APPLICATION CERTIFICATION
On Behalf of
South East Asia Resources Ltd.

Johnson Gas RF Model H Version
Model No.: 00-001105-00

FCC ID: EPK001105A
IC ID: 2887A-001105A

Prepared for	:	South East Asia Resources Ltd.
Address	:	1902-03, Kwong Sang Center, 151-153 Hoi Bun Road Kwun Tong, Hong Kong
Prepared by	:	ACCURATE TECHNOLOGY CO. LTD
Address	:	F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China Tel: (0755) 26503290 Fax: (0755) 26503396

Report Number	:	ATE20061964
Date of Test	:	September 28, 2006
Date of Report	:	October 10, 2006

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Description Page

Test Report Certification

Applicant	:	South East Asia Resources Ltd.
Manufacturer	:	Acumen Manufacturing Limited
EUT Description	:	Johnson Gas RF Model H Version
		(A) MODEL NO.: 00-001105-00
		(B) SERIAL NO.: N/A
		(C) POWER SUPPLY: 4.5V DC ("AAA" battery Type×3)

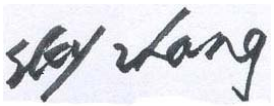
Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.231: 2006
RSS-210 Issue 6 September 2005

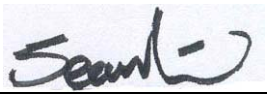
The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.231, RSS-210 Issue 6 September 2005 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test : September 28, 2006

Prepared by : 

(Engineer)

Reviewer : 

(Quality Manager)

Approved & Authorized Signer : 

(Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	Johnson Gas RF Model H Version
Model Number	:	00-001105-00
Power Supply	:	4.5V DC ("AAA" battery Type×3)
Applicant	:	South East Asia Resources Ltd.
Address	:	1902-03, Kwong Sang Center, 151-153 Hoi Bun Road Kwun Tong, Hong Kong
Manufacturer	:	Acumen Manufacturing Limited
Address	:	Queshan Industrial Zone, Longhua, Baoan, Shenzhen, Guangdong, P.R.China
Date of sample received	:	September 26, 2006
Date of Test	:	September 28, 2006

1.2.Description of Test Facility

EMC Lab	:	Accredited by TUV Rheinland Shenzhen, May 10, 2004 Accredited by FCC, May 10, 2004 The Certificate Registration Number is 253065 Accredited by Industry Canada, May 18, 2004 The Certificate Registration Number is IC 5077
Name of Firm	:	ACCURATE TECHNOLOGY CO. LTD
Site Location	:	F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China

1.3.Measurement Uncertainty

Conducted emission expanded uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty	=	4.12dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	03.31.2007
EMI Test Receiver	Rohde&Schwarz	ESI26	838786/013	01.02.2007
Bilog Antenna	Schwarzbeck	VULB9163	9163-194	03.31.2007
Bilog Antenna	Chase	CBL6112B	2591	03.31.2007
Horn Antenna	Rohde&Schwarz	HF906	100013	01.02.2007
Spectrum Analyzer	Anritsu	MS2651B	6200238856	03.31.2007
Pre-Amplifier	Agilent	8447D	2944A10619	03.31.2007

3. THE FIELD STRENGTH OF RADIATION EMISSION

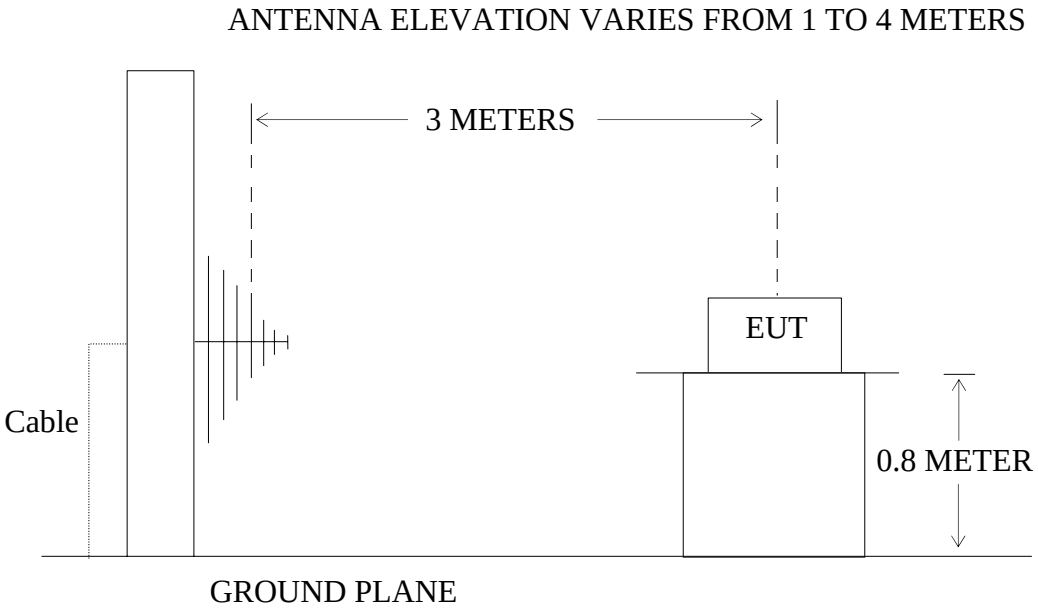
3.1.Block Diagram of Test Setup

3.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Johnson Gas RF Model H Version)

3.1.2.Anechoic Chamber Test Setup Diagram



(EUT: Johnson Gas RF Model H Version)

3.2.The Field Strength of Radiation Emission Measurement Limits

3.2.1 Radiation Emission Measurement Limits According to FCC Part 15 Section 15.231(b) & RSS-210 Table 4

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [Average] [μV/m]	Field Strength of Spurious Emission [Average] [μV/m]
40.66-40.70	2250	225
70-130	1250	125
130-174	1250-3750	125-375
174-260	3750	375
260-470	3750-12500	375-1250

Above 470	12500	1250

Where F is the frequency in MHz, The formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174MHz, μV/m at 3 meters=56.81818(F)-6136.3636; For the band 260-470MHz, μV/m at 3 meters=41.6667(F)-7083.3333. The maximum permissible unwanted emission level is 20dB below the maximum permitted fundamental level.

3.2.2 Restricted Band Radiation Emission Measurement Limits According to FCC part 15 Section 15.205 and Section15.209; RSS-210 table1.

3.3.Configuration of EUT on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

3.3.1. Johnson Gas RF Model H Version (EUT)

Model Number	:	00-001105-00
Serial Number	:	N/A
Manufacturer	:	Acumen Manufacturing Limited

3.4.Operating Condition of EUT

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

3.4.2.Turn on the power of all equipment.

3.4.3. Let the EUT work in measuring modes (TX) measure it.

3.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI 63.4 on radiated emission measurement.

The bandwidth of test receiver (R&S ESI26) is set at 120KHz in 30-1000MHz, and 1MHz in 1000-4000MHz.
The frequency range from 30MHz to 4000MHz is checked.

3.6. The Field Strength of Radiation Emission Measurement Results

PASS.

The frequency range 30MHz to 4000MHz is investigated.

Date of Test:	September 28, 2006	Temperature:	25°C
EUT:	Johnson Gas RF Model H Version	Humidity:	58%
Model No.:	00-001105-00	Power Supply:	4.5V DC ("AAA" battery Type×3)
Test Mode:	TX	Test Engineer:	Andy

Frequency (MHz)	Reading (dBμV/m)	Factor Corr.	Average Factor	Result(dBμV/m)		Limit(dBμV/m)		Margin(dBμV/m)		Polarization
	PEAK	(dB)	(dB)	AV	PEAK	AV	PEAK	AV	PEAK	
349.935	87.9	-17.7	-9.2	61.0	70.2	77.5	97.5	16.5	27.3	Horizontal
699.895	51.3	-13.6	-9.2	28.5	37.7	57.5	77.5	29.0	39.8	
349.935	72.6	-17.7	-9.2	45.7	54.9	77.5	97.5	31.8	42.6	Vertical
699.895	43.9	-13.6	-9.2	21.1	30.3	57.5	77.5	36.4	47.2	

Note:

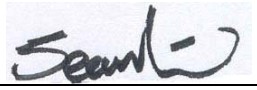
1. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss – Amplifier Gain

2. FCC Limit for Average Measurement = 41.6667(350)-7083.3333 = 7500.0117μV/m
=77.5dBμV/m

3. The spectral diagrams in appendix I display the measurement of peak values.

Reviewer **:** 

4. 20DB OCCUPIED BANDWIDTH

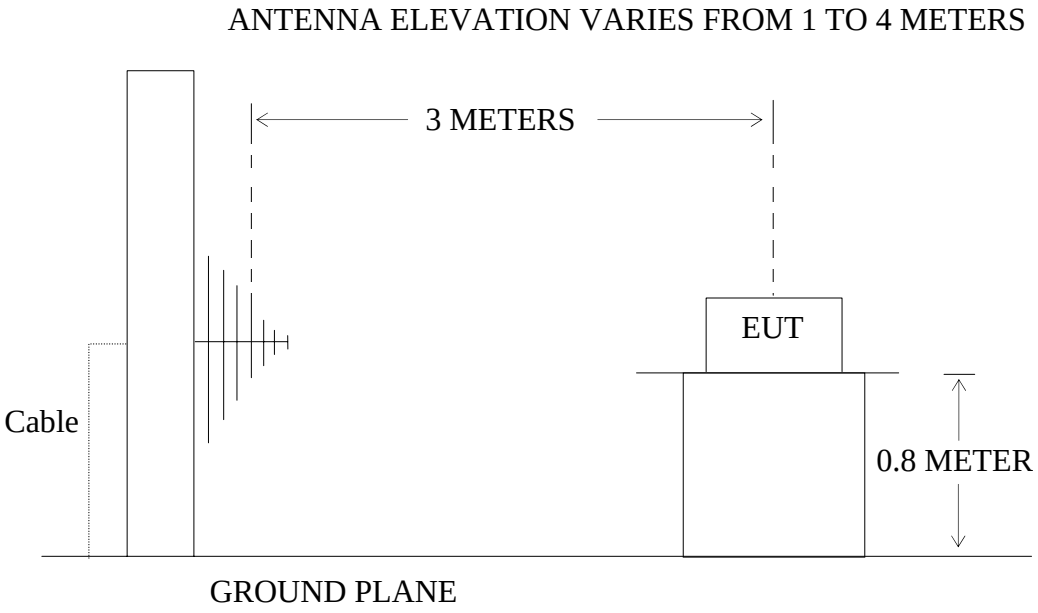
4.1.Block Diagram of Test Setup

4.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Johnson Gas RF Model H Version)

4.1.2.Anechoic Chamber Test Setup Diagram



(EUT: Johnson Gas RF Model H Version)

4.2.The Bandwidth of Emission Limit According To FCC Part 15 Section

15.231(c)

The bandwidth of emission shall be no wider than 0.25% of the center frequency. Therefore, the bandwidth of the emission limit is 350MHz×0.25% = 875KHz.
Bandwidth is determined at the two points 20 dB down from the top of modulated carrier.

4.3.EUT Configuration on Measurement

The following equipment are installed on the bandwidth of emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.3.1.Johnson Gas RF Model H Version (EUT)

Model Number	**:**	00-001105-00
Serial Number	**:**	N/A
Manufacturer	**:**	Acumen Manufacturing Limited

4.4.Operating Condition of EUT

4.4.1.Setup the EUT and simulator as shown as Section 4.1.

4.4.2.Turn on the power of all equipment.

4.4.3.Let the EUT work in measuring mode (TX) measure it.

4.5.Test Procedure

4.5.1. Set SPA Center Frequency = Fundamental frequency, RBW = 100kHz, VBW = 100kHz, Span = 1MHz.

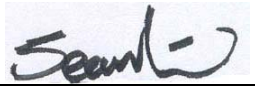
4.5.2. Set SPA Max hold. Mark peak, -20dB

4.6. Measurement Result

The EUT does meet the FCC requirement.

-20dB bandwidth = 262KHz < 875KHz.

The spectral diagrams in appendix I.

Reviewer **:** 

5. 99% OCCUPIED BANDWIDTH

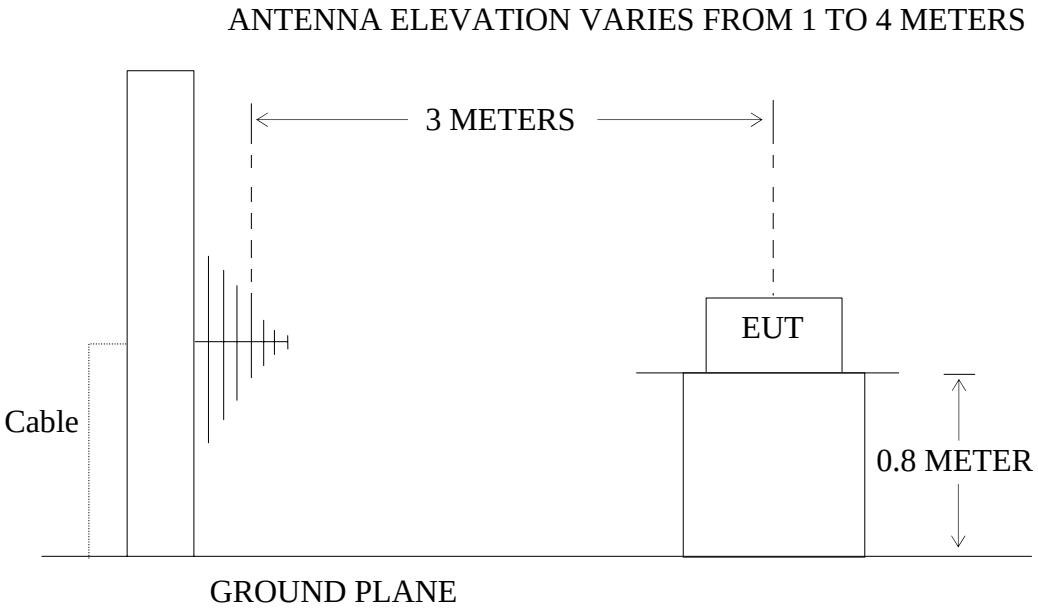
5.1.Block Diagram of Test Setup

5.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Johnson Gas RF Model H Version)

5.1.2.Anechoic Chamber Test Setup Diagram



(EUT: Johnson Gas RF Model H Version)

5.2.The Bandwidth of Emission Limit According To RSS-210 A1.1.3

The 99% bandwidth shall be no wider than 0.25% of the center frequency for device operating between 70-900MHz. Therefore, the bandwidth of the emission limit is 350MHz×0.25% = 875KHz.

5.3.EUT Configuration on Measurement

The following equipment are installed on the bandwidth of emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.3.1.Johnson Gas RF Model H Version (EUT)

Model Number	**:**	00-001105-00
Serial Number	**:**	N/A
Manufacturer	**:**	Acumen Manufacturing Limited

5.4.Operating Condition of EUT

5.4.1.Setup the EUT and simulator as shown as Section 4.1.

5.4.2.Turn on the power of all equipment.

5.4.3.Let the EUT work in measuring mode (TX) measure it.

5.5.Test Procedure

5.5.1. Set SPA Center Frequency = Fundamental frequency, RBW = 100kHz, VBW = 100kHz, Span = 1MHz.

5.5.2.Set SPA Max hold. Mark peak.

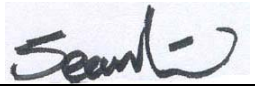
5.5.3.Set SPA “Meas” function, Select “Occupied Bandwidth” function, Select “99% Power Bandwidth”. The frequency of the upper and lower markers indicating the edges of the transmitters “99% Power” emission bandwidth shall be recorded to automate by SPA.

5.6. Measurement Result

The EUT does meet the RSS-210 requirement.

99% Power bandwidth = 222KHz < 875KHz.

The spectral diagrams in appendix I.

Reviewer **:** 

6. RELEASE TIME MEASUREMENT

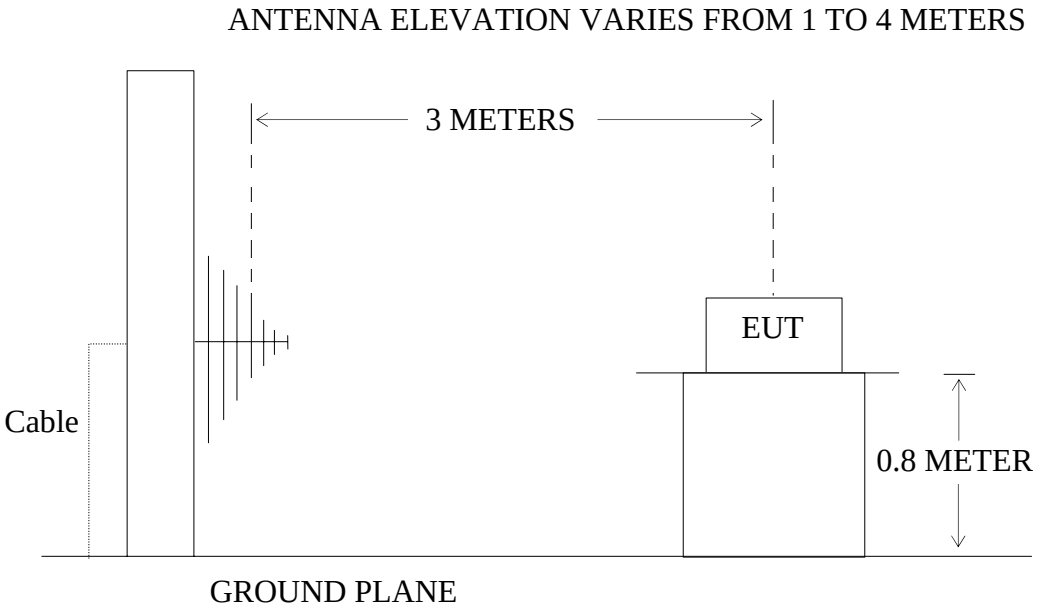
6.1.Block Diagram of Test Setup

6.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Johnson Gas RF Model H Version)

6.1.2.Anechoic Chamber Test Setup Diagram



(EUT: Johnson Gas RF Model H Version)

6.2.Release Time Measurement According To FCC Part 15 Section 15.231(a)&

RSS-210 A1.1.1

Section 15.231(a) (1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

A1.1.1 (1) A manually operated transmitter shall employ a push-to-operate switch and be under manual control at all transmission times. When released, the transmitter shall cease transmission.(holdover time of up to 5 seconds if permitted) (2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.

6.3.EUT Configuration on Measurement

The following equipment are installed on Release Time Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.3.1.Johnson Gas RF Model H Version (EUT)

Model Number	**:**	00-001105-00
Serial Number	**:**	N/A
Manufacturer	**:**	Acumen Manufacturing Limited

6.4.Operating Condition of EUT

6.4.1.Setup the EUT and simulator as shown as Section 5.1.

6.4.2.Turn on the power of all equipment.

6.4.3.Let the EUT work in measuring mode (TX) measure it.

6.5.Test Procedure

6.5.1. Set SPA Center Frequency = Fundamental frequency, RBW = 100kHz, VBW = 100kHz, Span = 0Hz. Sweep time = 5seconds.

6.5.2. Set EUT as normal operation and press Transmitter button.

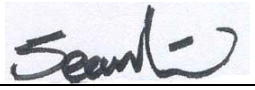
6.5.3. Set SPA View. Delta Mark time.

6.6. Measurement Result

The release time less than 5 seconds.

Release Time= 1.5 seconds

The spectral diagrams in appendix I.

Reviewer **:** 

7. AVERAGE FACTOR MEASUREMENT

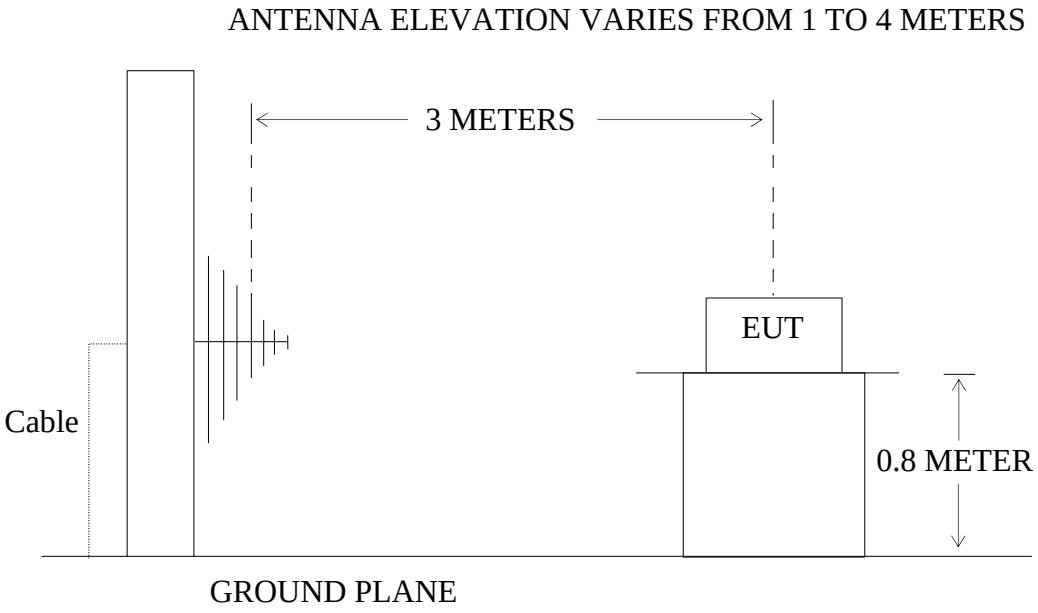
7.1.Block Diagram of Test Setup

7.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Johnson Gas RF Model H Version)

7.1.2.Anechoic Chamber Test Setup Diagram



(EUT: Johnson Gas RF Model H Version)

7.2. Average factor Measurement

Average factor in dB = 20 log (duty cycle)

7.2.1.The specification for output field strengths in accordance with the FCC rules specify measurements with an average detector. During testing, a spectrum analyzer incorporating a peak detector was used. Therefore, a reduction factor can be applied to the resultant peak signal level and compared to the limit for measurement instrumentation incorporating an average detector.

7.3.EUT Configuration on Measurement

The following equipment are installed on average factor Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.3.1. Johnson Gas RF Model H Version (EUT)

Model Number	**:**	00-001105-00
Serial Number	**:**	N/A
Manufacturer	**:**	Acumen Manufacturing Limited

7.4.Operating Condition of EUT

7.4.1.Setup the EUT and simulator as shown as Section 5.1.

7.4.2.Turn on the power of all equipment.

7.4.3.Let the EUT work in measuring mode (TX) measure it.

7.5.Test Procedure

7.5.1. The time period over which the duty cycle is measured is 100 milliseconds, or the repetition cycle, whichever is a shorter time frame. The worst case (highest percentage on) duty cycle is used for the calculation.

7.5.2. Set EUT as normal operation.

7.5.3. Set SPA View. Delta Mark time.

7.6. Measurement Result

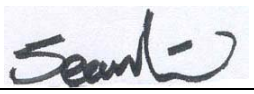
The duty cycle is simply the on time divided by the period:

The duration of one cycle = 32.1ms
Effective period of the cycle = (9×1.02)+ (4×0.5) ms= 11.18ms

DC = 11.18ms/32.1ms = 0.3483

Therefore, the average factor is found by 20log0.3483 = -9.2dB

The spectral diagrams in appendix I.

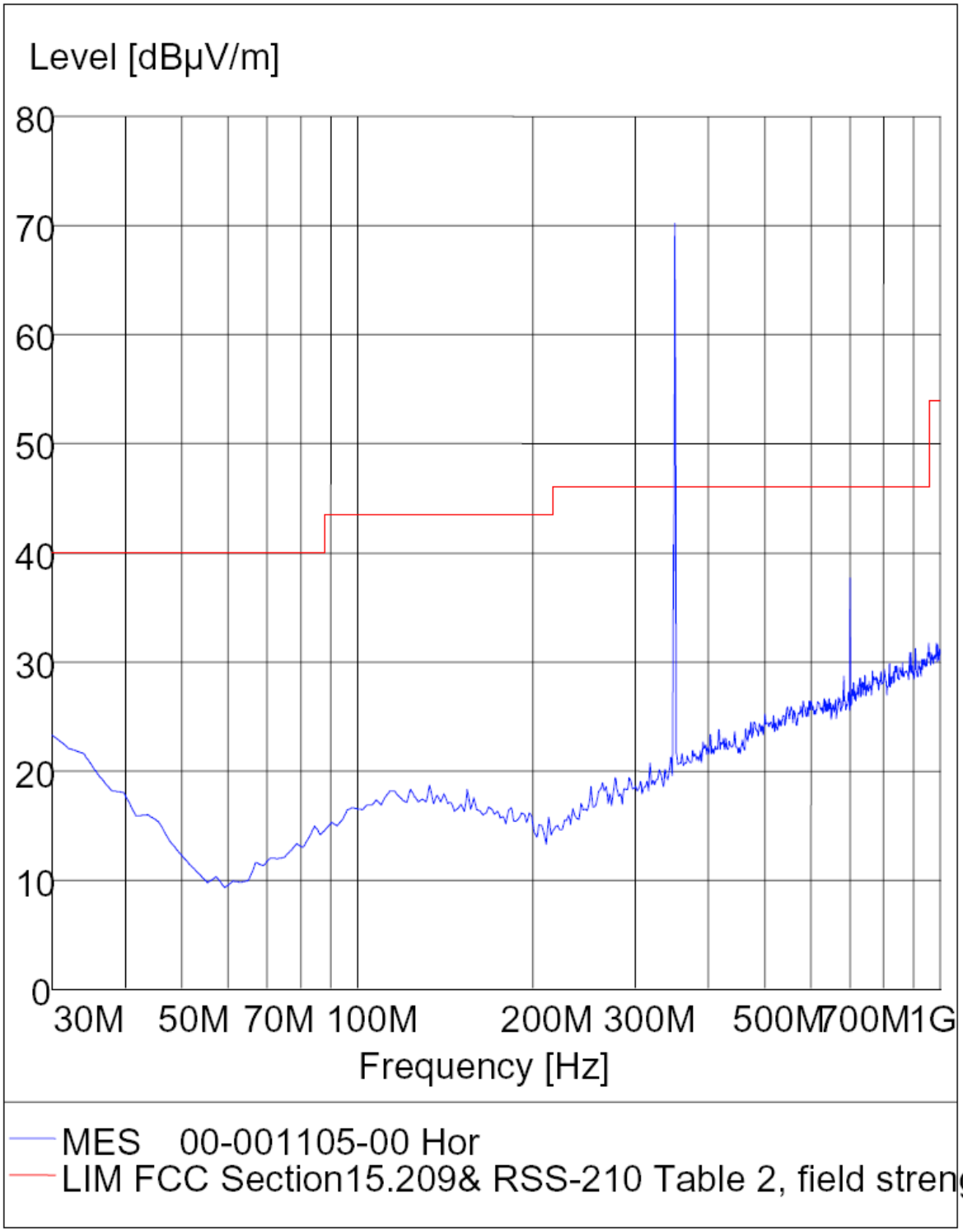
Reviewer **:** 

APPENDIX I
(Test Curves)

Radiated Disturbance

FCC Part 15& RSS-210

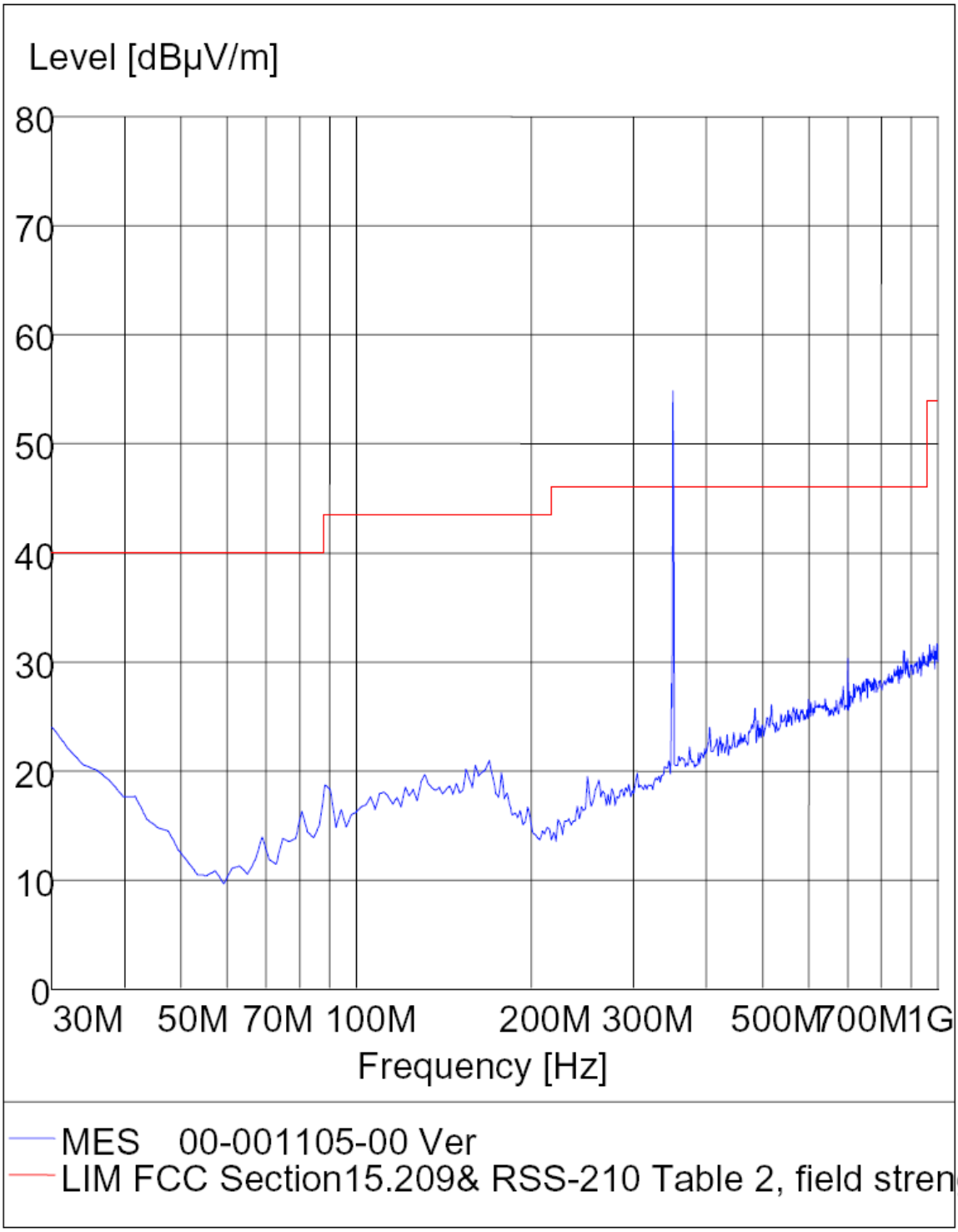
```
EUT: Johnson Gas RF Model H Version              M/N: 00-001105-00
Manufacturer:       Acumen Manufacturing Limited
Operating Condition: TX
Test Site:          ATC EMC Lab.SAC
Operator::          Andy
Test Specification:  Horizontal
Comment:            DC 4.5V
```



Radiated Disturbance

FCC Part 15& RSS-210

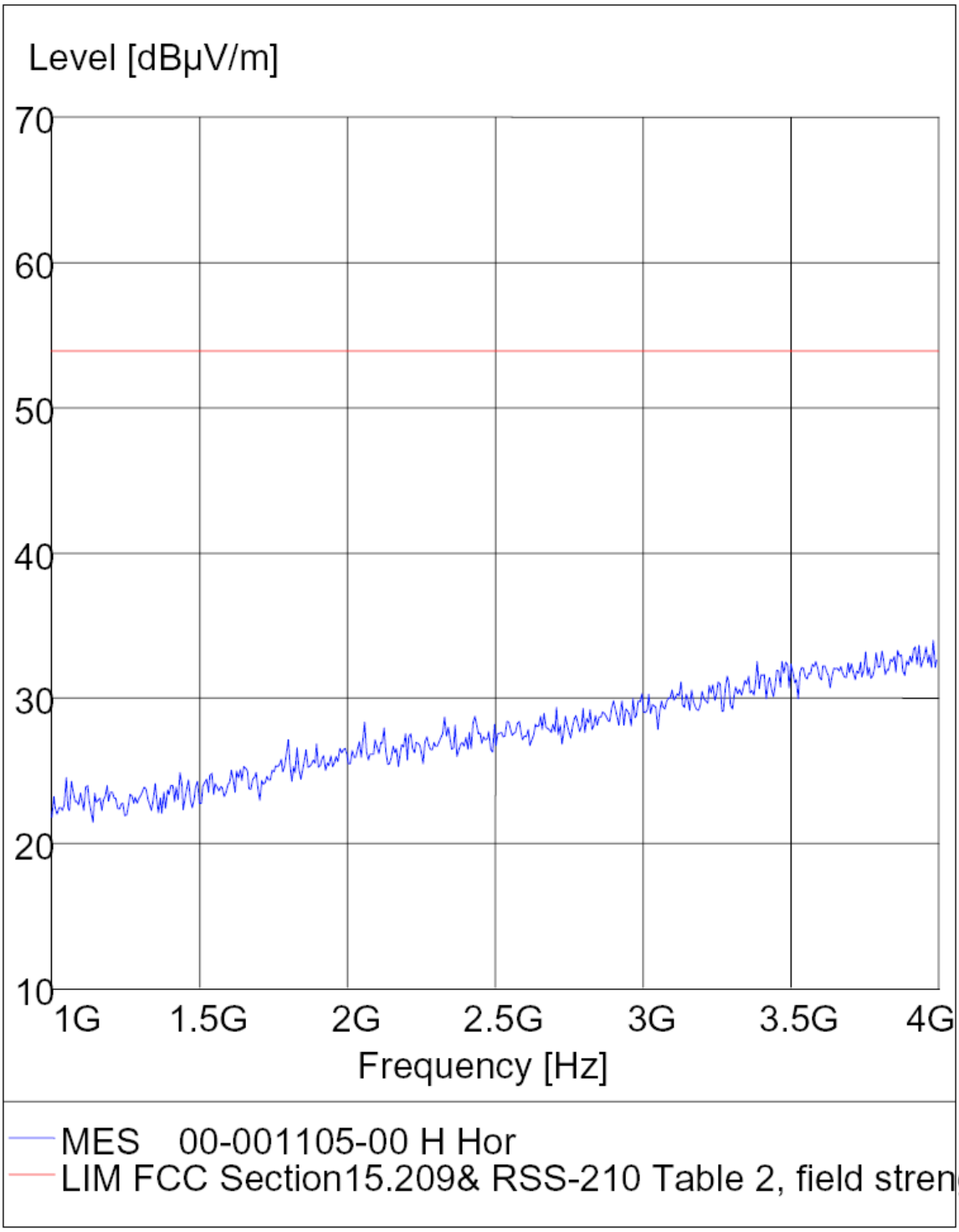
EUT: Johnson Gas RF Model H Version M/N: 00-001105-00
Manufacturer: Acumen Manufacturing Limited
Operating Condition: TX
Test Site: ATC EMC Lab.SAC
Operator:: Andy
Test Specification: Vertical
Comment: DC 4.5V



Radiated Disturbance

FCC Part 15& RSS-210

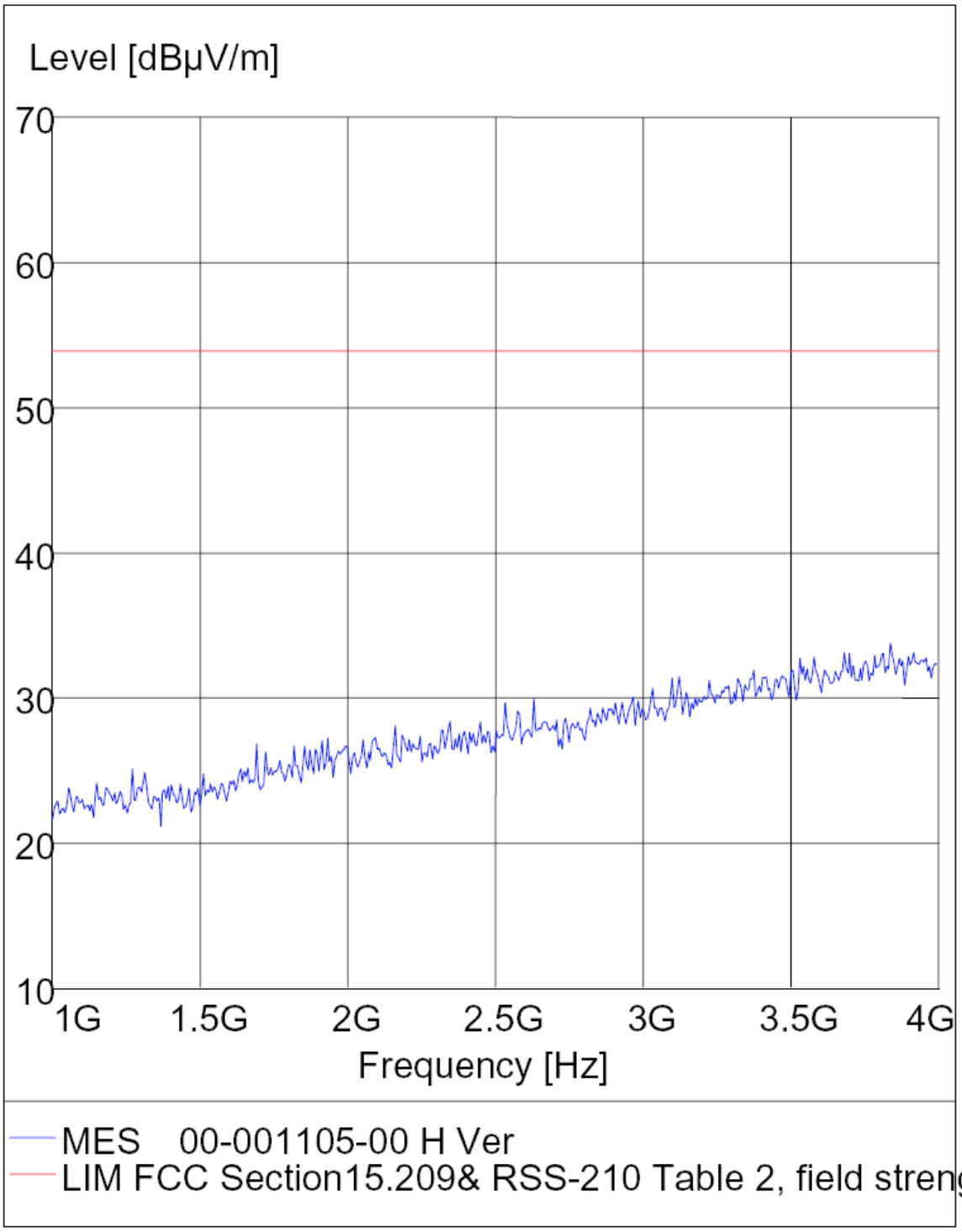
EUT: Johnson Gas RF Model H Version M/N: 00-001105-00
Manufacturer: Acumen Manufacturing Limited
Operating Condition: TX
Test Site: ATC EMC Lab.SAC
Operator:: Andy
Test Specification: Horizontal
Comment: DC 4.5V

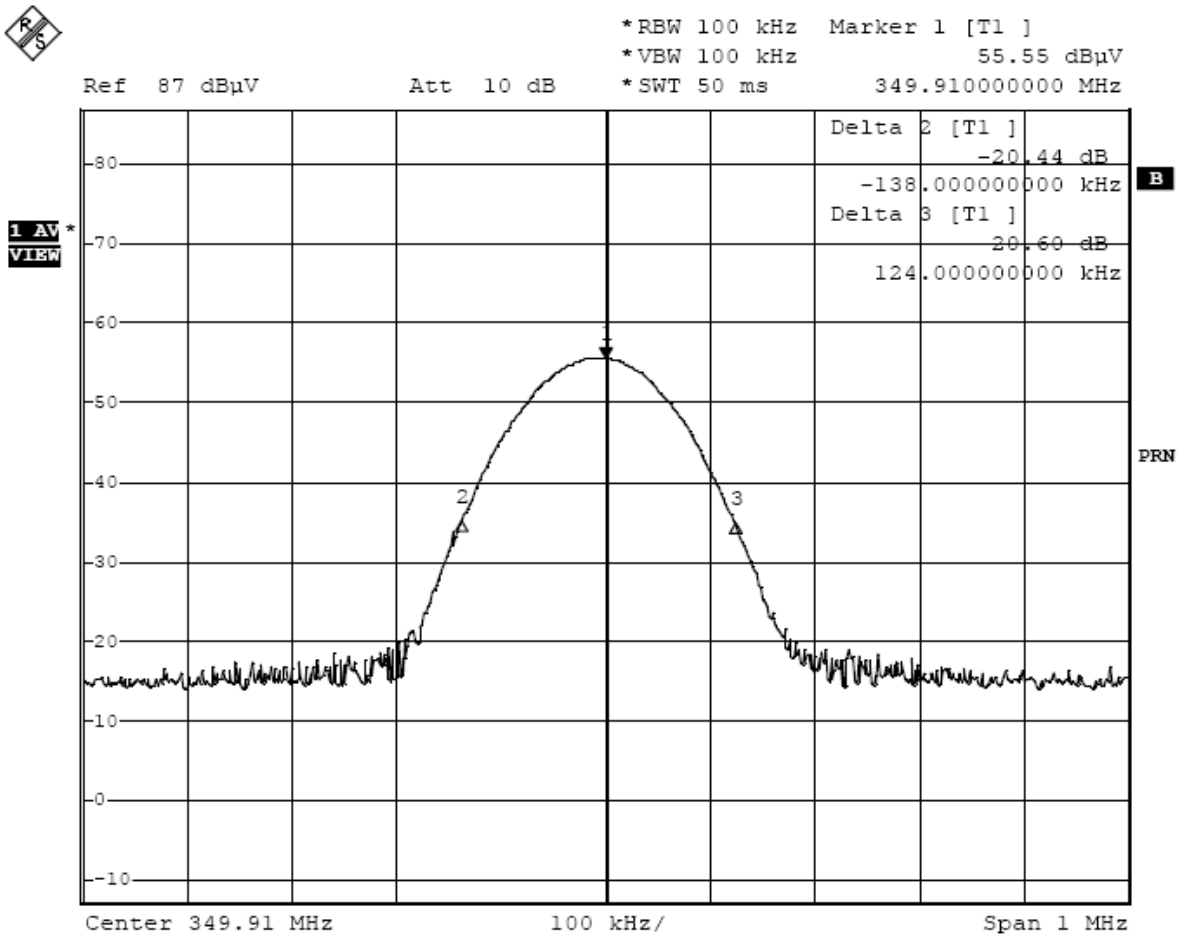


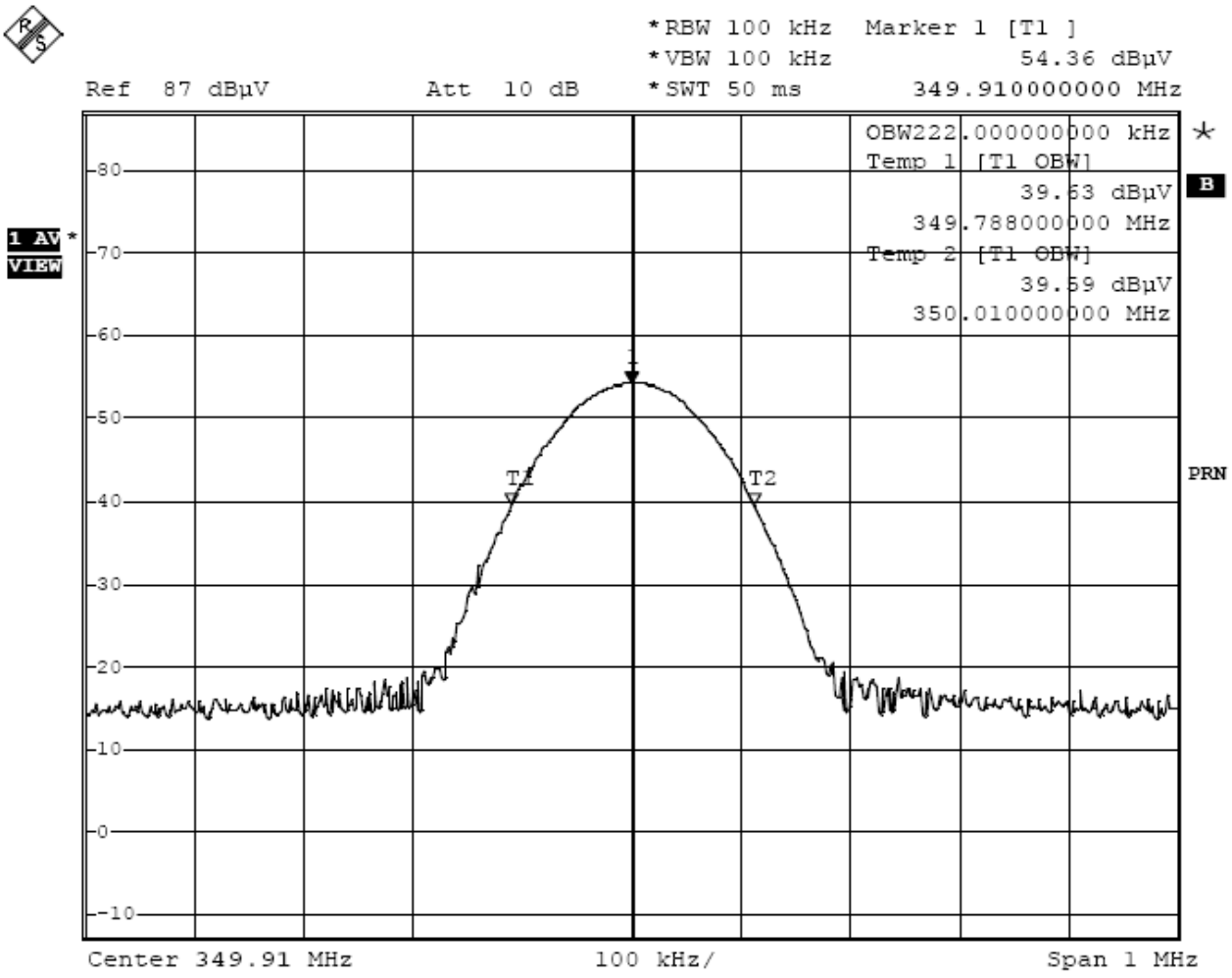
Radiated Disturbance

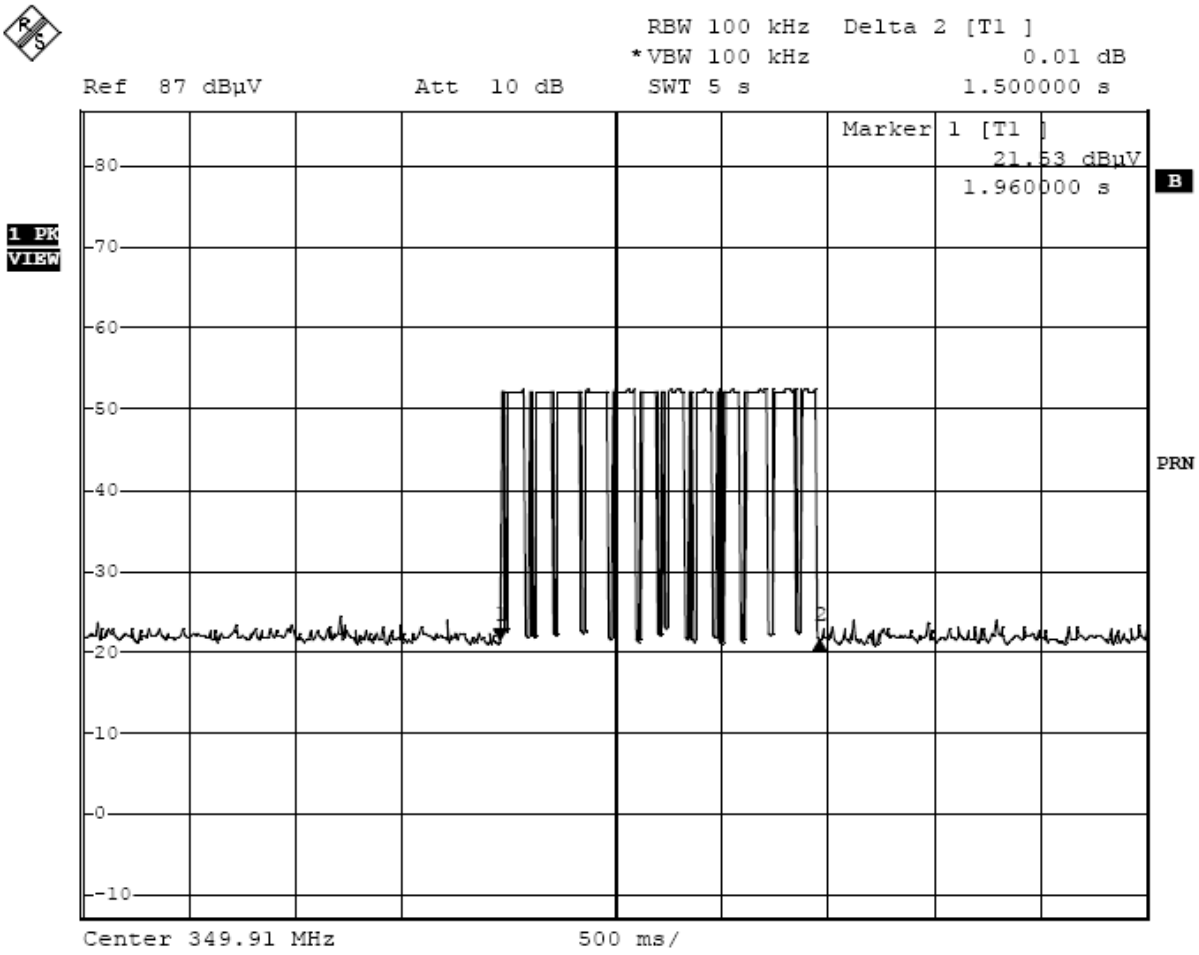
FCC Part 15& RSS-210

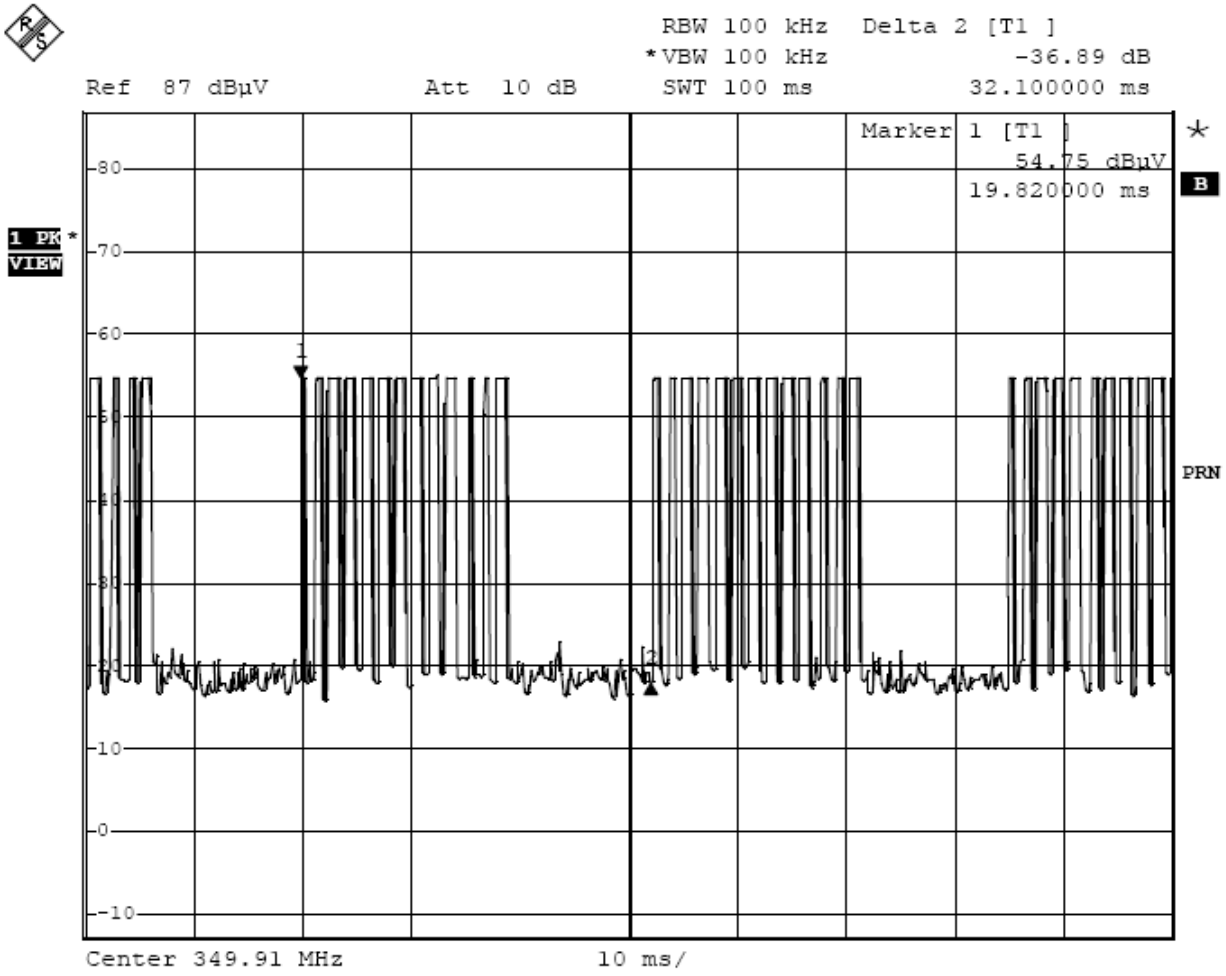
EUT: Johnson Gas RF Model H Version M/N: 00-001105-00
Manufacturer: Acumen Manufacturing Limited
Operating Condition: TX
Test Site: ATC EMC Lab.SAC
Operator:: Andy
Test Specification: Vertical
Comment: DC 4.5V



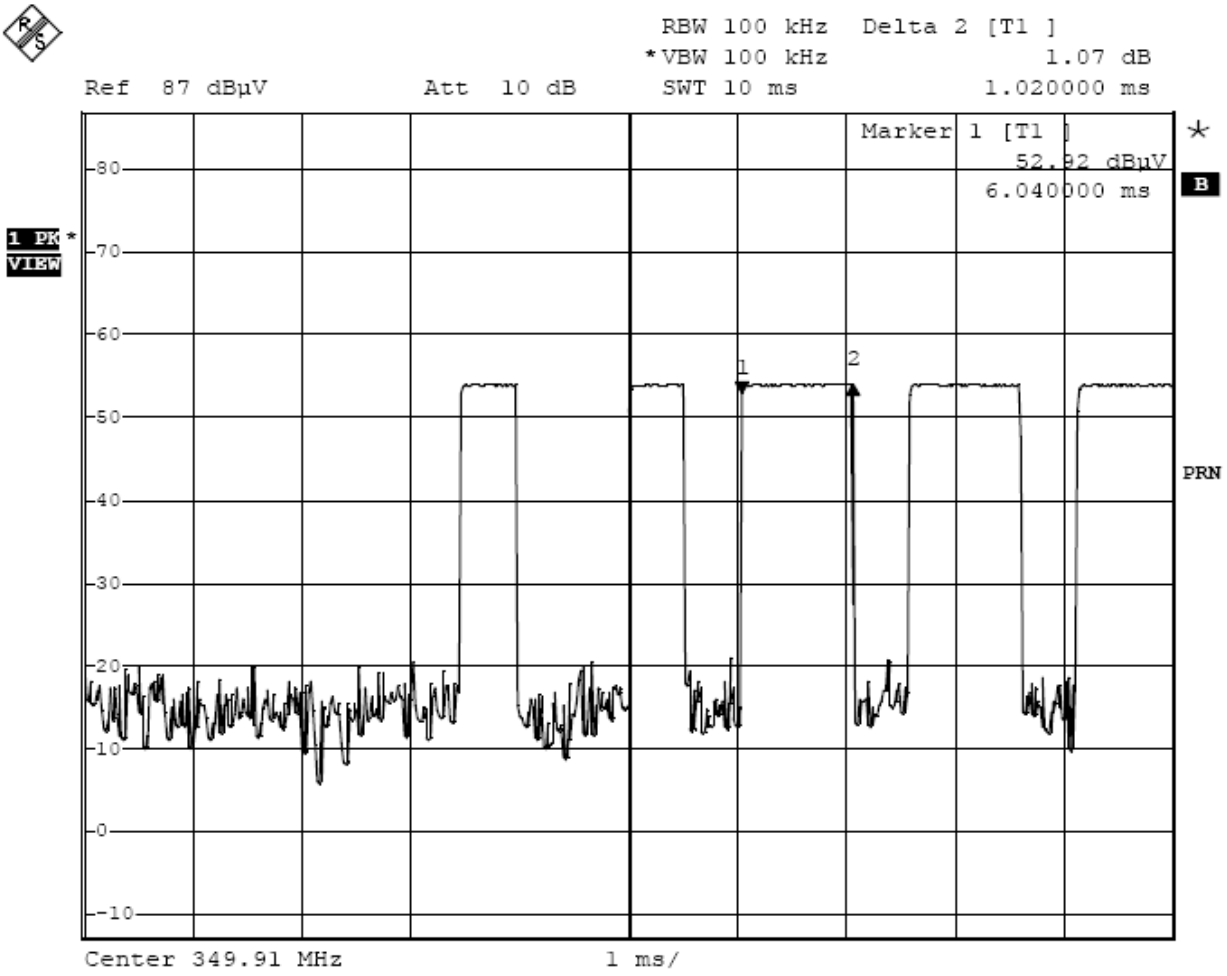

*RBW 100 kHz
*VBW 100 kHz
*SWT 50 ms
Marker 1 [T1]
55.55 dBµV
349.910000000 MHz
Ref 87 dBµV
Att 10 dB
Delta 2 [T1]
-20.44 dB
-138.000000000 kHz
Delta 3 [T1]
20.60 dB
124.000000000 kHz
1 AV
VIEW
B
PRN
80
70
60
50
40
30
20
10
0
-10
Center 349.91 MHz
100 kHz/
Span 1 MHz


*RBW 100 kHz
*VBW 100 kHz
*SWT 50 ms
Marker 1 [T1]
54.36 dBµV
349.910000000 MHz
Ref 87 dBµV
Att 10 dB
OBW222.000000000 kHz
Temp 1 [T1 OBW]
39.63 dBµV
349.788000000 MHz
Temp 2 [T1 OBW]
39.59 dBµV
350.010000000 MHz
1 AV
VIEW
B
PRN
T1
T2
80
70
60
50
40
30
20
10
0
-10
Center 349.91 MHz
100 kHz/
Span 1 MHz

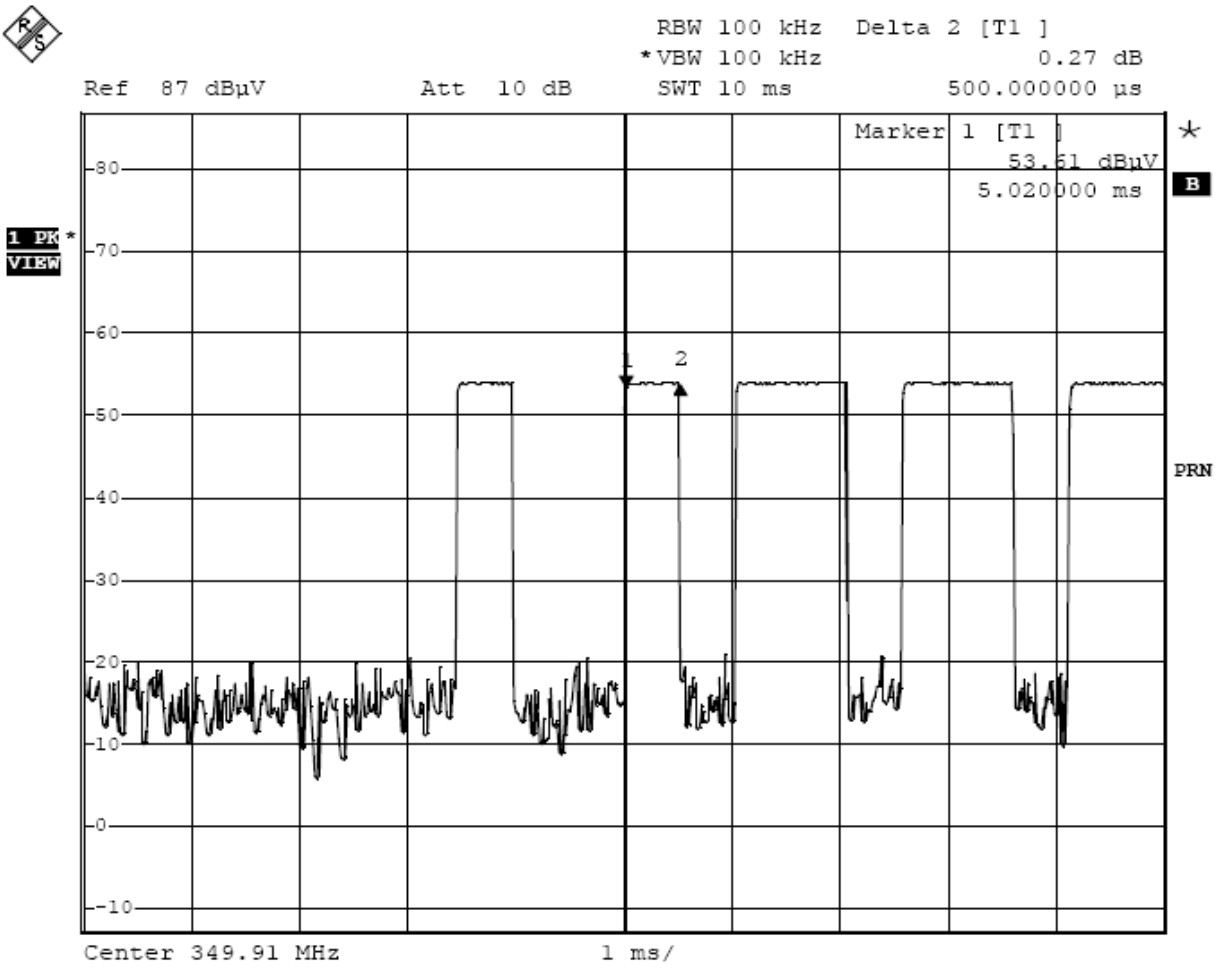

RBW 100 kHz
*VBW 100 kHz
SWT 5 s
Delta 2 [T1]
0.01 dB
1.500000 s
Ref 87 dBµV
Att 10 dB
Marker 1 [T1]
21.53 dBµV
1.960000 s
1 PK
VIEW
B
PRN
80
70
60
50
40
30
20
10
0
-10
Center 349.91 MHz
500 ms/



The graph shows the pattern of coding during the signal transmission.
The time interval of one coding period starts from marker 1 to marker 2,
Hence the total time of one period is 32.1ms.
It sums of 9 long ‘on’ signals and 4 short ‘on’ signals.



The graph show the duration of long ‘on’ signal. From marker 1 to marker 2, duration is 1.02ms.



The graph show the duration of short ‘on’ signal. From marker 1 to marker 2, duration is 0.5ms.