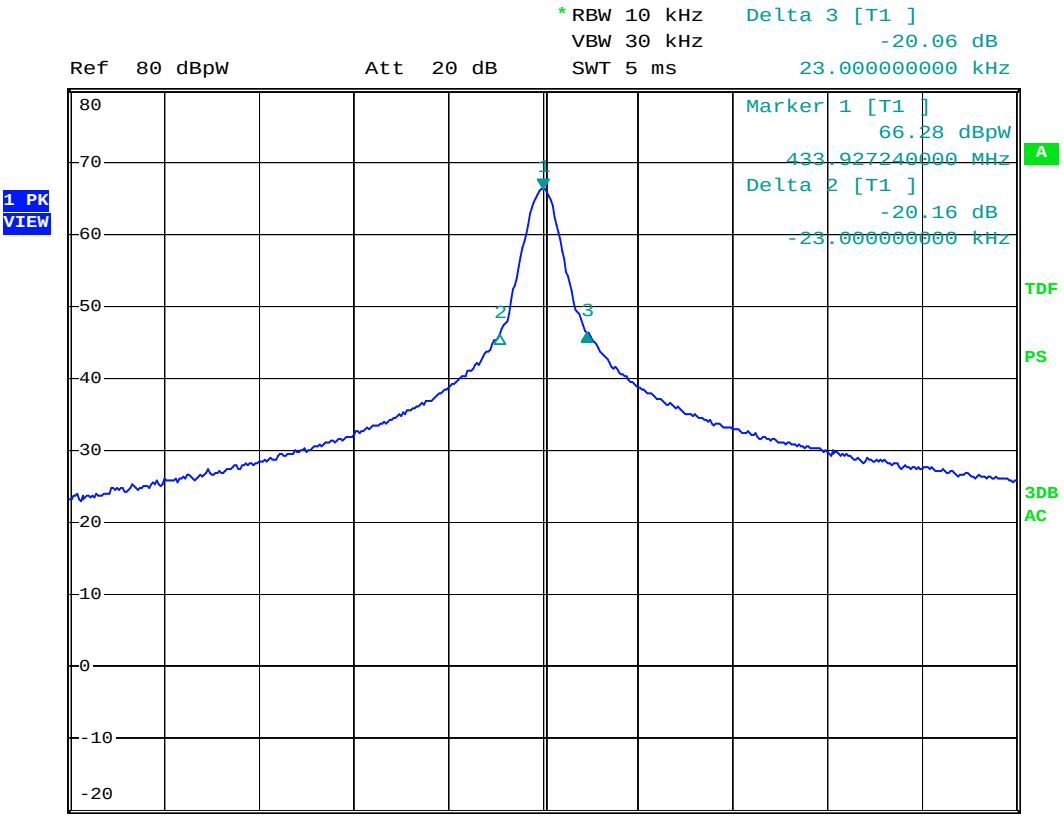
TEST RESULTS

Channel	Measurement Bandwidth (KHz)	Limit (kHz)	Result
1	47.0	1085	Pass
2	46.0	1085	Pass
3	46.0	1085	Pass

For Channel 1



For Channel 2



For Channel 3