EMISSIONS TEST REPORT

Report Number: 100058757BOX-003
Project Number: G100058757

Report Issue Date: 12/16/2010

Product Designation: **Shower with DECT 6.0 Intercom/phone plus radio; Shower Panel Unit**

Standards: **CFR47 FCC Part 15 Subpart D:2010 "Unlicensed Personal Communications Service Devices"**
CFR47 FCC Part 15 Subpart B:2010 "Unintentional Radiators"
IC RSS-213 Issue 2 December 2005 "2 GHz Licence-exempt Personal Communications Service Devices (LE-PCS)"
IC ICES-003 Issue 4 February 2004 "Digital Apparatus"

Tested by:
Intertek Testing Services NA, Inc.
70 Codman Hill Road
Boxborough, MA 01719

Client:
Sensasia Shower Products
600 Old State Road 419
Winter Springs, FL 32708

Report prepared by

Nicholas Abbondante/Senior Project Engineer

Report prepared by

Michael F. Murphy / Staff Engineer, EMC

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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 3.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

2 Test Summary

Section	Test full name	Result
3	Client Information	
4	Description of Equipment Under Test	
5	System Setup and Method	
6	Occupied Bandwidth (CFR47 Part 15.323(a); ANSI C63.17 Sub-Clause 6.1.3 & 6.1.2; IC RSS-213 6.4)	Pass
7	Peak Transmit Power and RF Exposure (CFR47 Parts 1.1307(b), 1.1310, 2.1091, 2.1093, 15.319(c & e & i); ANSI C63.17 Sub-Clause 6.1.2 & 4.3.1 & Annex A; IC RSS-213 6.5; IC RSS-102; IC RSS-Gen)	Pass
8	Power Spectral Density (CFR47 Part 15.319(d); ANSI C63.17 Sub-Clause 6.1.5; IC RSS-213 6.6)	Pass
9	Automatic Discontinuation of Transmission (CFR47 Part 15.319(f); IC RSS-213 4.3.4(a))	Pass
10	Emissions Inside the Sub-Bands, Conducted (CFR47 Part 15.323(d.1); ANSI C63.17 Sub-Clause 6.1.6; IC RSS-213 6.7.2)	Pass
11	Emissions Outside the Sub-Bands, Conducted (CFR47 Part 15.323(d.2); ANSI C63.17 Sub-Clause 6.1.6; IC RSS-213 6.7.1)	Pass
12	Emissions Outside the Sub-Bands, Radiated (CFR47 Part 15.323(d.2); ANSI C63.17 Sub-Clause 6.1.6; IC RSS-213 6.7.1)	Pass
13	Receiver Radiated Spurious Emissions (CFR47 Part 15.109; IC RSS-213 6.8; IC RSS-Gen 4.10, 6.0, 7.2.3)	Pass
14	AC Mains Conducted Emissions (CFR47 Part 15.207; IC RSS-Gen 7.2.2)	Pass
15	Frame Repetition Stability (CFR47 Part 15.323(e.1); ANSI C63.17 Sub-Clause 6.2.2; IC RSS-213 4.3.4(c))	Pass
16	Frame Period and Jitter (CFR47 Part 15.323(e.2); ANSI C63.17 Sub-Clause 6.2.3; IC RSS-213 4.3.4(c))	Pass
17	Carrier Frequency Stability (CFR47 Part 15.323(f.1, f.2, f.3); ANSI C63.17 Sub-Clause 6.2.1.1, 6.2.1.2, 6.2.1.3; IC RSS-213 6.2)	Pass

Section	Test full name	Result
18	Monitoring Threshold (CFR47 Part 15.323(c2 & c5); ANSI C63.17 Sub-Clause 7.3.1(b), 7.3.2; IC RSS-213 4.3.4(b)(2, 5.1 & 9))	Pass
19	FCC LIC Selection / IC LIC Confirmation with 6dB Power Measurement Resolution (CFR47 Part 15.323(c5); ANSI C63.17 Sub-Clause 7.3.3; IC RSS-213 4.3.4(b)(5.2)	Pass
20	Monitoring Time (CFR47 Part 15.323(c1); ANSI C63.17 Sub-Clause 7.3.4; IC RSS-213 4.3.4(b)(1))	Pass
21	Maximum Transmit Period (CFR47 Part 15.323(c3); ANSI C63.17 Sub-Clause 8.2.2; IC RSS-213 4.3.4(b)(3))	Pass
22	System Acknowledgement (CFR47 Part 15.323(c4); ANSI C63.17 Sub-Clause 8.1 / 8.2; IC RSS-213 4.3.4(b)(4))	N/A
23	Random Waiting Interval (CFR47 Part 15.323(c6); ANSI C63.17 Sub-Clause 8.1.2 & 8.1.3; IC RSS-213 4.3.4(b)(6))	N/A
24	Monitoring Bandwidth (CFR47 Part 15.323(c7.1); ANSI C63.17 Sub-Clause 7.4; IC RSS-213 4.3.4(b)(7.1))	Pass
25	Maximum/Monitoring Reaction Time (CFR47 Part 15.323(c7.2); ANSI C63.17 Sub-Clause 7.5; IC RSS-213 4.3.4(b)(7.2))	Pass
26	Monitoring Antenna (CFR47 Part 15.323(c8); ANSI C63.17 Clause 4; IC RSS-213 4.3.4(b)(8))	Pass
27	Duplex Connections (CFR47 Part 15.323(c10); ANSI C63.17 Sub-Clause 8.3; IC RSS-213 4.3.4(b)(10))	N/A
28	Co-Located Devices (CFR47 Part 15.323(c11); ANSI C63.17 Sub-Clause 8.4; IC RSS-213 4.3.4(b)(11))	N/A
29	Revision History	

3 Client Information

This EUT was tested at the request of:

Company: Sensasia Shower Products
600 Old State Road 419
Winter Springs, FL 32708
Contact: Mr. Alec Phillips
Telephone: 407-414-4192
Fax: N/A
Email: alec@siana.us

4 Description of Equipment Under Test

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
Shower with DECT 6.0 Intercom/phone plus radio, Shower Panel Unit	Sensasia Shower Products	Independence1 Panel	#4

Receive Date:	03/26/2010
Received Condition:	Good
Test Start Date:	06/15/2010
Type:	Prototype in Good Condition

Description of Equipment Under Test (provided by client)

The EUT is a cordless telephone shower panel that is part of the Independence1 system, molded into the shower unit. It has an integral antenna with 0 dBi gain.

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
100-240VAC	1.2A	50-60Hz	1

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	The EUT was powered from 120VAC/60Hz and was set to operate in TBR6 mode. The R&S CMD-60 was used to control the channel of operation as well as the traffic and datastream. A temporary 50 Ohm antenna port was affixed to the EUT in order to perform conducted testing.
2	

5 System Setup and Method

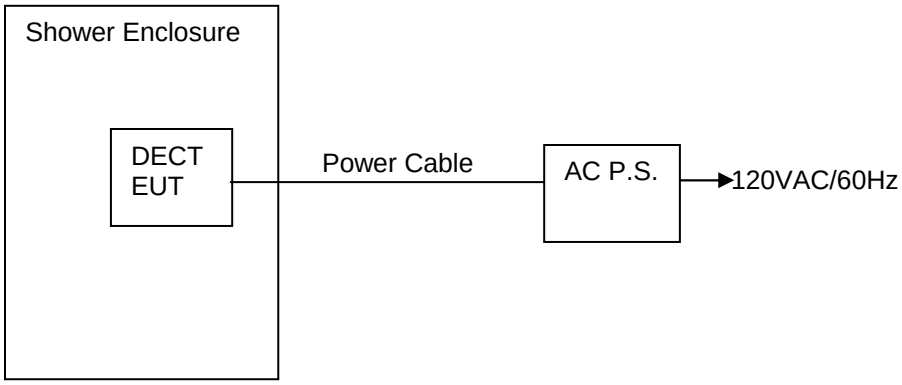
Cables					
ID	Description	Length (m)	Shielding	Ferrites	Termination
	Power Cable	2.0	None	None	Metal/360 Jack

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
12V DC Power Supply	N/L	GFP361DA-1230B	N/L
Independence1 Base Unit	Sensasia Shower Products	Independence1	#4

5.1 Method:

Tested using ANSI C63.17:2006 and ANSI C63.4:2003 for guidance.

5.2 EUT Block Diagram:



6 Occupied Bandwidth

6.1 Method

Tests are performed in accordance with CFR47 Part 15.323(a); ANSI C63.17 Sub-Clause 6.1.3 & 6.1.2; and IC RSS-213 6.4.

TEST SITE: 10m Chamber Building

6.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
SAF285	6 line Digital Barometer*	Mannix	0ABA8886	SAF285	12/28/2009	12/28/2010
CBL030	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 80	CBL030	01/04/2010	01/04/2011
NAR003	Directional Coupler 1.7-26.5GHz	Narda / L-3	4227-16	03135	02/26/2010	02/26/2011
ROS001	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	12/04/2009	12/04/2010
ROS003	DECT Test Set	Rohde & Schwartz	CMD60	829902026	03/30/2010	03/30/2011

Software Utilized:

Name	Manufacturer	Version
DECT 6.0 Test Suite V2.15	Intertek	V2.15

6.3 Results:

The sample tested was found to Comply.

6.4 Test Data:

Limits: 50kHz ≤ EBW ≤ 2.5MHz, where EBW = Emission Bandwidth

FCC Method (26 dB Bandwidth)

Results - Traffic Carrier

Channel	Channel Frequency (MHz)	Emission Bandwidth	Figures	Measured BW (MHz)	Verdict
Lowest	1921.536	26 dB down	1A	1.47	PASS
Highest	1928.448	26 dB down	1D	1.49	PASS

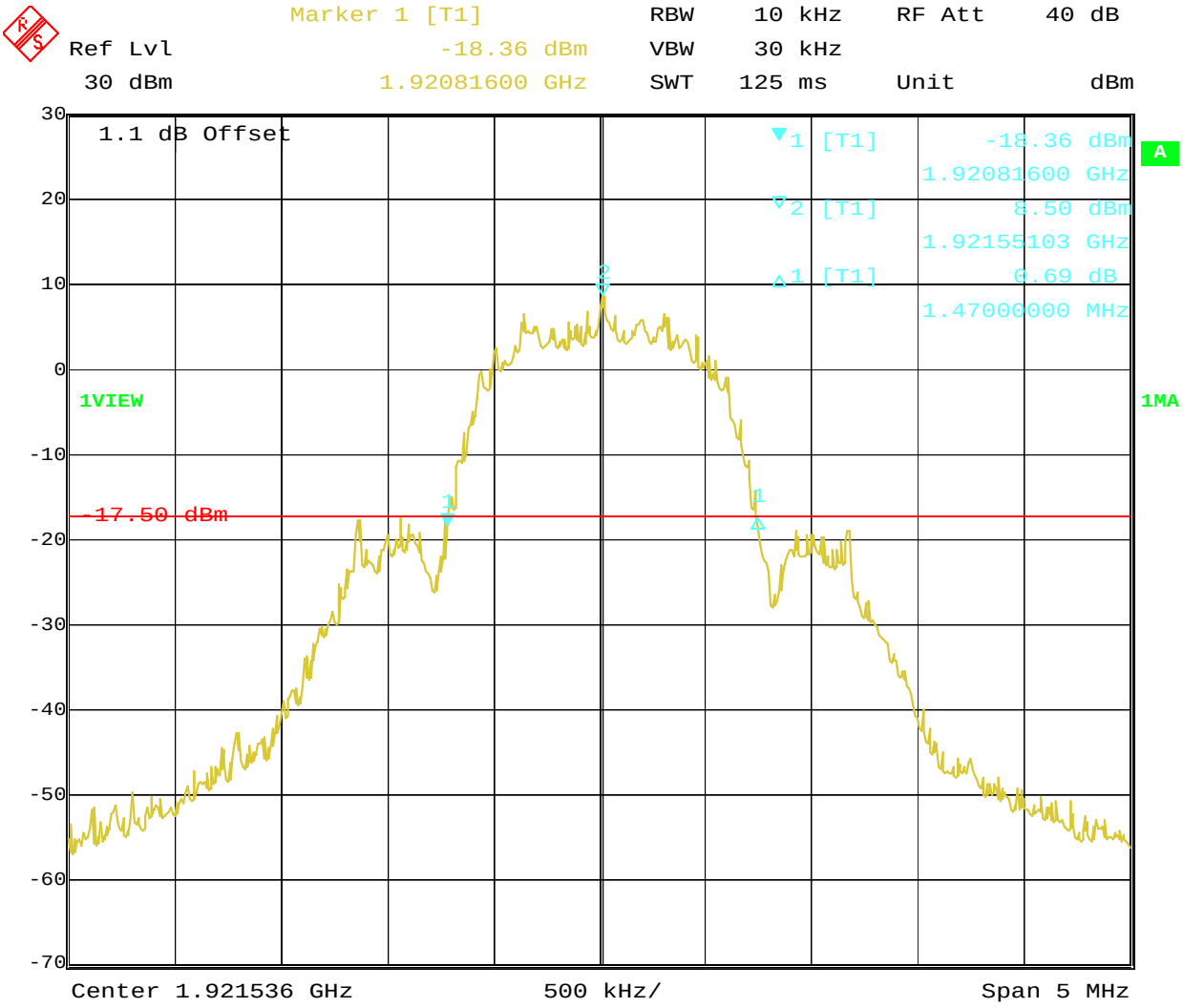
Channel	Channel Frequency (MHz)	Measuring Signal Level	Figures	Measured Frequency (MHz)	Reference
Lowest	1921.536	Peak Level	1B	1921.55103	15.319d
		6 dB down		1921.12017	15.323c7
				1921.97187	
		12 dB down	1C	1920.946	
				1922.17227	
Highest	1928.448	Peak Level	1E	1928.46303	15.319d
		6 dB down		1928.008	15.323c7
				1928.89389	
		12 dB down	1F	1927.848	
				1929.064232	

Industry Canada Method (20 dB Bandwidth)

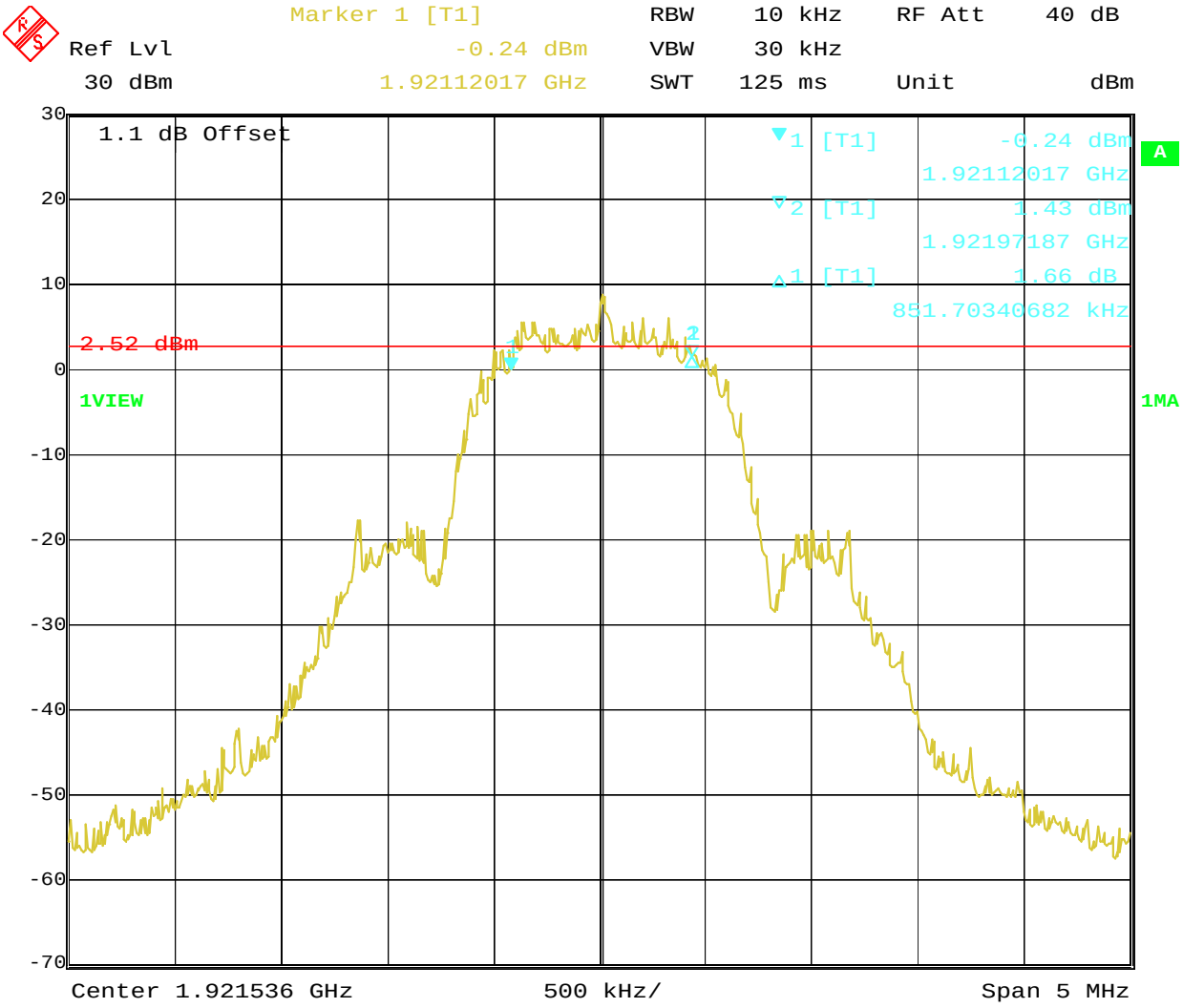
Results - Traffic Carrier

Channel	Channel Frequency (MHz)	Emission Bandwidth	Figures	Measured BW (MHz)	Verdict
Middle	1924.992	20 dB down	1M	1.38	PASS

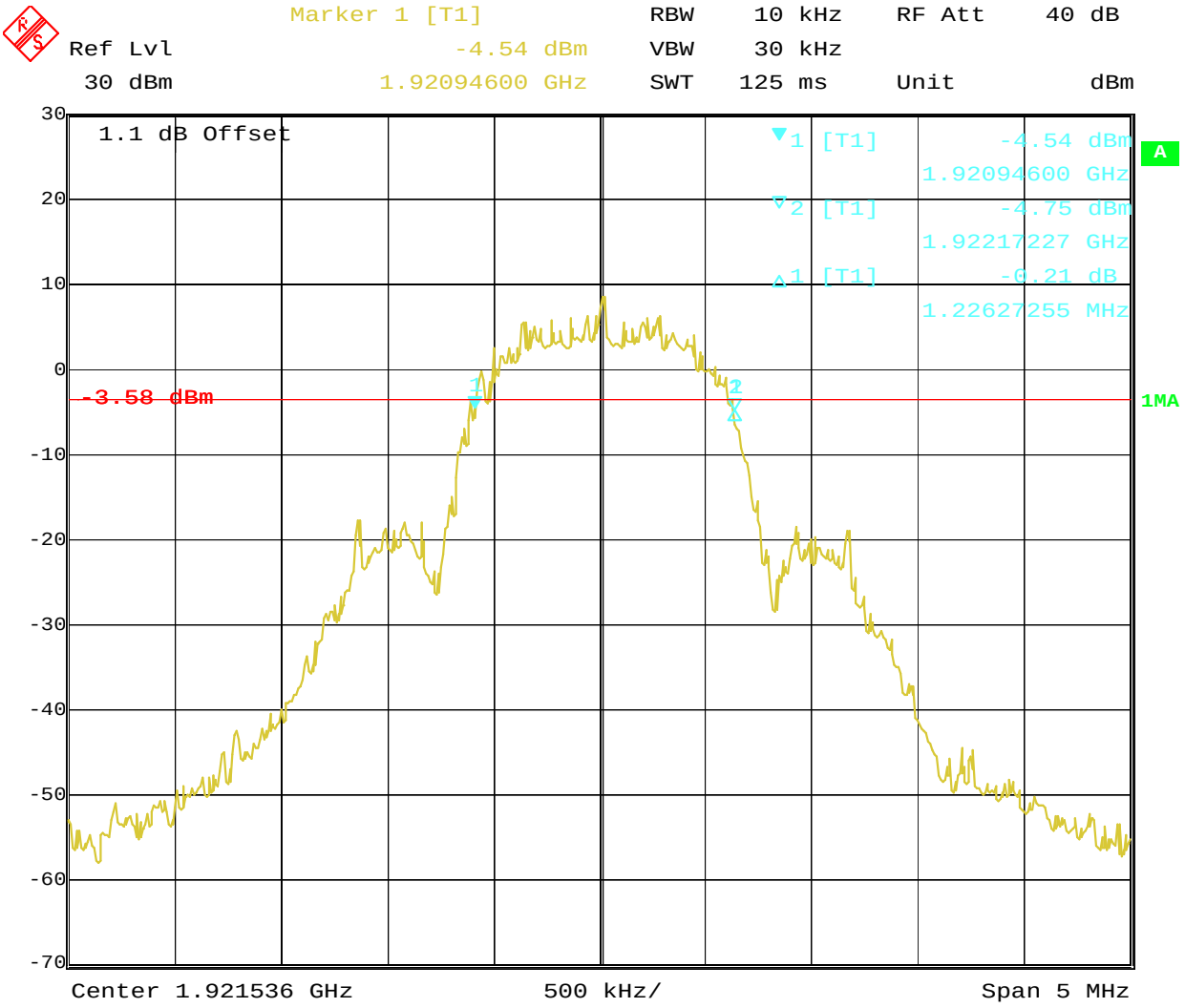
Channel	Channel Frequency (MHz)	Measuring Signal Level	Figures	Measured Frequency (MHz)	Reference
Middle	1924.992	Peak Level	1N	1925.00703	15.319d
		6 dB down		1924.512	15.323c7
				1925.43789	
		12 dB down	1O	1924.402	
				1925.608232	



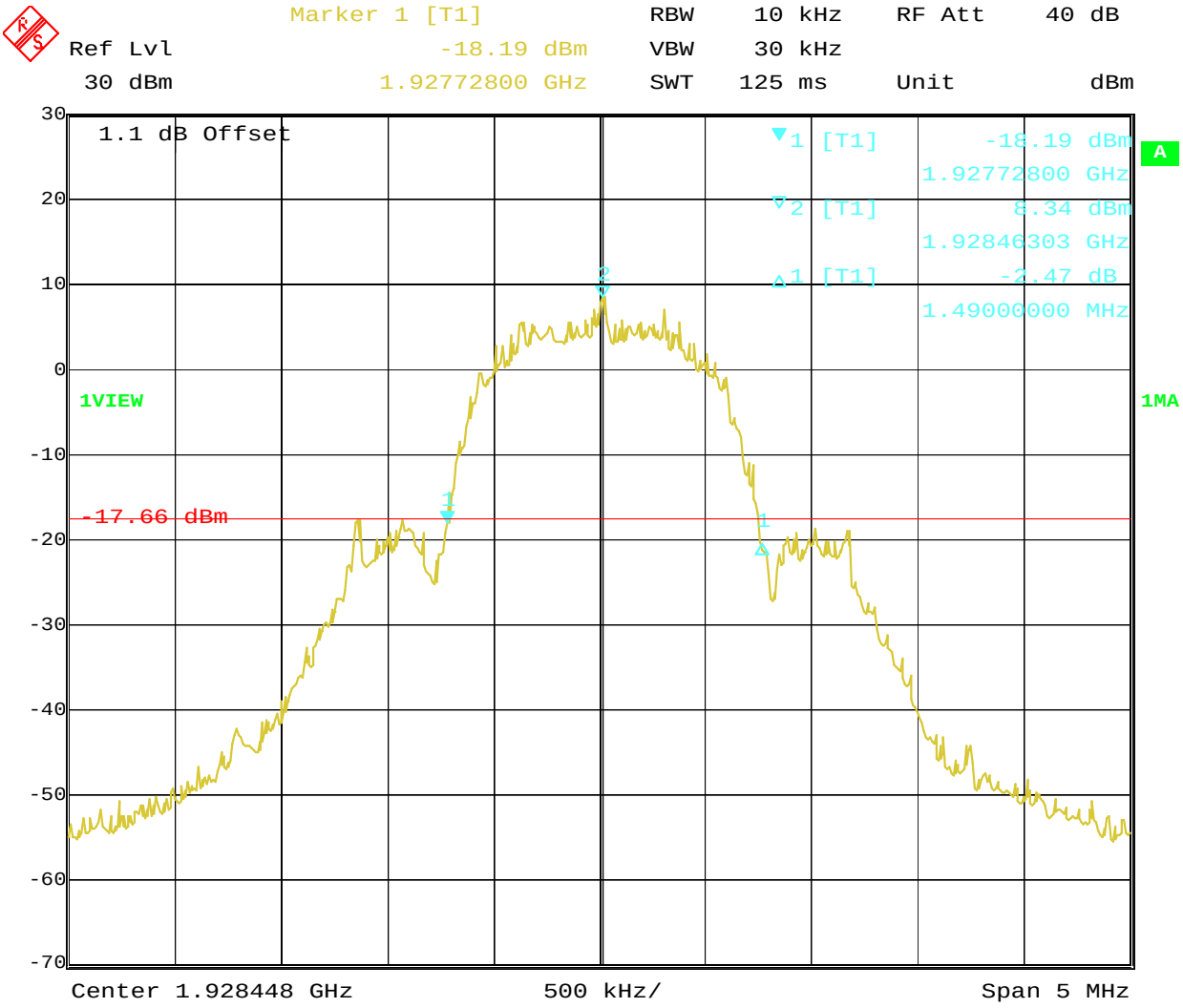
1A – Channel 1; 26 dB Bandwidth



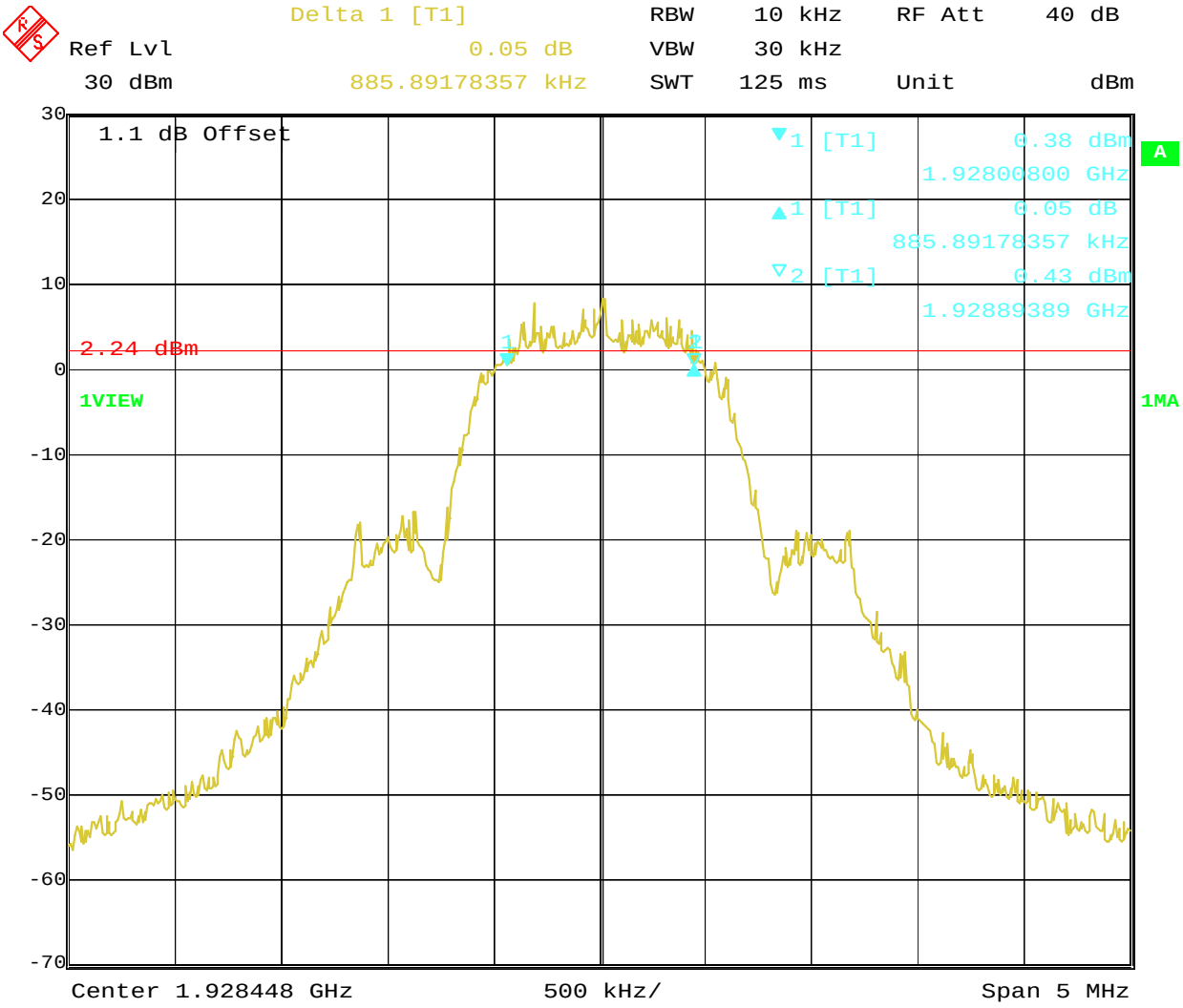
1B – Channel 1; 6 dB Bandwidth



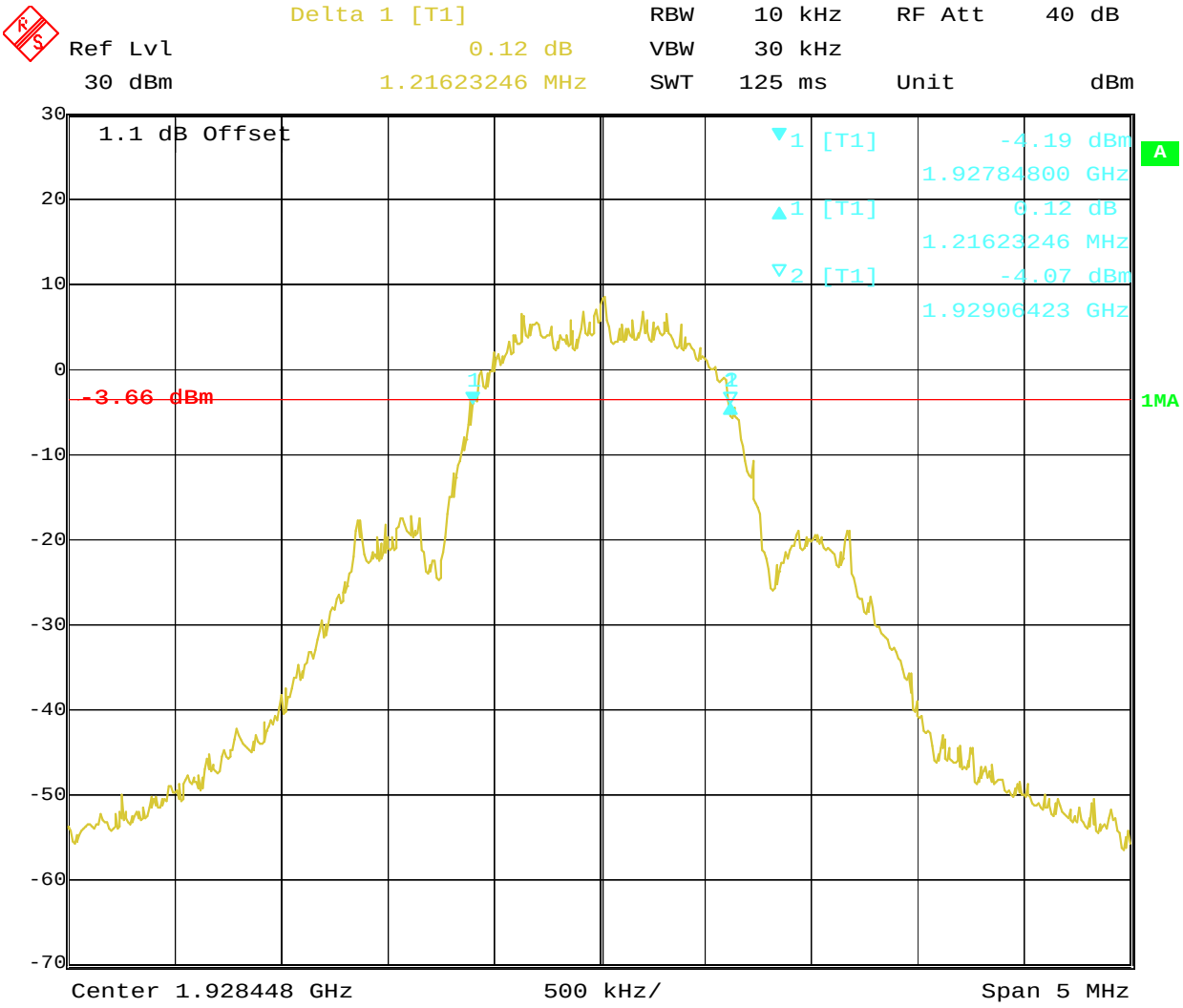
1C – Channel 1; 12 dB Bandwidth



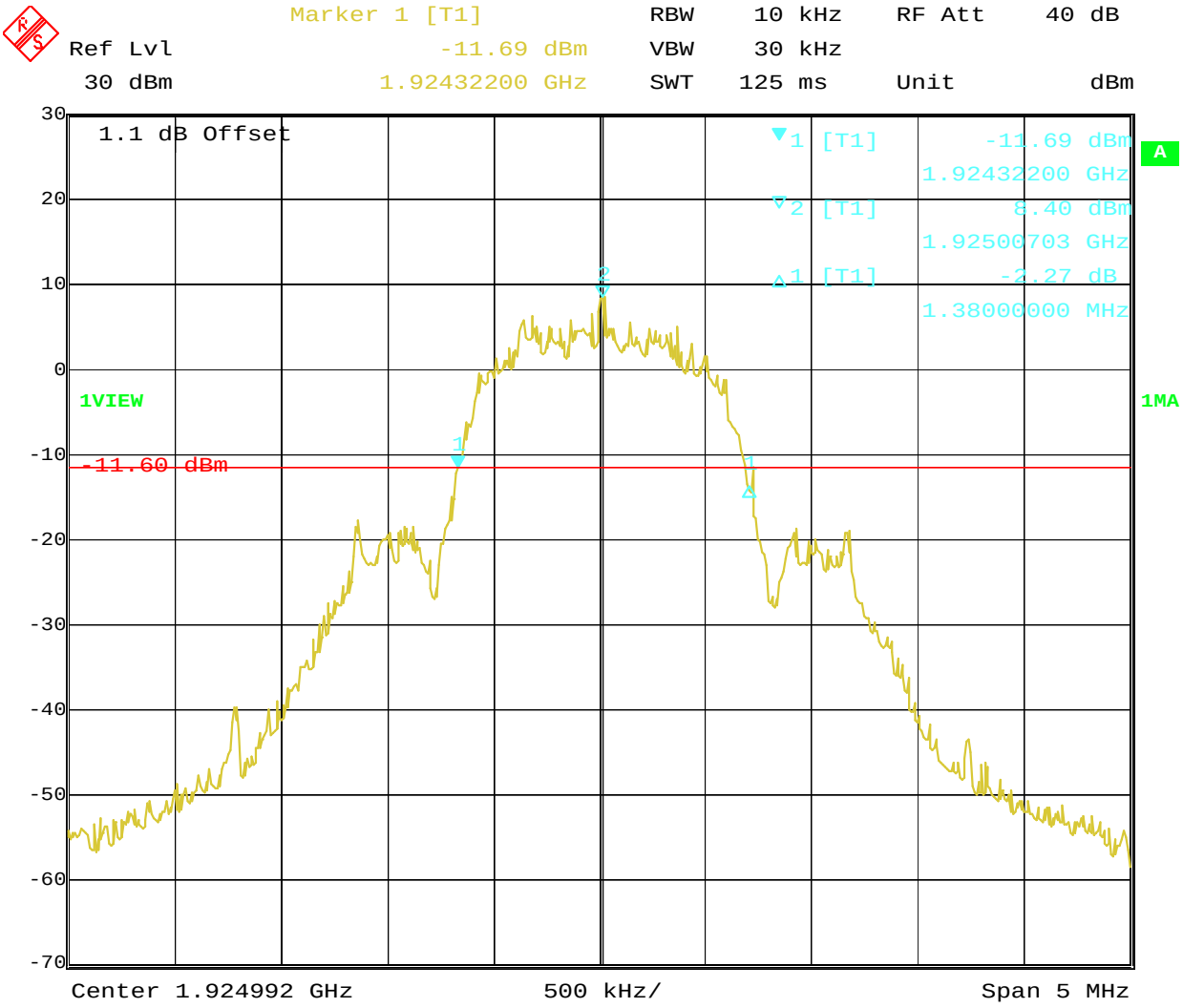
1D – Channel 5; 26 dB Bandwidth



1E – Channel 5; 6 dB Bandwidth



1F – Channel 5; 12 dB Bandwidth



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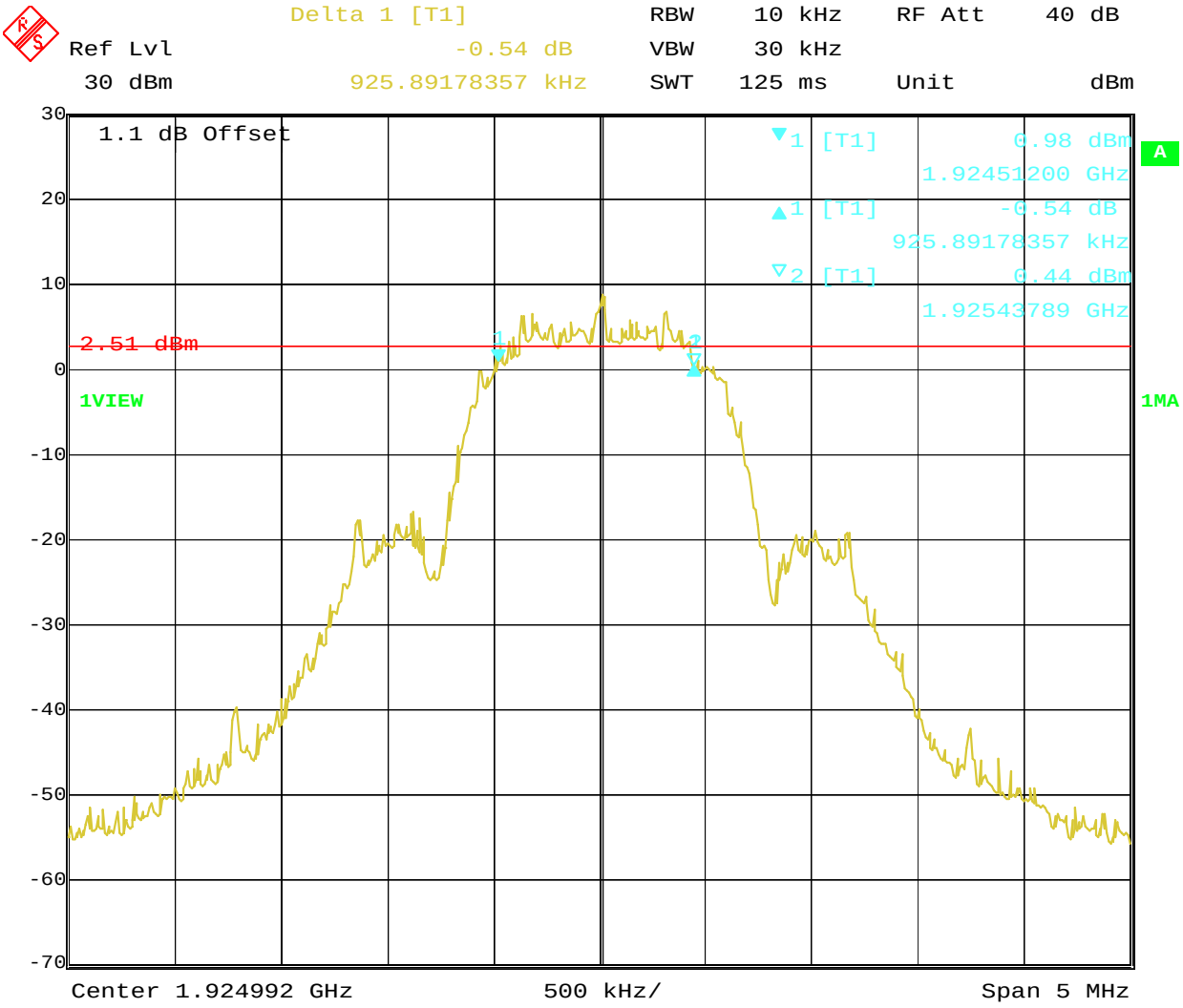
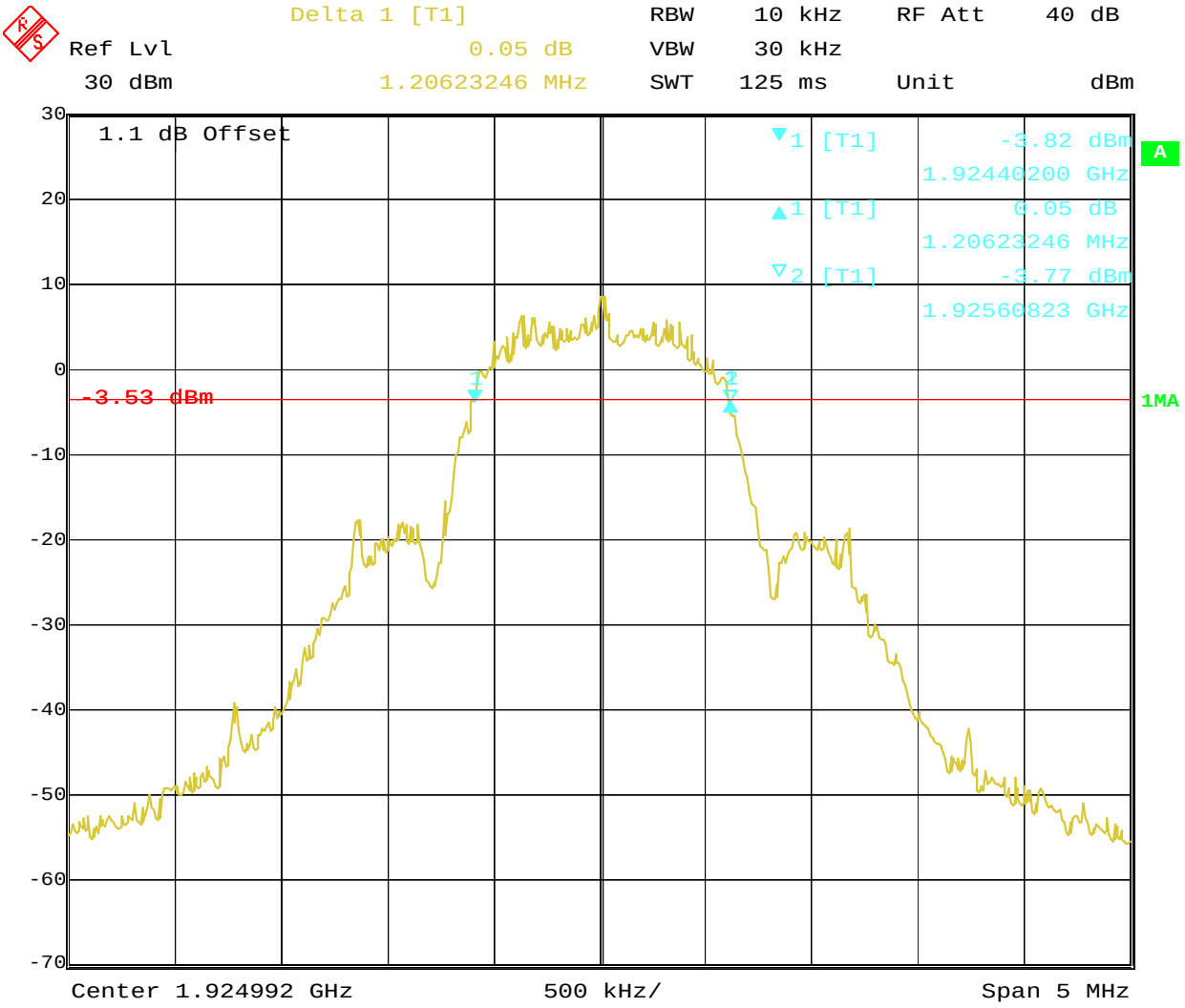
1G – Channel 3; 20 dB Bandwidth



1H – Channel 3; 6 dB Bandwidth



1I – Channel 3; 12 dB Bandwidth

Test Personnel:	Nicholas Abbondante	Test Date:	06/24/2010
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	120V/60Hz	Ambient Temperature:	21 ºC
Pretest Verification w/ BB Source:	**No**	Relative Humidity:	47 %
		Atmospheric Pressure:	996 mbars

Deviations, Additions, or Exclusions: None

7 Peak Transmit Power and RF Exposure

7.1 Method

Tests are performed in accordance with CFR47 Part 15.319(c & e); ANSI C63.17 Sub-Clause 6.1.2 & 4.3.1;and IC RSS-213 6.5.

TEST SITE: 10m Chamber Building

7.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
SAF285	6 line Digital Barometer*	Mannix	0ABA8886	SAF285	12/28/2009	12/28/2010
CBL030	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 80	CBL030	01/04/2010	01/04/2011
NAR003	Directional Coupler 1.7-26.5GHz	Narda / L-3	4227-16	03135	02/26/2010	02/26/2011
ROS001	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	12/04/2009	12/04/2010
ROS003	DECT Test Set	Rohde & Schwartz	CMD60	829902026	03/30/2010	03/30/2011

Software Utilized:

Name	Manufacturer	Version
DECT 6.0 Test Suite V2.15	Intertek	V2.15

7.3 Results:

The sample tested was found to Comply.

7.4 Test Data:

Peak Transmit Power Limit (P_{max}):

[X]	Manufacturer declares that the directional gain of the antenna is less than or equal to 3dBi. No peak transmit power reduction is required. $P_{max} = 5 \log_{10} B - 10$ dBm when $G_A \leq 3$dBi
[ ]	Manufacturer declares that the directional gain of the antenna is greater than 3dBi. The peak transmit power shall be reduced by ___ dB. $P_{max} = 5 \log_{10} B - 10$ dBm $- (G_A - 3$dBi) when $G_A > 3$dBi

Where B = Emission Bandwidth (26dB down BW) in Hz

G_A = EUT Antenna Gain: __0__ dBi

Results - Traffic Carrier

85% AC Voltage (102VAC/60Hz)

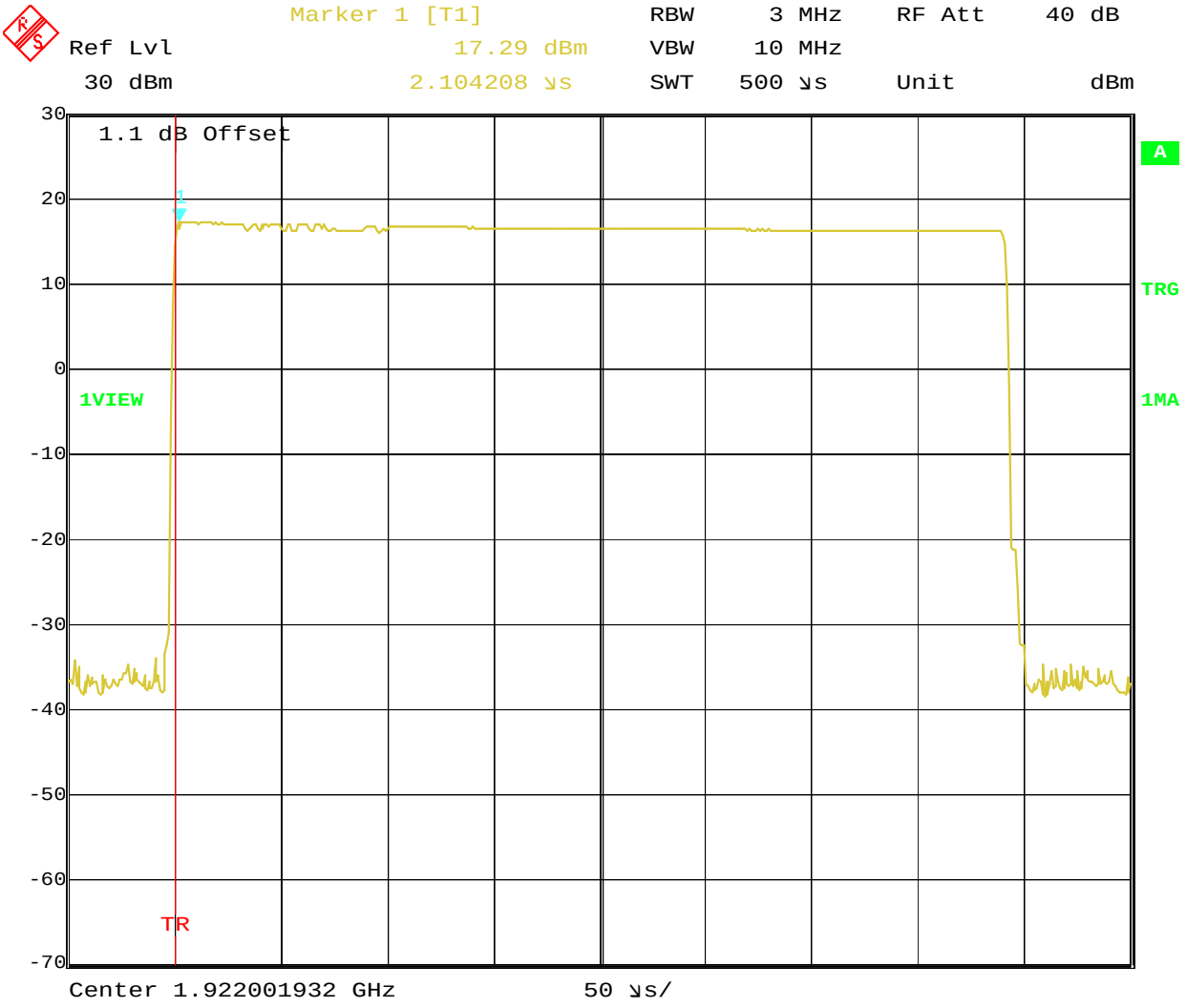
Channel	Channel Frequency (MHz)	Figures	Measured Peak Transmission Power (dBm)	Limit (dBm)	Verdict
Lowest	1921.536	2A	17.29	20.84	PASS
Middle	1924.992	2B	17.16	20.70	PASS
Highest	1928.448	2C	17.05	20.87	PASS

100% AC Voltage (120VAC/60Hz)

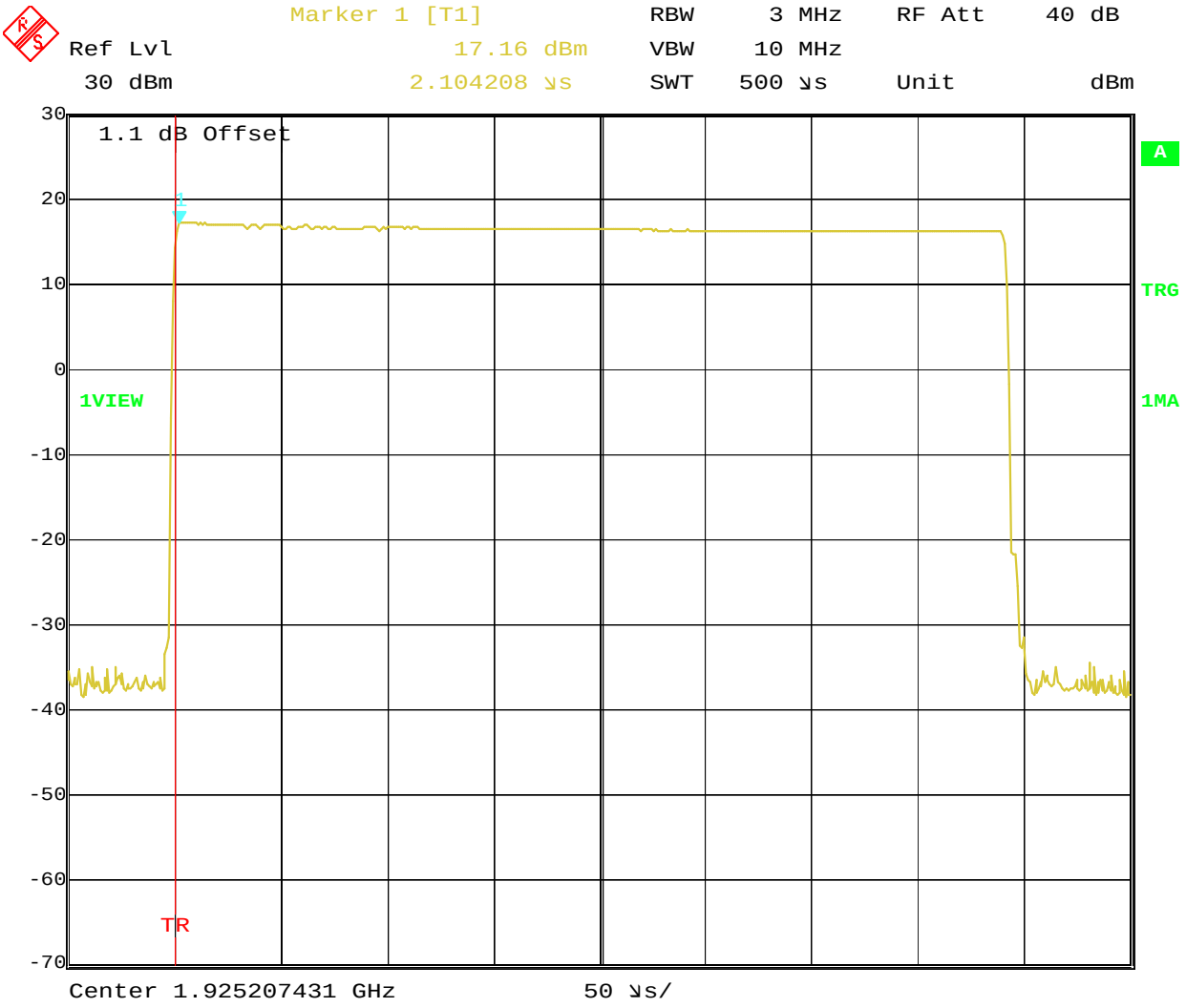
Channel	Channel Frequency (MHz)	Figures	Measured Peak Transmission Power (dBm)	Limit (dBm)	Verdict
Lowest	1921.536	2D	17.16	20.84	PASS
Middle	1924.992	2E	17.16	20.70	PASS
Highest	1928.448	2F	17.05	20.87	PASS

115% AC Voltage (138VAC/60Hz)

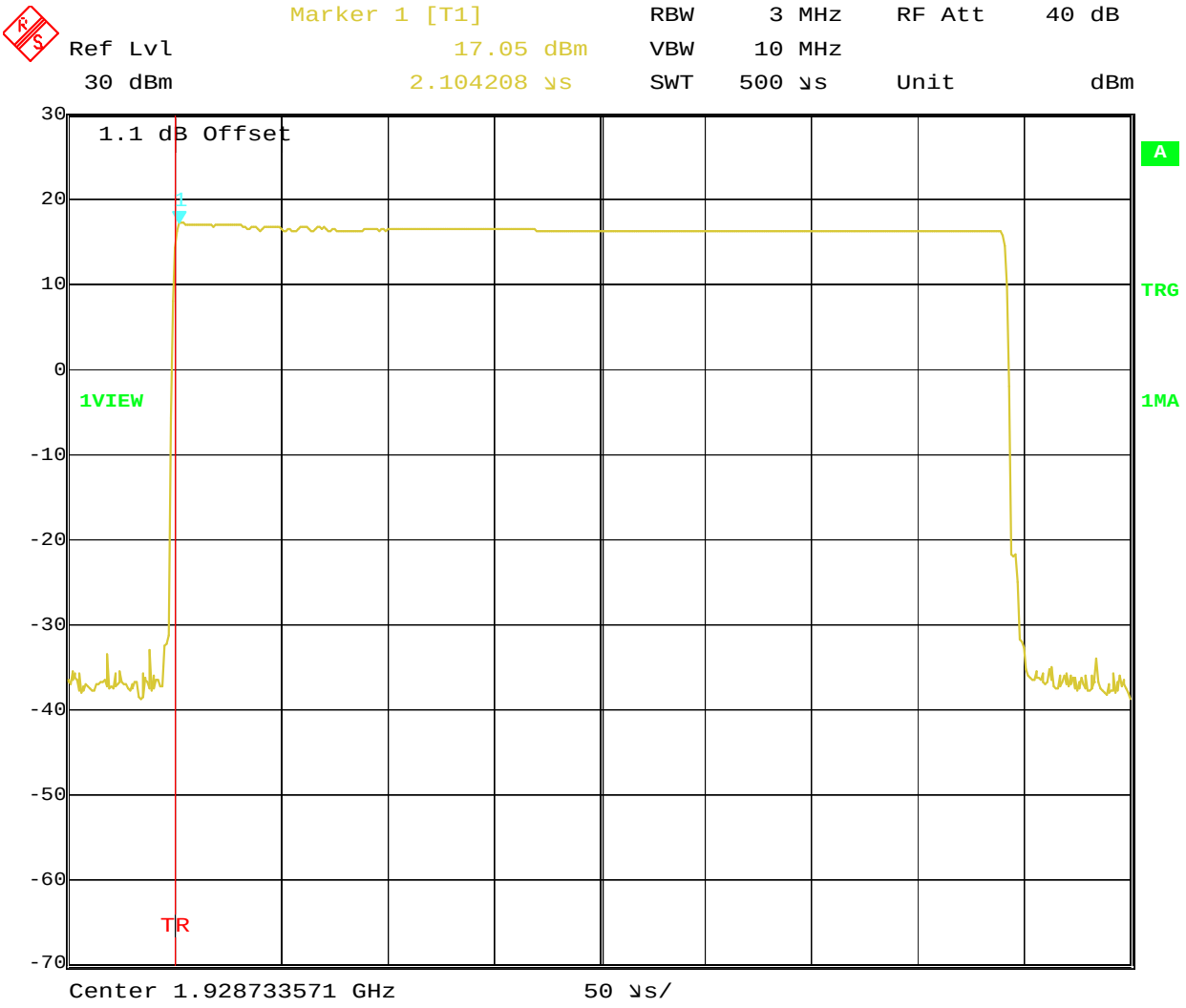
Channel	Channel Frequency (MHz)	Figures	Measured Peak Transmission Power (dBm)	Limit (dBm)	Verdict
Lowest	1921.536	2G	17.16	20.84	PASS
Middle	1924.992	2H	17.16	20.70	PASS
Highest	1928.448	2I	17.05	20.87	PASS



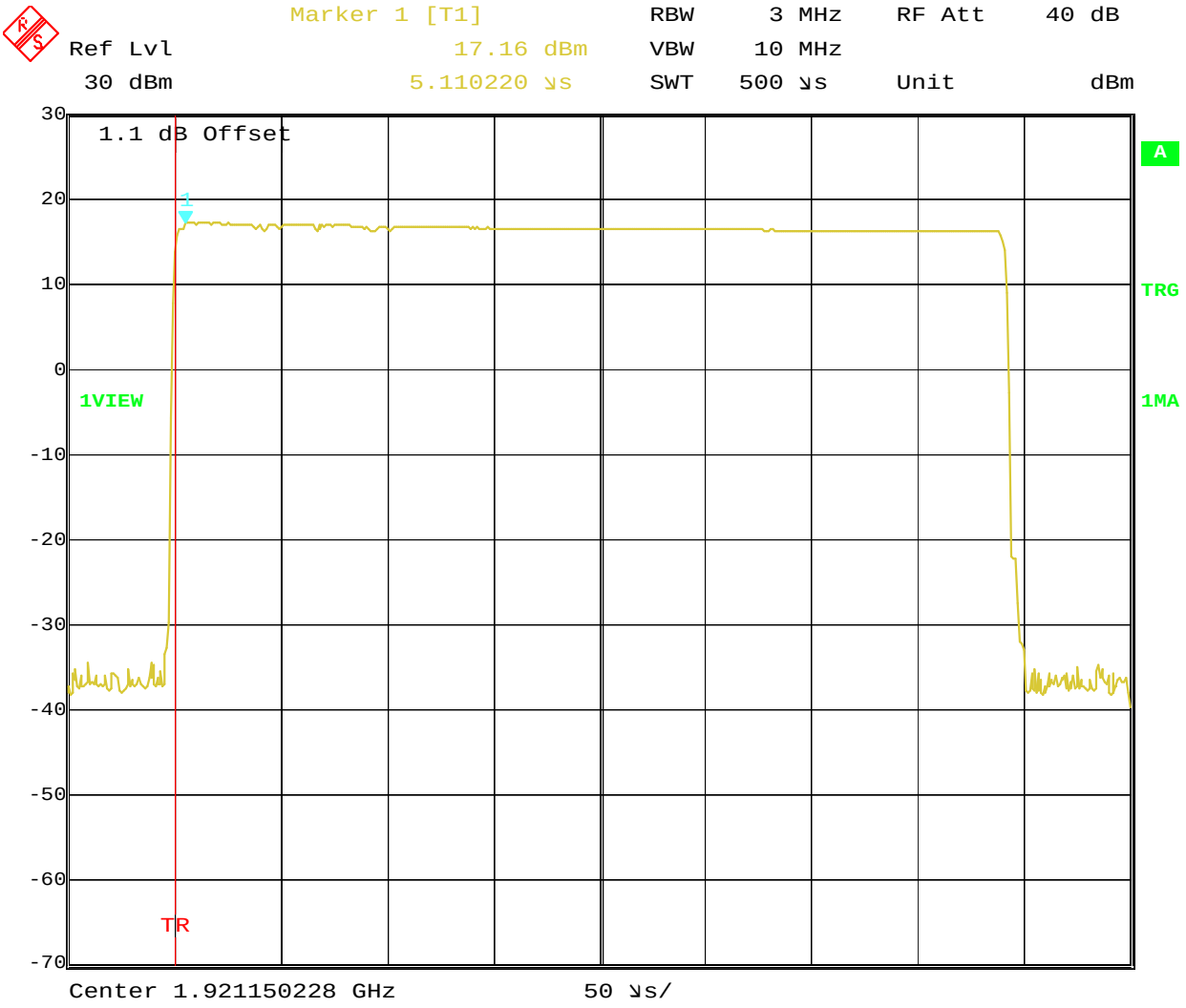
2A – Channel 1 Peak Transmit Power (102V/60Hz AC)



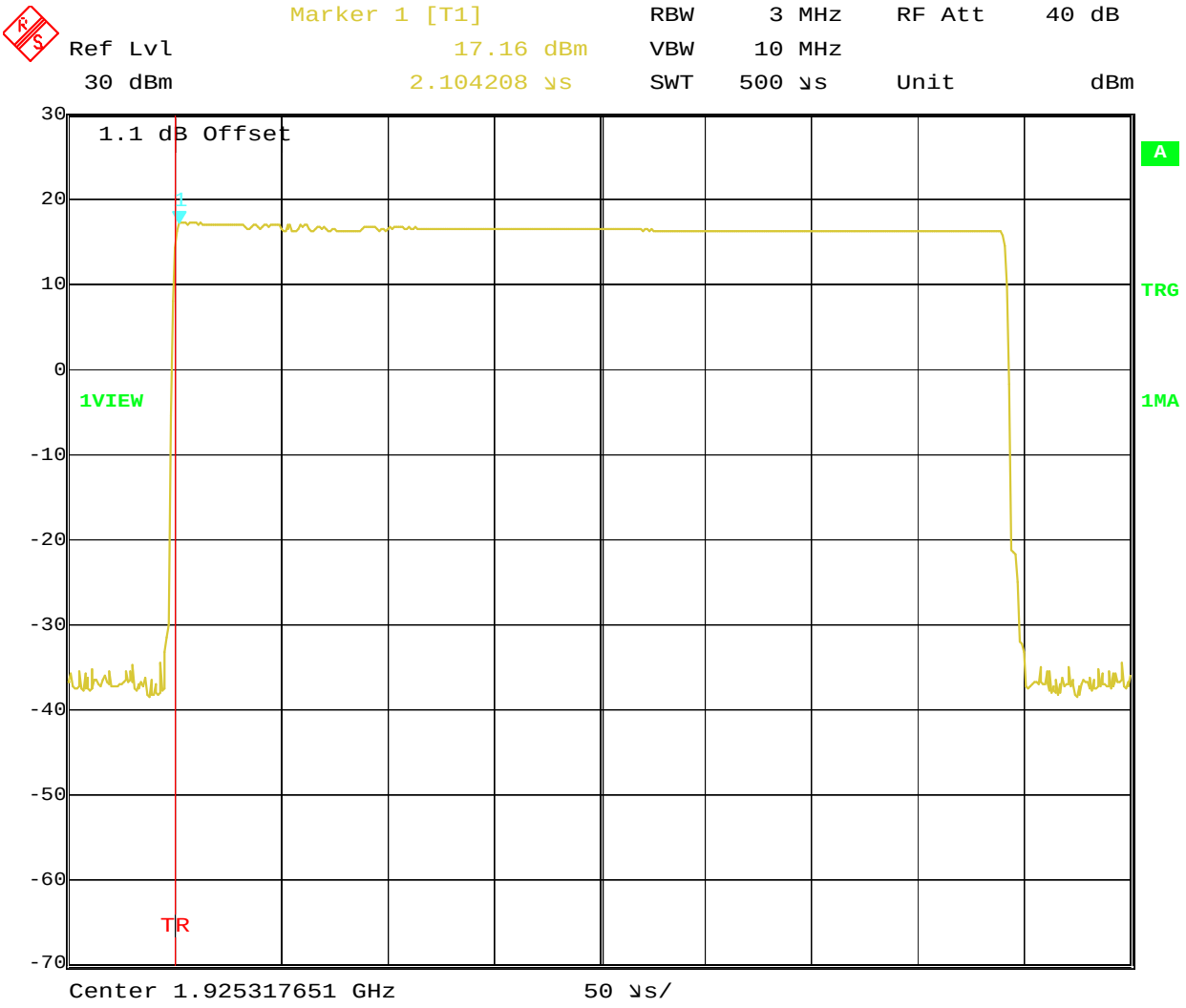
2B – Channel 3 Peak Transmit Power (102V/60Hz AC)



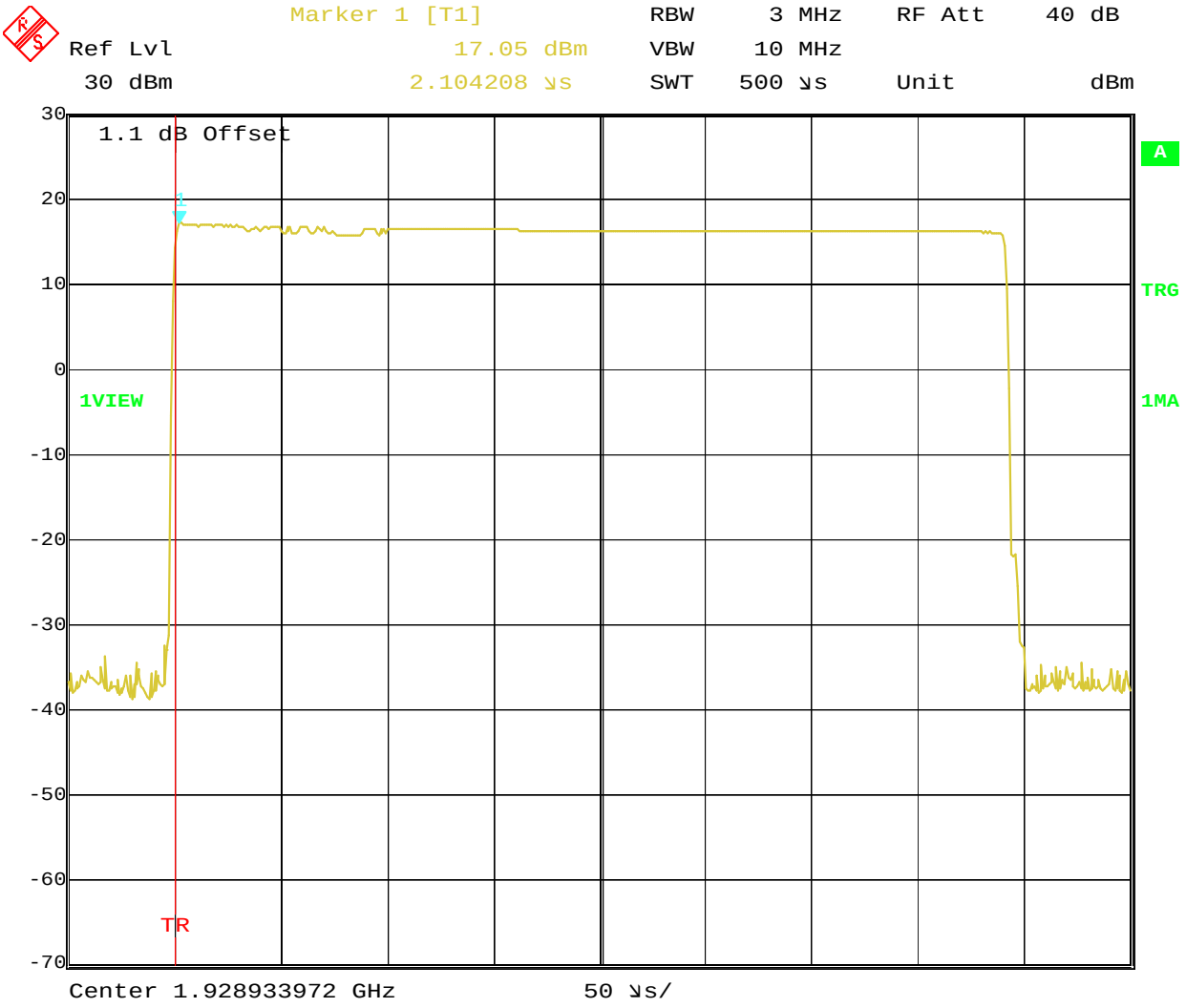
2C – Channel 5 Peak Transmit Power (102V/60Hz AC)



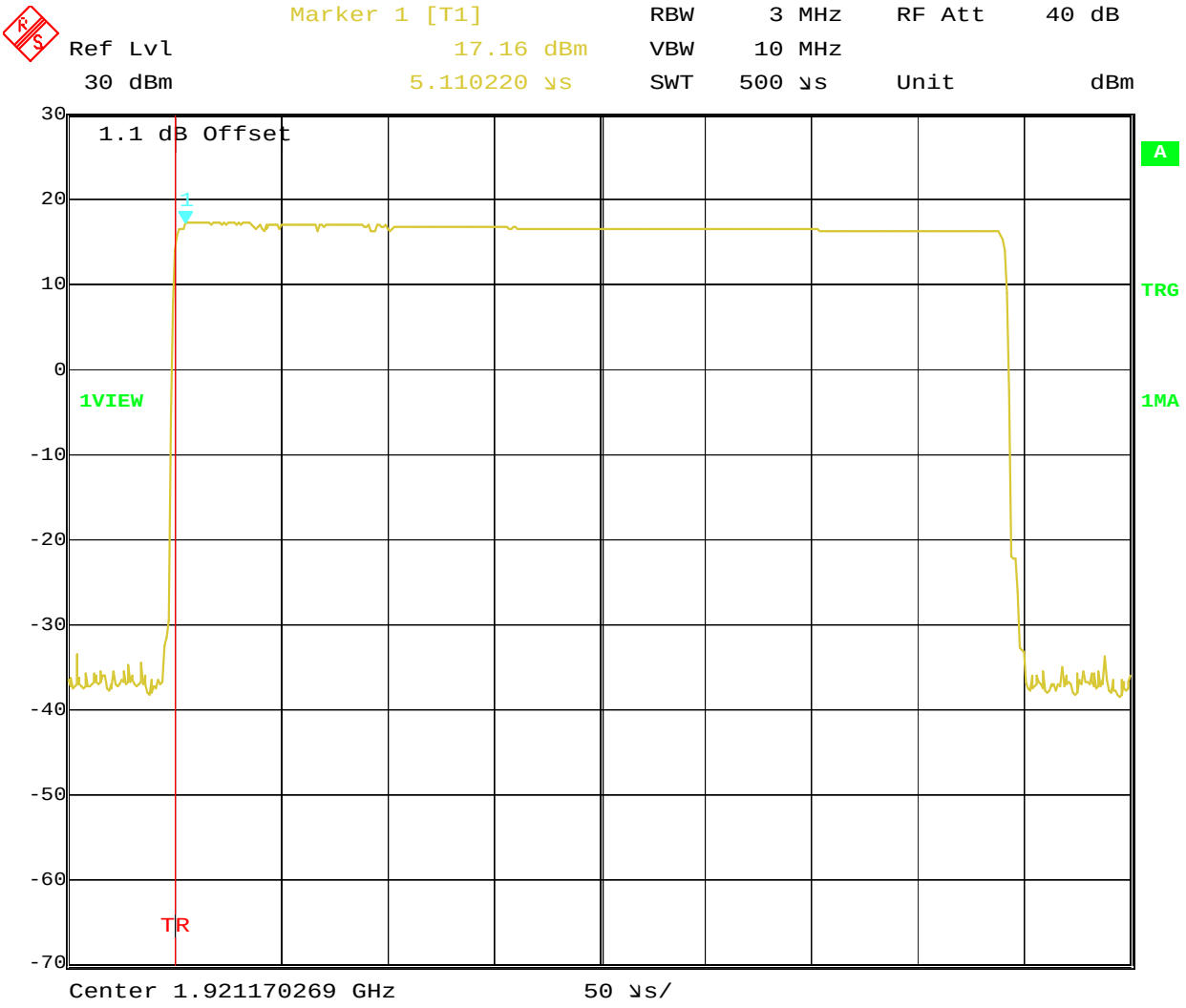
2D – Channel 1 Peak Transmit Power (120V/60Hz AC)



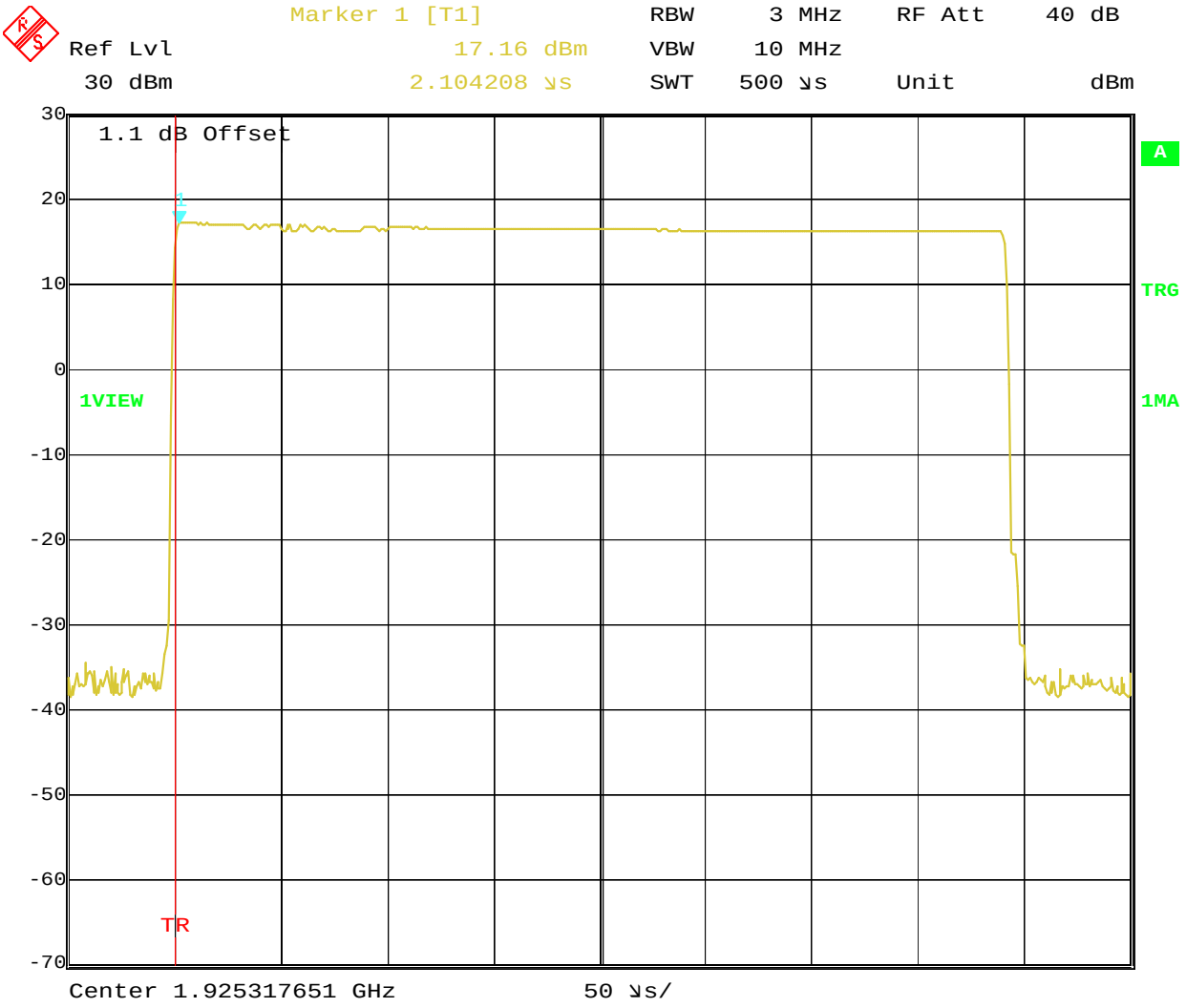
2E – Channel 3 Peak Transmit Power (120V/60Hz AC)



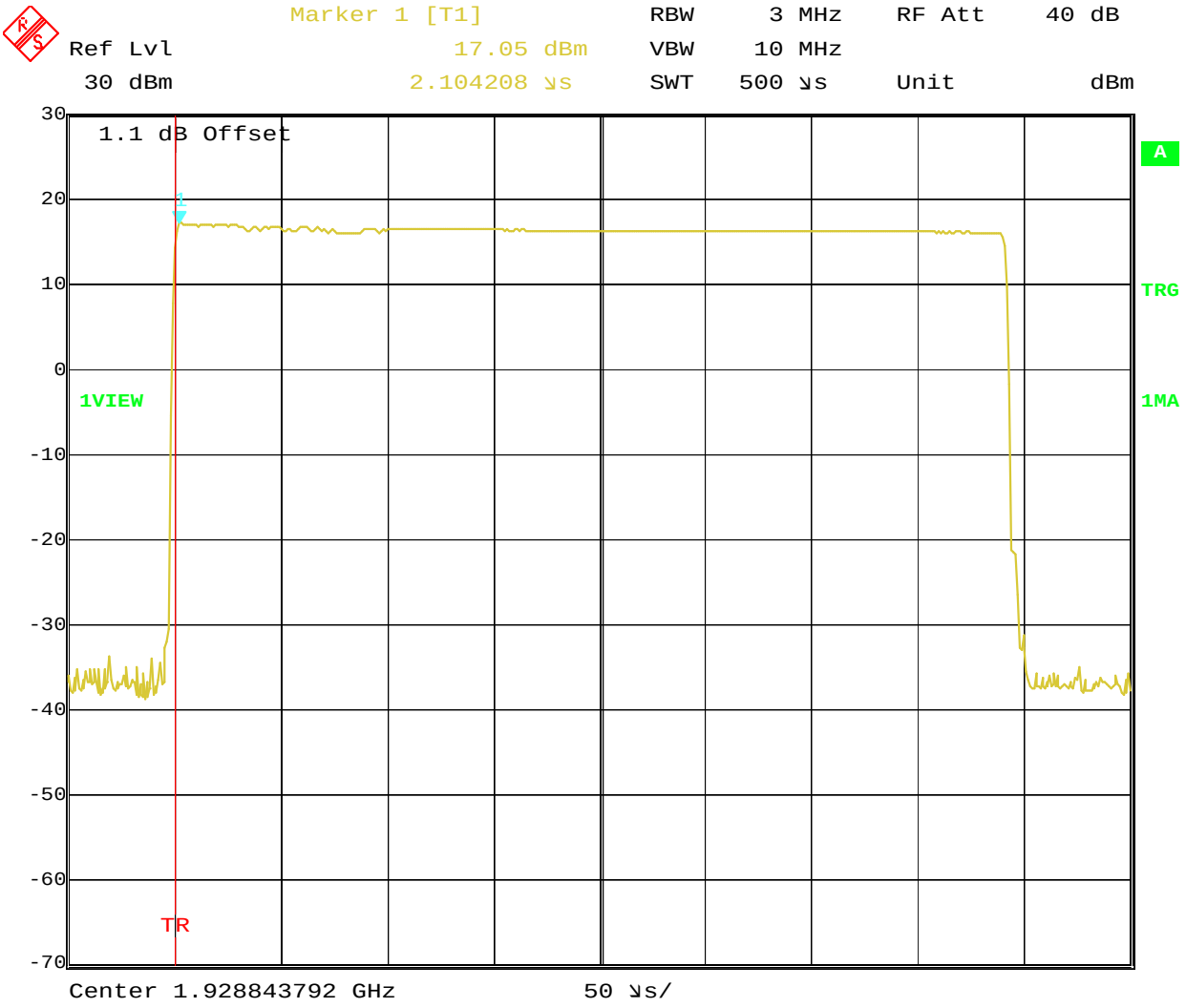
2F – Channel 5 Peak Transmit Power (120V/60Hz AC)



2G – Channel 1 Peak Transmit Power (138V/60Hz AC)



2H – Channel 3 Peak Transmit Power (138V/60Hz AC)



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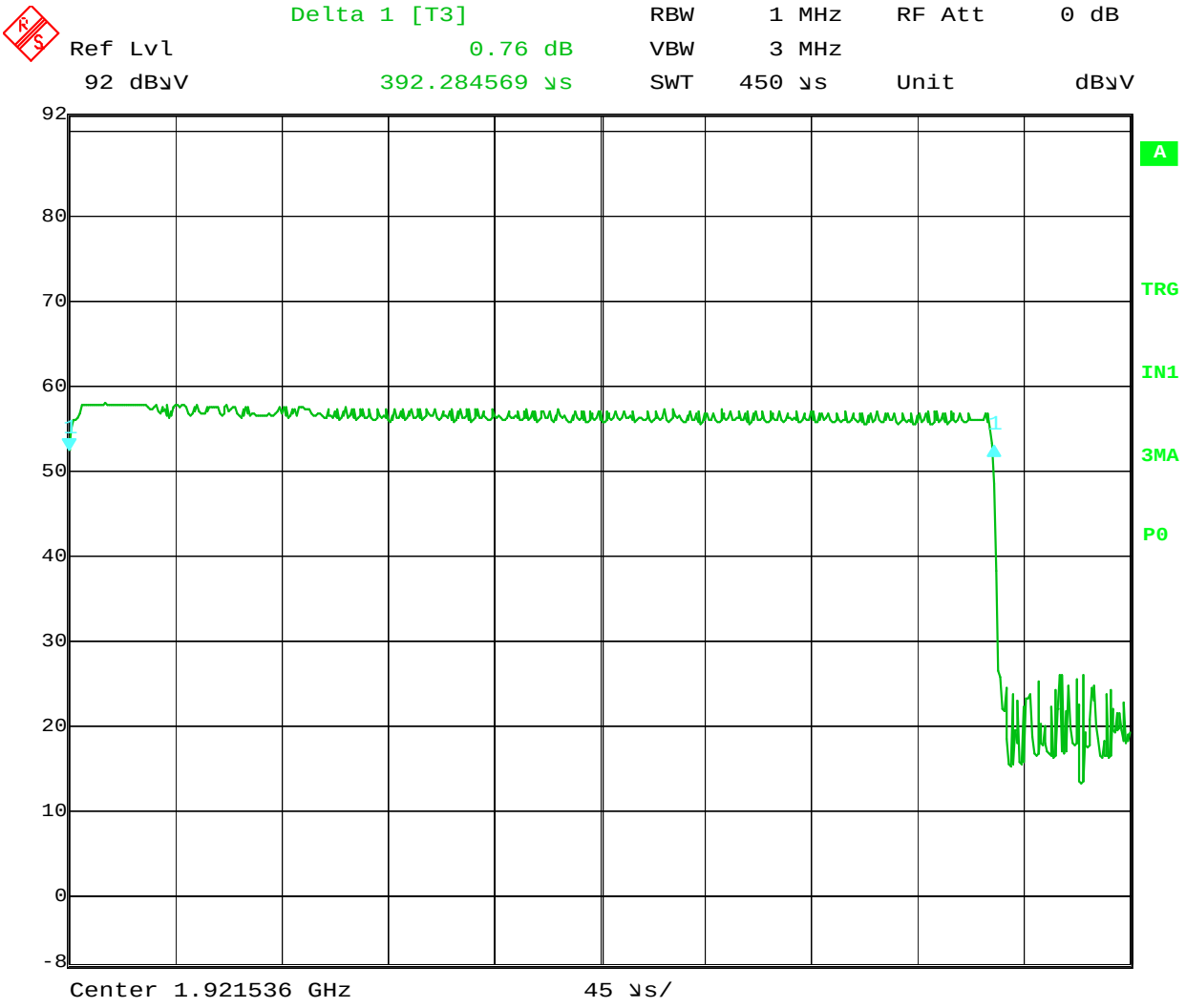
2I – Channel 5 Peak Transmit Power (138V/60Hz AC)

Note that the EUT is a handset device that is fixed in a shower installation and is therefore used in a Fixed Configuration. The maximum measured output power was 17.29 dBm (53.6 mW) and the antenna gain is stated by the manufacturer to be 0 dBi. Therefore, the EUT generates 17.29 dBm (53.6 mW) peak EIRP, however it has a duty cycle of less than 4%, based on a burst length of approximately 392.3 us and a burst interval of 10 ms. Therefore the average EIRP is 2.14 mW, and the minimum safe distance where the power density equals the General Occupation RF exposure limit of 1 mW/cm^2 is 0.41 cm.

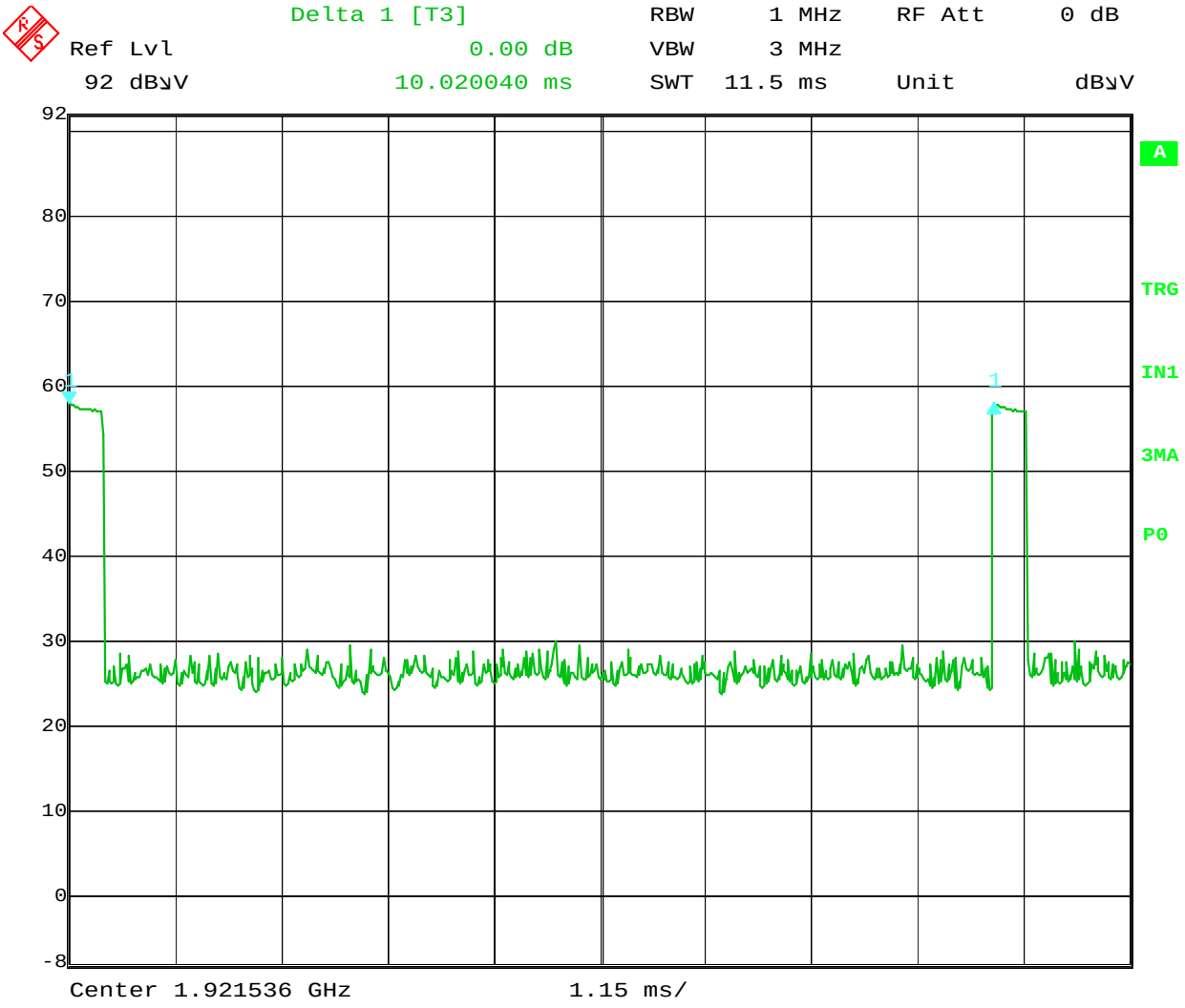
Section 1.1310 and RSS-102 4.0 Combined Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
1500–100,000	137	0.364	5.0	6
(B) Limits for General Population/Uncontrolled Exposure				
1500–100,000	61.4	0.163	1.0	30

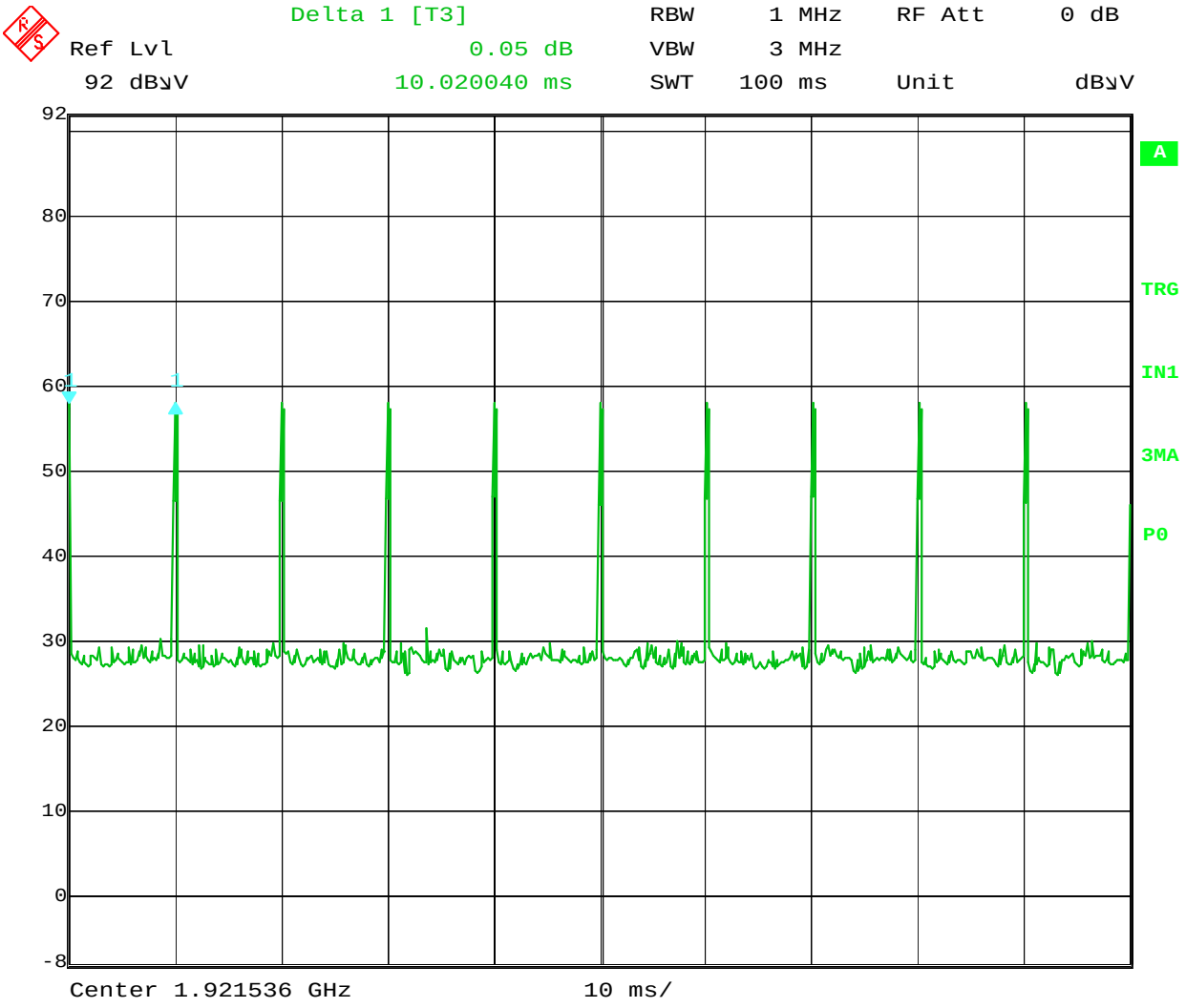
f = frequency in MHz



392.3 us burst length (using maxhold)



10 ms Burst Interval (Frame Period)



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10 Bursts in 100ms

	Nicholas Abbondante	Test Date:	06/24/2010; 11/17/2010
Test Personnel:			
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	120V/60Hz		
		Ambient Temperature:	21 ºC
Pretest Verification w/ BB Source:	**No**	Relative Humidity:	47 %
		Atmospheric Pressure:	996 mbars

Deviations, Additions, or Exclusions: None

8 Power Spectral Density

8.1 Method

Tests are performed in accordance with CFR47 Part 15.319(d); ANSI C63.17 Sub-Clause 6.1.5; and IC RSS-213 6.6.

TEST SITE: 10m Chamber Building

8.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
SAF285	6 line Digital Barometer*	Mannix	0ABA8886	SAF285	12/28/2009	12/28/2010
CBL030	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 80	CBL030	01/04/2010	01/04/2011
NAR003	Directional Coupler 1.7-26.5GHz	Narda / L-3	4227-16	03135	02/26/2010	02/26/2011
ROS001	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	12/04/2009	12/04/2010
ROS003	DECT Test Set	Rohde & Schwartz	CMD60	829902026	03/30/2010	03/30/2011

Software Utilized:

Name	Manufacturer	Version
DECT 6.0 Test Suite V2.15	Intertek	V2.15

8.3 Results:

The sample tested was found to Comply.

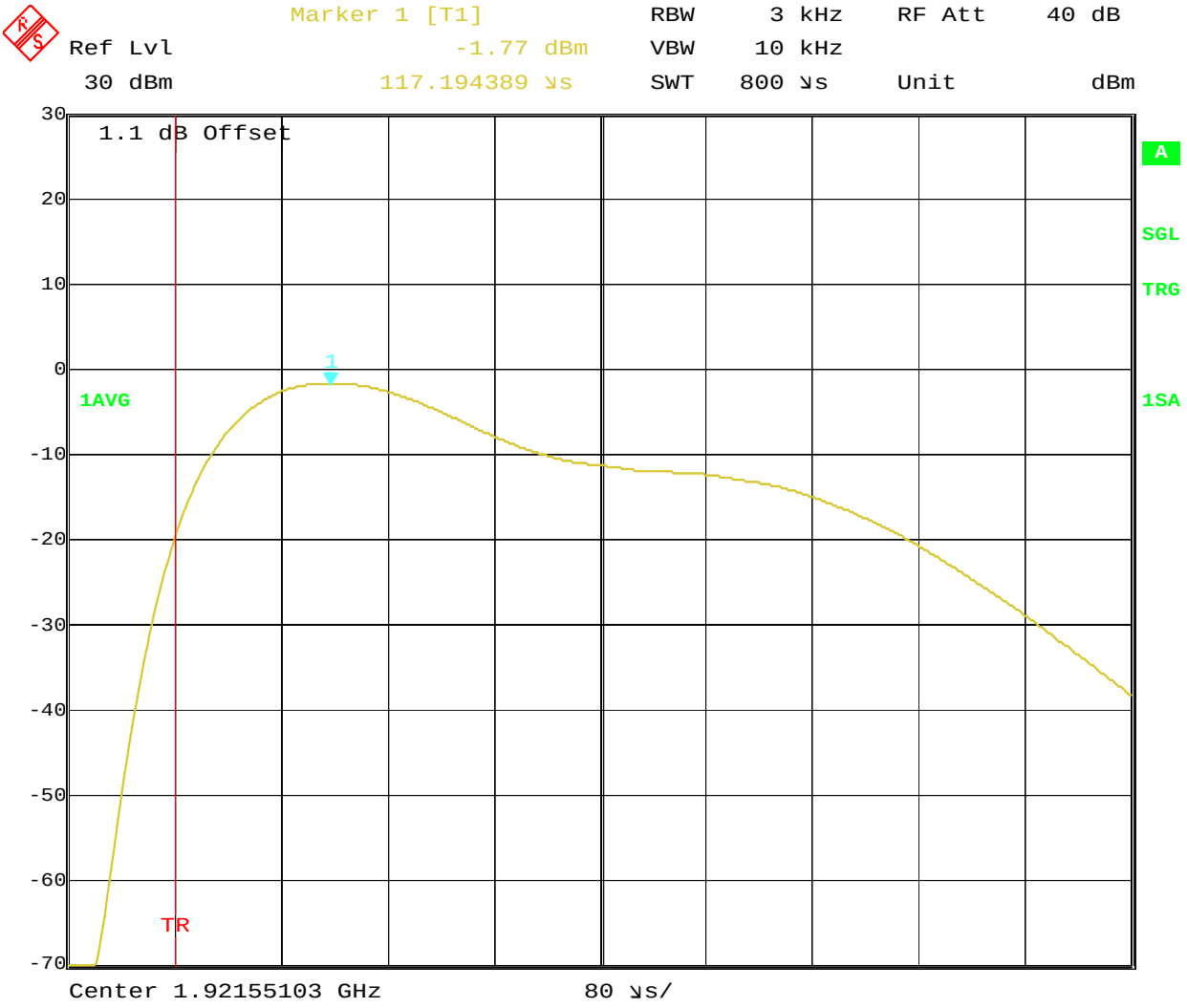
8.4 Test Data:

Limits: Measured value ≤3mW/ 3kHz, or (4.8 dBm / 3 kHz)

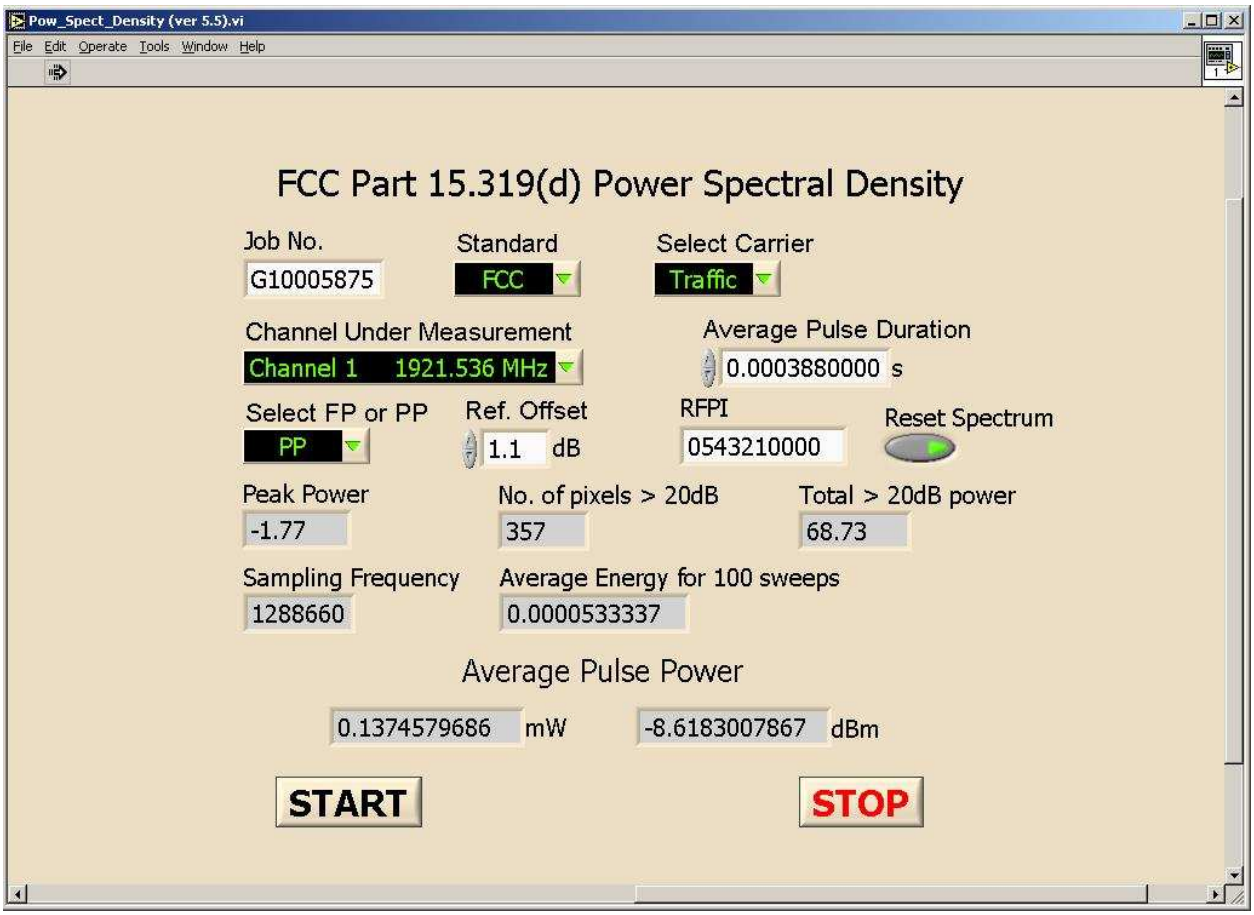
Results - Traffic Carrier

Channel	Channel Frequency (MHz)	Figures	Measured Power Spectral Density (dBm/3kHz)	Limit (dBm/3 kHz)	Verdict
Lowest	1921.536	3A & 3B	-8.62	4.8	Pass
Middle	1924.992	3C & 3D	-8.46	4.8	Pass
Highest	1928.448	3E & 3F	-8.43	4.8	Pass

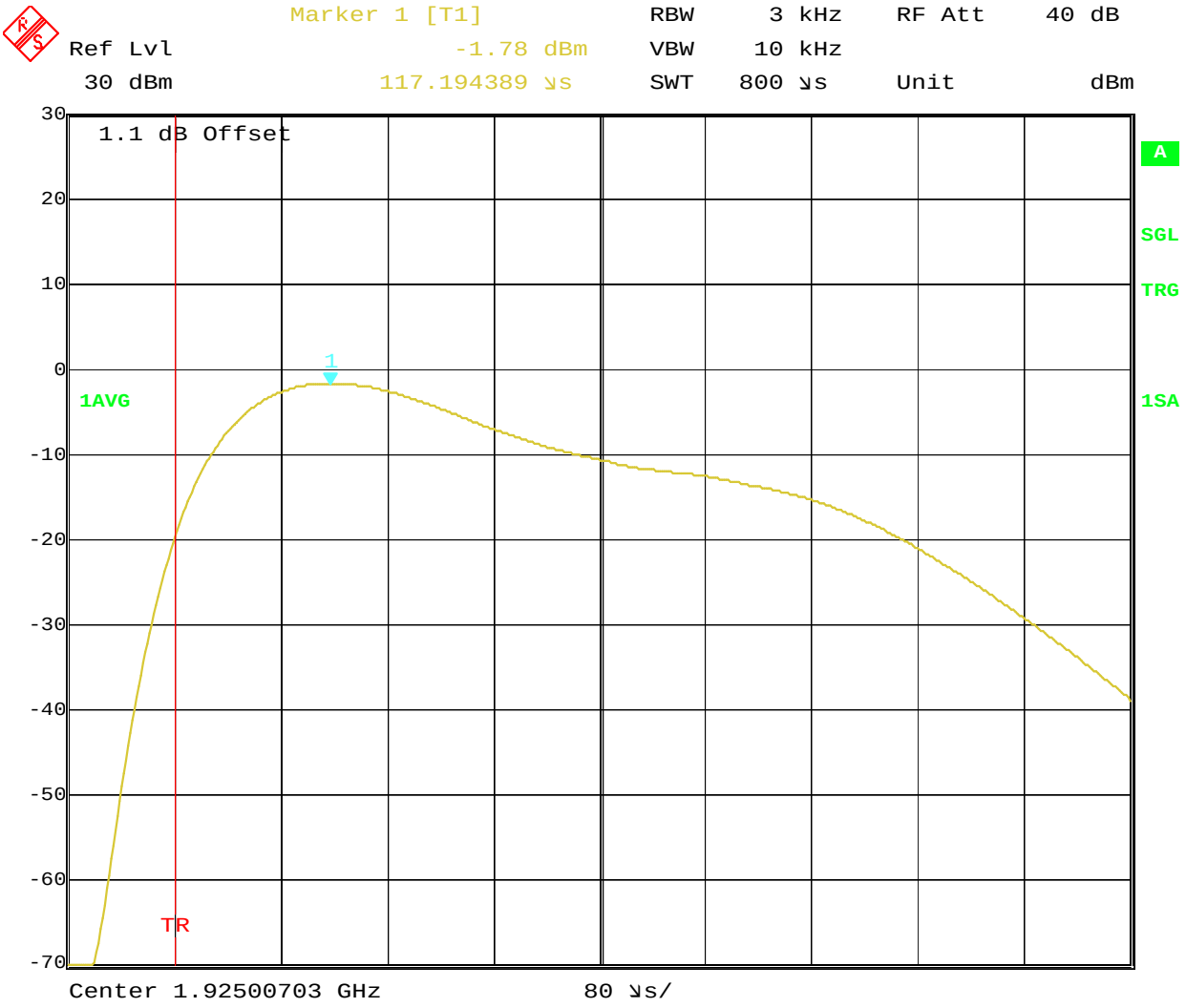
The minimum Pulse Duration, 388 us, shown in plot 3G, was used for the averaging period as a worst-case.



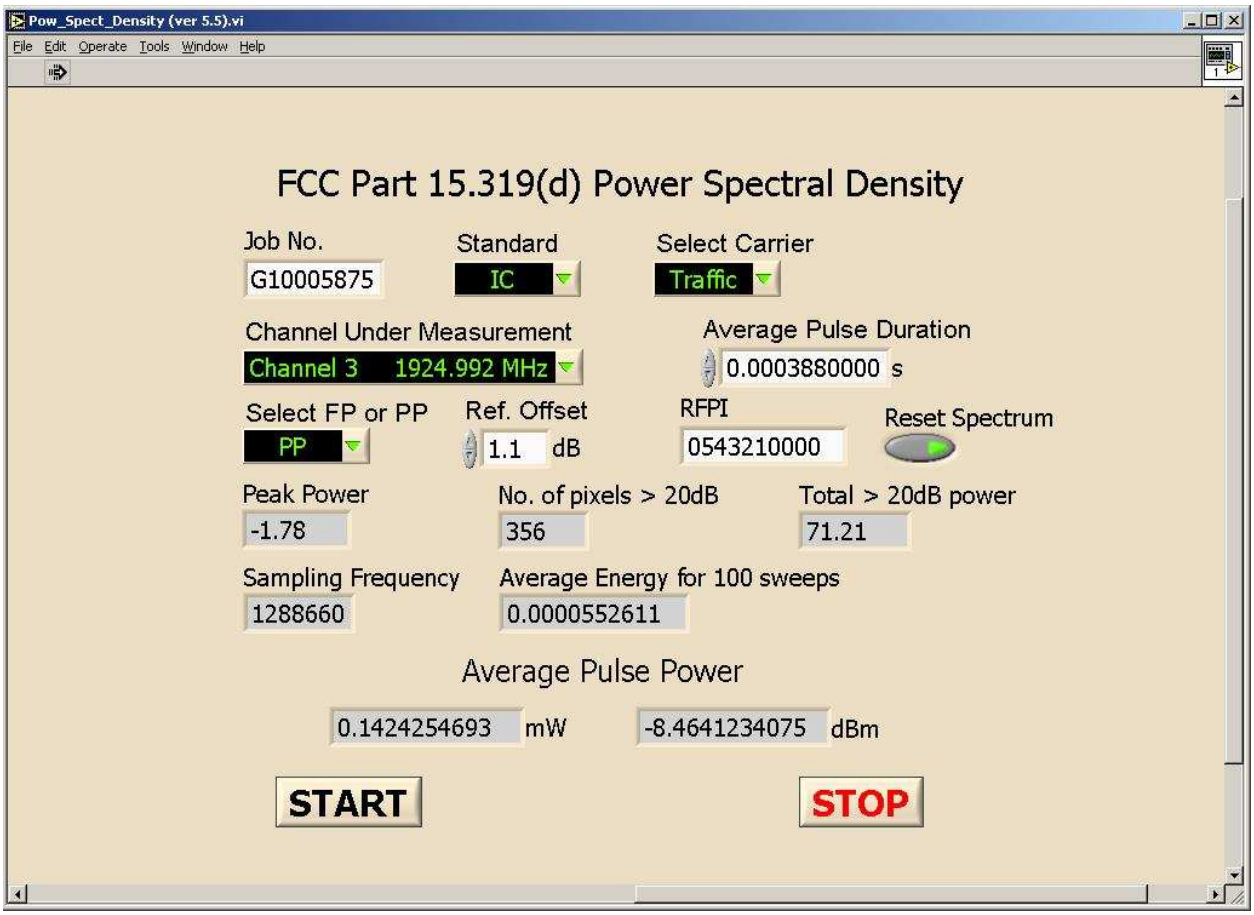
3A – Channel 1 Power Spectral Density Waveform



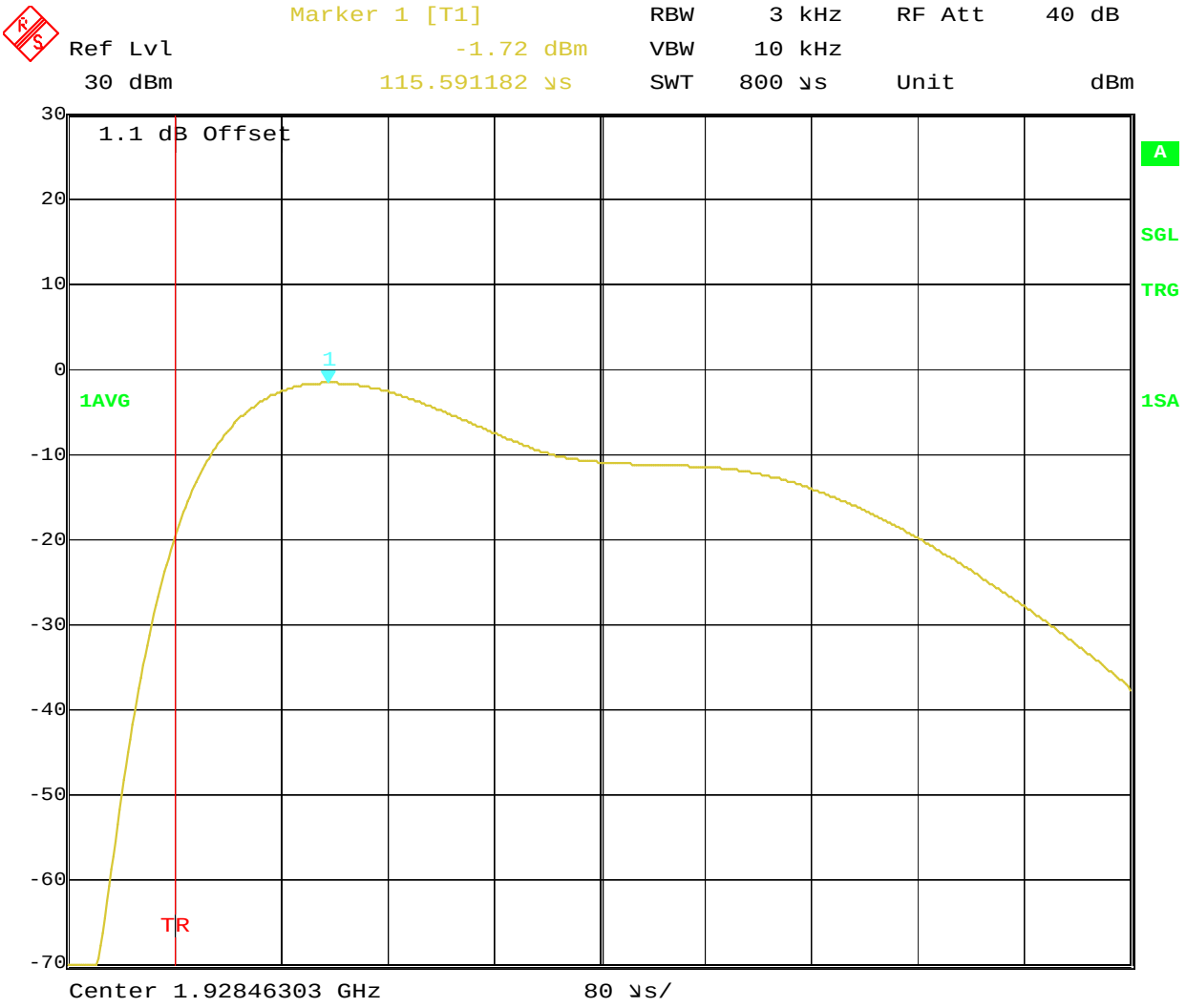
3B – Channel 1 Power Spectral Density Results



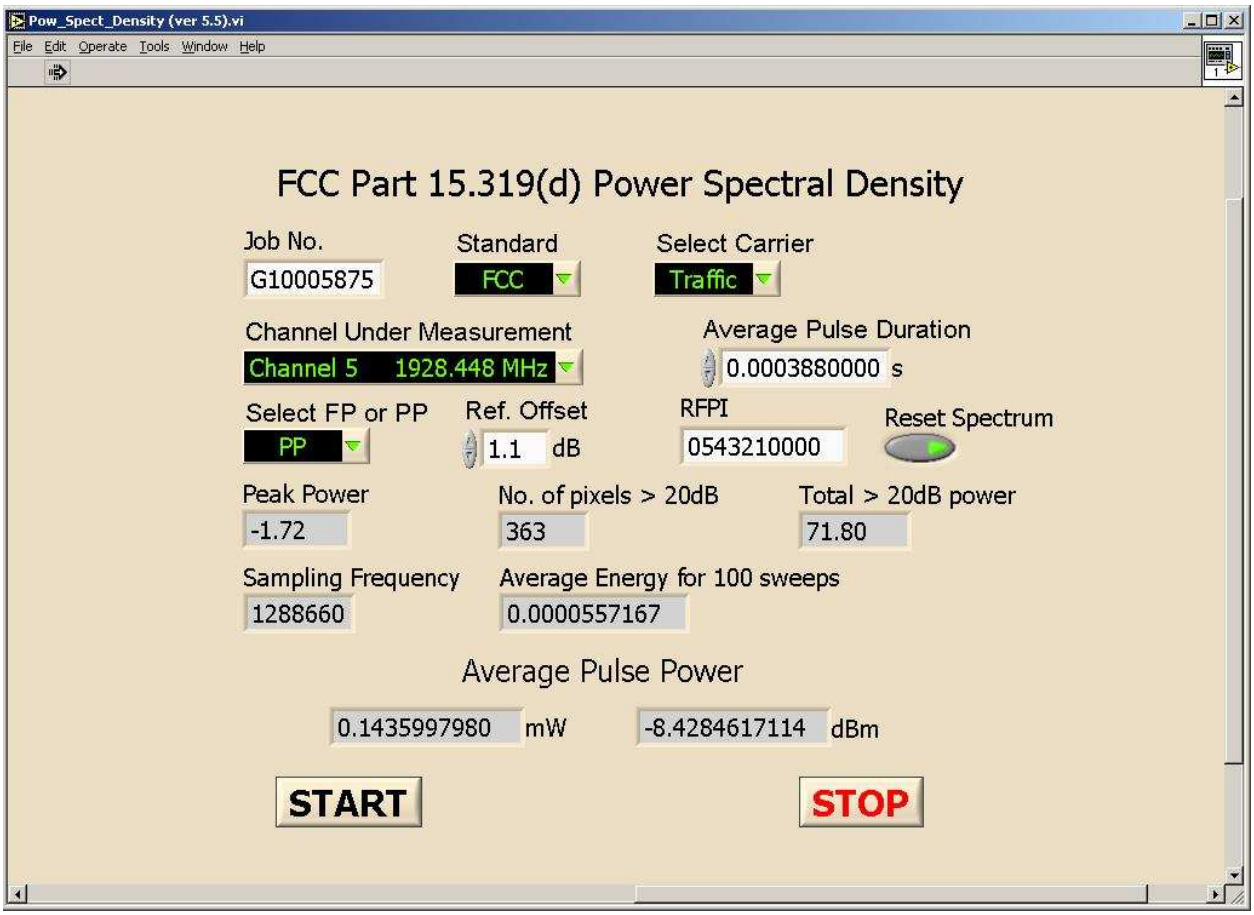
3C – Channel 3 Power Spectral Density Waveform



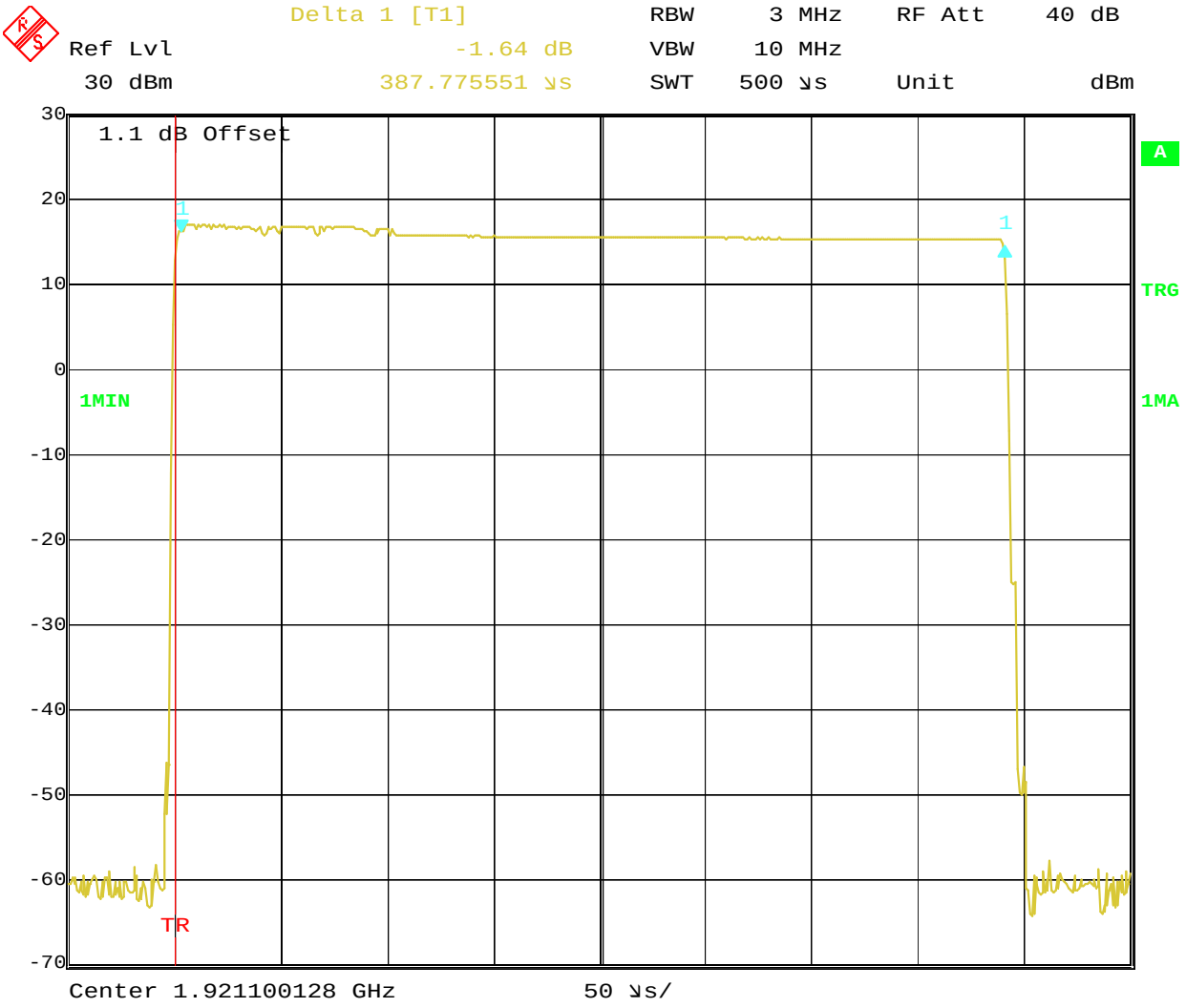
3D – Channel 3 Power Spectral Density Results



3E – Channel 5 Power Spectral Density Waveform



3F – Channel 5 Power Spectral Density Results



3G – Minimum Pulse Duration

	Nicholas Abbondante	Test Date:	06/24/2010
Test Personnel:			
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	120V/60Hz		
		Ambient Temperature:	21 ºC
Pretest Verification w/ BB Source:	**No**	Relative Humidity:	47 %
		Atmospheric Pressure:	996 mbars

Deviations, Additions, or Exclusions: None

9 Automatic Discontinuation of Transmission

9.1 Method

Tests are performed in accordance with CFR47 Part 15.319(f); and IC RSS-213 4.3.4(a).

TEST SITE: 10m Chamber Building

9.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
None						

9.3 Results:

The sample was found to Comply through manufacturer attestation.

9.4 Test Data:

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.

Results

	Test	Reaction of EUT	Verdict
1	Switch-off companion device	A	Pass
2	On hook by companion device	NA	NA
3	Remove power from companion device	A	Pass
4	Switch-off device	A	Pass
5	On hook device	A	Pass
6	Remove power from device	A	Pass

A – Connection break down, cease of transmit
B – Connection break down, EUT transmits signaling information
C – Connection break down, counter part transmits signaling information

[X] The manufacturer declares that the EUT can automatically discontinue transmission in case of either absent information to transmit or operational failure.

Please find the manufacturer attestation in exhibit FCC15D_App-SD_Form2.doc

Test Personnel:	N/A	Test Date:	N/A
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	N/A		
		Ambient Temperature:	N/A ºC
Pretest Verification w/ BB Source:	**N/A**	Relative Humidity:	N/A %
		Atmospheric Pressure:	N/A mbars

Deviations, Additions, or Exclusions: None

10 Emissions Inside the Sub-Bands, Conducted

10.1 Method

Tests are performed in accordance with CFR47 Part 15.323(d.1); ANSI C63.17 Sub-Clause 6.1.6; and IC RSS-213 6.7.2.

TEST SITE: 10m Chamber Building

10.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
SAF285	6 line Digital Barometer*	Mannix	0ABA8886	SAF285	12/28/2009	12/28/2010
CBL030	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 80	CBL030	01/04/2010	01/04/2011
NAR003	Directional Coupler 1.7-26.5GHz	Narda / L-3	4227-16	03135	02/26/2010	02/26/2011
ROS001	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	12/04/2009	12/04/2010
ROS003	DECT Test Set	Rohde & Schwartz	CMD60	829902026	03/30/2010	03/30/2011

Software Utilized:

Name	Manufacturer	Version
DECT 6.0 Test Suite V2.15	Intertek	V2.15

10.3 Results:

The sample tested was found to Comply.

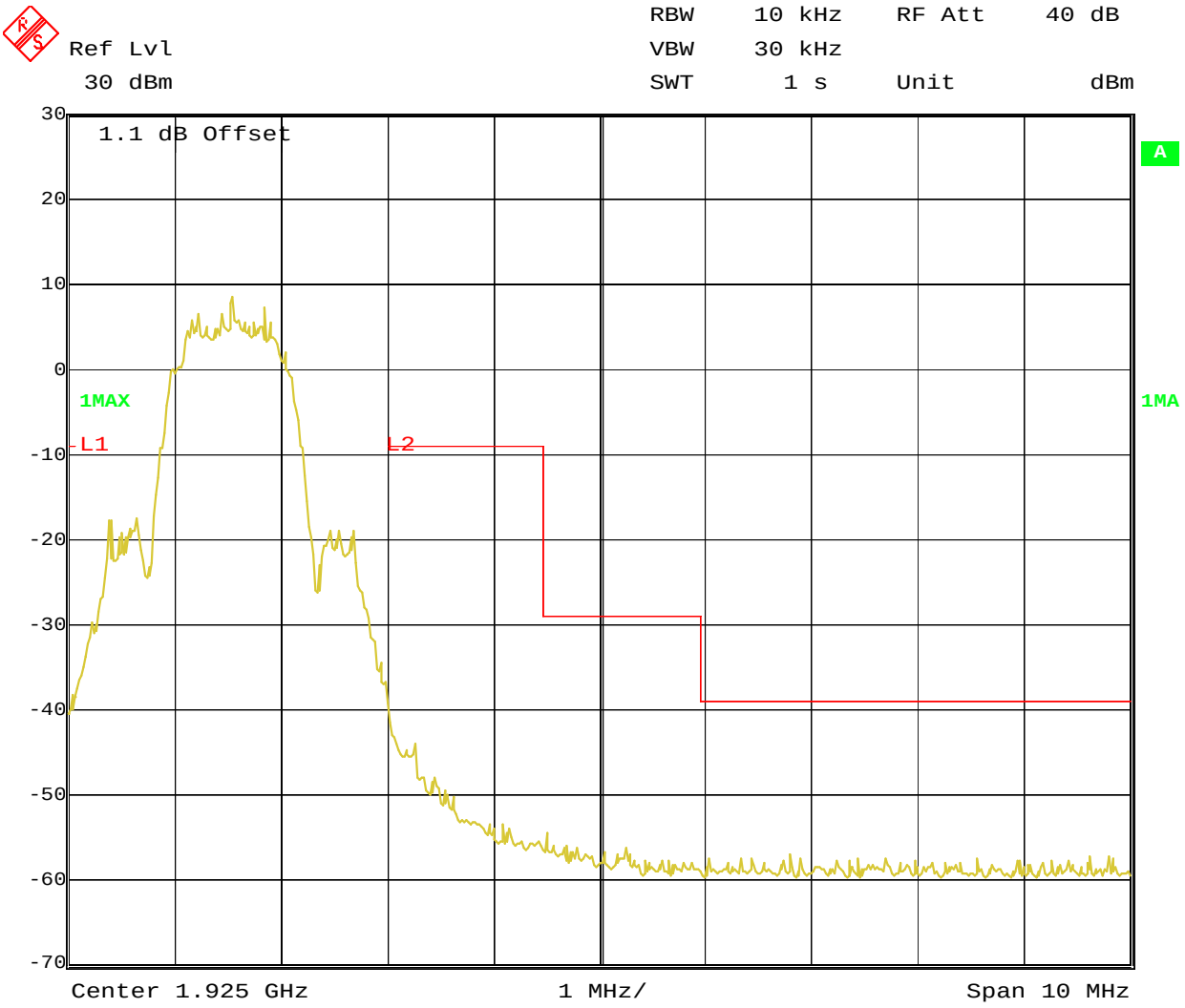
10.4 Test Data:

Limit: Emissions inside the 1920-1930 MHz band shall be attenuated below the transmit power permitted for that device, as follows:

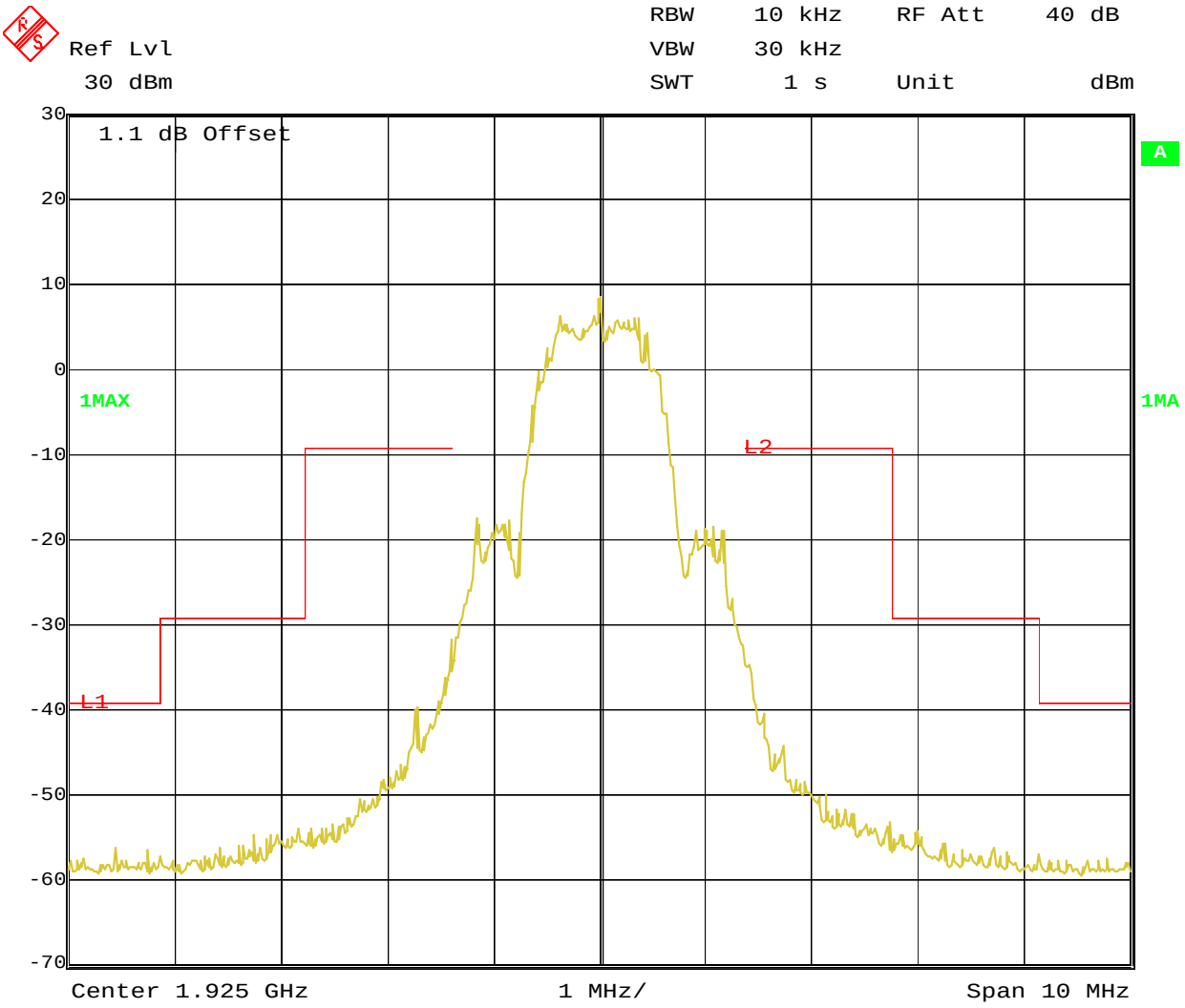
- 30 dB between the frequencies 1B and 2B measured from the centre of the occupied bandwidth;
- 50 dB between the frequencies 2B and 3B measured from the centre of the occupied bandwidth; and
- 60 dB between the frequencies 3B and band edge, where B is the occupied bandwidth in hertz.

Results - Traffic Carrier

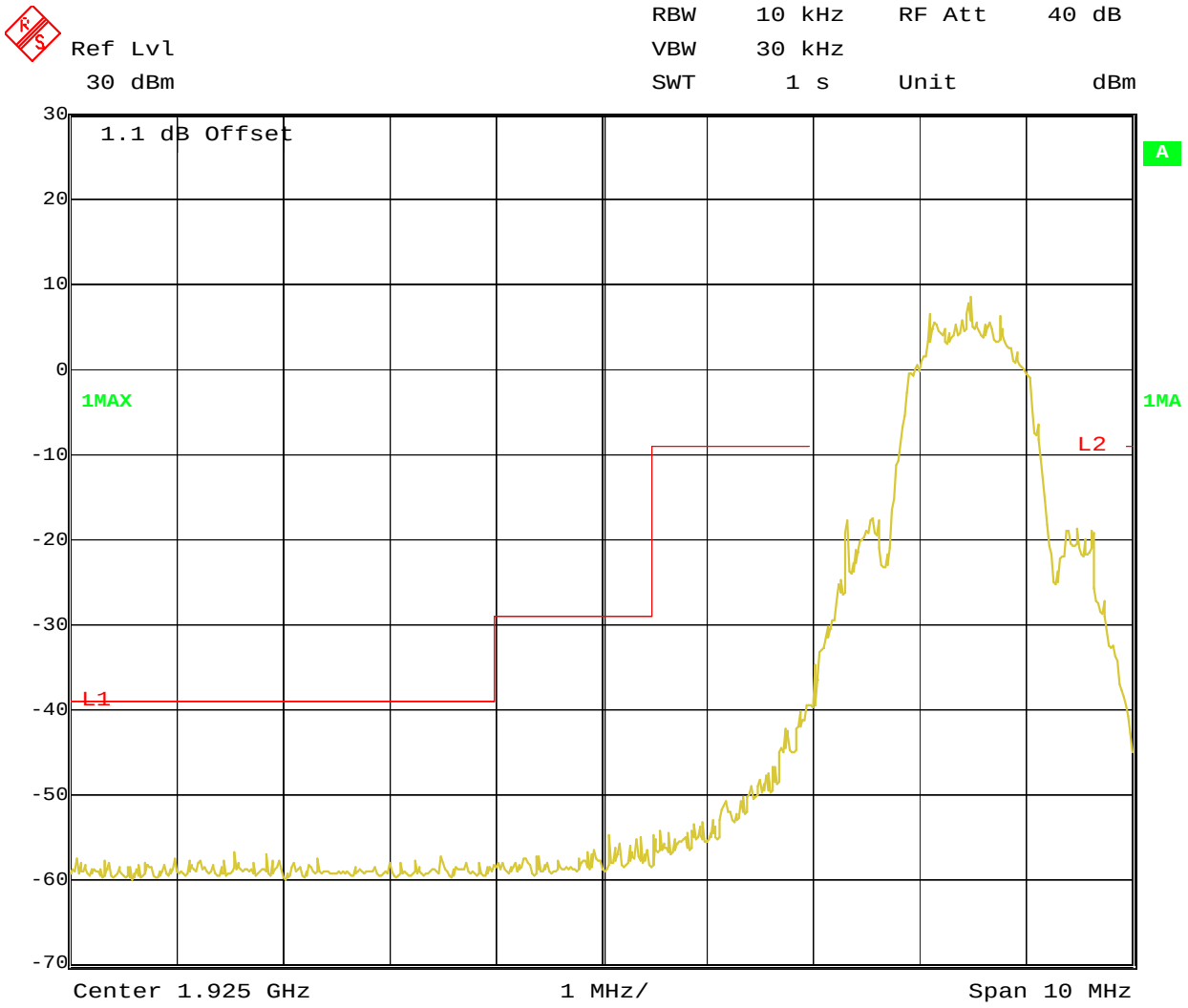
Channel	Channel Frequency (MHz)	Figures	Verdict
Lowest	1921.536	4A	Pass
Middle	1924.992	4B	Pass
Highest	1928.448	4C	Pass



4A – Channel 1 Emissions Inside the Sub-Band



4B – Channel 3 Emissions Inside the Sub-Band



4C – Channel 5 Emissions Inside the Sub-Band

	Nicholas Abbondante	Test Date:	06/25/2010
Test Personnel:			
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	120V/60Hz		
		Ambient Temperature:	24 ºC
Pretest Verification w/ BB Source:	**No**	Relative Humidity:	37 %
		Atmospheric Pressure:	1003 mbars

Deviations, Additions, or Exclusions: None

11 Emissions Outside the Sub-Bands, Conducted

11.1 Method

Tests are performed in accordance with CFR47 Part 15.323(d.2); ANSI C63.17 Sub-Clause 6.1.6; and IC RSS-213 6.7.1.

TEST SITE: 10m Chamber Building

11.2 Test Equipment Used:

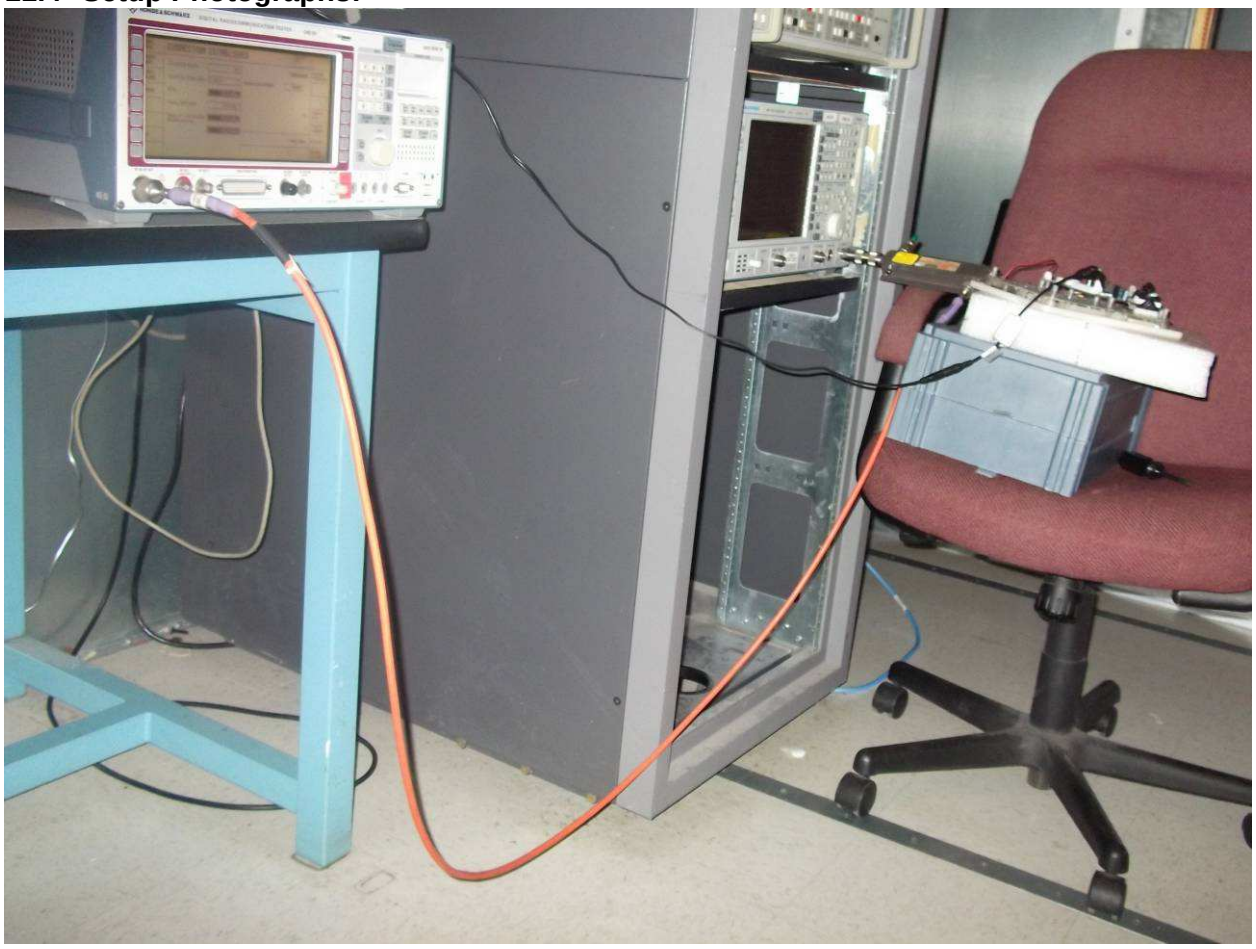
Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
SAF285	6 line Digital Barometer*	Mannix	0ABA8886	SAF285	12/28/2009	12/28/2010
CBL030	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 80	CBL030	01/04/2010	01/04/2011
NAR003	Directional Coupler 1.7-26.5GHz	Narda / L-3	4227-16	03135	02/26/2010	02/26/2011
ROS001	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	12/04/2009	12/04/2010
ROS003	DECT Test Set	Rohde & Schwartz	CMD60	829902026	03/30/2010	03/30/2011
DAV004	Weather Station	Davis Instruments	7400	PE80529A61 A	06/11/2010	06/11/2011
AMP41	Dual Directional Coupler	Amplifier Research	DC7144A	305090	04/20/2010	04/20/2011
145128	EMI Receiver 40 GHz (20 Hz - 40 Ghz)	Rohde & Schwarz	ESI	8392831001	08/10/2010	08/10/2011

* - ROS001 was used for testing on 06/25/2010 only

11.3 Results:

The sample tested was found to Comply.

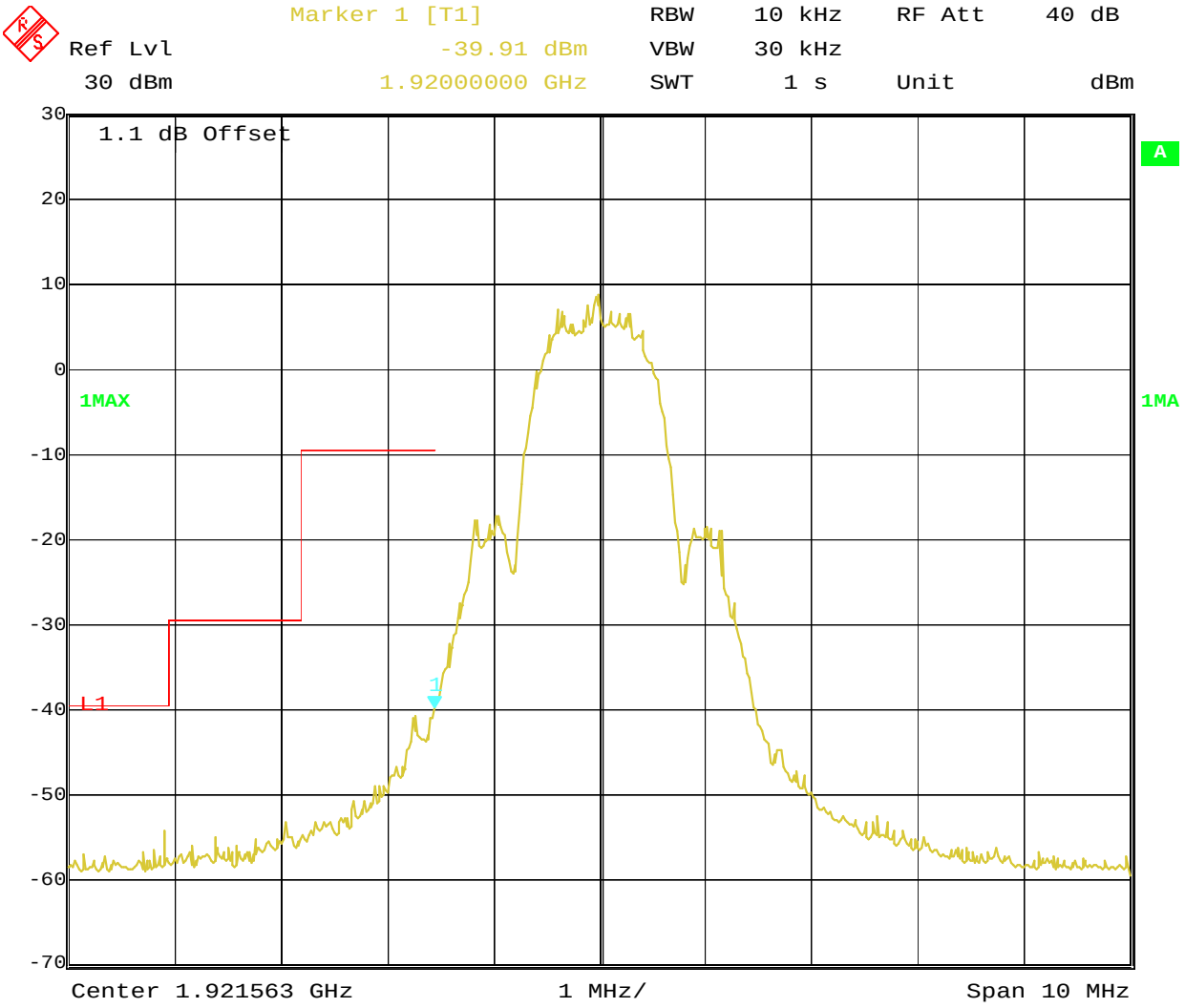
11.4 Setup Photographs:



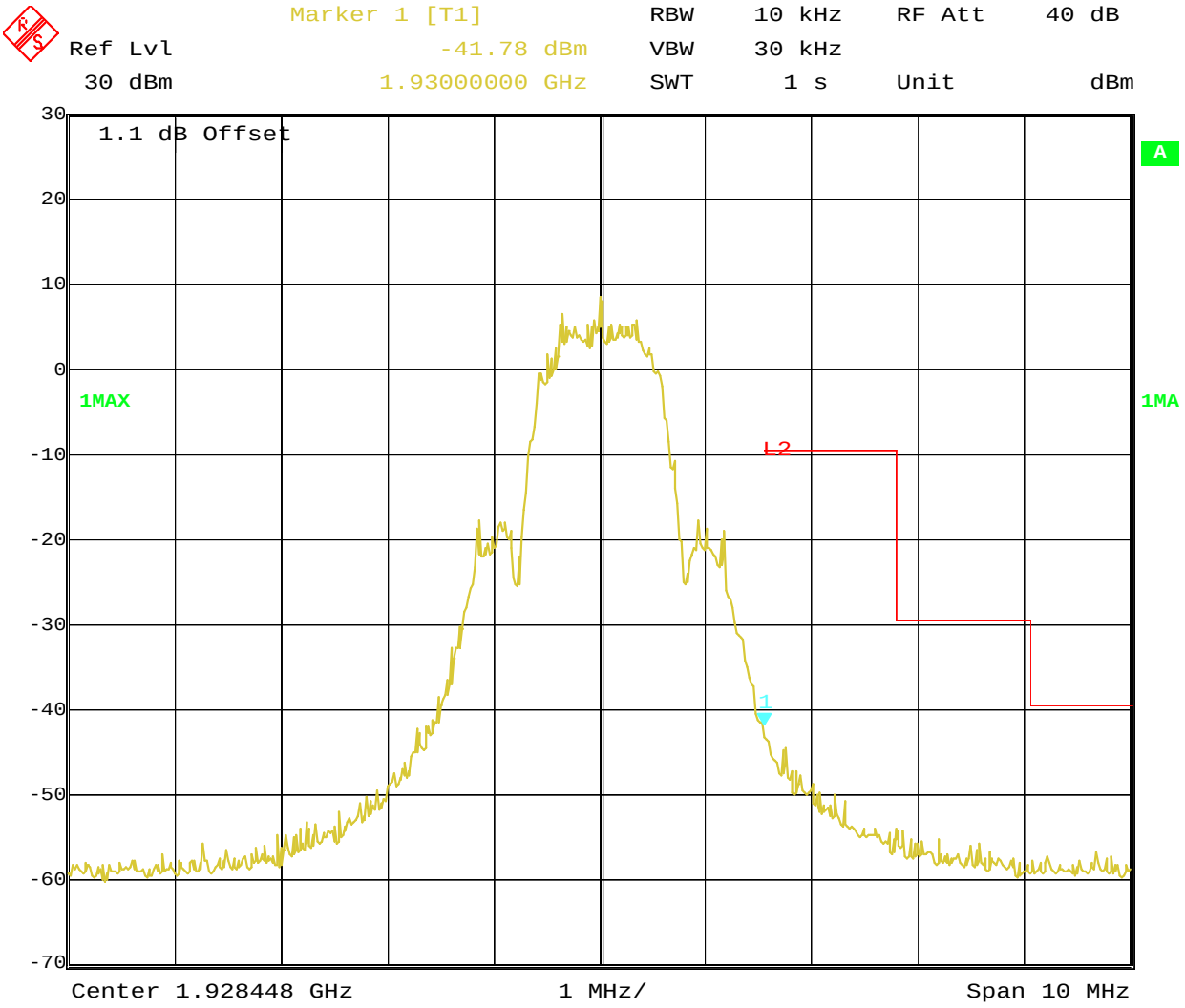
11.5 Test Data:

Limit: Emissions outside the 1920-1930 MHz band shall be attenuated below a reference power of 112 milliwatts (-9.5 dBW) by at least:

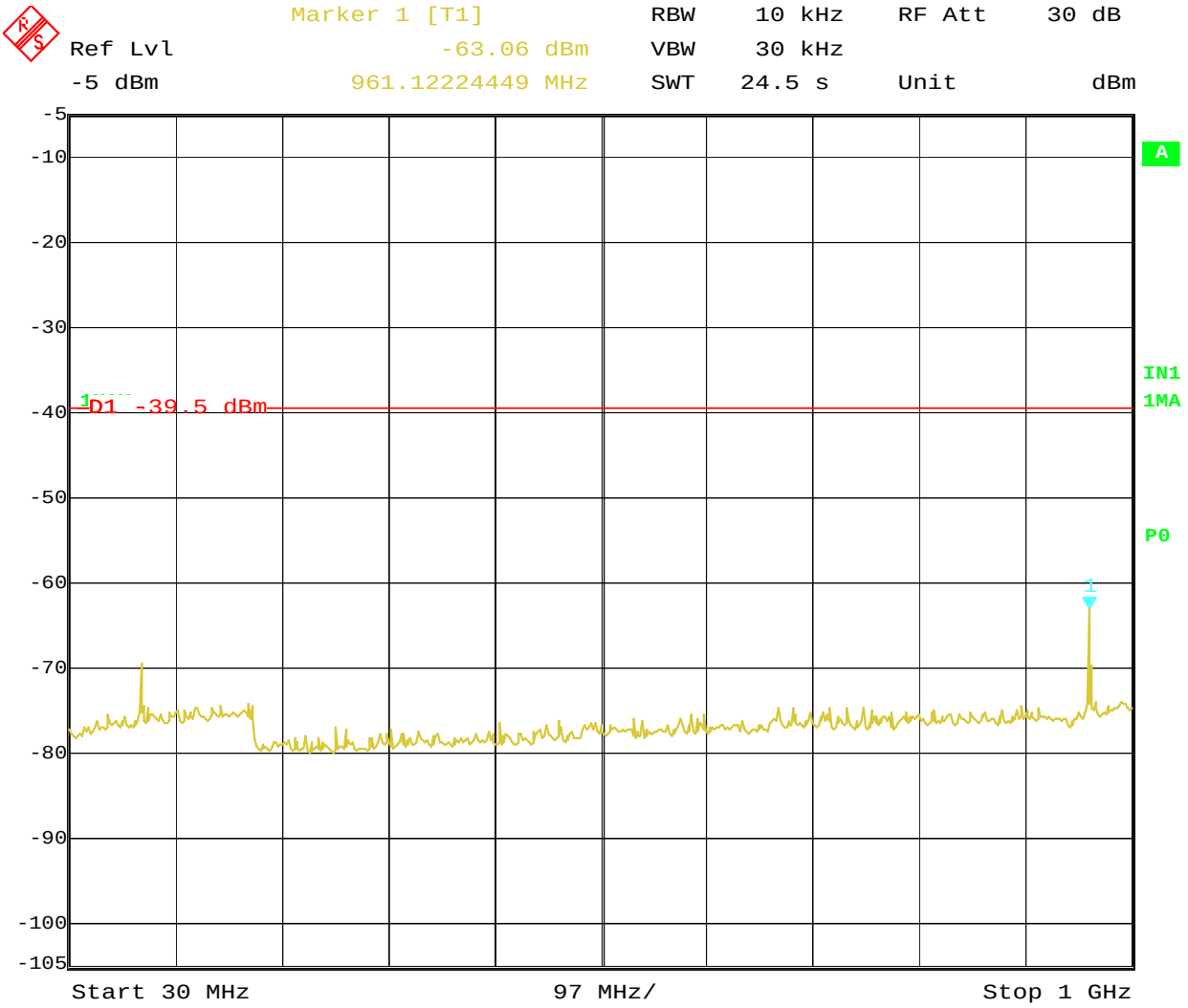
- 30 dB between the band edges and 1.25 MHz above and below the band edges; (-9.5dBm)
- 50 dB between 1.25 MHz and 2.5 MHz above or below the band edges; and (-29.5 dBm)
- 60 dB at 2.5 MHz or greater above or below the band edges (-39.5 dBm).



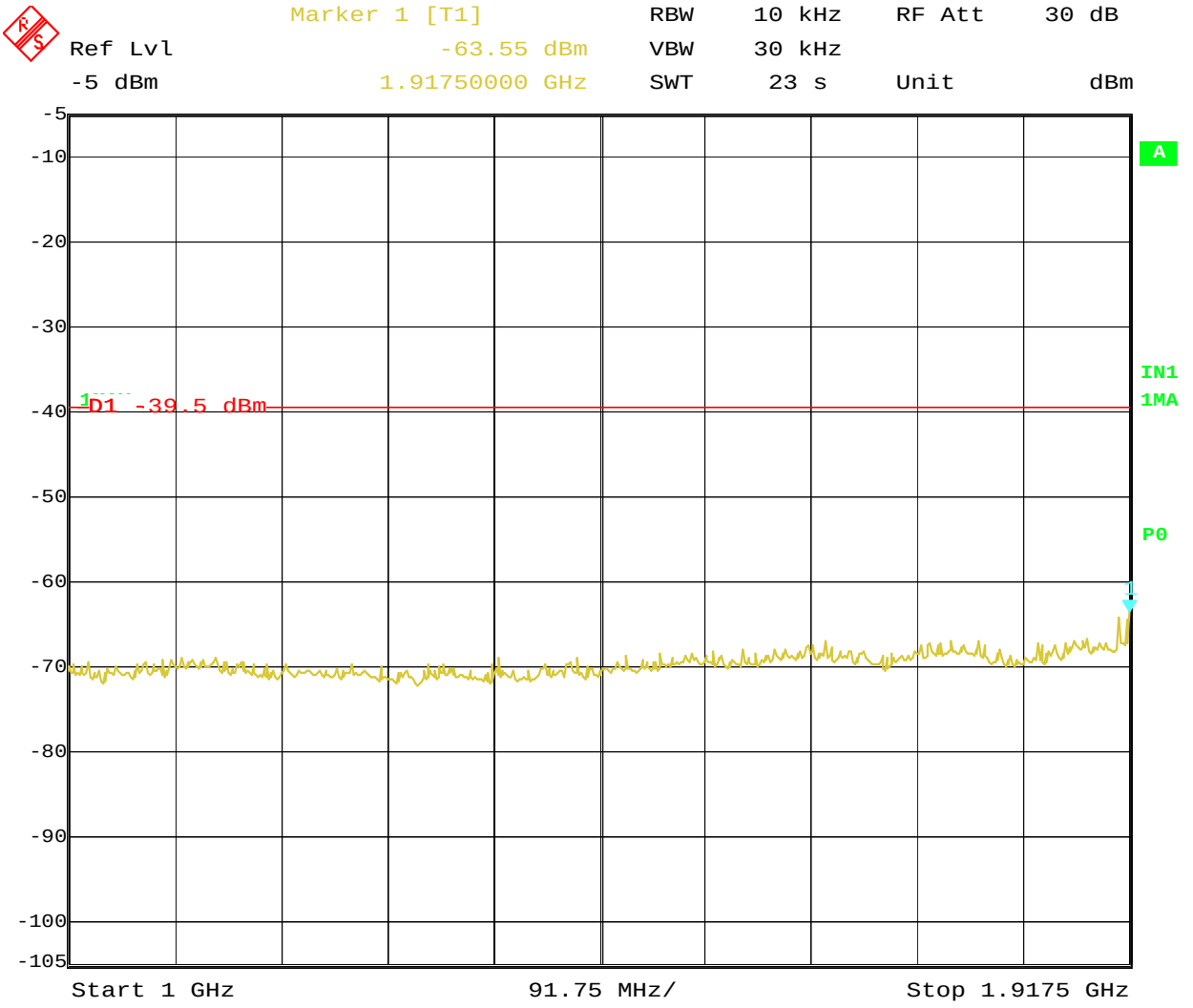
Channel 1, Lower Band Edge



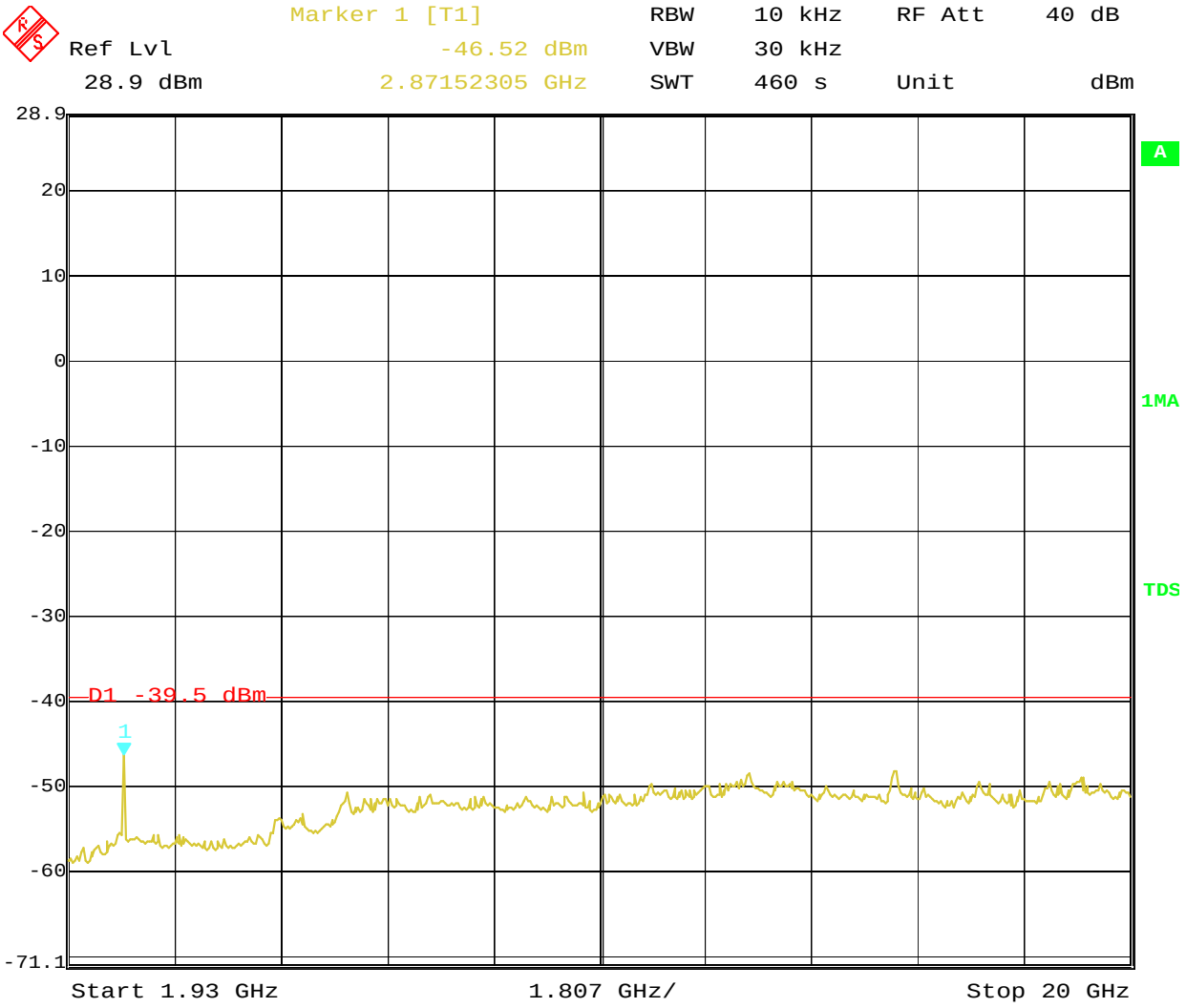
Channel 5, Upper Band Edge



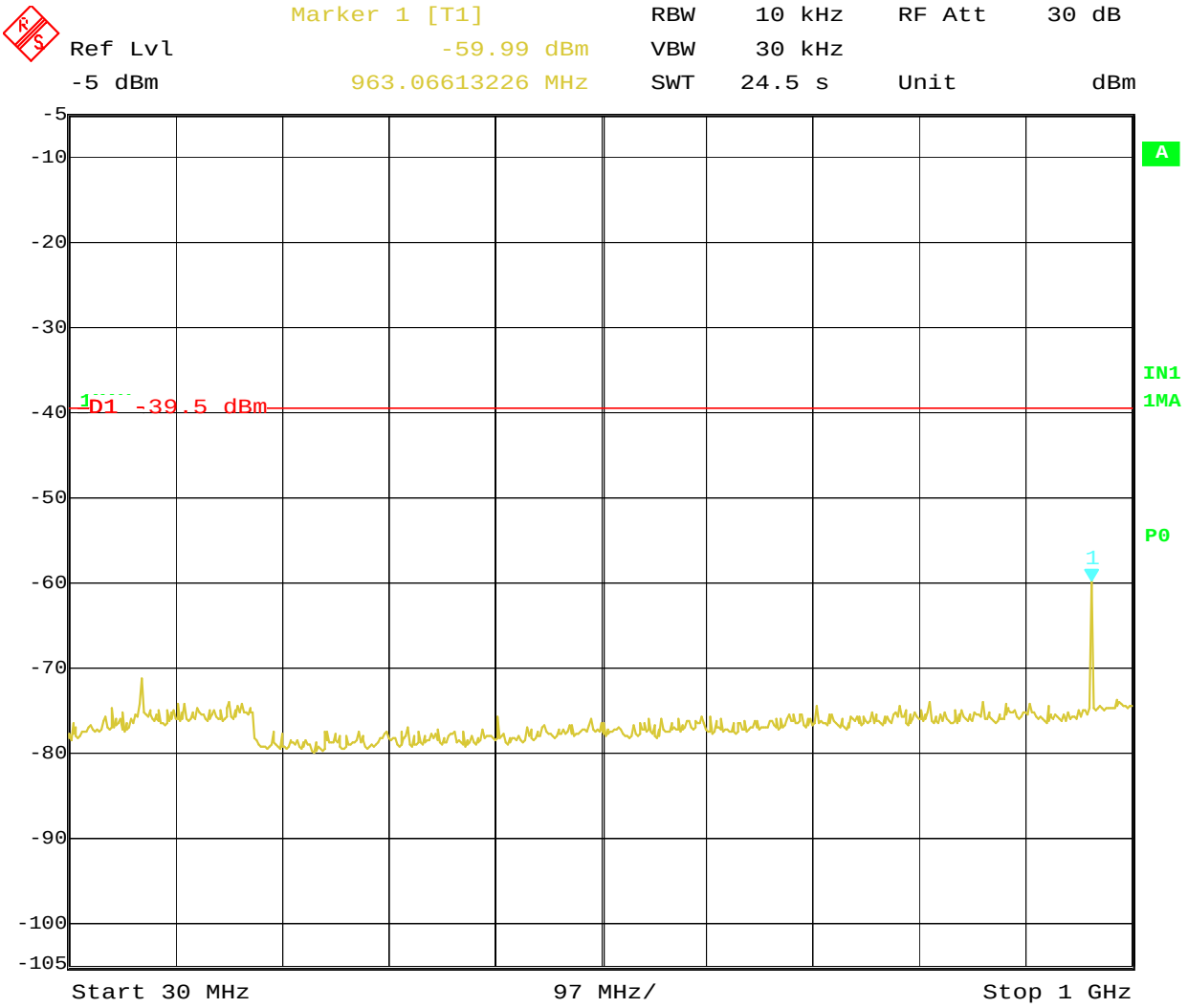
30 MHz – 1 GHz Conducted Emissions, Channel 1



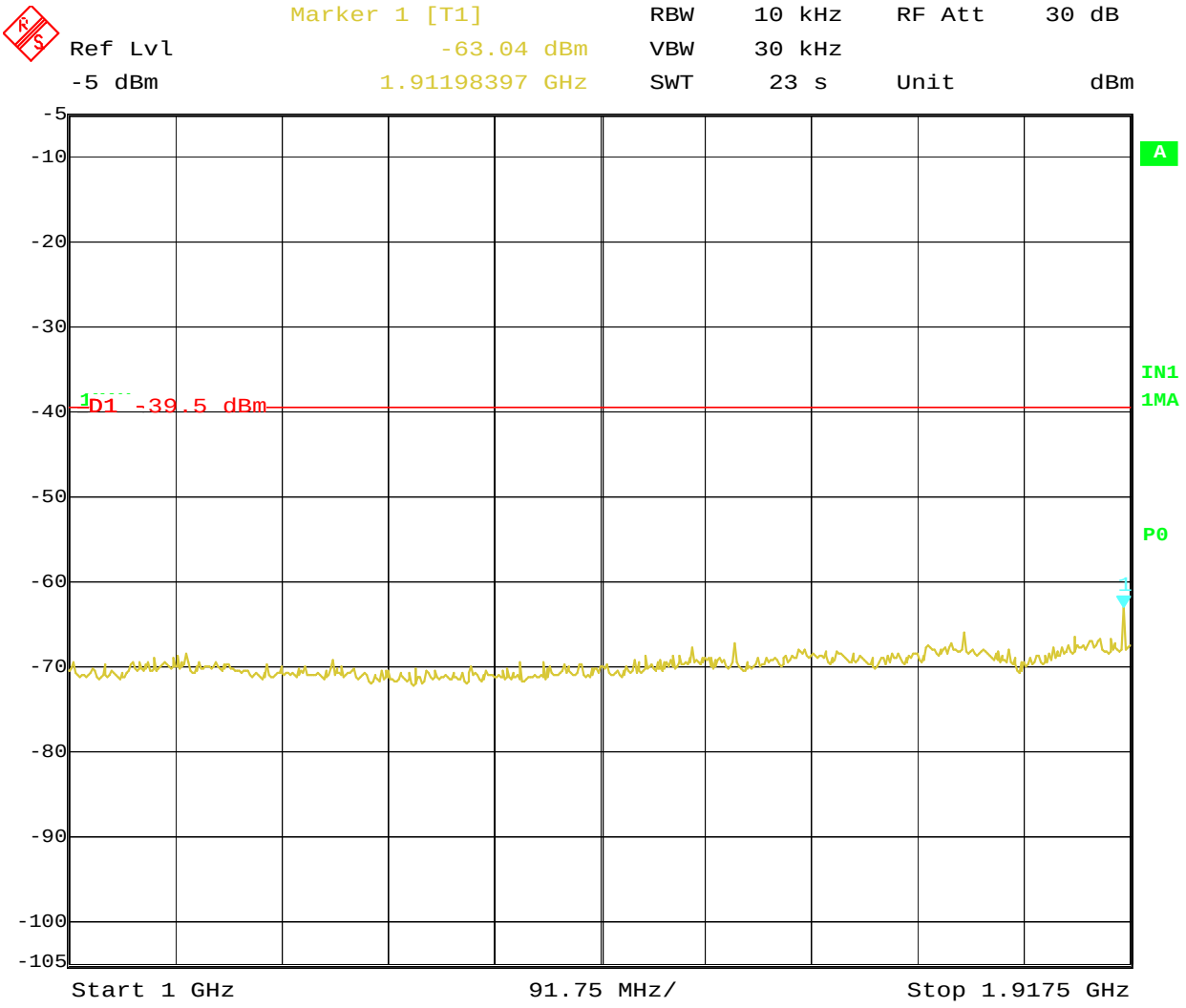
1 – 1.9175 GHz Conducted Emissions, Channel 1



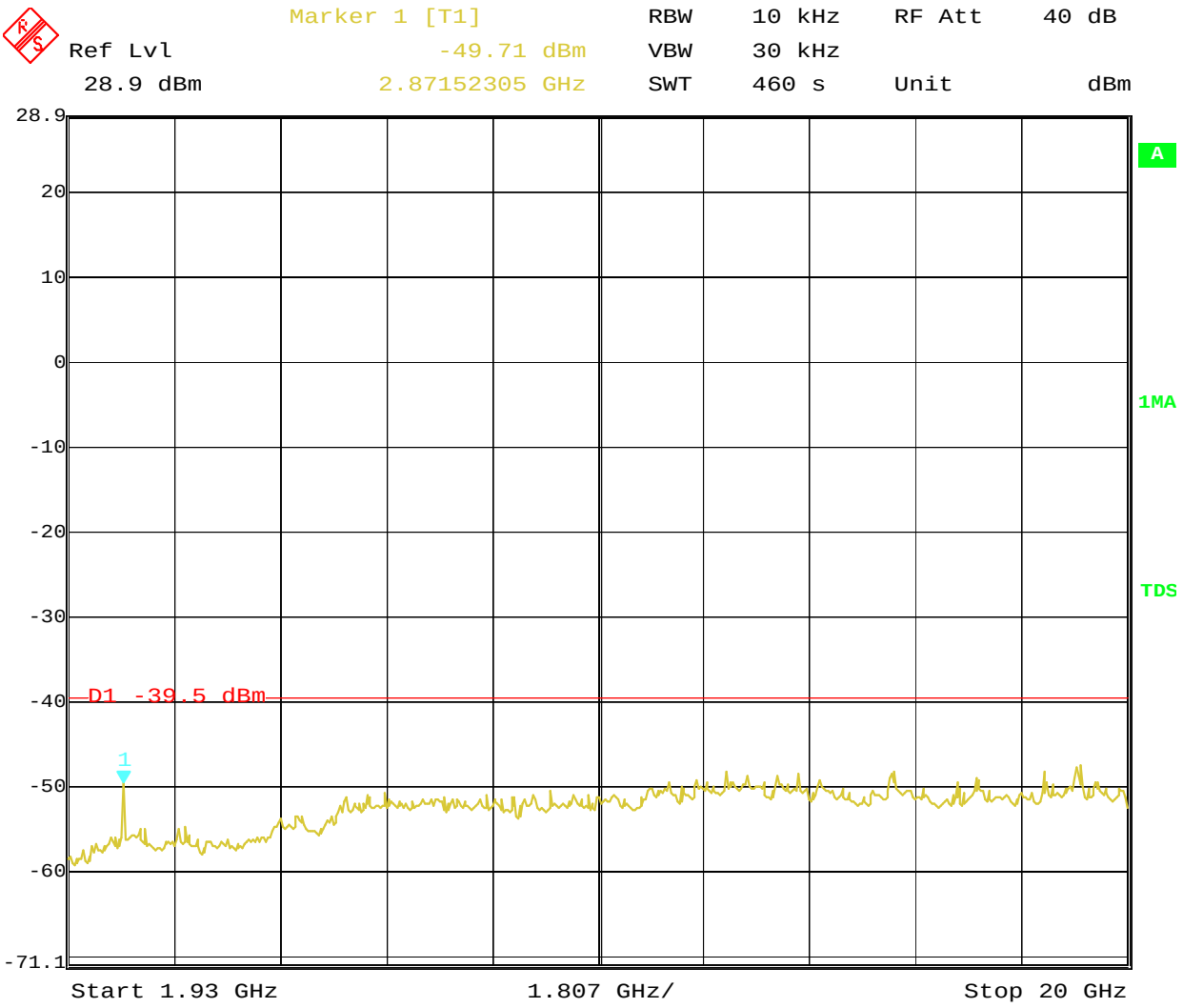
1.9325 – 20 GHz Conducted Emissions, Channel 1



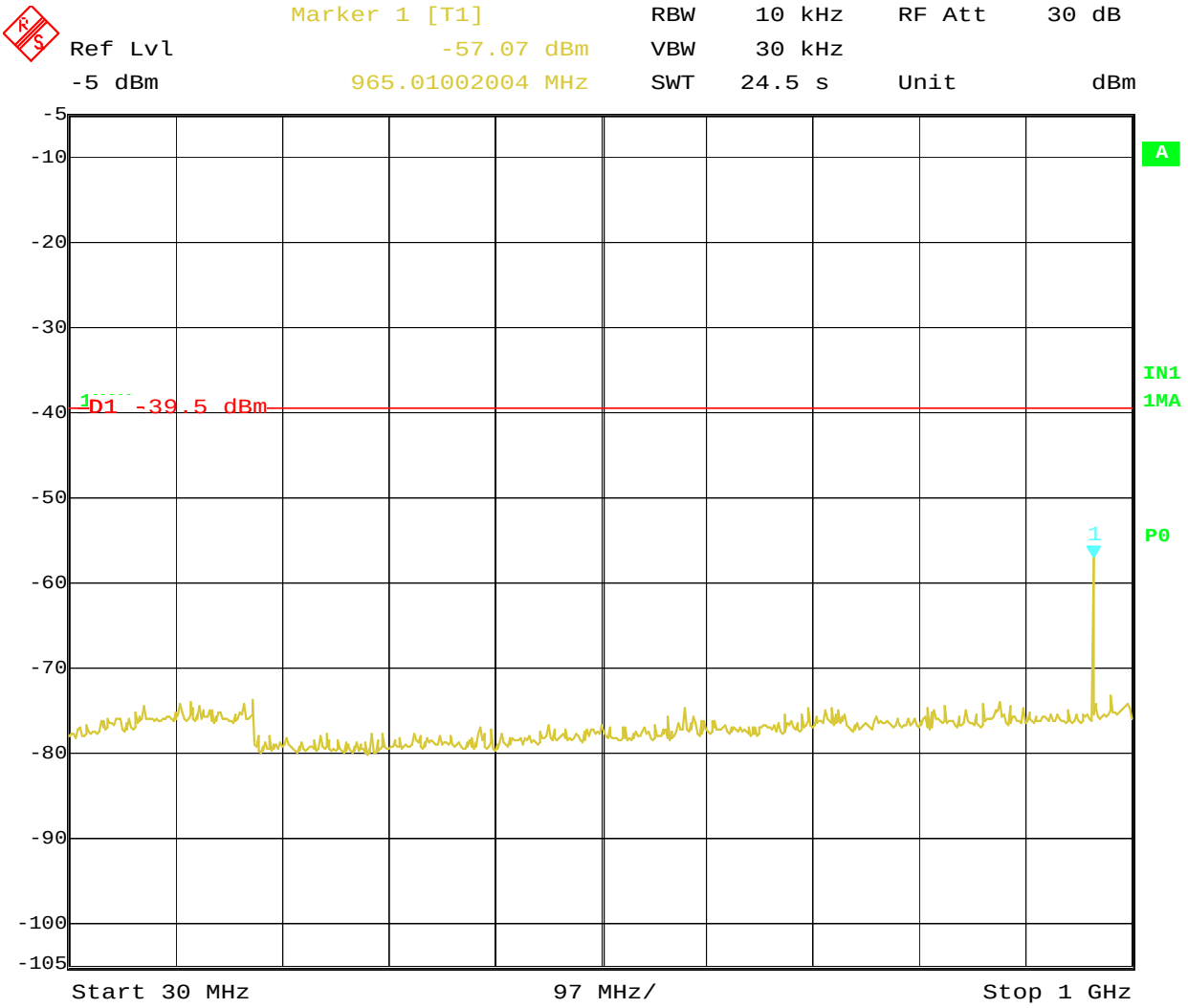
30 MHz – 1 GHz Conducted Emissions, Channel 3



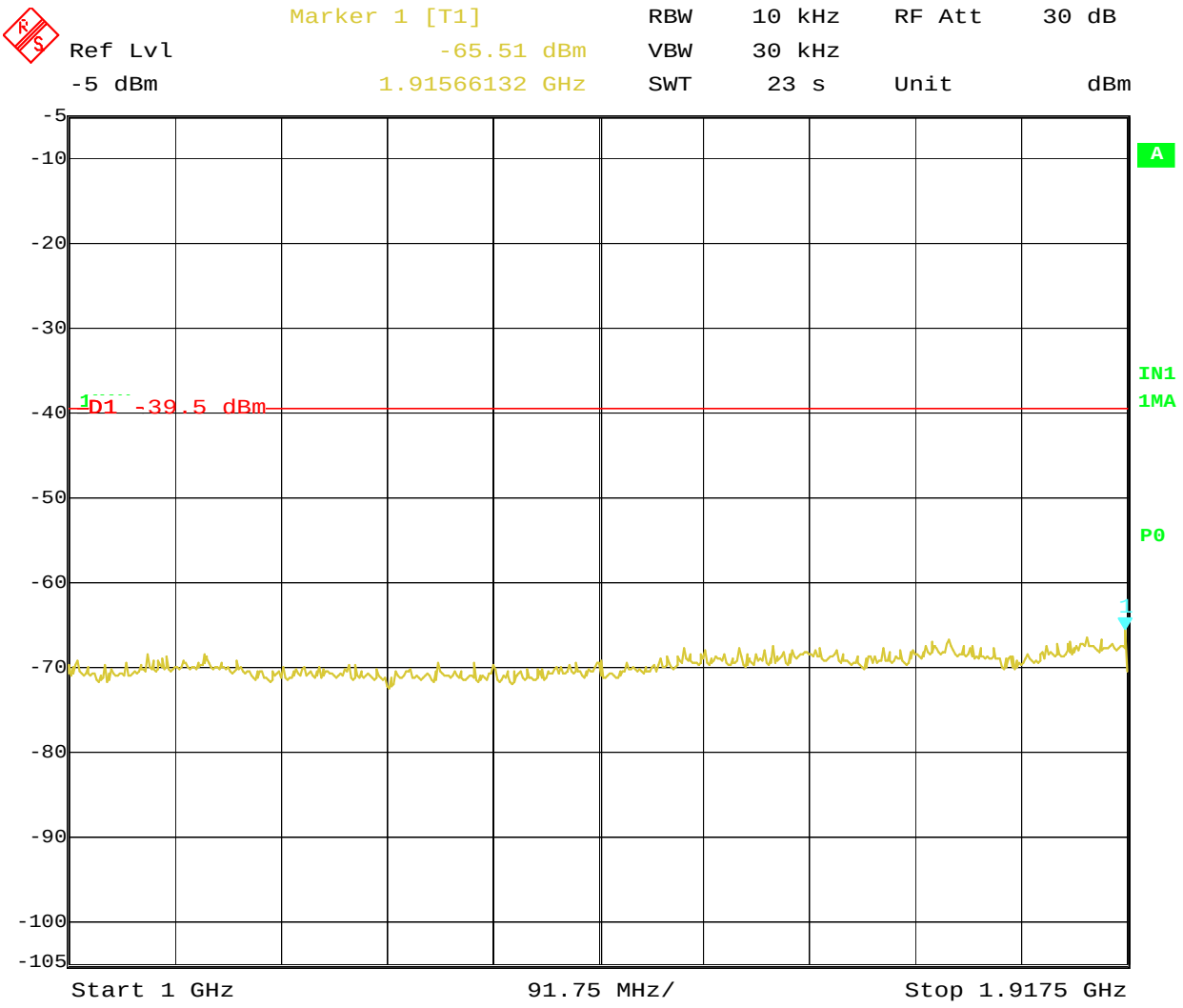
1 – 1.9175 GHz Conducted Emissions, Channel 3



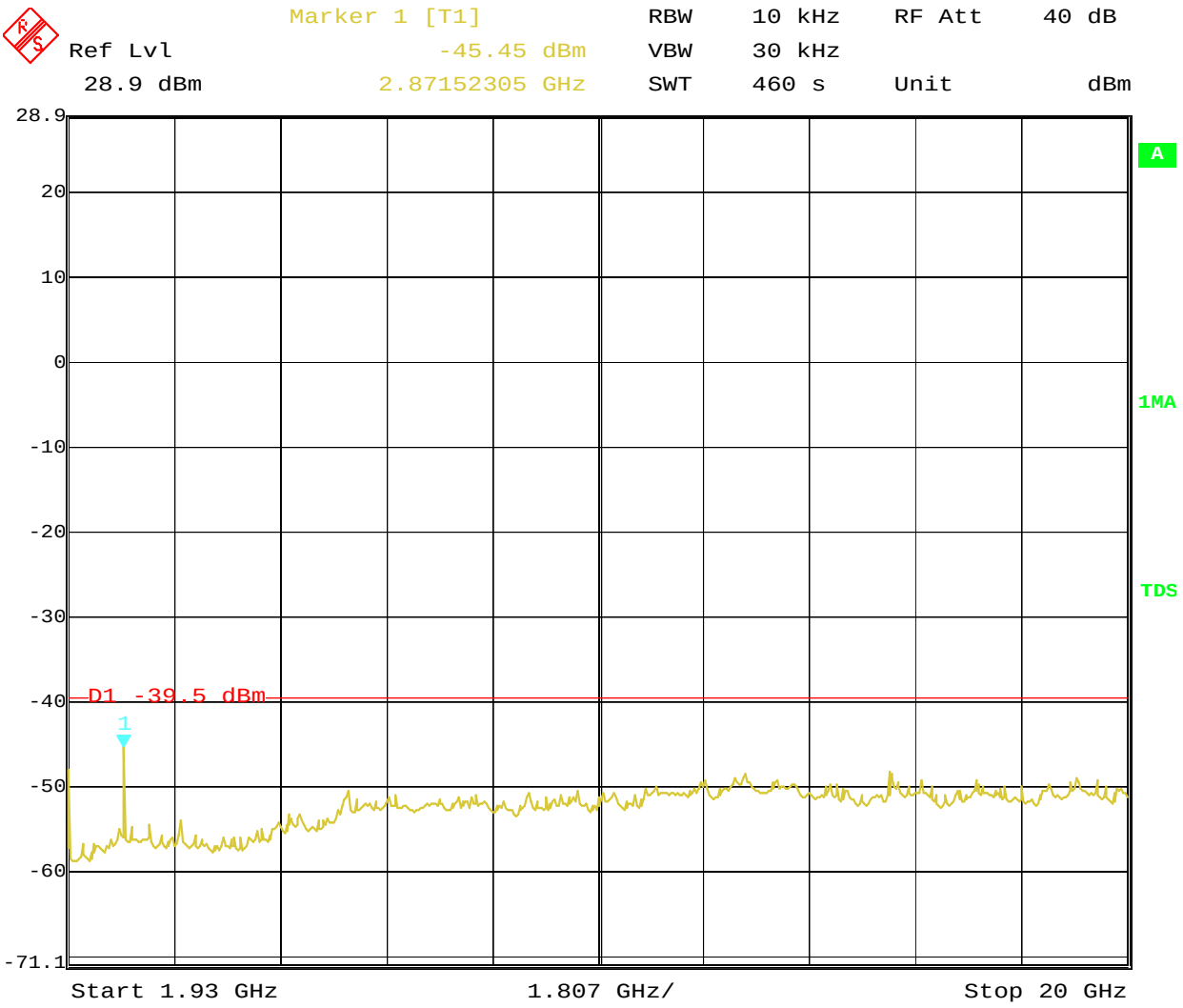
1.9325 – 20 GHz Conducted Emissions, Channel 3



30 MHz – 1 GHz Conducted Emissions, Channel 5



1 – 1.9175 GHz Conducted Emissions, Channel 5



1.9325 – 20 GHz Conducted Emissions, Channel 5

Test Personnel:	Nicholas Abbondante	Test Date:	06/25/2010, 12/07/2010
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	120V/60Hz	Ambient Temperature:	24, 23 ºC
Pretest Verification w/ BB Source:	**No**	Relative Humidity:	37, 16 %
		Atmospheric Pressure:	1003, 987 mbars

Deviations, Additions, or Exclusions: None

12 Emissions Outside the Sub-Bands, Radiated

12.1 Method

Tests are performed in accordance with CFR47 Part 15.323(d.2); ANSI C63.17 Sub-Clause 6.1.6; and IC RSS-213 6.7.1.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

Measurement Uncertainty

For radiated emissions, U_{lab} (3.5 dB at 3m and 3.5 dB at 10m below 1 GHz, and 4.2 dB at 3m above 1 GHz) < U_{CISPR} (5.2 dB), which is the reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF - AG
Where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dBμV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 52.0 dBμV
AF = 7.4 dB/m
CF = 1.6 dB
AG = 29.0 dB
FS = 32 dBμV/m

To convert from dBμV to μV or mV the following was used:

$UF = 10^{(NF / 20)}$ where UF = Net Reading in μV
NF = Net Reading in dBμV

Example:

FS = RA + AF + CF – AG = 52.0 + 7.4 + 1.6 – 29.0 = 32.0
$UF = 10^{(32\ dB\mu V / 20)}$ = 39.8 μV/m

12.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004	Weather Station	Davis Instruments	7400	PE80529A61 A	06/11/2010	06/11/2011
REA006	18GHz High Pass Filter	Reactel, Inc	7HS-18G/40G K11	(06)1	04/19/2010	04/19/2011
~REA004	3GHz High Pass Filter	Reactel, Inc	7HSX-3G/18G-S11	06-1	12/06/2010	12/06/2011
EMC04	ANTENNA, RIDGED GUIDE, 18-40 GHZ	EMCO	3116	2090	02/04/2010	02/04/2011
145-416	Cables 145-400 145-408 145-402 145-404	Huber + Suhner	3m Track B cables	multiple	08/31/2010	08/31/2011
PRE9	100MHz-40GHz Preamp	MITEQ	NSP4000-NFG	1260417	04/19/2010	04/19/2011
145128	EMI Receiver 40 GHz (20 Hz - 40 Ghz)	Rohde & Schwarz	ESI	8392831001	08/10/2010	08/10/2011
HORN3	HORN ANTENNA	EMCO	3115	9610-4980	03/22/2010	03/22/2011
145-410	Cables 145-400 145-406 145-407 145-405 145-403	Huber + Suhner	10m Track A Cables	multiple	08/31/2010	08/31/2011
145003	Preamplifier (150 KHz to 1.3 GHz)	Hewlett Packard	8447D	2443A04077	09/24/2010	09/24/2011
145106	Bilog Antenna (30MHz - 5GHz)	Sunol Sciences	JB5	A111003	07/20/2010	07/20/2011

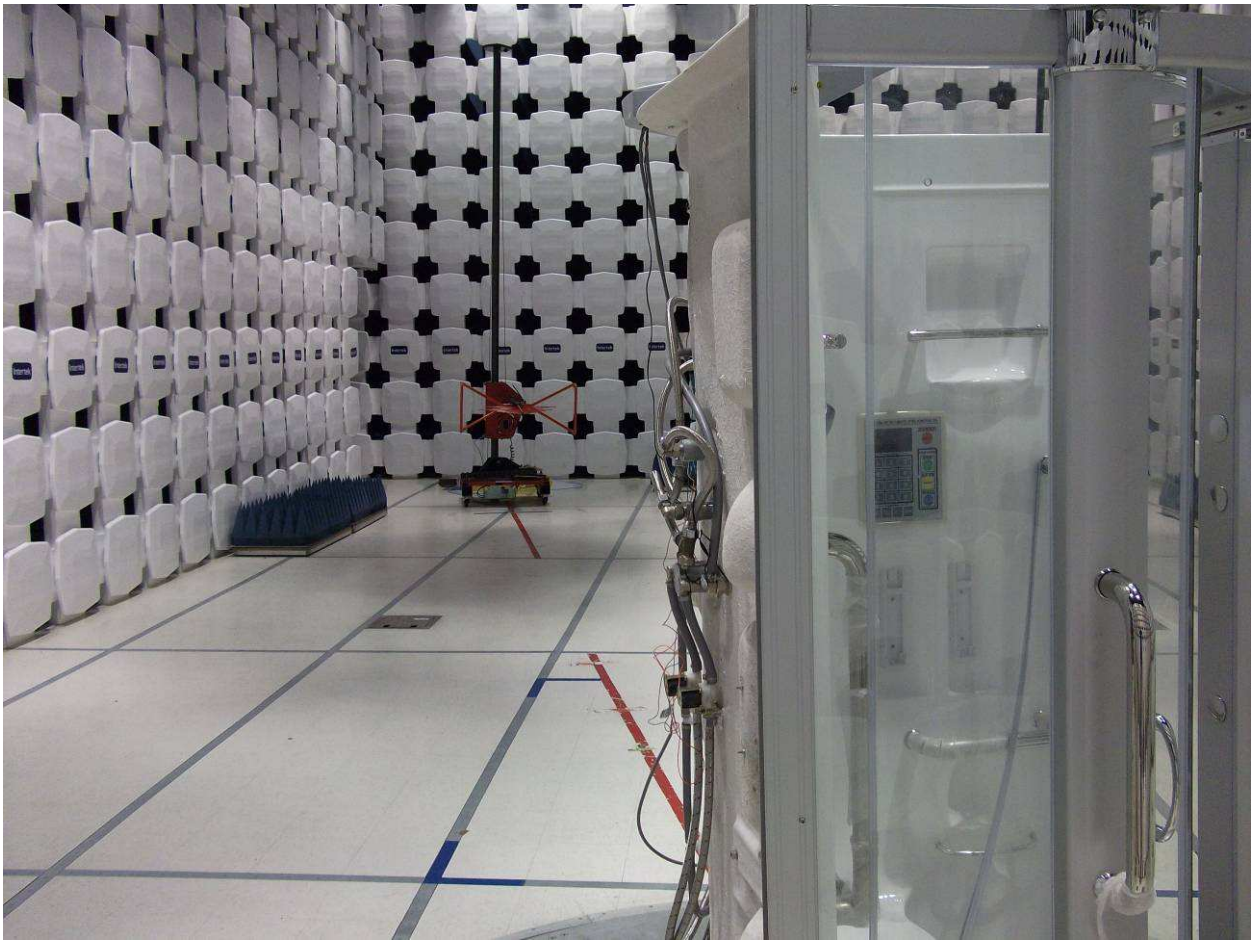
Software Utilized:

Name	Manufacturer	Version
C5	Teseq	Build 5.26.00.3
Excel 2003	Microsoft	(11.8326.8324) SP3
EMI Boxborough.xls	Intertek	08/27/2010

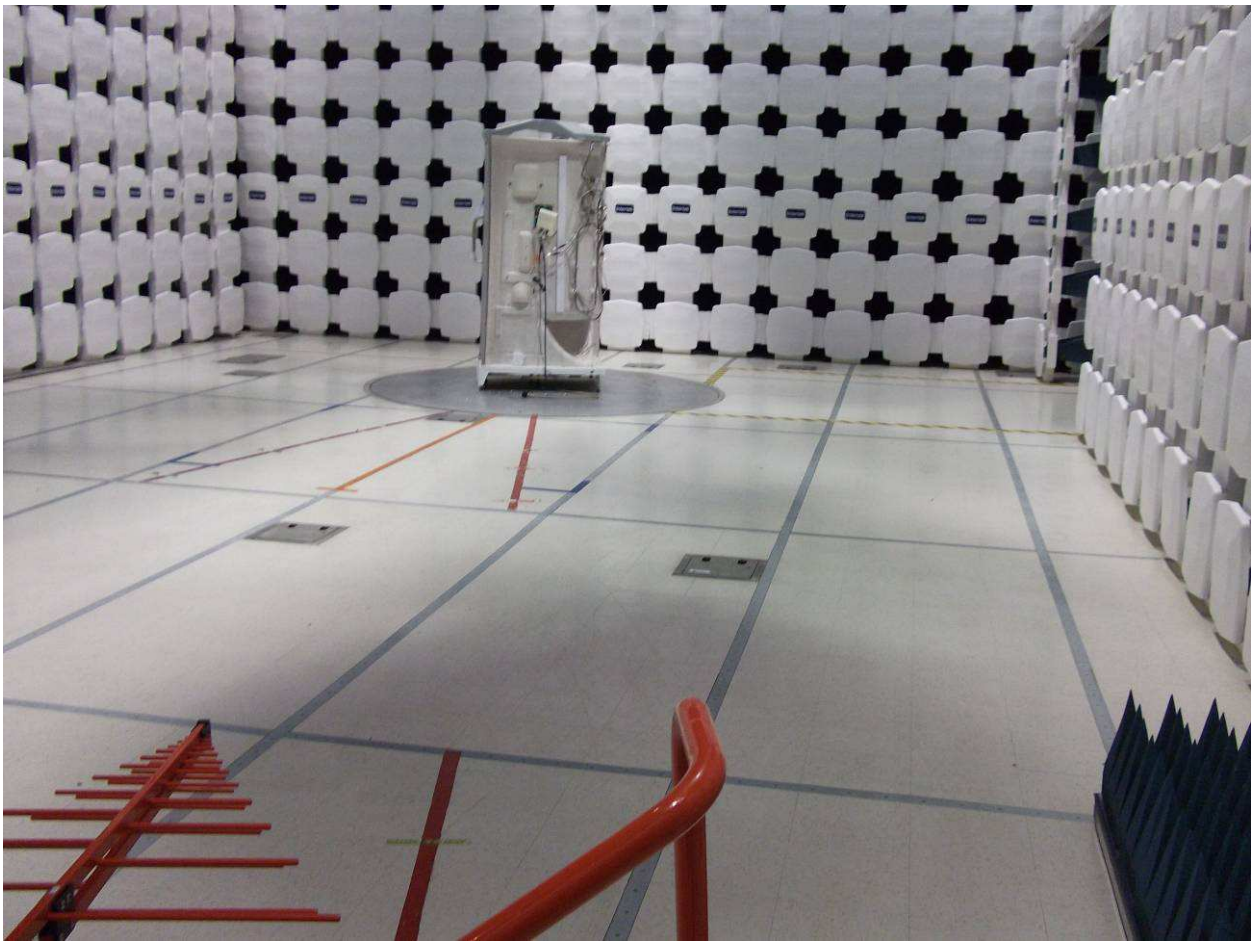
12.3 Results:

The sample tested was found to Comply.

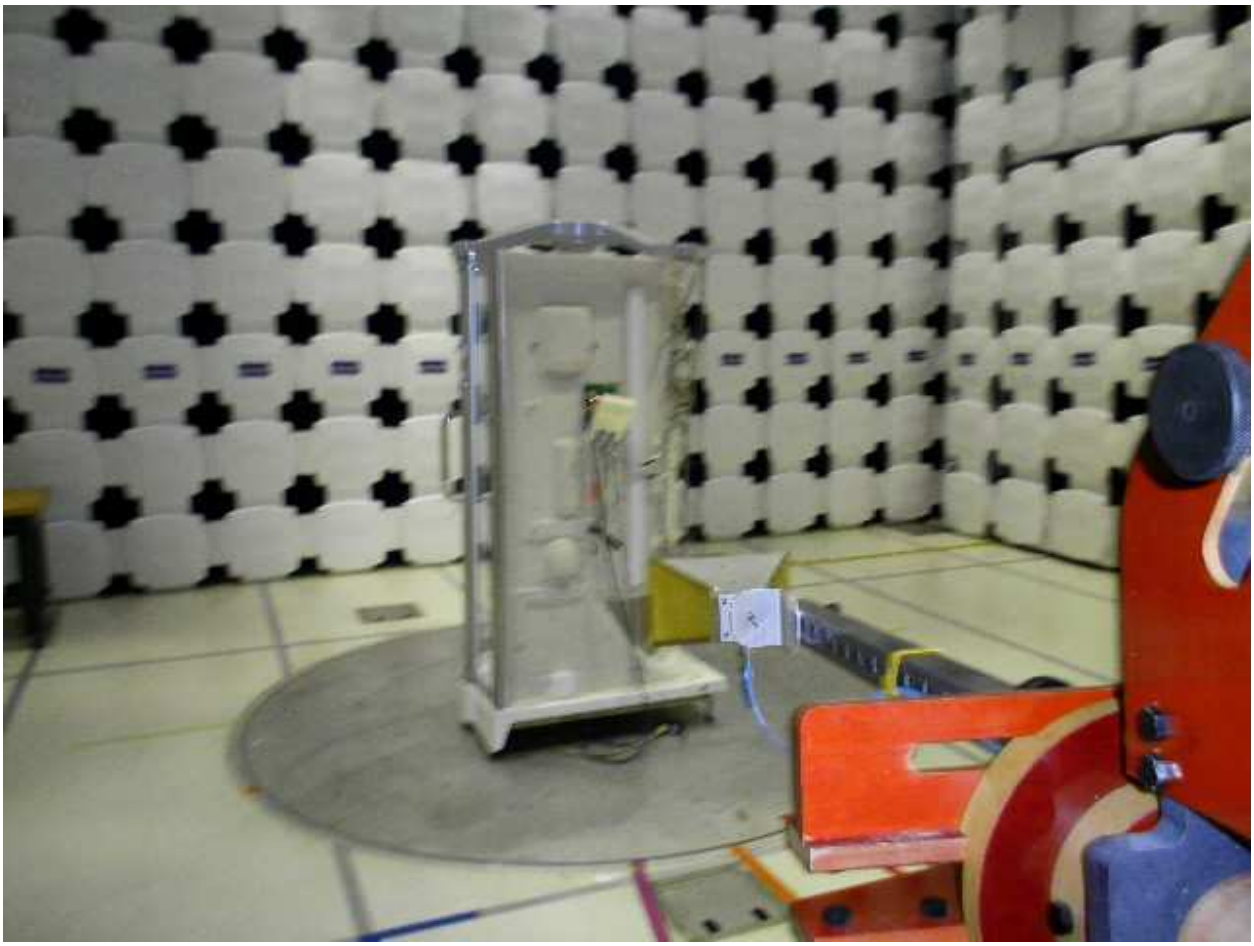
12.4 Setup Photographs:



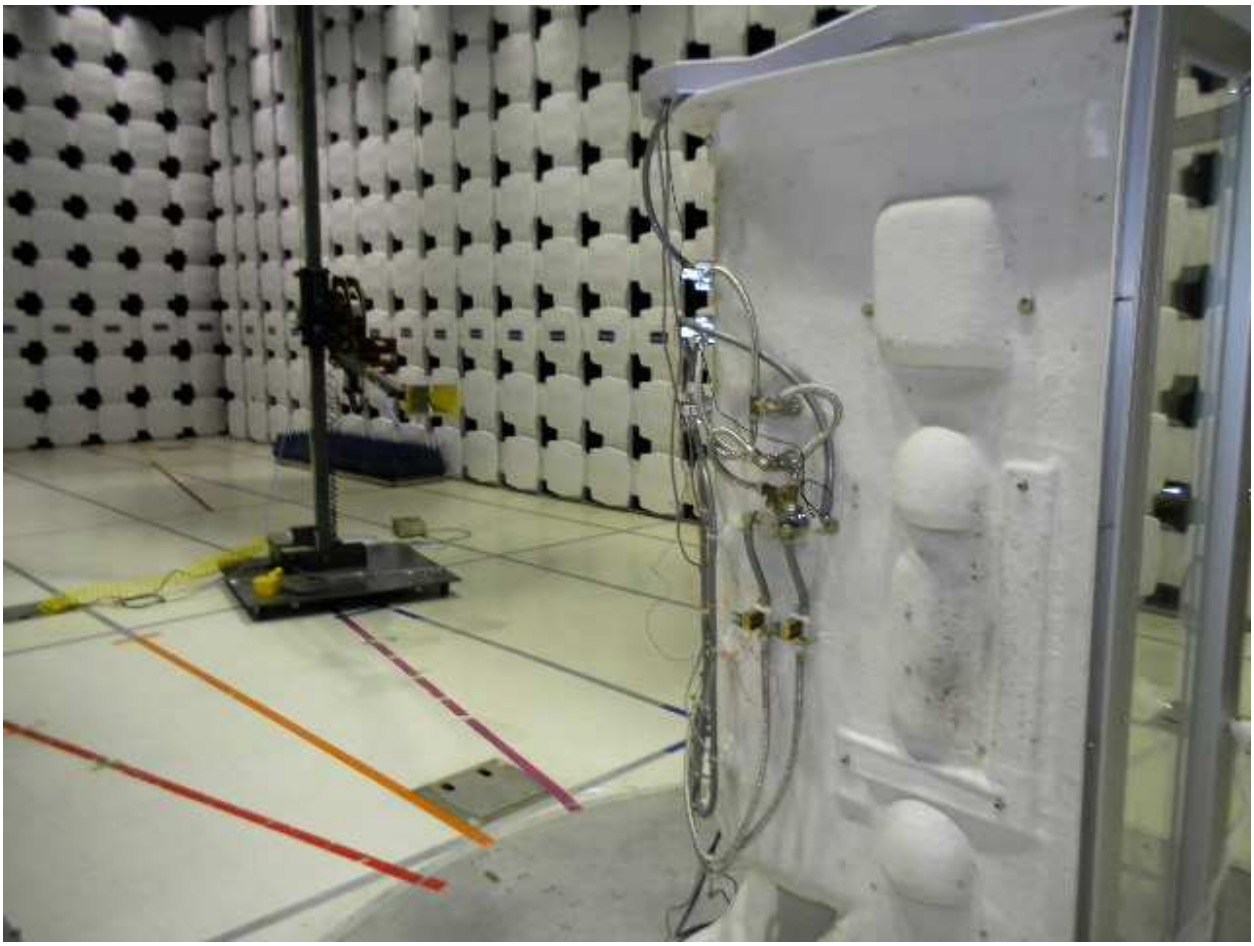
Transmit Mode 30-1000 MHz



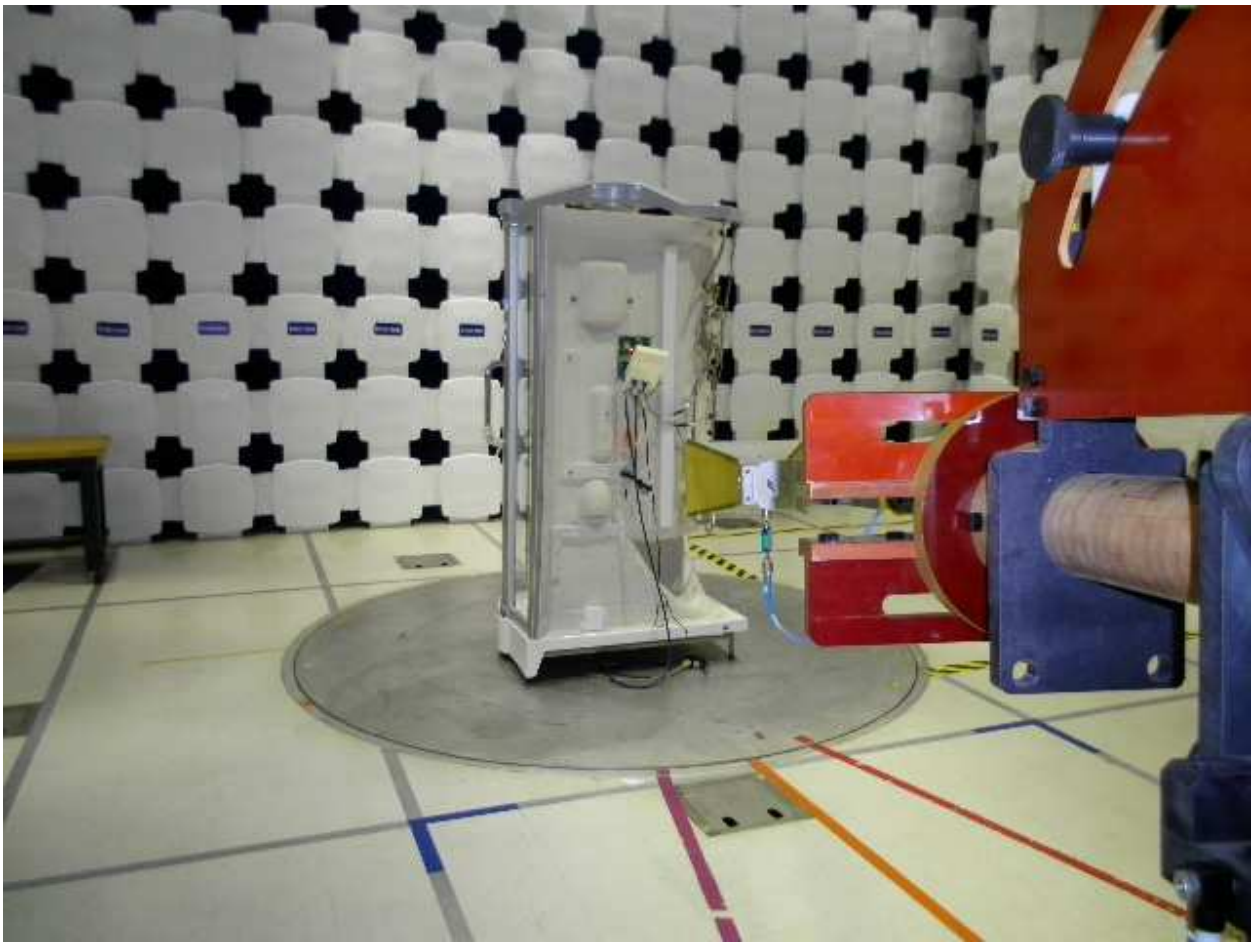
Transmit Mode 30-1000 MHz



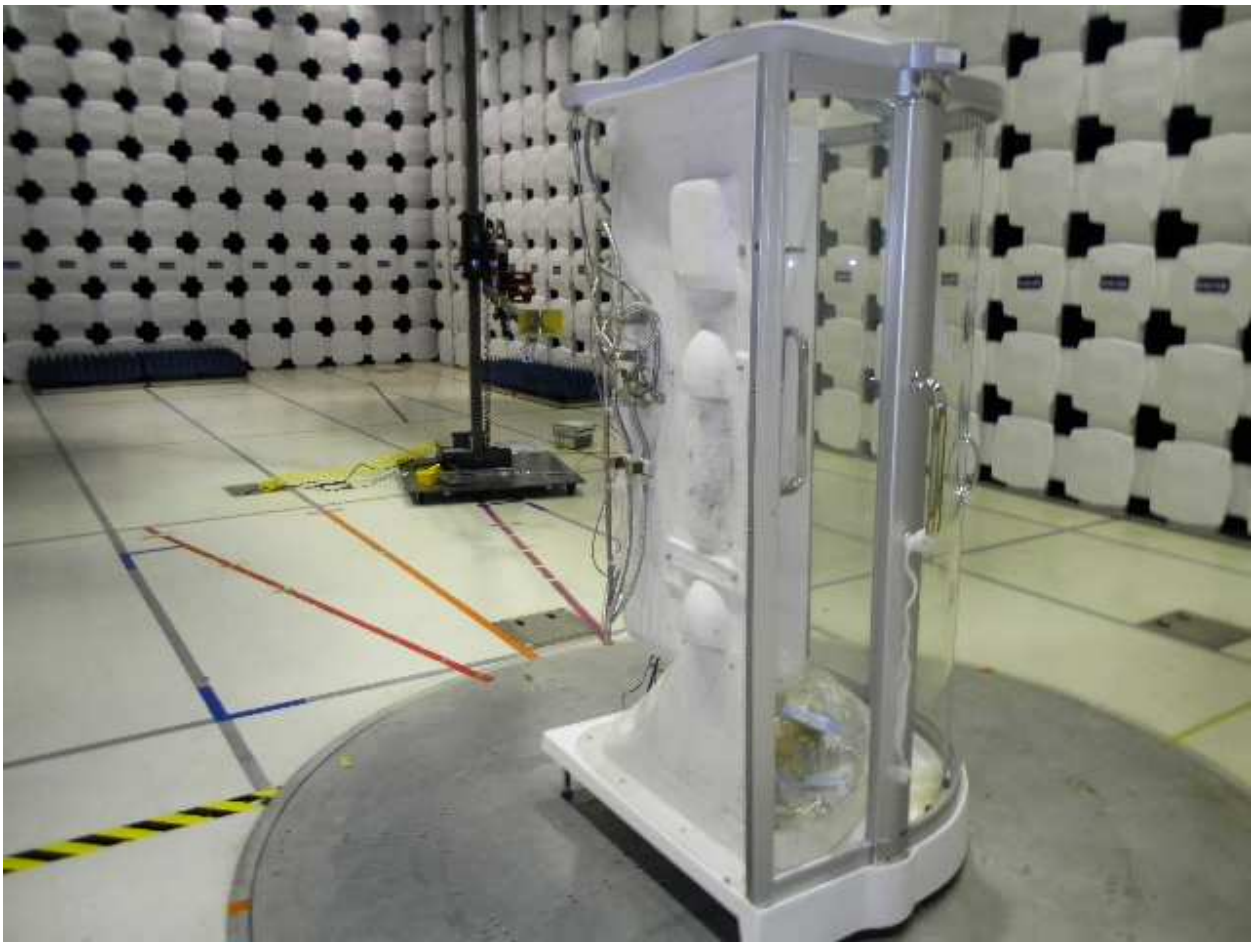
Transmit Mode 1-4 GHz



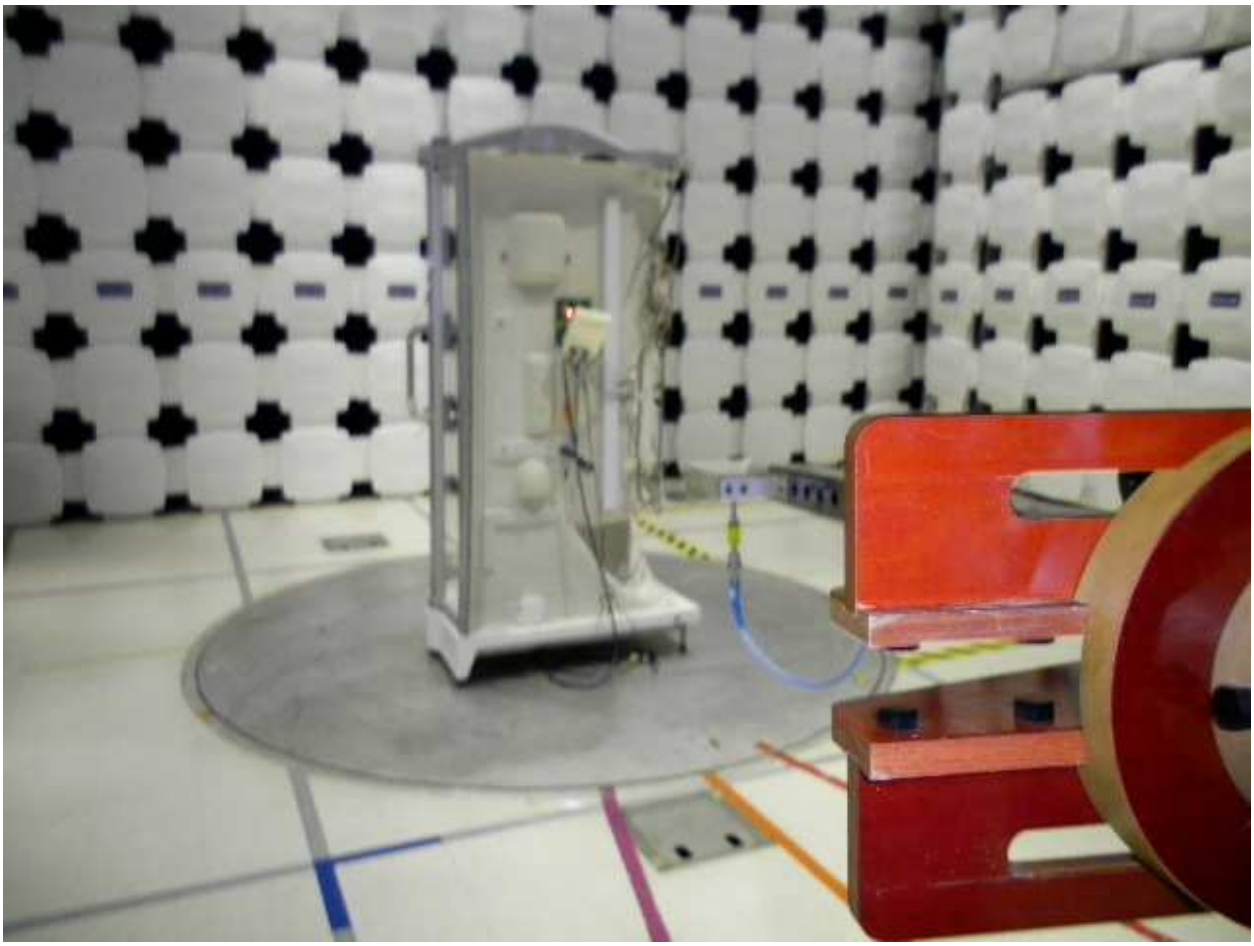
Transmit Mode 1-4 GHz



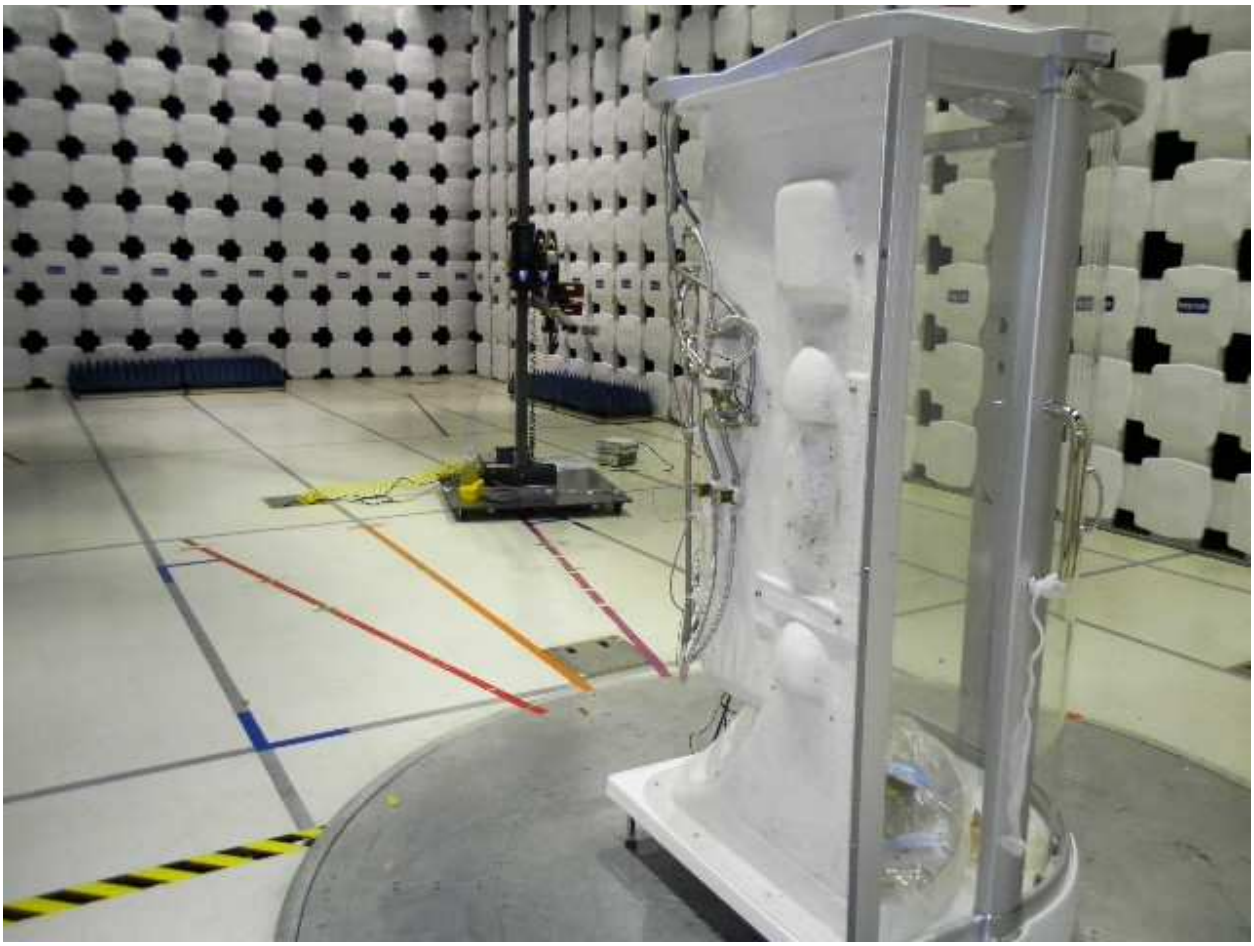
Transmit Mode 4-18 GHz



Transmit Mode 4-18 GHz



Transmit Mode 18-20 GHz



Transmit Mode 18-20 GHz

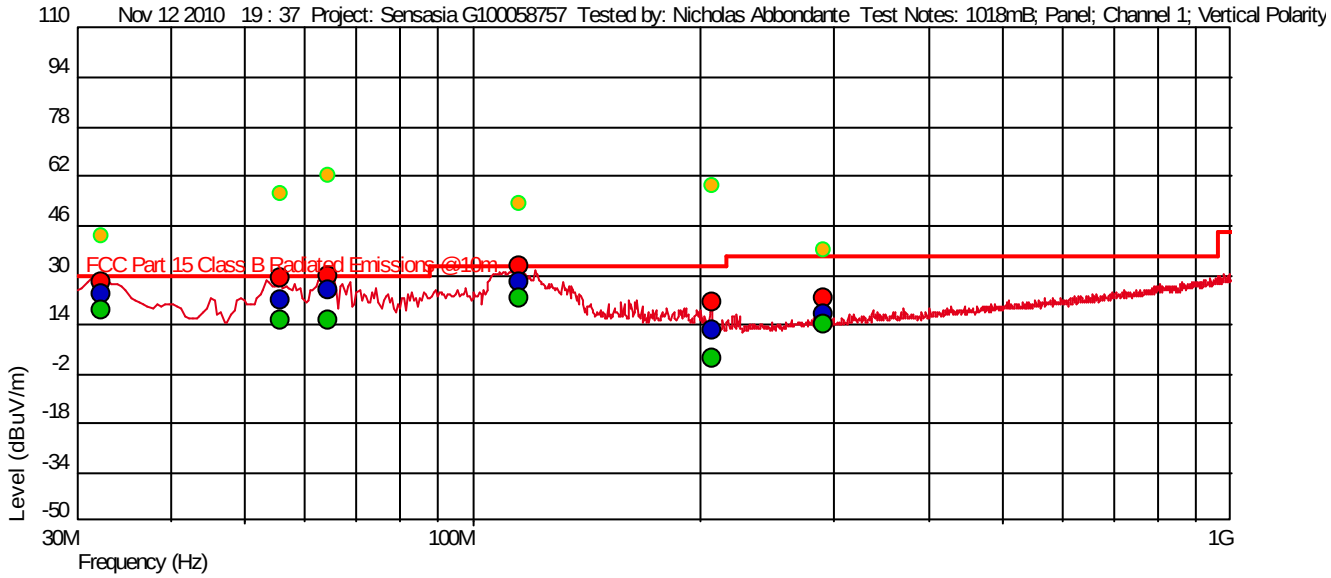
12.5 Test Data:

In the region at 2.5 MHz or greater below and above the lower and upper band edges, respectively, the measured emission level shall not exceed the limits of 47CFR15.209. Measurement shall be made as a radiated test.

See the Peak Transmit Power section for duty cycle measurements.

Test Information

Test Details	User Input
Project:	Sensasia G100058757
Test Notes:	1018mB; Panel; Channel 1; Vertical Polarity
Temperature:	21c
Humidity:	23%
Tested by:	Nicholas Abbondante
Test Started:	Nov 12 2010 19 : 37



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable

Level (dBuV/m) = AF + CL + PA + Raw

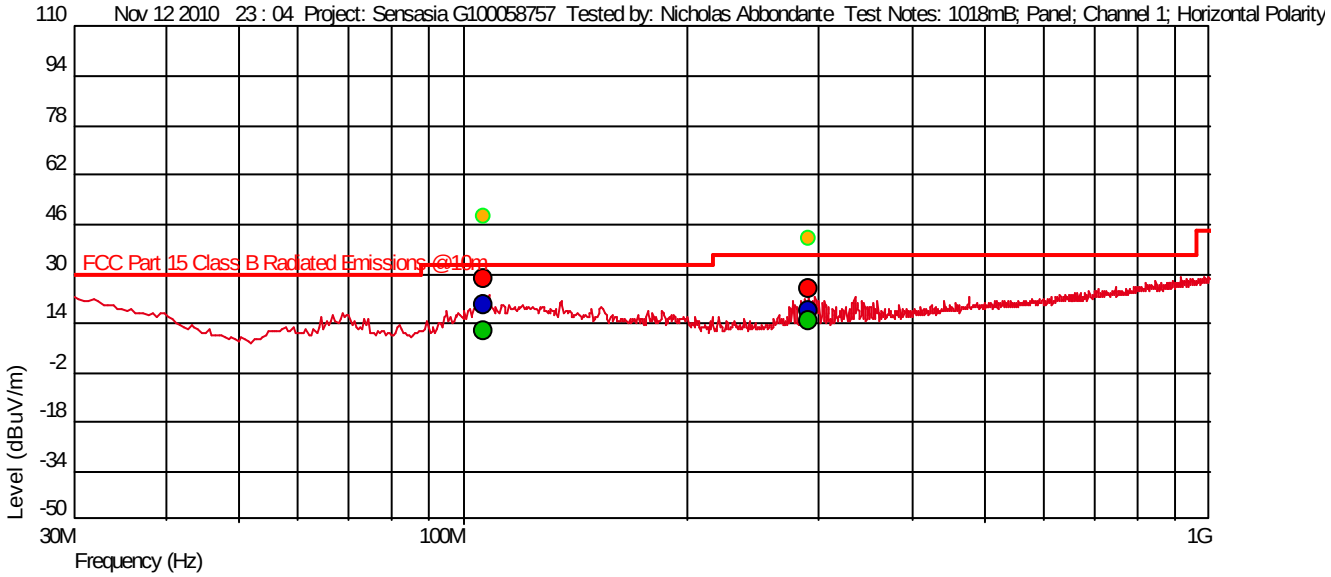
AF = Antenna Factor
CL = Cable Losses
PA = Pre-Amplifier
Raw = Raw Instrument Reading (Not listed on Spot Tables)

Measured: QP

Frequency (Hz)	Level* (dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver (|)	Angle (Deg)	Mast Height (m)	Detector	RBW(Hz)
32.449 M	23.87	18.930	-26.303	30.00	-6.13	|	52	1.56	QP	120 k
55.772 M	21.89	7.000	-25.958	30.00	-8.11	|	137	1.30	QP	120 k
64.633 M	25.19	7.700	-25.852	30.00	-4.81	|	65	3.93	QP	120 k
115.452 M	27.82	13.309	-25.369	33.00	-5.18	|	52	1.18	QP	120 k
206.496 M	12.22	11.461	-24.422	33.00	-20.78	|	78	1.55	QP	120 k
290.850 M	17.02	13.417	-24.524	36.00	-18.98	|	29	4.00	QP	120 k

Test Information

Test Details	User Input
Project:	Sensasia G100058757
Test Notes:	1018mB; Panel; Channel 1; Horizontal Polarity
Temperature:	21c
Humidity:	23%
Tested by:	Nicholas Abbondante
Test Started:	Nov 12 2010 23 : 04



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable

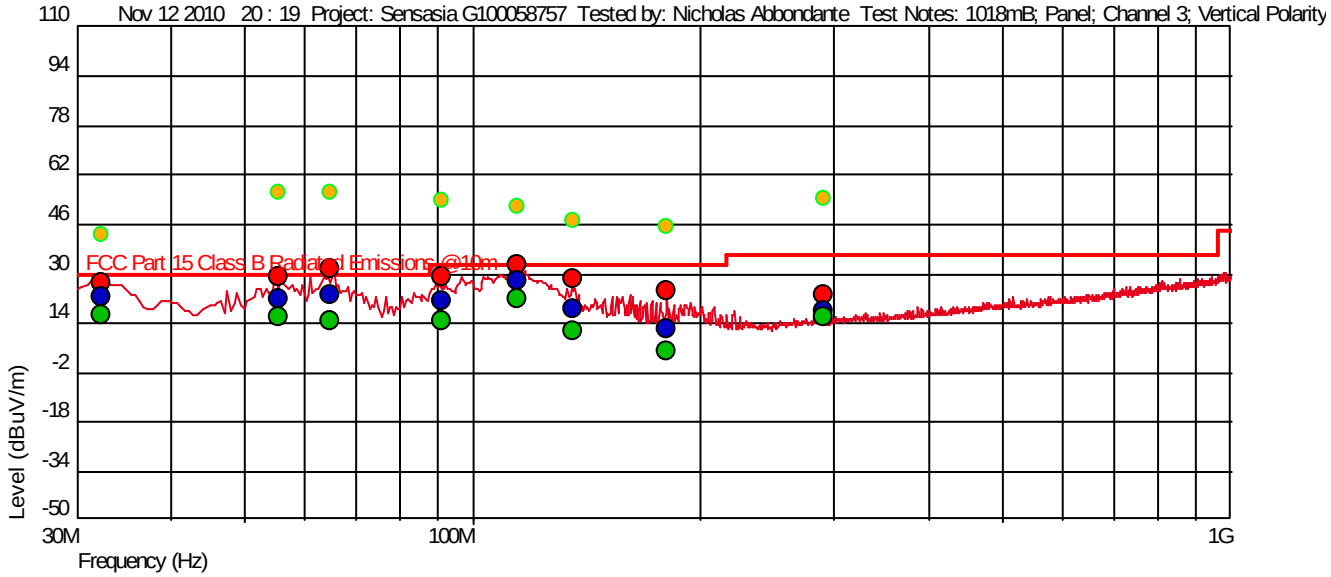
Level (dBuV/m) = AF + CL + PA + Raw
AF = Antenna Factor
CL = Cable Losses
PA = Pre-Amplifier
Raw = Raw Instrument Reading (Not listed on Spot Tables)

Measured: QP

Frequency (Hz)	Level* (dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver (|)	Angle (Deg)	Mast Height (m)	Detector	RBW(Hz)
106.349 M	19.65	11.870	-25.501	33.00	-13.35	--	158	4.00	QP	120 k
290.708 M	17.97	13.400	-24.524	36.00	-18.03	--	3	2.13	QP	120 k

Test Information

Test Details	User Input
Project:	Sensasia G100058757
Test Notes:	1018mB; Panel; Channel 3; Vertical Polarity
Temperature:	21c
Humidity:	23%
Tested by:	Nicholas Abbondante
Test Started:	Nov 12 2010 20 : 19



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable

Level (dBuV/m) = AF + CL + PA + Raw

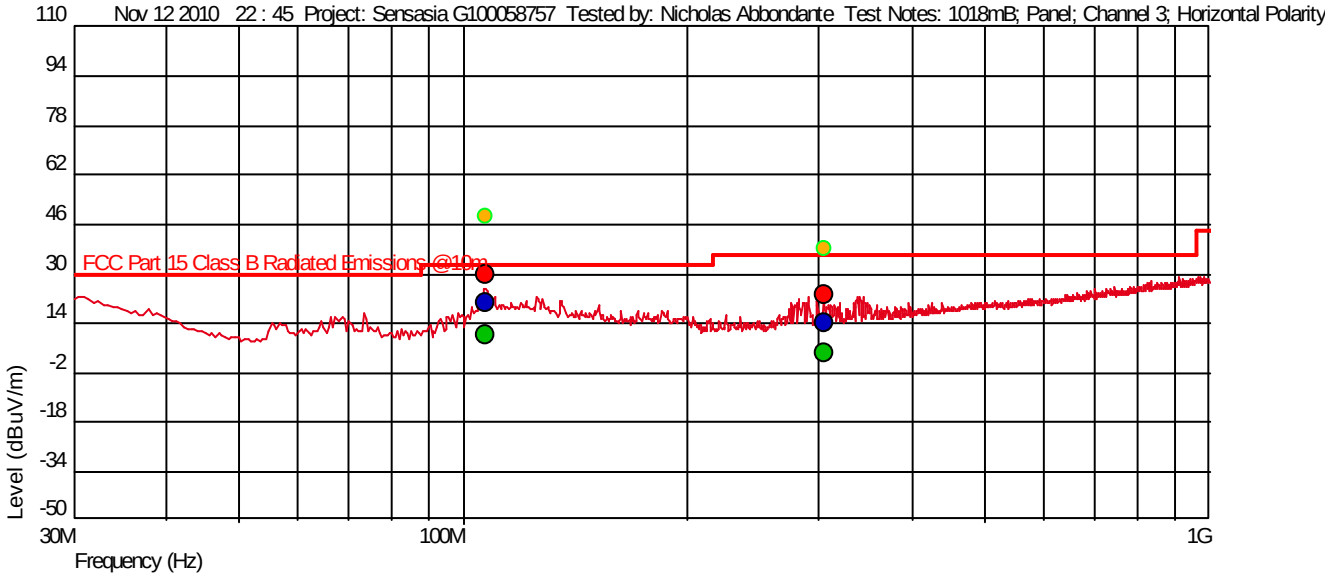
AF = Antenna Factor
CL = Cable Losses
PA = Pre-Amplifier
Raw = Raw Instrument Reading (Not listed on Spot Tables)

Measured: QP

Frequency (Hz)	Level* (dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver (|)	Angle (Deg)	Mast Height (m)	Detector	RBW(Hz)
32.285 M	22.41	19.028	-26.305	30.00	-7.59	|	77	3.71	QP	120 k
55.344 M	22.12	7.000	-25.964	30.00	-7.88	|	153	1.88	QP	120 k
64.997 M	22.86	7.700	-25.848	30.00	-7.14	|	41	1.87	QP	120 k
90.922 M	21.13	8.384	-25.733	33.00	-11.87	|	69	3.42	QP	120 k
114.517 M	27.41	13.213	-25.382	33.00	-5.59	|	44	1.18	QP	120 k
135.680 M	18.84	13.718	-25.110	33.00	-14.16	|	59	1.46	QP	120 k
180.482 M	11.84	11.490	-24.596	33.00	-21.16	|	70	1.19	QP	120 k
290.825 M	18.29	13.417	-24.524	36.00	-17.71	|	27	1.30	QP	120 k

Test Information

Test Details	User Input
Project:	Sensasia G100058757
Test Notes:	1018mB; Panel; Channel 3; Horizontal Polarity
Temperature:	21c
Humidity:	23%
Tested by:	Nicholas Abbondante
Test Started:	Nov 12 2010 22 : 45



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable

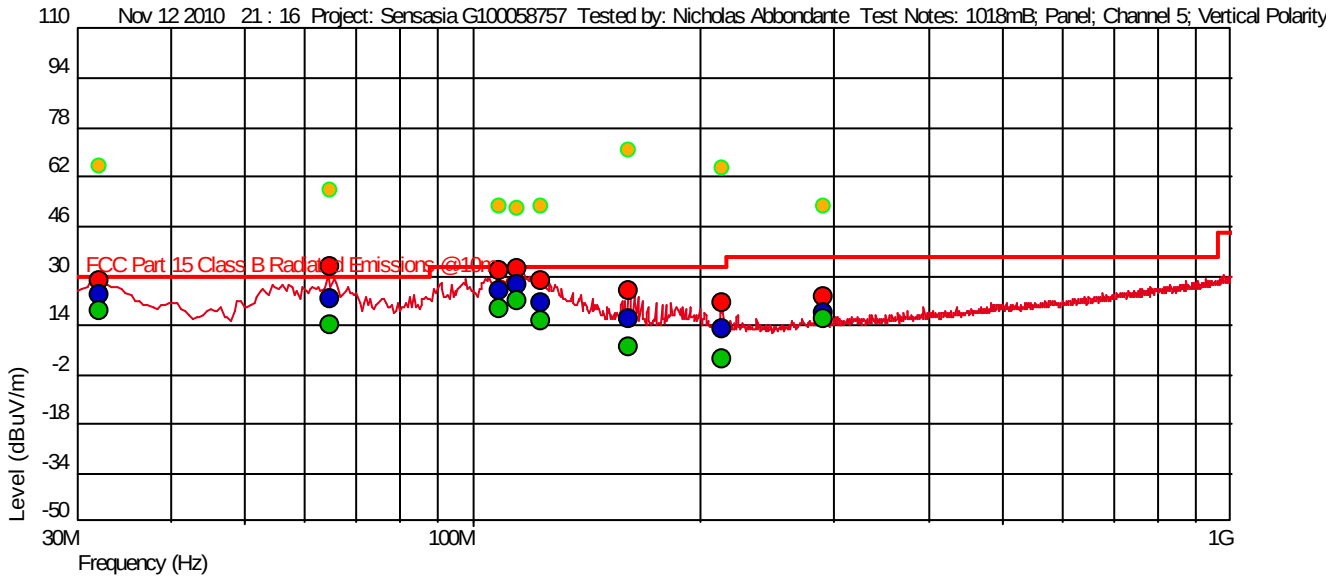
Level (dBuV/m) = AF + CL + PA + Raw
AF = Antenna Factor
CL = Cable Losses
PA = Pre-Amplifier
Raw = Raw Instrument Reading (Not listed on Spot Tables)

Measured: QP

Frequency (Hz)	Level* (dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver (|)	Angle (Deg)	Mast Height (m)	Detector	RBW(Hz)
107.394 M	20.80	12.079	-25.485	33.00	-12.20	--	178	4.00	QP	120 k
304.212 M	13.84	13.668	-24.520	36.00	-22.16	--	356	1.73	QP	120 k

Test Information

Test Details	User Input
Project:	Sensasia G100058757
Test Notes:	1018mB; Panel; Channel 5; Vertical Polarity
Temperature:	21c
Humidity:	23%
Tested by:	Nicholas Abbondante
Test Started:	Nov 12 2010 21 : 16



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable

Level (dBuV/m) = AF + CL + PA + Raw

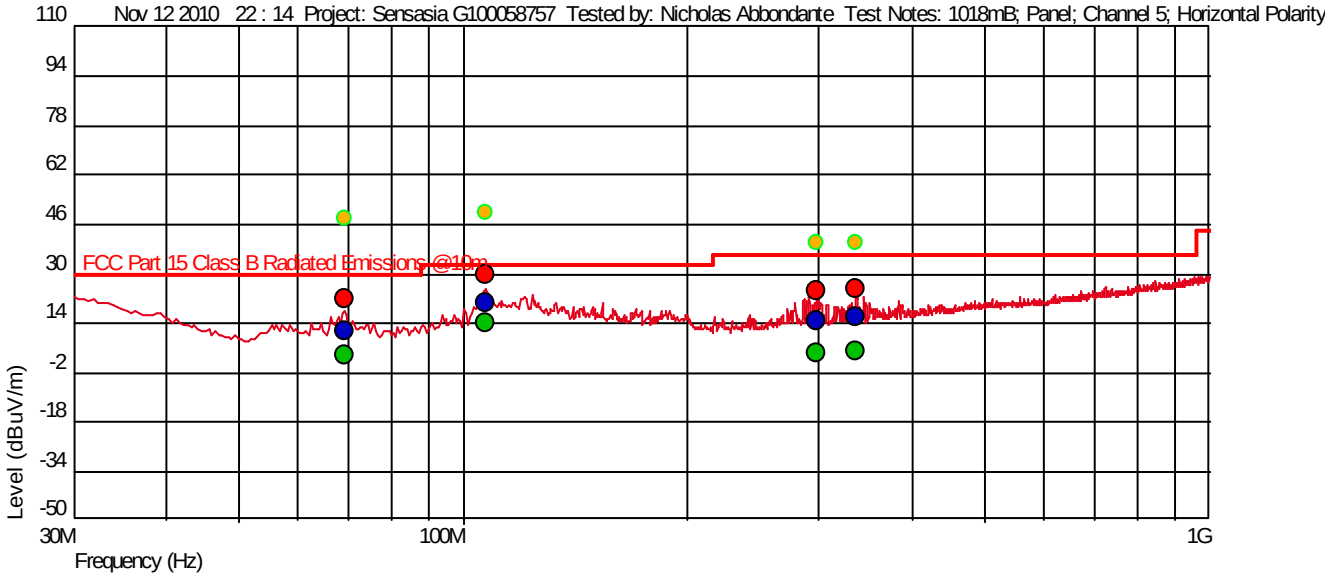
AF = Antenna Factor
CL = Cable Losses
PA = Pre-Amplifier
Raw = Raw Instrument Reading (Not listed on Spot Tables)

Measured: QP

Frequency (Hz)	Level*(dBuV/ m)	AF	PA+CL	Limit(dBuV/ m)	Margin(dBuV/ m)	Hor (--), Ver (|)	Angle (Deg)	Mast Height (m)	Detector	RBW(Hz)
32.243 M	24.07	19.054	-26.306	30.00	-5.93	|	57	1.62	QP	120 k
64.992 M	22.66	7.700	-25.848	30.00	-7.34	|	47	2.18	QP	120 k
108.320 M	25.21	12.131	-25.472	33.00	-7.79	|	45	1.29	QP	120 k
114.224 M	27.14	13.160	-25.386	33.00	-5.86	|	46	1.17	QP	120 k
123.050 M	21.31	13.583	-25.267	33.00	-11.69	|	34	2.77	QP	120 k
160.455 M	15.77	12.573	-24.820	33.00	-17.23	|	63	1.51	QP	120 k
213.575 M	12.97	10.900	-24.444	33.00	-20.03	|	86	1.51	QP	120 k
290.777 M	18.14	13.416	-24.524	36.00	-17.86	|	42	1.19	QP	120 k

Test Information

Test Details	User Input
Project:	Sensasia G100058757
Test Notes:	1018mB; Panel; Channel 5; Horizontal Polarity
Temperature:	21c
Humidity:	23%
Tested by:	Nicholas Abbondante
Test Started:	Nov 12 2010 22 : 14



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable

Level (dBuV/m) = AF + CL + PA + Raw
AF = Antenna Factor
CL = Cable Losses
PA = Pre-Amplifier
Raw = Raw Instrument Reading (Not listed on Spot Tables)

Measured: QP

Frequency (Hz)	Level* (dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver (|)	Angle (Deg)	Mast Height (m)	Detector	RBW(Hz)
69.225 M	11.41	8.023	-25.807	30.00	-18.59	--	7	2.69	QP	120 k
107.330 M	20.64	12.066	-25.486	33.00	-12.36	--	155	3.80	QP	120 k
297.782 M	15.03	13.456	-24.520	36.00	-20.97	--	350	1.57	QP	120 k
336.497 M	15.73	14.100	-24.527	36.00	-20.27	--	356	1.76	QP	120 k

Special Radiated Emissions

Company: Sensasia
Model #: Panel
Serial #: #4
Engineers: Nicholas Abbondante
Project #: G100058757
Standard: FCC Part 15 Subpart C 15.209
Receiver: R&S ESI (145-128) 08-10-2011
PreAmp: PRE9 04-19-2011.txt
PreAmp Used? (Y or N): N

Date(s): 11/17/10
Limit Distance (m): 3
Test Distance (m): 3
Voltage/Frequency: Fresh Battery

Location: 10m Chamber
Barometer: DAV004
Temp/Humidity/Pressure: 21c 42% 991mB
Frequency Range: 1-4 GHz

Antenna & Cables: N
Antenna: HORN3 V3m 03-22-2011.txt HORN3 H3m 03-22-2011.txt
Cable(s): 3mTrackB 145-416 08-31-2011.txt NONE.
Filter: NONE
Bands: N, LF, HF, SHF

Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)
Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth	FCC	IC
Note: Average obtained from peak reading using 28.1 dB average factor for 3.92% duty cycle													
Note: Panel Channel 1													
PK	H	1917.500	32.11	27.53	5.10	0.00	0.00	64.74	74.00	-9.26	1/3MHz		
AVG	H	1917.500	4.01	27.53	5.10	0.00	0.00	36.64	54.00	-17.36	1/3MHz		
PK	H	3843.072	29.81	32.54	7.43	0.00	0.00	69.78	74.00	-4.22	1/3MHz	RB	RB
AVG	H	3843.072	1.71	32.54	7.43	0.00	0.00	41.68	54.00	-12.32	1/3MHz	RB	RB
Note: Panel Channel 3													
PK	V	3850.000	30.18	32.58	7.45	0.00	0.00	70.21	74.00	-3.79	1/3MHz	RB	RB
AVG	V	3850.000	2.08	32.58	7.45	0.00	0.00	42.11	54.00	-11.89	1/3MHz	RB	RB
Note: Panel Channel 5													
PK	H	1932.500	31.74	27.58	5.10	0.00	0.00	64.42	74.00	-9.58	1/3MHz		
AVG	H	1932.500	3.64	27.58	5.10	0.00	0.00	36.32	54.00	-17.68	1/3MHz		
PK	V	3857.000	30.28	32.58	7.47	0.00	0.00	70.33	74.00	-3.67	1/3MHz	RB	RB
AVG	V	3857.000	2.18	32.58	7.47	0.00	0.00	42.23	54.00	-11.77	1/3MHz	RB	RB

Intertek

Special Radiated Emissions

Company: Sensasia
Model #: Panel
Serial #: #4
Engineers: Nicholas Abbondante
Project #: G100058757 Date(s): 11/17/10
Standard: FCC Part 15 Subpart C 15.209
Receiver: R&S ESI (145-128) 08-10-2011 Limit Distance (m): 3
PreAmp: PRE9 04-19-2011.txt Test Distance (m): 3
PreAmp Used? (Y or N): Y Voltage/Frequency: Fresh Battery Frequency Range: 4-18GHz

Antenna & Cables: HF Bands: N, LF, HF, SHF
Antenna: HORN3 V3m 03-22-2011.txt HORN3 H3m 03-22-2011.txt
Cable(s): 3mTrackB 145-416 08-31-2011.txt NONE.
Location: 10m Chamber Barometer: DAV004 Filter: REA004
Temp/Humidity/Pressure: 21c 42% 991mB

Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)
Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth	FCC	IC
Note: Average obtained from peak reading using 28.1 dB average factor for 3.92% duty cycle													
Note: Panel Channel 1													
PK	V	5764.608	50.02	34.47	9.19	28.99	0.00	64.70	74.00	-9.30	1/3MHz		
AVG	V	5764.608	21.92	34.47	9.19	28.99	0.00	36.60	54.00	-17.40	1/3MHz		
PK	V	7686.144	39.53	36.47	10.78	27.95	0.00	58.84	74.00	-15.16	1/3MHz	RB	RB
AVG	V	7686.144	11.43	36.47	10.78	27.95	0.00	30.74	54.00	-23.26	1/3MHz	RB	RB
PK	H	9607.680	37.65	39.11	12.17	26.91	0.00	62.02	74.00	-11.98	1/3MHz		
AVG	H	9607.680	9.55	39.11	12.17	26.91	0.00	33.92	54.00	-20.08	1/3MHz		
PK	H	11529.216	34.04	39.22	13.61	26.61	0.00	60.25	74.00	-13.75	1/3MHz	RB	RB
AVG	H	11529.216	5.94	39.22	13.61	26.61	0.00	32.15	54.00	-21.85	1/3MHz	RB	RB
PK	V	13450.752	33.97	40.30	15.31	26.49	0.00	63.09	74.00	-10.91	1/3MHz		
AVG	V	13450.752	5.87	40.30	15.31	26.49	0.00	34.99	54.00	-19.01	1/3MHz		
PK	H	15372.288	33.38	39.94	16.79	26.58	0.00	63.53	74.00	-10.47	1/3MHz	RB	RB
AVG	H	15372.288	5.28	39.94	16.79	26.58	0.00	35.43	54.00	-18.57	1/3MHz	RB	RB
PK	V	17293.824	34.88	43.06	17.25	27.50	0.00	67.69	74.00	-6.31	1/3MHz		
AVG	V	17293.824	6.78	43.06	17.25	27.50	0.00	39.59	54.00	-14.41	1/3MHz		
Note: Panel Channel 3													
PK	V	5775.000	49.90	34.46	9.23	28.98	0.00	64.60	74.00	-9.40	1/3MHz		
AVG	V	5775.000	21.80	34.46	9.23	28.98	0.00	36.50	54.00	-17.50	1/3MHz		
PK	V	7700.000	40.17	36.48	10.79	27.94	0.00	59.50	74.00	-14.50	1/3MHz	RB	RB
AVG	V	7700.000	12.07	36.48	10.79	27.94	0.00	31.40	54.00	-22.60	1/3MHz	RB	RB
PK	H	9625.000	38.61	39.17	12.19	26.90	0.00	63.06	74.00	-10.94	1/3MHz		
AVG	H	9625.000	10.51	39.17	12.19	26.90	0.00	34.96	54.00	-19.04	1/3MHz		
PK	H	11550.000	34.11	39.24	13.59	26.61	0.00	60.33	74.00	-13.67	1/3MHz	RB	RB
AVG	H	11550.000	6.01	39.24	13.59	26.61	0.00	32.23	54.00	-21.77	1/3MHz	RB	RB
PK	V	13475.000	34.18	40.34	15.32	26.49	0.00	63.35	74.00	-10.65	1/3MHz		
AVG	V	13475.000	6.08	40.34	15.32	26.49	0.00	35.25	54.00	-18.75	1/3MHz		
PK	H	15400.000	33.13	39.75	16.86	26.59	0.00	63.15	74.00	-10.85	1/3MHz	RB	RB
AVG	H	15400.000	5.03	39.75	16.86	26.59	0.00	35.05	54.00	-18.95	1/3MHz	RB	RB
PK	V	17325.000	33.88	43.36	17.31	27.52	0.00	67.04	74.00	-6.96	1/3MHz		
AVG	V	17325.000	5.78	43.36	17.31	27.52	0.00	38.94	54.00	-15.07	1/3MHz		
Note: Panel Channel 5													
PK	V	5785.488	49.35	34.44	9.26	28.98	0.00	64.07	74.00	-9.93	1/3MHz		
AVG	V	5785.488	21.25	34.44	9.26	28.98	0.00	35.97	54.00	-18.03	1/3MHz		
PK	V	7713.984	40.02	36.49	10.80	27.93	0.00	59.38	74.00	-14.62	1/3MHz	RB	RB
AVG	V	7713.984	11.92	36.49	10.80	27.93	0.00	31.28	54.00	-22.72	1/3MHz	RB	RB
PK	H	9642.480	36.62	39.22	12.20	26.89	0.00	61.15	74.00	-12.85	1/3MHz		
AVG	H	9642.480	8.52	39.22	12.20	26.89	0.00	33.05	54.00	-20.95	1/3MHz		
PK	H	11570.976	34.10	39.27	13.57	26.61	0.00	60.33	74.00	-13.67	1/3MHz	RB	RB
AVG	H	11570.976	6.00	39.27	13.57	26.61	0.00	32.23	54.00	-21.77	1/3MHz	RB	RB
PK	H	13499.472	34.27	40.41	15.34	26.49	0.00	63.53	74.00	-10.47	1/3MHz		
AVG	H	13499.472	6.17	40.41	15.34	26.49	0.00	35.43	54.00	-18.57	1/3MHz		
PK	V	15427.968	33.20	39.62	16.94	26.61	0.00	63.15	74.00	-10.85	1/3MHz	RB	RB
AVG	V	15427.968	5.10	39.62	16.94	26.61	0.00	35.05	54.00	-18.95	1/3MHz	RB	RB
PK	H	17356.464	33.51	43.85	17.38	27.53	0.00	67.20	74.00	-6.80	1/3MHz		
AVG	H	17356.464	5.41	43.85	17.38	27.53	0.00	39.10	54.00	-14.90	1/3MHz		

Intertek

Special Radiated Emissions

Company: Sensasia
Model #: Panel
Serial #: #4
Engineers: Nicholas Abbondante
Project #: G100058757 Date(s): 11/17/10
Standard: FCC Part 15 Subpart C 15.209
Receiver: R&S ESI (145-128) 08-10-2011 Limit Distance (m): 3
PreAmp: PRE9 04-19-2011.txt Test Distance (m): 3
PreAmp Used? (Y or N): Y Voltage/Frequency: Fresh Battery Frequency Range: 18-20GHz

Antenna & Cables: SHF Bands: N, LF, HF, SHF
Antenna: EMC04_1M_Vert_2-4-2011.txt EMC04_1M_H_2-4-2011.txt
Cable(s): 3mTrackB 145-416 08-31-2011.txt NONE.
Location: 10m Chamber Barometer: DAV004 Filter: REA006
Temp/Humidity/Pressure: 21c 42% 1001mB

Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)
Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth	FCC	IC
Note: Average obtained from peak reading using 28.1 dB average factor for 3.92% duty cycle													
PK	H	19215.360	32.28	44.74	18.69	28.42	0.00	67.29	74.00	-6.71	1/3MHz	RB	RB
AVG	H	19215.360	4.18	44.74	18.69	28.42	0.00	39.19	54.00	-14.81	1/3MHz	RB	RB
PK	V	19250.000	32.82	45.25	18.73	28.44	0.00	68.36	74.00	-5.64	1/3MHz	RB	RB
AVG	V	19250.000	4.72	45.25	18.73	28.44	0.00	40.26	54.00	-13.74	1/3MHz	RB	RB
PK	H	19284.960	33.06	44.76	18.76	28.46	0.00	68.12	74.00	-5.88	1/3MHz	RB	RB
AVG	H	19284.960	4.96	44.76	18.76	28.46	0.00	40.02	54.00	-13.98	1/3MHz	RB	RB

Test Personnel: Nicholas Abbondante
Product Standard: FCC Part 15 Subpart D; IC RSS-213
Input Voltage: 120V/60Hz
Pretest Verification w/ BB Source: **No**

Test Date: 11/12/2010, 11/17/2010
Test Levels: See test results
Ambient Temperature: 21, 21 ºC
Relative Humidity: 23, 42 %
Atmospheric Pressure: 1018, 1001 mbars

Deviations, Additions, or Exclusions: None

13 Receiver Radiated Spurious Emissions

13.1 Method

Tests are performed in accordance with CFR47 Part 15.109; IC RSS-213 6.8; IC RSS-Gen 4.10, 6.0, 7.2.3, and ANSI C63.4:2003.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

Measurement Uncertainty

For radiated emissions, U_{lab} (3.5 dB at 3m and 3.5 dB at 10m below 1 GHz, and 4.2 dB at 3m above 1 GHz) < U_{CISPR} (5.2 dB), which is the reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF - AG
Where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dBμV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 52.0 dBμV
AF = 7.4 dB/m
CF = 1.6 dB
AG = 29.0 dB
FS = 32 dBμV/m

To convert from dBμV to μV or mV the following was used:

$UF = 10^{(NF / 20)}$ where UF = Net Reading in μV
NF = Net Reading in dBμV

Example:

FS = RA + AF + CF – AG = 52.0 + 7.4 + 1.6 – 29.0 = 32.0
$UF = 10^{(32\ dB\mu V / 20)}$ = 39.8 μV/m

13.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004	Weather Station	Davis Instruments	7400	PE80529A61 A	06/11/2010	06/11/2011
145-416	Cables 145-400 145-408 145-402 145-404	Huber + Suhner	3m Track B cables	multiple	08/31/2010	08/31/2011
145014	Preamplifier (1 GHz to 26.5 GHz)	Hewlett Packard	8449B	3008A00232	01/05/2010	01/05/2011
145128	EMI Receiver 40 GHz (20 Hz - 40 Ghz)	Rohde & Schwarz	ESI	8392831001	08/10/2010	08/10/2011
HORN3	HORN ANTENNA	EMCO	3115	9610-4980	03/22/2010	03/22/2011
145-410	Cables 145-400 145-406 145-407 145-405 145-403	Huber + Suhner	10m Track A Cables	multiple	08/31/2010	08/31/2011
145003	Preamplifier (150 KHz to 1.3 GHz)	Hewlett Packard	8447D	2443A04077	09/24/2010	09/24/2011
145106	Bilog Antenna (30MHz - 5GHz)	Sunol Sciences	JB5	A111003	07/20/2010	07/20/2011

Software Utilized:

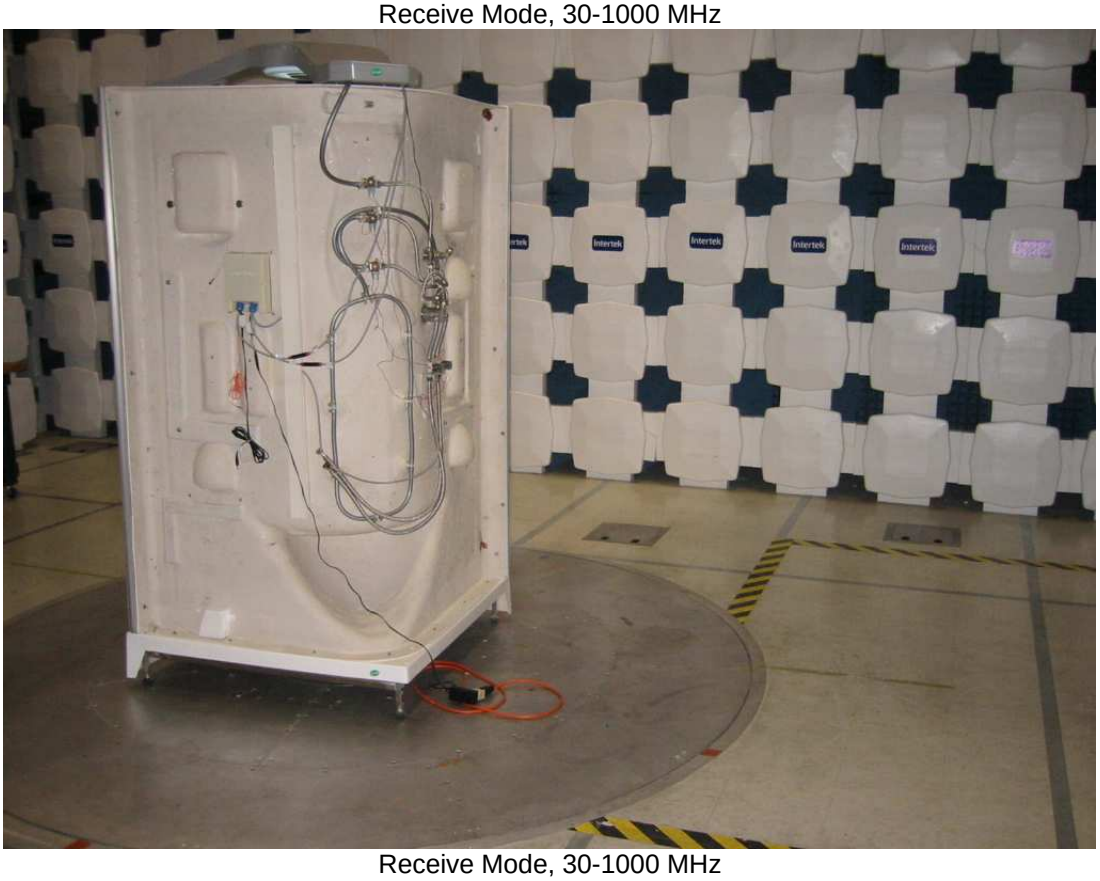
Name	Manufacturer	Version
C5	Teseq	Build 5.26.00.3

13.3 Results:

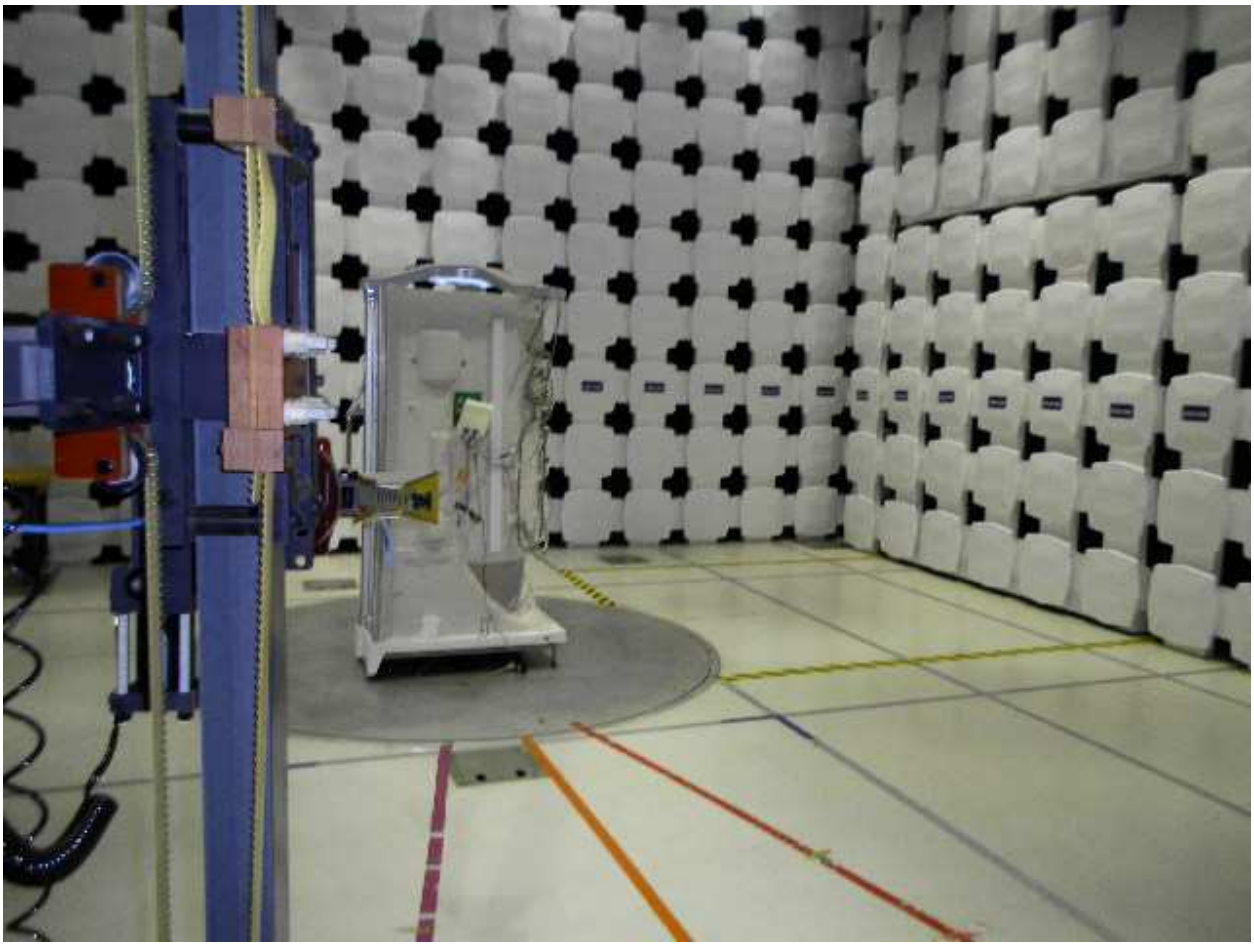
The sample tested was found to Comply.

13.4 Setup Photographs:

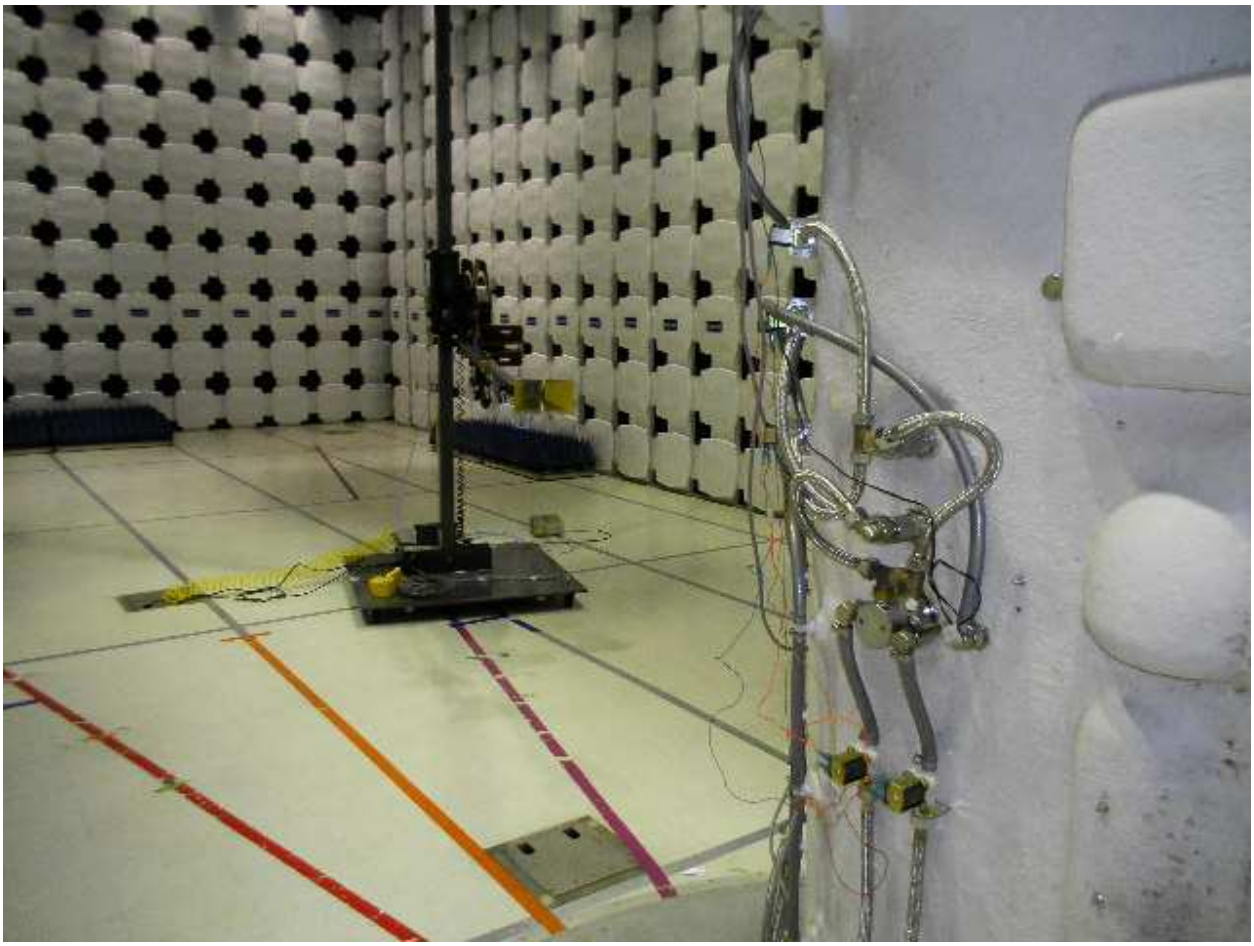
Receive Mode, 30-1000 MHz



Receive Mode, 30-1000 MHz



Receive Mode, 1-10 GHz



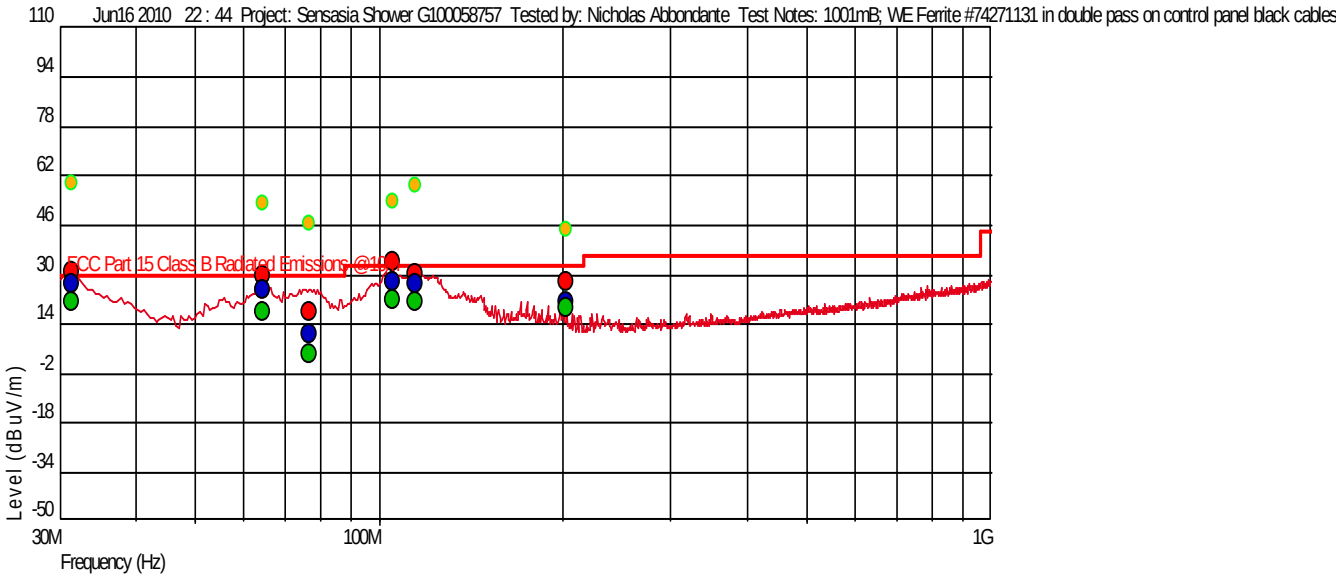
Receive Mode, 1-10 GHz

13.5 Test Data:

Receiver spurious emissions shall comply with the limits specified in CFR47 Part 15.109 and RSS-Gen Table 1.

Test Information

Test Details	User Input
Project:	Sensasia Shower G100058757
Test Notes:	1001mB; WE Ferrite #74271131 in double pass on control panel bl
Temperature:	25c
Humidity:	36%
Tested by:	Nicholas Abbondante
Test Started:	Jun16 2010 22 : 44



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable

Level (dBuV/m) = AF + CL + PA + Raw

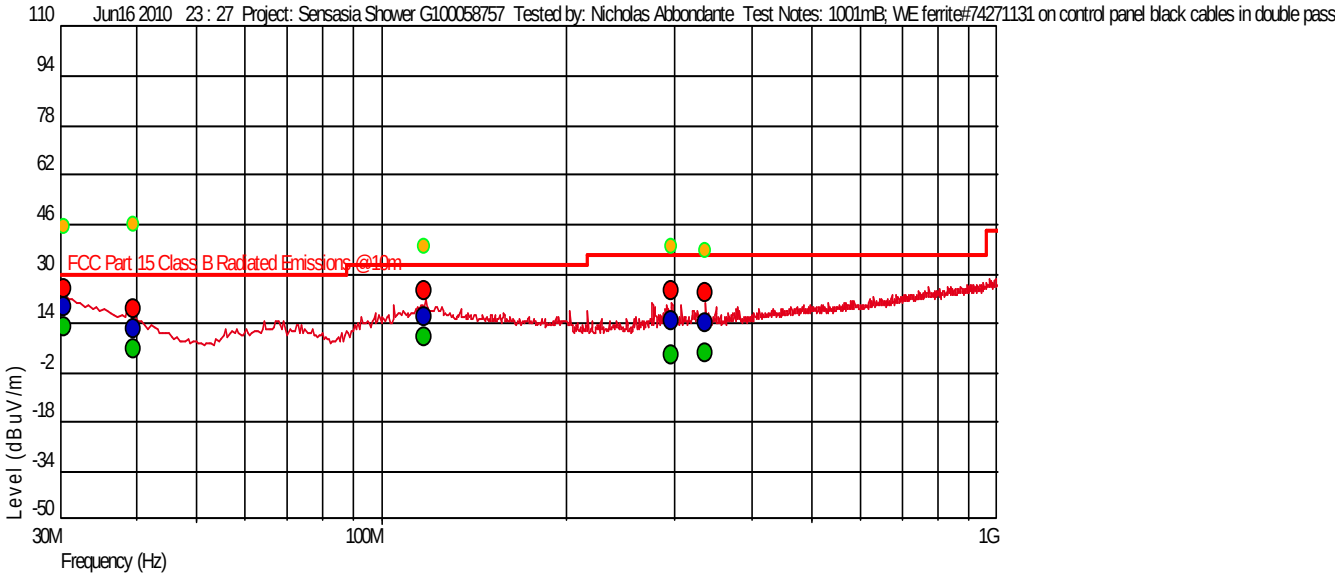
AF = Antenna Factor
CL = Cable Losses
PA = Pre-Amplifier
Raw = Raw Instrument Reading (Not listed on Spot Tables)

Measured: QP

Frequency (Hz)	Level* (dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver (|)	Angle (Deg)	Mast Height (m)	Detector	RBW(Hz)
31.455 M	26.98	19.381	-26.435	30.00	-3.02	|	253	3.23	QP	120 k
64.633 M	24.88	7.963	-25.954	30.00	-5.12	|	282	1.55	QP	120 k
76.734 M	10.50	7.831	-25.900	30.00	-19.50	|	305	3.97	QP	120 k
105.423 M	27.93	11.493	-25.522	33.00	-5.07	|	210	1.35	QP	120 k
114.714 M	26.88	13.066	-25.393	33.00	-6.12	|	213	3.91	QP	120 k
202.148 M	20.93	12.413	-24.513	33.00	-12.07	|	256	1.23	QP	120 k

Test Information

Test Details	User Input
Project:	Sensasia Shower G100058757
Test Notes:	1001mB; WE ferrite#74271131 on control panel black cables in do
Temperature:	25c
Humidity:	36%
Tested by:	Nicholas Abbondante
Test Started:	Jun16 2010 23 : 27



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable

Level (dBuV/m) = AF + CL + PA + Raw

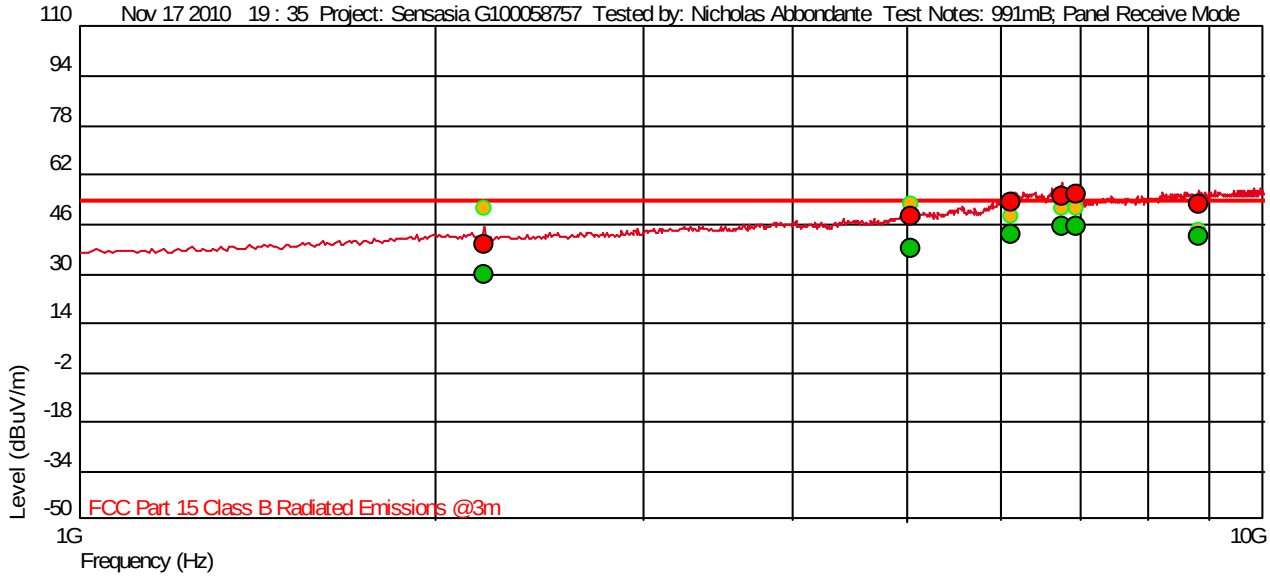
AF = Antenna Factor
CL = Cable Losses
PA = Pre-Amplifier
Raw = Raw Instrument Reading (Not listed on Spot Tables)

Measured: QP

Frequency (Hz)	Level* (dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver (|)	Angle (Deg)	Mast Height (m)	Detector	RBW(Hz)
30.494 M	19.09	20.754	-26.439	30.00	-10.91	--	307	3.35	QP	120 k
39.387 M	12.27	14.590	-26.402	30.00	-17.73	--	307	3.30	QP	120 k
117.456 M	15.71	13.646	-25.356	33.00	-17.29	--	229	4.00	QP	120 k
295.725 M	14.55	13.515	-24.907	36.00	-21.45	--	179	2.15	QP	120 k
336.778 M	13.88	14.100	-25.079	36.00	-22.12	--	184	1.22	QP	120 k

Test Information

Test Details	User Input
Project:	Sensasia G100058757
Test Notes:	991mB; Panel Receive Mode
Temperature:	21c
Humidity:	42%
Tested by:	Nicholas Abbondante
Test Started:	Nov 17 2010 19 : 35



A peak trace is shown, but only the average limit is shown. The peak limit at 74 dBuV/m is not shown.

- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable

Level (dBuV/m) = AF + CL + PA + Raw

AF = Antenna Factor
CL = Cable Losses
PA = Pre-Amplifier
Raw = Raw Instrument Reading (Not listed on Spot Tables)

Measured: PEAK

Frequency (Hz)	Level*(dBuV/ m)	AF	PA+CL	Limit(dBuV/ m)	Margin(dBuV/ m)	Hor (--), Ver (|)	Angle (Deg)	Mast Height (m)	Detector	RBW(Hz)
2.201 G	39.59	27.228	-28.762	74.00	-34.41	--	194	1.60	PEAK	1 M
5.045 G	48.28	32.798	-26.596	74.00	-25.72	--	37	1.42	PEAK	1 M
6.121 G	53.31	33.580	-25.124	74.00	-20.69	--	27	2.50	PEAK	1 M
6.753 G	55.22	34.557	-25.598	74.00	-18.78	--	216	1.96	PEAK	1 M
6.948 G	55.76	34.811	-25.307	74.00	-18.24	|	152	1.19	PEAK	1 M
8.807 G	52.57	37.216	-23.989	74.00	-21.43	|	192	2.21	PEAK	1 M

Measured: AVERAGE

Frequency (Hz)	Level* (dBuV/ m)	AF	PA+CL	Limit(dBuV/ m)	Margin(dBuV/ m)	Hor (--), Ver (|)	Angle (Deg)	Mast Height (m)	Detector	RBW(Hz)
2.201 G	29.42	27.228	-28.762	54.00	-24.58	--	194	1.60	AVERAGE	1 M
5.045 G	38.02	32.798	-26.596	54.00	-15.98	--	37	1.42	AVERAGE	1 M
6.121 G	42.80	33.580	-25.124	54.00	-11.20	--	27	2.50	AVERAGE	1 M
6.753 G	45.54	34.557	-25.598	54.00	-8.46	--	216	1.96	AVERAGE	1 M
6.948 G	45.52	34.811	-25.307	54.00	-8.48	|	152	1.19	AVERAGE	1 M
8.807 G	42.15	37.216	-23.989	54.00	-11.85	|	192	2.21	AVERAGE	1 M

	Nicholas Abbondante	Test Date:	06/16/2010; 11/17/2010
Test Personnel:			
Product Standard:	FCC Part 15 Subpart B; IC RSS-213, IC RSS-Gen	Test Levels:	See test results
Input Voltage:	120V/60Hz		
		Ambient Temperature:	21, 25 ºC
Pretest Verification w/ BB Source:	**No**	Relative Humidity:	42, 36 %
		Atmospheric Pressure:	991, 1001 mbars

Deviations, Additions, or Exclusions: It was necessary to affix two Wurth Elektronik ferrites #74271131 in a double pass configuration as shown in the photo.

14 AC Mains Conducted Emissions

14.1 Method

Tests are performed in accordance with CFR47 Part 15.207; IC RSS-Gen 7.2.2, and ANSI C63.4:2003.

TEST SITE: 10m Chamber Building

The EMC Lab has two Semi-anechoic Chambers and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

The AMAP Building and Lab includes general lab space that can be used for testing where a shielded/enclosed environment is not required.

Measurement Uncertainty

For conducted emissions, U_{lab} (3.2 dB in worst case) < U_{CISPR} (3.6 dB), which is the reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculations

The following is how net line-conducted readings were determined:

NF = RF + LF + CF + AF
Where NF = Net Reading in dBµV
RF = Reading from receiver in dBµV
LF = LISN Correction Factor in dB
CF = Cable Correction Factor in dB
AF = Attenuator Loss Factor in dB

To convert from dBµV to µV or mV the following was used:

$UF = 10^{(NF / 20)}$ where UF = Net Reading in µV
NF = Net Reading in dBµV

Example:

NF = RF + LF + CF + AF = 28.5 + 0.2 + 0.4 + 20.0 = 49.1 dBµV
$UF = 10^{(49.1\ dB\mu V / 20)}$ = 285.1 µV/m

14.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004	Weather Station	Davis Instruments	7400	PE80529A61A	06/11/2010	06/11/2011
ROS002	9kHz to 3GHz EMI Test Receiver	Rohde & Schwartz	ESCI 1166.5950K03	100067	03/26/2010	03/26/2011
~CBLBNC61	Cable, BNC	N/L	RG-58 C/U	CBLBNC61	09/15/2010	09/25/2011
DS26A	Attenuator, 20dB	Mini Circuits	20dB, 50 ohm	DS26A	09/15/2010	09/15/2011
145015	LISN: 50 Ohm/50 microHenry	Solar Electronics	9252-50-R-24-BNC	971617	01/12/2010	01/12/2011

Software Utilized:

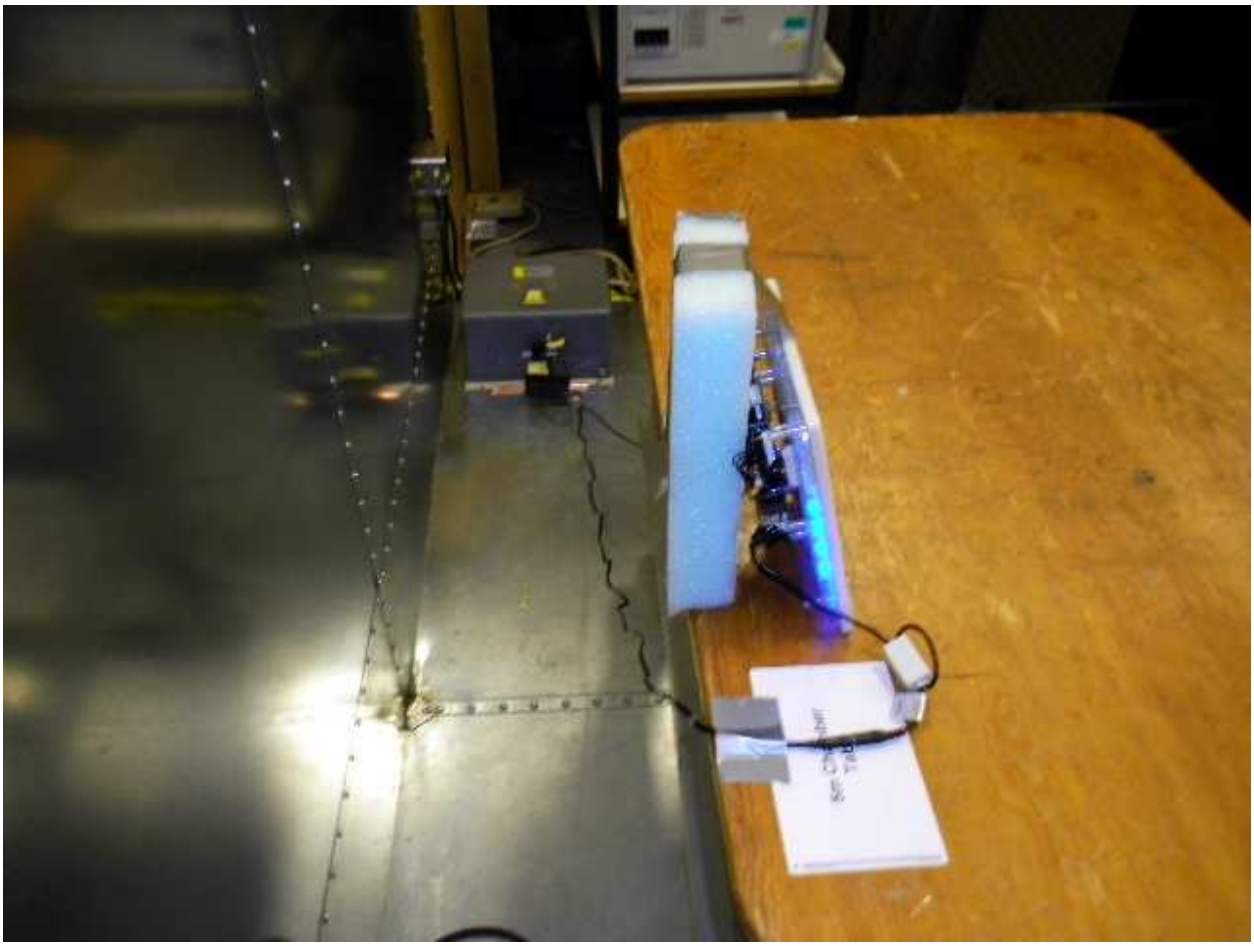
Name	Manufacturer	Version
Excel 2003	Microsoft	(11.8326.8324) SP3
EMI Boxborough.xls	Intertek	08/27/2010

14.3 Results:

The sample tested was found to Comply.

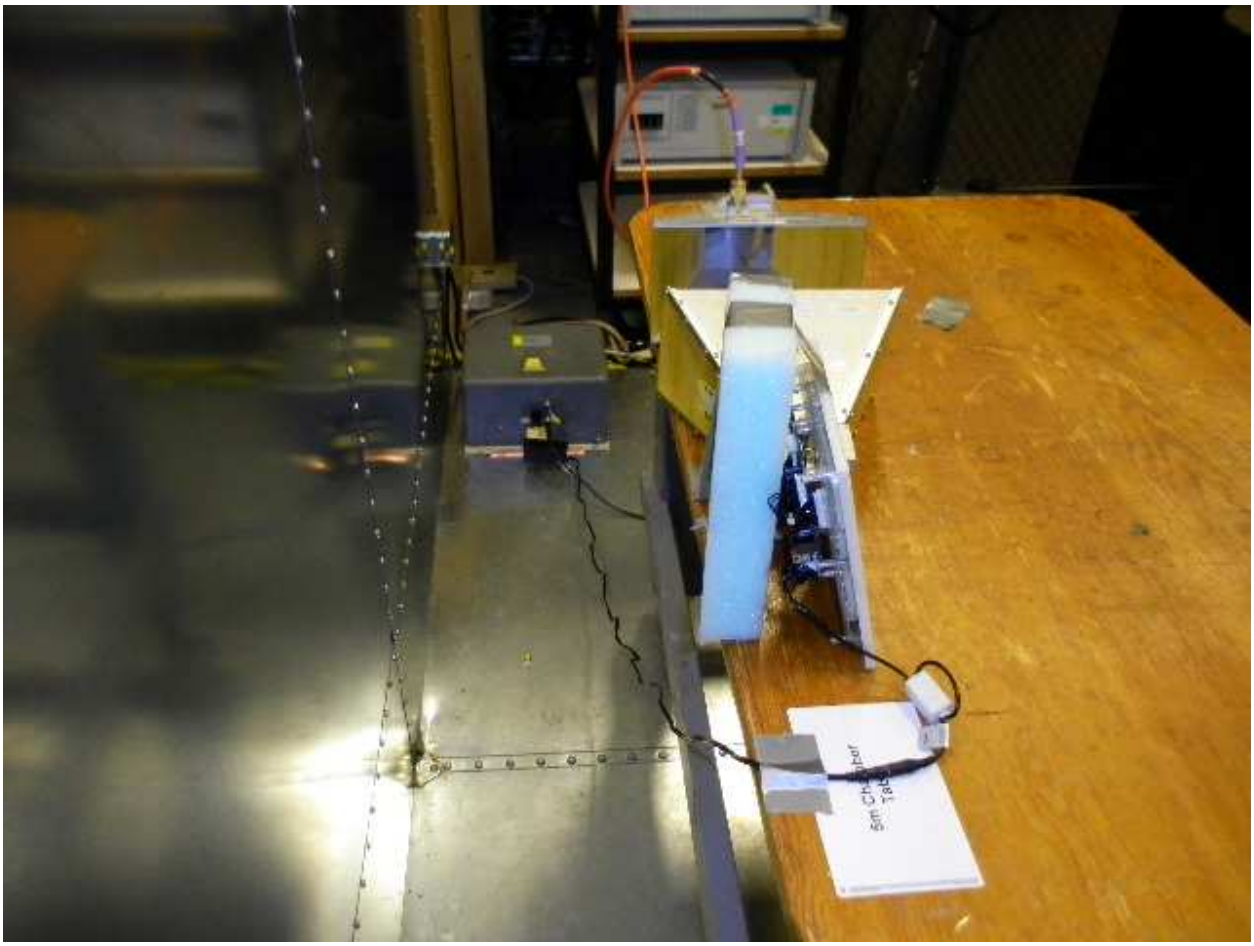
14.4 Setup Photographs:

Idle Mode



Idle Mode

Transmit Mode



Transmit Mode

14.5 Data:

AC Line-Conducted Emissions must be below the CFR47 Part 15.207 and IC RSS-Gen 7.2.2 Table 2 Limits.

Intertek

Conducted Emissions

Company: Sensasia
Model #: Panel
Serial #: #4
Engineer(s): Nicholas Abbondante
Project #: G100058757
Standard: FCC Part 15 Subpart C 15.207/IC RSS-Gen
Barometer: DAV004 Temp/Humidity/Pressure: 23c 19% 992mB
Voltage/Frequency: 120V/60Hz
Location: 10m Chamber
Date: 11/27/10

Receiver: R&S ESI (145-128) 08-10-2011
Cable: CBLBNC61_9-15-2011.txt
LISN 1: LISN145015_line1_1-12-2011.txt
LISN 2: LISN145015_line2_1-12-2011.txt
LISN 3: NONE.
LISN 4: NONE.
Attenuator: DS26A_9-15-2011.txt
Frequency Range: 150kHz - 30 MHz

Net is the sum of worst-case lisn, cable, & attenuator losses, and initial reading, factors are not shown
Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor; Bandwidth denoted as RBW/VBW

Detector Type	Frequency MHz	Reading Line 1 dB(uV)	Reading Line 2 dB(uV)	Reading Line 3 dB(uV)	Reading Line 4 dB(uV)	Net dB(uV)	QP Limit dB(uV)	Margin dB	Bandwidth
Note: Panel Idle Mode									
QP	0.150	25.70	25.80			46.92	66.00	-19.08	9/30 kHz
QP	0.218	22.90	23.50			44.57	62.91	-18.34	9/30 kHz
QP	0.508	15.90	16.60			37.57	56.00	-18.43	9/30 kHz
QP	0.581	13.90	17.00			37.97	56.00	-18.03	9/30 kHz
QP	0.728	13.30	10.50			34.30	56.00	-21.70	9/30 kHz
QP	1.380	13.80	8.00			34.84	56.00	-21.16	9/30 kHz
QP	7.339	11.10	-2.40			32.38	60.00	-27.62	9/30 kHz
QP	20.200	16.60	12.50			38.07	60.00	-21.93	9/30 kHz

Detector Type	Frequency MHz	Reading Line 1 dB(uV)	Reading Line 2 dB(uV)	Reading Line 3 dB(uV)	Reading Line 4 dB(uV)	Net dB(uV)	Average Limit dB(uV)	Margin dB	Bandwidth
Note: Panel Idle Mode									
AVG	0.150	12.30	15.20			36.32	56.00	-19.68	9/30 kHz
AVG	0.218	10.20	16.20			37.27	52.91	-15.64	9/30 kHz
AVG	0.508	15.60	16.30			37.27	46.00	-8.73	9/30 kHz
AVG	0.581	13.30	17.00			37.97	46.00	-8.03	9/30 kHz
AVG	0.728	13.00	9.30			34.00	46.00	-12.00	9/30 kHz
AVG	1.380	13.80	7.90			34.84	46.00	-11.16	9/30 kHz
AVG	7.339	10.90	-4.70			32.18	50.00	-17.82	9/30 kHz
AVG	20.200	15.40	11.40			36.87	50.00	-13.13	9/30 kHz

Intertek

Conducted Emissions

Company: Sensasia
Model #: Panel
Serial #: #4
Engineer(s): Nicholas Abbondante
Project #: G100058757 Date: 11/27/10
Standard: FCC Part 15 Subpart C 15.207/IC RSS-Gen
Barometer: DAV004 Temp/Humidity/Pressure: 23c 19% 992mB
Voltage/Frequency: 120V/60Hz
Location: 10m Chamber
Receiver: R&S ESCI (ROS002) 03-26-2011
Cable: CBLBNC61_9-15-2011.txt
LISN 1: LISN145015_line1_1-12-2011.txt
LISN 2: LISN145015_line2_1-12-2011.txt
LISN 3: NONE.
LISN 4: NONE.
Attenuator: DS26A_9-15-2011.txt
Frequency Range: 150kHz - 30 MHz

Net is the sum of worst-case lisn, cable, & attenuator losses, and initial reading, factors are not shown
Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor; Bandwidth denoted as RBW/VBW

Detector Type	Frequency MHz	Reading Line 1 dB(uV)	Reading Line 2 dB(uV)	Reading Line 3 dB(uV)	Reading Line 4 dB(uV)	Net dB(uV)	QP Limit dB(uV)	Margin dB	Bandwidth
Note: Panel Transmit Mode									
QP	0.150	23.80	24.00			45.12	66.00	-20.88	9/30 kHz
QP	0.218	21.30	21.90			42.97	62.91	-19.94	9/30 kHz
QP	0.508	16.70	17.60			38.57	56.00	-17.43	9/30 kHz
QP	0.581	17.20	18.40			39.37	56.00	-16.63	9/30 kHz
QP	0.801	11.40	7.80			32.40	56.00	-23.60	9/30 kHz
QP	1.381	9.60	6.30			30.64	56.00	-25.36	9/30 kHz
QP	9.880	9.90	2.60			31.23	60.00	-28.77	9/30 kHz
QP	16.193	11.90	8.30			33.32	60.00	-26.68	9/30 kHz

Detector Type	Frequency MHz	Reading Line 1 dB(uV)	Reading Line 2 dB(uV)	Reading Line 3 dB(uV)	Reading Line 4 dB(uV)	Net dB(uV)	Average Limit dB(uV)	Margin dB	Bandwidth
Note: Panel Transmit Mode									
AVG	0.150	9.80	13.20			34.32	56.00	-21.68	9/30 kHz
AVG	0.218	9.60	16.00			37.07	52.91	-15.84	9/30 kHz
AVG	0.508	16.10	17.10			38.07	46.00	-7.93	9/30 kHz
AVG	0.581	16.60	18.00			38.97	46.00	-7.03	9/30 kHz
AVG	0.801	7.50	3.70			28.50	46.00	-17.50	9/30 kHz
AVG	1.381	6.70	6.10			27.74	46.00	-18.26	9/30 kHz
AVG	9.880	6.70	-1.00			28.03	50.00	-21.97	9/30 kHz
AVG	16.193	6.30	4.40			27.72	50.00	-22.28	9/30 kHz

Test Personnel: Nicholas Abbondante
Product Standard: FCC Part 15 Subpart D; IC RSS-213
Input Voltage: 120V/60Hz
Pretest Verification w/ BB Source: **No**

Test Date: 11/27/2010
Test Levels: N/L
Ambient Temperature: 23ºC
Relative Humidity: 19%
Atmospheric Pressure: 992 mbars

Deviations, Additions, or Exclusions: None

15 Frame Repetition Stability

15.1 Method

Tests are performed in accordance with CFR47 Part 15.323(e.1); ANSI C63.17 Sub-Clause 6.2.2; and IC RSS-213 4.3.4(c).

TEST SITE: 10m Chamber Building

15.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004	Weather Station	Davis Instruments	7400	PE80529A61 A	06/11/2010	06/11/2011
CBL030	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 80	CBL030	01/04/2010	01/04/2011
NAR003	Directional Coupler 1.7-26.5GHz	Narda / L-3	4227-16	03135	02/26/2010	02/26/2011
ROS001	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	12/04/2009	12/04/2010
ROS003	DECT Test Set	Rohde & Schwartz	CMD60	829902026	03/30/2010	03/30/2011

Software Utilized:

Name	Manufacturer	Version
DECT 6.0 Test Suite V2.15	Intertek	V2.15

15.3 Results:

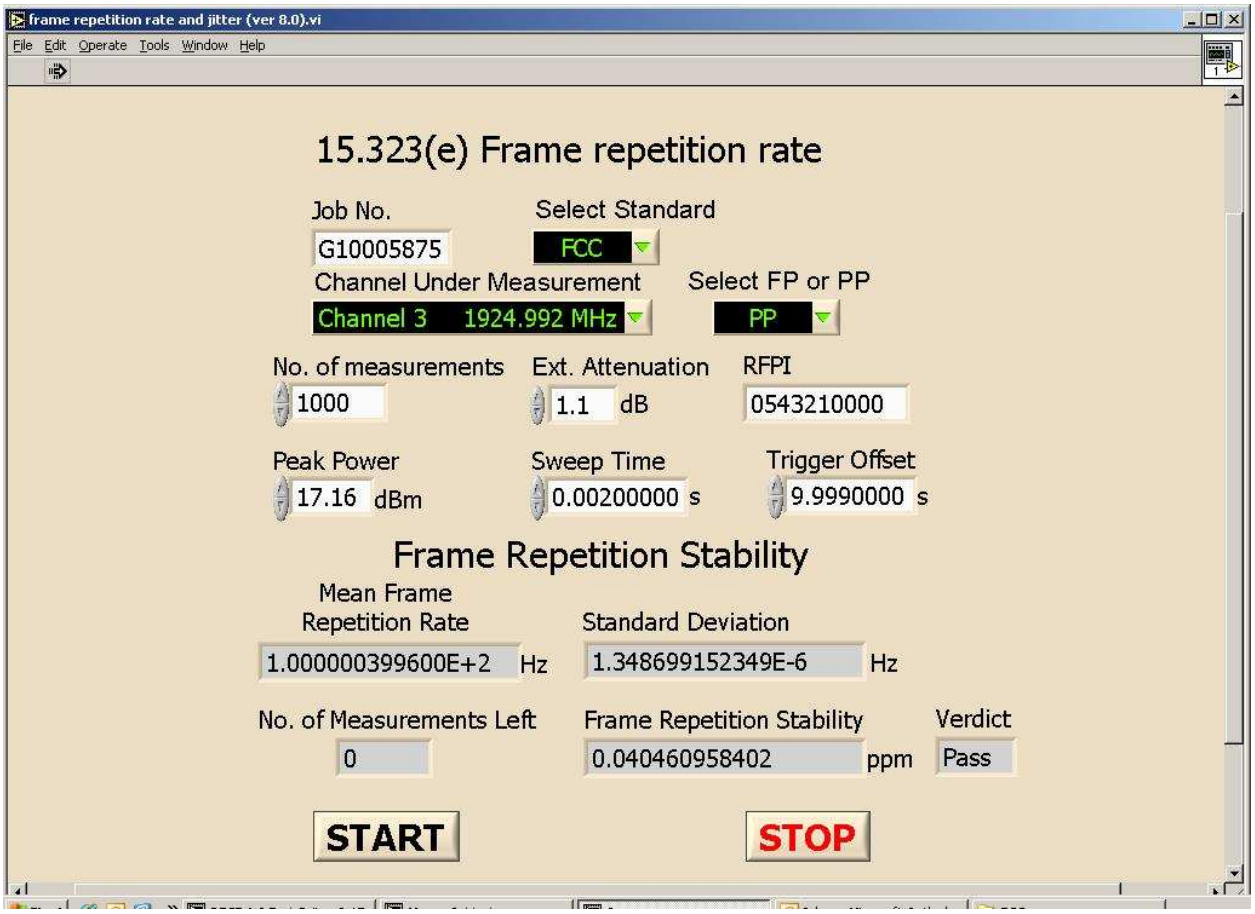
The sample tested was found to Comply.

15.4 Test Data:

Limits:
[ ] TDD= > Frame frequency drift ≤ 50 ppm
[✓] TDMA= > Frame frequency drift ≤ 10 ppm

Results

Maximum Frame Rate Drift (ppm)	Limit (ppm)	Verdict
0.04	10	Pass



	Nicholas Abbondante	Test Date:	11/23/2010
Test Personnel:			
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	120V/60Hz		
		Ambient Temperature:	21 ºC
Pretest Verification w/ BB Source:	**No**	Relative Humidity:	36 %
		Atmospheric Pressure:	999 mbars

Deviations, Additions, or Exclusions: None

16 Frame Period and Jitter

16.1 Method

Tests are performed in accordance with CFR47 Part 15.323(e.2); ANSI C63.17 Sub-Clause 6.2.3; and IC RSS-213 4.3.4(c).

TEST SITE: 10m Chamber Building

16.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004	Weather Station	Davis Instruments	7400	PE80529A61 A	06/11/2010	06/11/2011
CBL030	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 80	CBL030	01/04/2010	01/04/2011
NAR003	Directional Coupler 1.7-26.5GHz	Narda / L-3	4227-16	03135	02/26/2010	02/26/2011
ROS001	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	12/04/2009	12/04/2010
ROS003	DECT Test Set	Rohde & Schwartz	CMD60	829902026	03/30/2010	03/30/2011

Software Utilized:

Name	Manufacturer	Version
DECT 6.0 Test Suite V2.15	Intertek	V2.15

16.3 Results:

The sample tested was found to Comply.

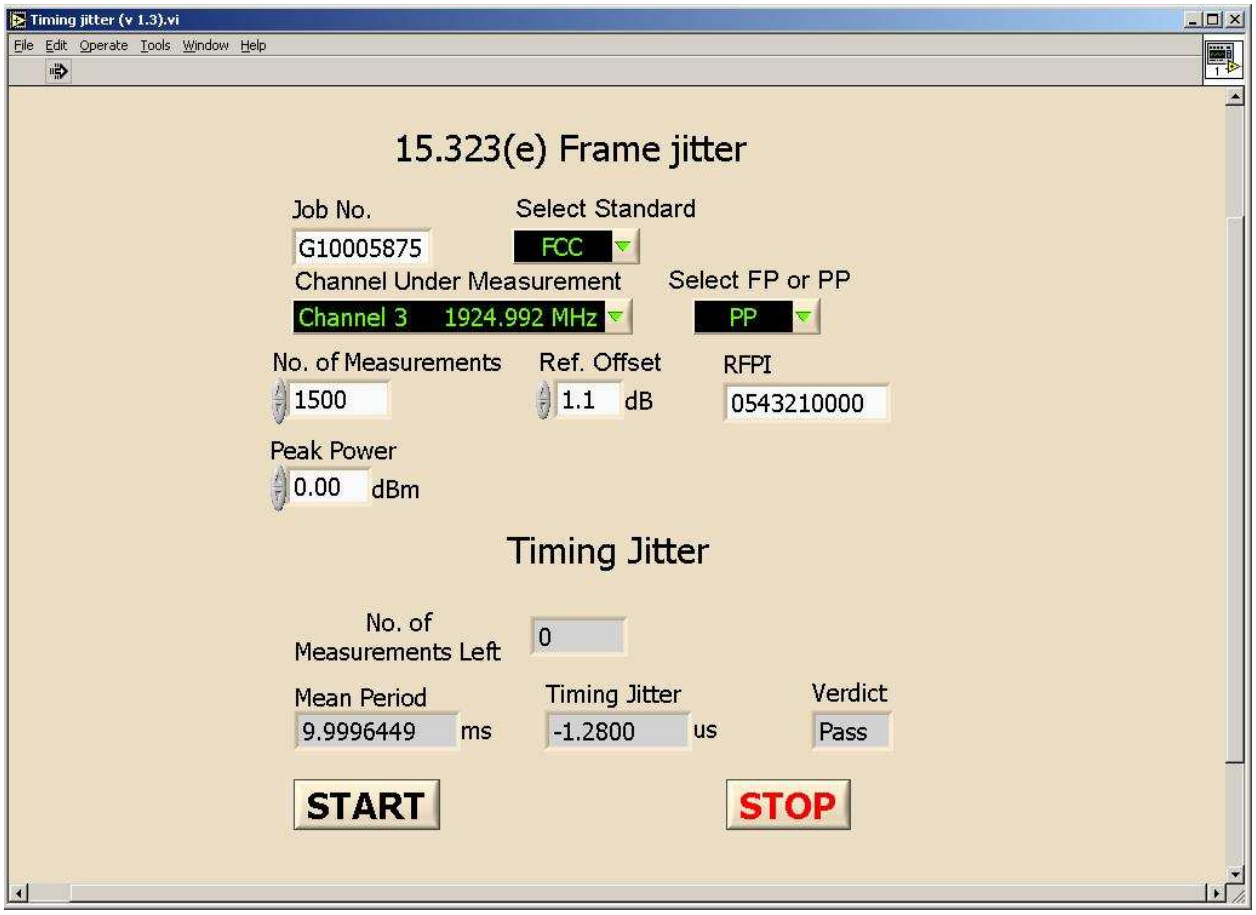
16.4 Test Data:

Criteria: Frame period shall be equal to 20ms / X, X is a positive whole number.

Limits: Any cases = > Jitter between two frames ≤ 25 us

Results

Maximum Jitter (us)	Limit (us)	Verdict
-1.28	± 25	Pass



	Nicholas Abbondante	Test Date:	06/29/2010
Test Personnel:			
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	120V/60Hz		
		Ambient Temperature:	21 ºC
Pretest Verification w/ BB Source:	**No**	Relative Humidity:	43 %
		Atmospheric Pressure:	1000 mbars

Deviations, Additions, or Exclusions: None

17 Carrier Frequency Stability

17.1 Method

Tests are performed in accordance with CFR47 Part 15.323(f.1, f.2, f.3); ANSI C63.17 Sub-Clause 6.2.1.1, 6.2.1.2, 6.2.1.3; IC RSS-213 6.2.

TEST SITE: 10m Chamber Building

17.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004	Weather Station	Davis Instruments	7400	PE80529A61 A	06/11/2010	06/11/2011
ROS001	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	12/04/2009	12/04/2010
ROS003	DECT Test Set	Rohde & Schwartz	CMD60	829902026	03/30/2010	03/30/2011
CBL030	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 80	CBL030	01/04/2010	01/04/2011
NAR003	Directional Coupler 1.7-26.5GHz	Narda / L-3	4227-16	03135	02/26/2010	02/26/2011
145038	AC Power Source (+- 0.7%)	Elgar	3001	2220 Lot 313	VBU	Verified
145042	Digital Multi Meter	Fluke	75 series II	55400267	10/09/2010	10/09/2011
148039	Thermal Shock Chamber	Cincinnati Sub-Zero	DTS-16-22-22-S/RAC	00-DT13598	08/30/2010	08/30/2011

Software Utilized:

Name	Manufacturer	Version
DECT 6.0 Test Suite V1.00	Intertek	V1.00

17.3 Results:

The sample tested was found to Comply.

17.4 Setup Photographs:

17.5 Test Data:

The freq. deviation relative to the ref. Freq. shall be ≤ 10 ppm over an hour.
The freq. deviation relative to the ref. Freq. shall be ≤ 10 ppm at the extremes of Power Supply Voltage.
The freq. deviation relative to the ref. Freq. shall be ≤ 10 ppm at the temperature extremes.

Test conditions:

Nominal supply voltage: 120 VAC
Extreme temperatures: -20 ℃ to +50 ℃

Results

Carrier Stability over time

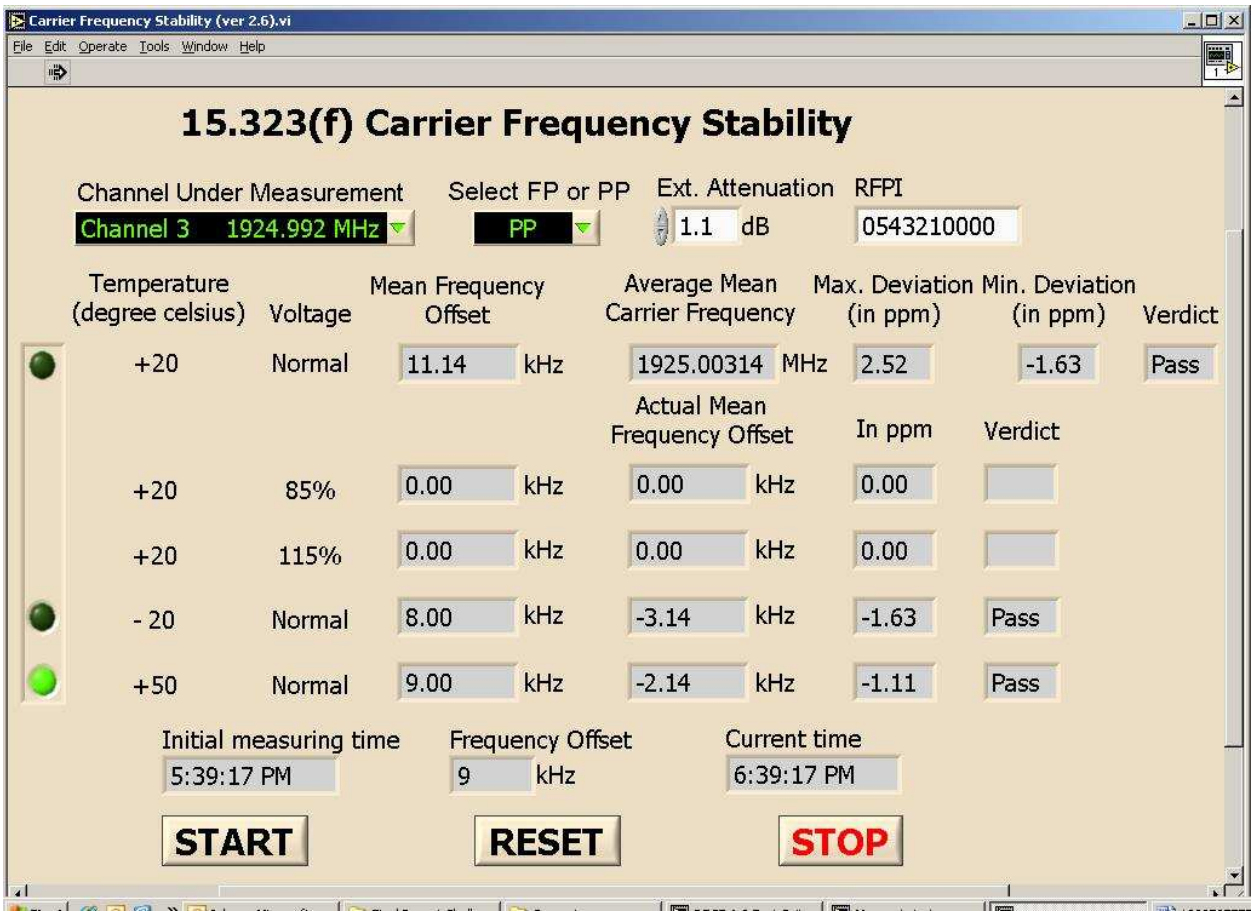
Voltage (VAC)	Temperature (^{o}C)	Measured Frequency Offset Over an hour (in ppm)		Limit (ppm)	Verdict
		Max.	Min.		
Nominal	+20^{o}C	2.52	-1.63	±10	Pass

Carrier Stability over Power Supply Voltage

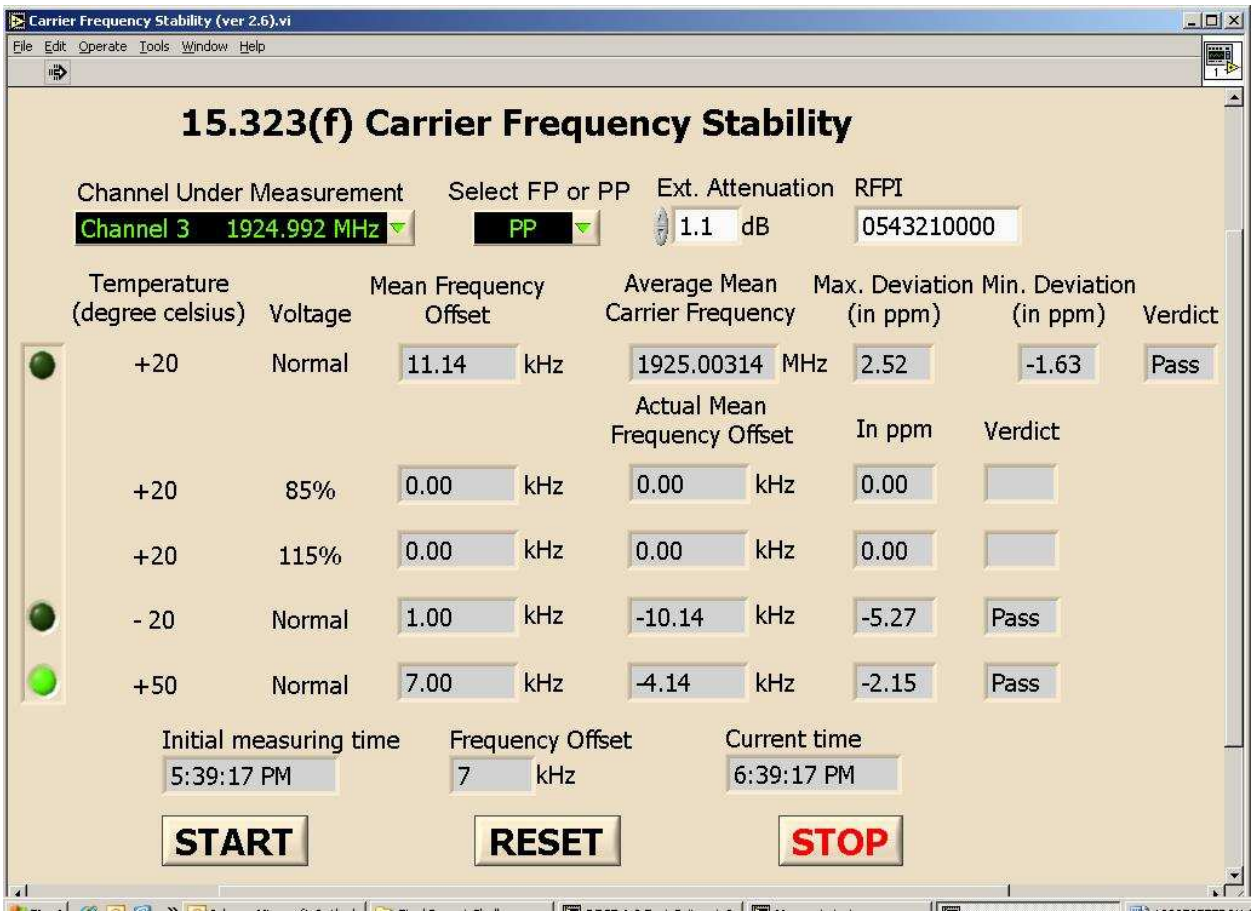
Voltage (VAC)	Temperature (^{o}C)	Measured Frequency Offset (in ppm)	Limit (ppm)	Verdict
85%	+20^{o}C	-1.63		
115%	+20^{o}C	-1.11	±10	Pass

Carrier Stability over Temperature

Voltage (VAC)	Temperature (^{o}C)	Measured Frequency Offset (in ppm)	Limit (ppm)	Verdict
Nominal	[X] -20^{o}C [ ] Manufacturer Declared	-5.27		
Nominal	[X] 50^{o}C [ ] Manufacturer Declared	-2.15	±10	Pass



Carrier Frequency Stability Results over Time and Voltage (due to a bug in the software, it does not allow measurement of AC voltage variations for handset devices. Therefore the -20c line was used for the 85% Voltage condition, and the +50c line was used for the 115% voltage condition)



Carrier Frequency Stability Results over Time and Temperature

	Nicholas Abbondante	Test Date:	11/24/2010
Test Personnel:			
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	120V/60Hz		
		Ambient Temperature:	24 ºC
Pretest Verification w/ BB Source:	**No**	Relative Humidity:	22 %
		Atmospheric Pressure:	1007 mbars

Deviations, Additions, or Exclusions: None

18 Monitoring Threshold

18.1 Method

Tests are performed in accordance with CFR47 Part 15.323(c2, c5); ANSI C63.17 Sub-Clause 7.3.1(b), 7.3.2; and IC RSS-213 4.3.4(b)(2, 5.1, & 9).

TEST SITE: 10m Chamber Building

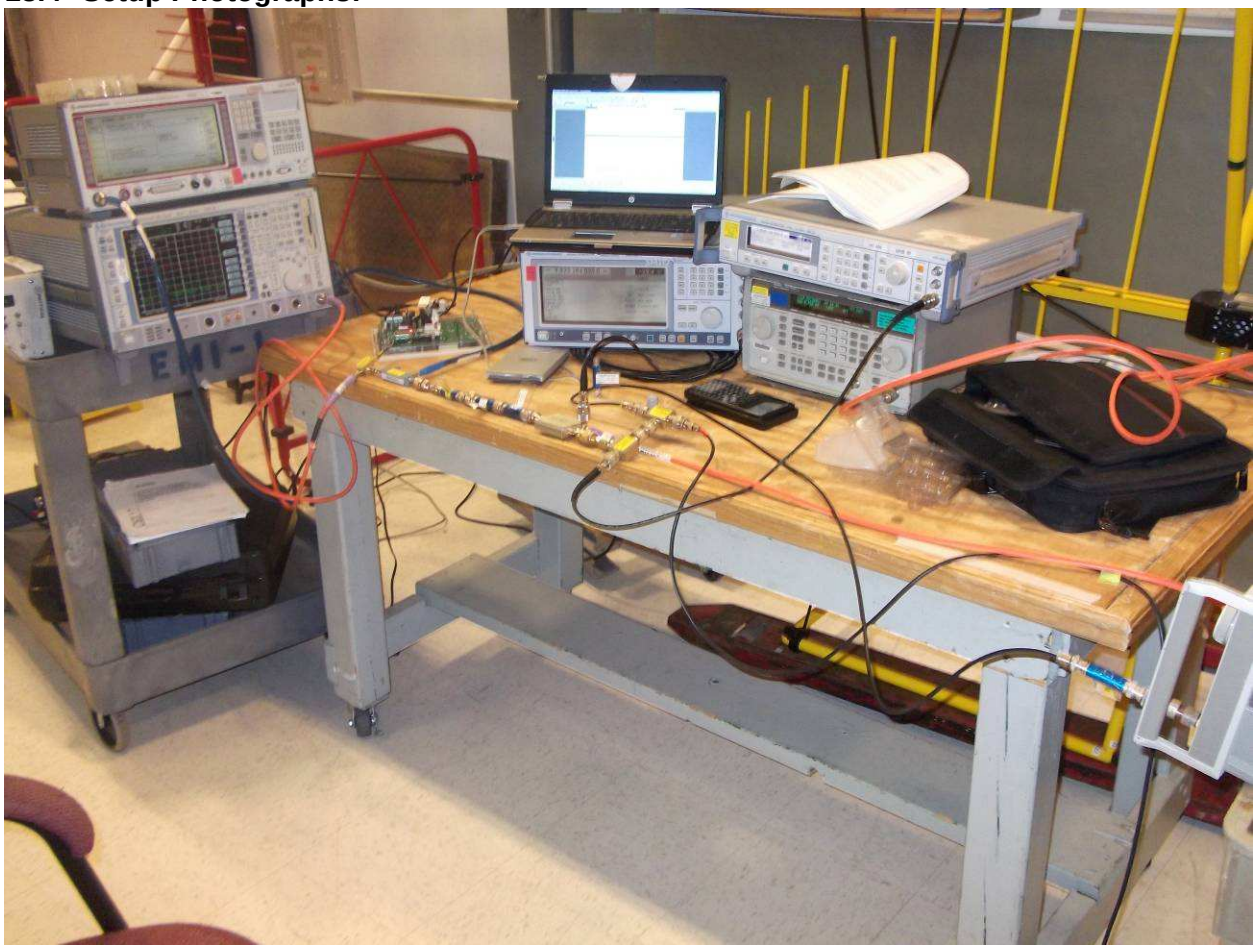
18.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004	Weather Station	Davis Instruments	7400	PE80529A61 A	06/11/2010	06/11/2011
ROS001	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	12/04/2009	12/04/2010
ROS003	DECT Test Set	Rohde & Schwartz	CMD60	829902026	03/30/2010	03/30/2011
ROS004	Vector Signal Generator, 300kHz-3.3GHz	Rohde & Schwartz	SMIQ03B	100338	03/30/2010	03/30/2011
NAR003	Directional Coupler 1.7-26.5GHz	Narda / L-3	4227-16	03135	02/26/2010	02/26/2011
CBL030	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 80	CBL030	01/04/2010	01/04/2011
147-306	Rental Signal Generator	Rohde & Schwarz	SML03	102824	10/01/2010	10/01/2011
HEW62	Synthesized Sweep Generator	Hewlett Packard	83620A	3213A01244	03/26/2010	03/26/2011
HEW63	Generator, Signal	Hewlett Packard	8648C	3847A05291	01/14/2009	01/14/2011
147058	Signal Generator	Hewlett Packard	83620B	3722A00552	03/03/2010	03/03/2011
MIN003	Splitter/Combiner 2-Way DC-2000 MHz	Mini Circuits	ZFRSC-2050	none	12/02/2003	Verified
MIN002	Splitter/Combiner 3-Way 650-1050 MHz	Mini-Circuits	ZN3PD	00337	12/02/2003	Verified
MIN005	Splitter/Combiner 2-Way 10-2000 MHz	Mini Circuits	ZESC-2-11	none	12/02/2003	Verified
MIN006	Splitter/Combiner 2-Way DC-4200 MHz	Mini Circuits	ZFRSC-42	none	12/02/2003	Verified

18.3 Results:

The sample tested was found to Comply.

18.4 Setup Photographs:



18.5 Test Data:

The test determines the lower and upper threshold of the EUT. The upper threshold is conditionally applicable for LIC systems which have Logically defined a min. of 40 duplex system access channels. Blind slots will be applied in the defining of the number of duplex channels.

Monitoring Threshold (T) $\leq 15 \log_{10} B - 184 + M - P_{EUT}$ dBm

FCC

		Emission Bandwidth (MHz)	Peak Transmit Power (dBm)	M	Calculated Threshold Value (dBm)
Traffic	1921.536	1.47	17.29	50	-58.8
	1928.448	1.49	17.05		-58.5
The Minimum value of the calculated threshold value (Upper)					-58.8

Where B = Measured Emission Bandwidth in Hz

M = 30 dB for Lower Monitoring Threshold (T_L) or 50 dB for Upper Monitoring Threshold (T_U)

P_{EUT} = Measured Peak Transmit Power in dBm

Industry Canada

		Emission Bandwidth (MHz)	Peak Transmit Power (dBm)	M	Calculated Threshold Value (dBm)
Traffic	1924.992	1.38	17.16	50	-59.1
The Minimum value of the calculated threshold value (Upper)					-59.1

Where B = Measured Emission Bandwidth in Hz

M = 30 dB for Lower Monitoring Threshold (T_L) or 50 dB for Upper Monitoring Threshold (T_U)

P_{EUT} = Measured Peak Transmit Power in dBm

CFR47 Part 15.323(c)(2) IC RSS-213 4.3.4(b)(2) ANSI C63.17(Sub-clause 7.3.1(b)): Lower Threshold, for EUT w/ No. of Ch < 40

Results

FCC

	Measured Value (dBm)	Lower Threshold Limit (dBm)	Verdict
Lower Threshold Level	NA	NA	NA

Industry Canada

	Measured Value (dBm)	Lower Threshold Limit (dBm)	Verdict
Lower Threshold Level	NA	NA	NA

CFR47 Part 15.323(c5.1) IC RSS-213 4.3.4(b)(5.1) ANSI C63.17(Sub-clause 7.3.2): Upper Threshold, for EUT w/ No. of Ch>= 40

Results

	Measured Threshold Value (dBm)	Calculated Threshold Limit ($T_u + U_m$) (dBm)	Verdict
Upper Threshold Level	-60.5	-53.1	Pass

U_m = 6 dB (to account for measurement uncertainty)

	Nicholas Abbondante	Test Date:	11/29/2010
Test Personnel:			
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	120V/60Hz		
		Ambient Temperature:	22 ºC
Pretest Verification w/ BB Source:	**No**	Relative Humidity:	21 %
		Atmospheric Pressure:	1023 mbars

Deviations, Additions, or Exclusions: None

19 FCC LIC Selection / IC LIC Confirmation with 6dB Power Measurement Resolution

19.1 Method

Tests are performed in accordance with CFR47 Part 15.323(c5); ANSI C63.17 Sub-Clause 7.3.3; and IC RSS-213 4.3.4(b)(5.2).

TEST SITE: 10m Chamber Building

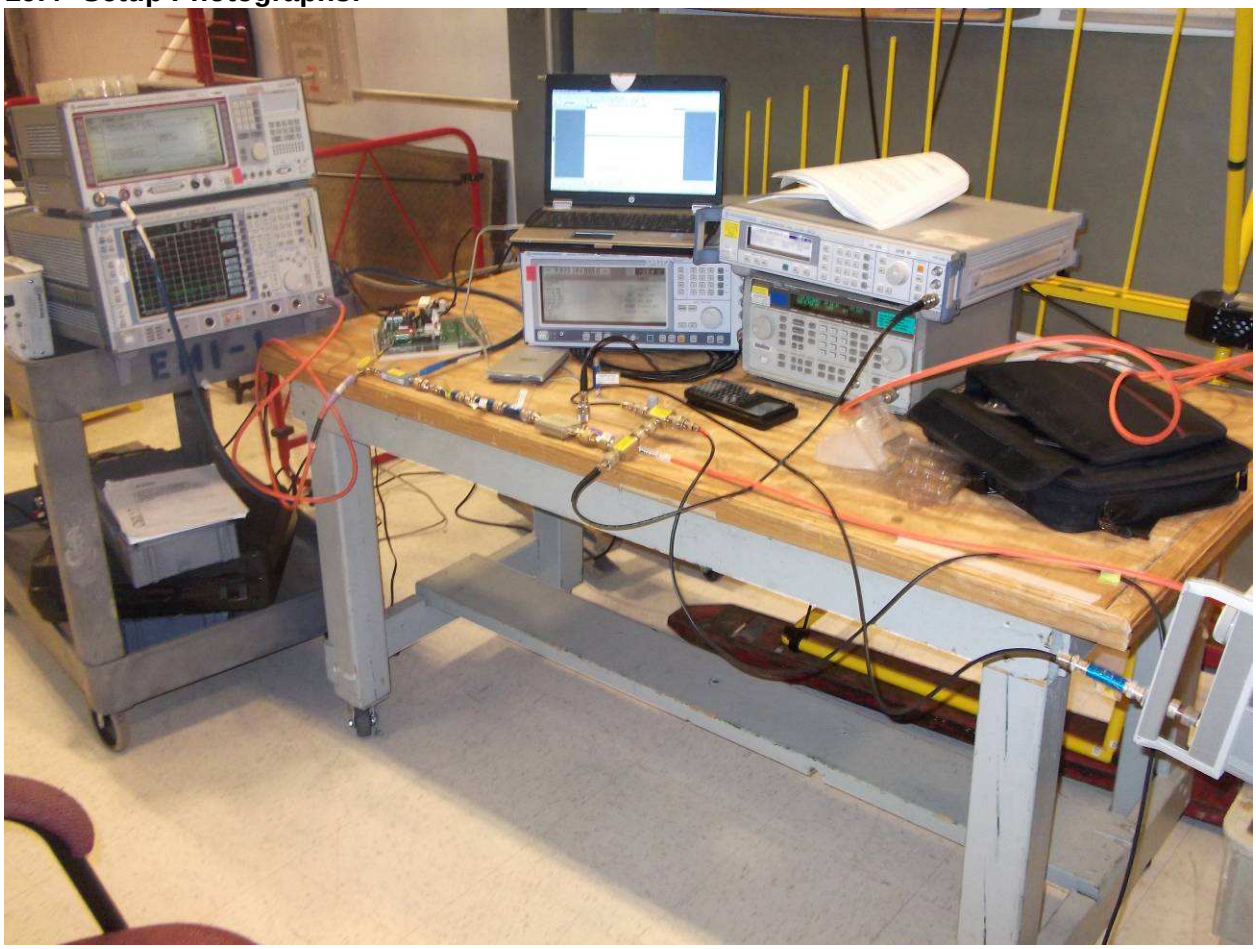
19.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004	Weather Station	Davis Instruments	7400	PE80529A61 A	06/11/2010	06/11/2011
ROS001	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	12/04/2009	12/04/2010
ROS003	DECT Test Set	Rohde & Schwartz	CMD60	829902026	03/30/2010	03/30/2011
ROS004	Vector Signal Generator, 300kHz-3.3GHz	Rohde & Schwartz	SMIQ03B	100338	03/30/2010	03/30/2011
NAR003	Directional Coupler 1.7-26.5GHz	Narda / L-3	4227-16	03135	02/26/2010	02/26/2011
CBL030	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 80	CBL030	01/04/2010	01/04/2011
147-306	Rental Signal Generator	Rohde & Schwarz	SML03	102824	10/01/2010	10/01/2011
HEW62	Synthesized Sweep Generator	Hewlett Packard	83620A	3213A01244	03/26/2010	03/26/2011
HEW63	Generator, Signal	Hewlett Packard	8648C	3847A05291	01/14/2009	01/14/2011
147058	Signal Generator	Hewlett Packard	83620B	3722A00552	03/03/2010	03/03/2011
MIN003	Splitter/Combiner 2-Way DC-2000 MHz	Mini Circuits	ZFRSC-2050	none	12/02/2003	Verified
MIN002	Splitter/Combiner 3-Way 650-1050 MHz	Mini-Circuits	ZN3PD	00337	12/02/2003	Verified
MIN005	Splitter/Combiner 2-Way 10-2000 MHz	Mini Circuits	ZESC-2-11	none	12/02/2003	Verified
MIN006	Splitter/Combiner 2-Way DC-4200 MHz	Mini Circuits	ZFRSC-42	none	12/02/2003	Verified

19.3 Results:

The sample tested was found to Comply.

19.4 Setup Photographs:



19.5 Test Data:

CFR47 Part 15.323(c5.2) IC RSS-213 4.3.4(b)(5.2) ANSI C63.17(Sub-clause 7.3.3): LIC Selection with 6dB Power Measurement resolution for EUT w/ No. of Ch >= 40

Results

	Tx Channel	Verdict
a. Interference on f1 = TL+7dB, f2 = TL	f2*	Pass
b. Interference on f1 = TL, f2 = TL+7dB	f1*	Pass
c. Interference on f1 = TL+1dB, f2 = TL-6dB	f2*	Pass
d. Interference on f1 = TL-6dB, f2 = TL+1dB	f1*	Pass

* - the EUT either did not transmit at all or transmitted on the frequency indicated

f1 = 1924.992 MHz
f2 = 1928.448 MHz

	Nicholas Abbondante	Test Date:	11/29/2010
Test Personnel:			
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	120V/60Hz		
		Ambient Temperature:	22 ºC
Pretest Verification w/ BB Source:	**No**	Relative Humidity:	21 %
		Atmospheric Pressure:	1023 mbars

Deviations, Additions, or Exclusions: None

20 Monitoring Time

20.1 Method

Tests are performed in accordance with CFR47 Part 15.323(c1); ANSI C63.17 Sub-Clause 7.3.4; and IC RSS-213 4.3.4(b)(1).

TEST SITE: 10m Chamber Building

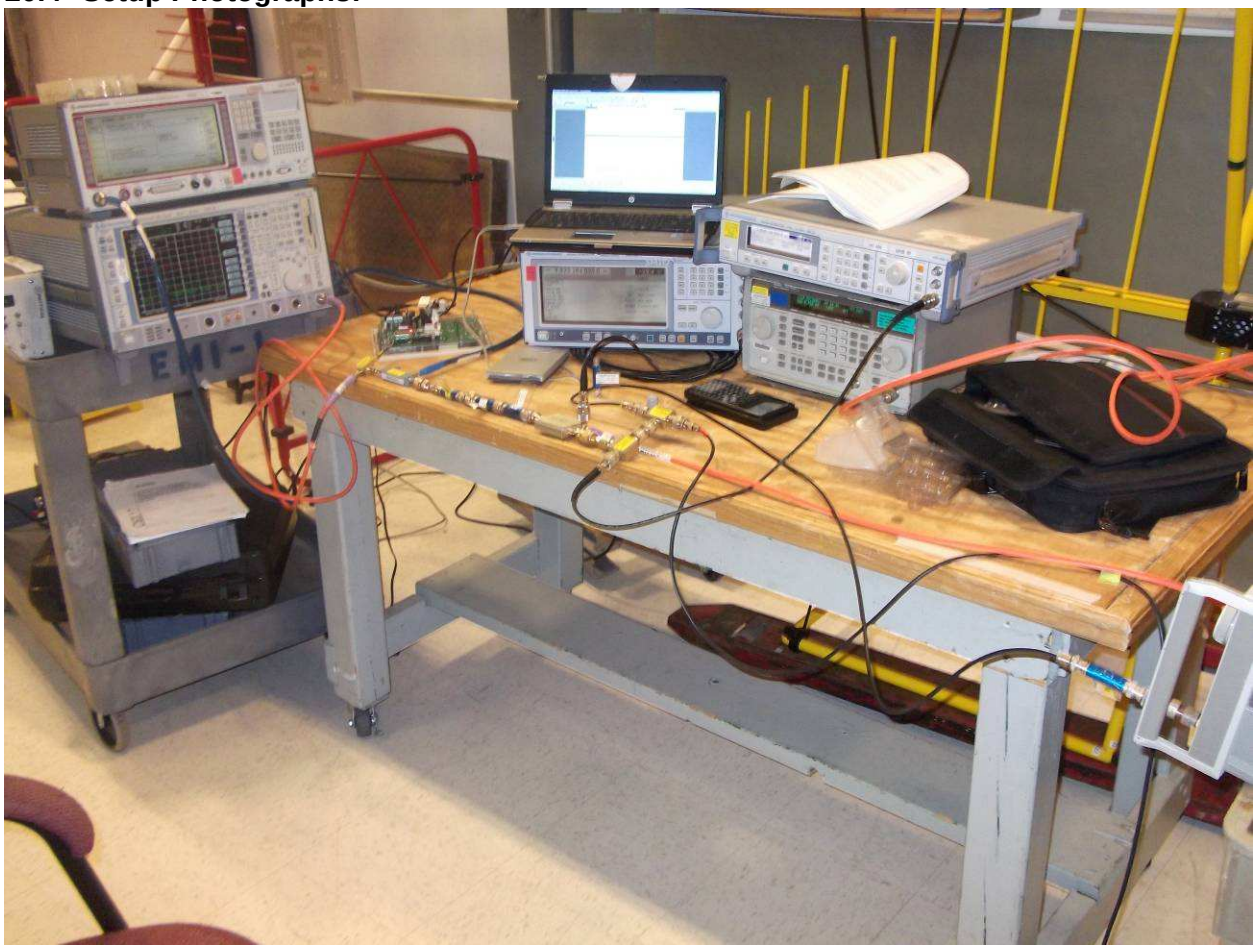
20.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004	Weather Station	Davis Instruments	7400	PE80529A61 A	06/11/2010	06/11/2011
ROS001	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	12/04/2009	12/04/2010
ROS003	DECT Test Set	Rohde & Schwartz	CMD60	829902026	03/30/2010	03/30/2011
ROS004	Vector Signal Generator, 300kHz-3.3GHz	Rohde & Schwartz	SMIQ03B	100338	03/30/2010	03/30/2011
NAR003	Directional Coupler 1.7-26.5GHz	Narda / L-3	4227-16	03135	02/26/2010	02/26/2011
CBL030	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 80	CBL030	01/04/2010	01/04/2011
147-306	Rental Signal Generator	Rohde & Schwarz	SML03	102824	10/01/2010	10/01/2011
HEW62	Synthesized Sweep Generator	Hewlett Packard	83620A	3213A01244	03/26/2010	03/26/2011
HEW63	Generator, Signal	Hewlett Packard	8648C	3847A05291	01/14/2009	01/14/2011
147058	Signal Generator	Hewlett Packard	83620B	3722A00552	03/03/2010	03/03/2011
MIN003	Splitter/Combiner 2-Way DC-2000 MHz	Mini Circuits	ZFRSC-2050	none	12/02/2003	Verified
MIN002	Splitter/Combiner 3-Way 650-1050 MHz	Mini-Circuits	ZN3PD	00337	12/02/2003	Verified
MIN005	Splitter/Combiner 2-Way 10-2000 MHz	Mini Circuits	ZESC-2-11	none	12/02/2003	Verified
MIN006	Splitter/Combiner 2-Way DC-4200 MHz	Mini Circuits	ZFRSC-42	none	12/02/2003	Verified

20.3 Results:

The sample tested was found to Comply.

20.4 Setup Photographs:



20.5 Test Data:

Immediately prior to initiating transmission, devices must monitor the combined time and spectrum windows in which they intend to transmit for a period larger than their frame period.

Results

Test	Channel Used	Verdict
Step 1: With Interference on f1	f2*	Pass
Step 2: With Interference on f2	f1*	Pass

* - the EUT either did not transmit at all or transmitted on the frequency indicated

f1 = 1923.264 MHz
f2 = 1924.992 MHz

	Nicholas Abbondante	Test Date:	11/29/2010
Test Personnel:			
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	120V/60Hz		
		Ambient Temperature:	22 ºC
Pretest Verification w/ BB Source:	**No**	Relative Humidity:	21 %
		Atmospheric Pressure:	1023 mbars

Deviations, Additions, or Exclusions: None

21 Maximum Transmit Period

21.1 Method

Tests are performed in accordance with CFR47 Part 15.323(c3); ANSI C63.17 Sub-Clause 8.2.2; and IC RSS-213 4.3.4(b)(3).

TEST SITE: 10m Chamber Building

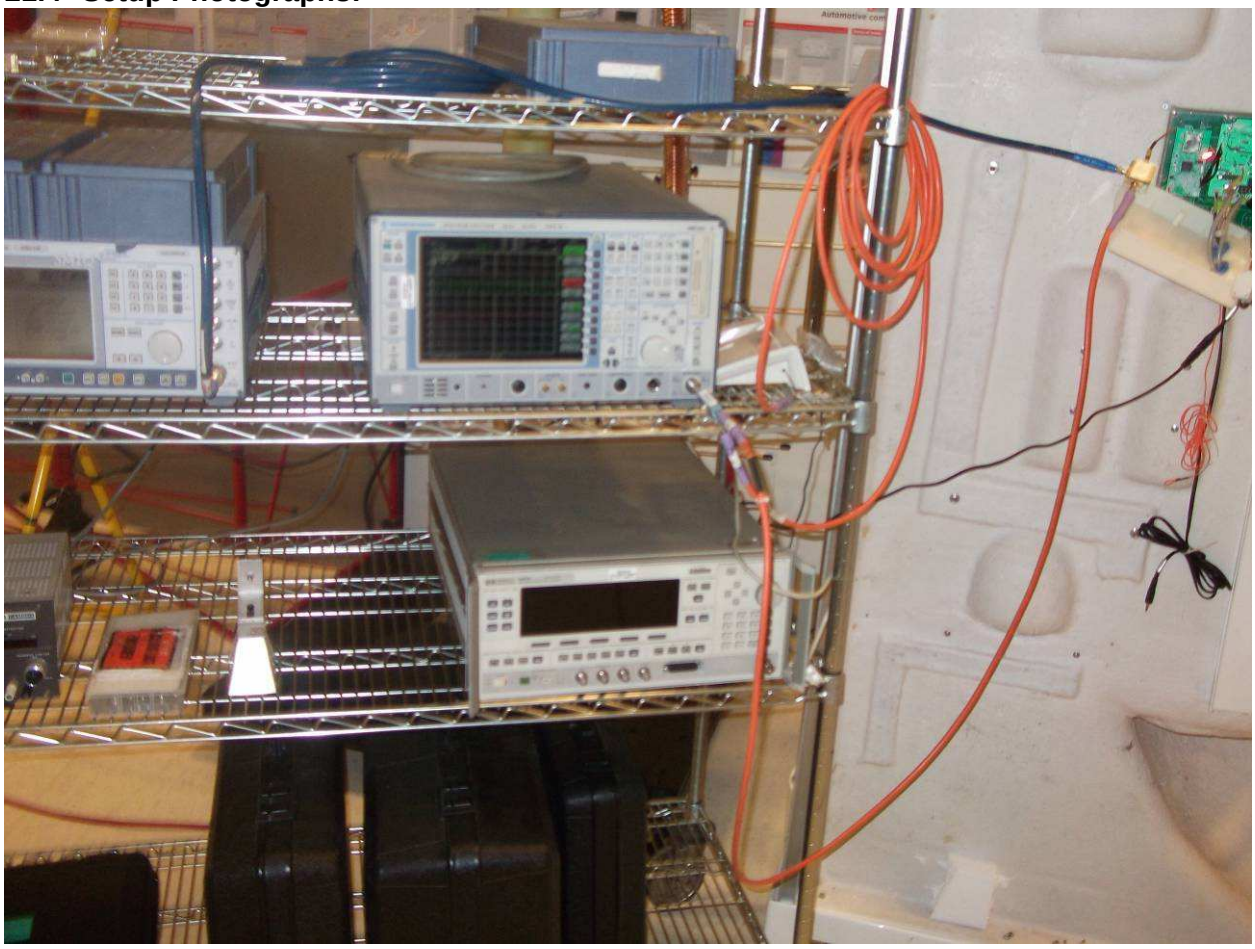
21.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004	Weather Station	Davis Instruments	7400	PE80529A61 A	06/11/2010	06/11/2011
CBL030	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 80	CBL030	01/04/2010	01/04/2011
NAR003	Directional Coupler 1.7-26.5GHz	Narda / L-3	4227-16	03135	02/26/2010	02/26/2011
ROS001	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	12/04/2009	12/04/2010
ROS004	Vector Signal Generator, 300kHz-3.3GHz	Rohde & Schwartz	SMIQ03B	100338	03/30/2010	03/30/2011
MIN006	Splitter/Combiner 2-Way DC-4200 MHz	Mini Circuits	ZFRSC-42	none	12/02/2003	Verified

21.3 Results:

The sample tested was found to Comply.

21.4 Setup Photographs:



21.5 Test Data:

Occupation of the same combined time and spectrum windows continuously over a period of time longer that 8 hours is not permitted without repeating the access criteria.

Results

	Measured Value (Seconds)	Limit (Seconds)	Verdict
Duration of occupation of the same combined time/spectrum windows	~22,560	28,800	Pass

Interference on communications channel Start Time 5:53 pm
Time of channel switch: 12:09 pm

	Nicholas Abbondante	Test Date:	12/02/2010
Test Personnel:			
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	120V/60Hz		
		Ambient Temperature:	22 ºC
Pretest Verification w/ BB Source:	**No**	Relative Humidity:	27 %
		Atmospheric Pressure:	1007 mbars

Deviations, Additions, or Exclusions: None

22 System Acknowledgement

22.1 Method

Tests are performed in accordance with CFR47 Part 15.323(c4); ANSI C63.17 Sub-Clause 8.1 / 8.2; and IC RSS-213 4.3.4(b)(4).

TEST SITE: 10m Chamber Building

22.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
None						

22.3 Results:

The sample was found to Comply.

22.4 Test Data:

This test is not applicable as the Panel device is a handset type of device, and it does not transmit a dummy carrier or beacon without the presence of a companion device.

Test Personnel:	N/A	Test Date:	N/A
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	N/A		
		Ambient Temperature:	N/A ºC
Pretest Verification w/ BB Source:	**N/A**	Relative Humidity:	N/A %
		Atmospheric Pressure:	N/A mbars

Deviations, Additions, or Exclusions: None

23 Random Waiting Interval

23.1 Method

Tests are performed in accordance with CFR47 Part 15.323(c6); ANSI C63.17 Sub-Clause 8.1.2 & 8.1.3; and IC RSS-213 4.3.4(b)(6).

TEST SITE: 10m Chamber Building

23.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
None						

23.3 Results:

The sample was found to Comply.

23.4 Test Data:

Note that this test is not applicable as the Panel is a handset type of device and does not transmit control and signaling information.

Test Personnel:	N/A	Test Date:	N/A
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	N/A		
		Ambient Temperature:	N/A ºC
Pretest Verification w/ BB Source:	**N/A**	Relative Humidity:	N/A %
		Atmospheric Pressure:	N/A mbars

Deviations, Additions, or Exclusions: None

24 Monitoring Bandwidth

24.1 Method

Tests are performed in accordance with CFR47 Part 15.323(c7.1); ANSI C63.17 Sub-Clause 7.4; and IC RSS-213 4.3.4(b)(7.1).

TEST SITE: 10m Chamber Building

24.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
None						

24.3 Results:

The sample was found to Comply.

24.4 Test Data:

The monitoring System BW >= the emission BW of the intended Transmission.

[ ] Simple Compliance Test:

Interference from Carrier	Reaction of EUT	Verdict
-30% EBW	NA	NA
+ 30% EBW	NA	NA

A – Could Transmit, B – Could not Transmit

[ ] Detailed Test:

Results

CW Interference from Carrier	Reaction of EUT	Verdict
+ 6 dB	NA	NA
+ 12 dB	NA	NA
- 6 dB	NA	NA
- 12 dB	NA	NA

A – Could Transmit, B – Could not Transmit

Note: the EUT uses the same receiver for monitoring that is used for communication, therefore the monitoring bandwidth requirement is met.

Test Personnel:	N/A	Test Date:	N/A
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	N/A		
		Ambient Temperature:	N/A ºC
Pretest Verification w/ BB Source:	**N/A**	Relative Humidity:	N/A %
		Atmospheric Pressure:	N/A mbars

Deviations, Additions, or Exclusions: None

25 Maximum/Monitoring Reaction Time

25.1 Method

Tests are performed in accordance with CFR47 Part 15.323(c7.2); ANSI C63.17 Sub-Clause 7.5; and IC RSS-213 4.3.4(b)(7.2).

TEST SITE: 10m Chamber Building

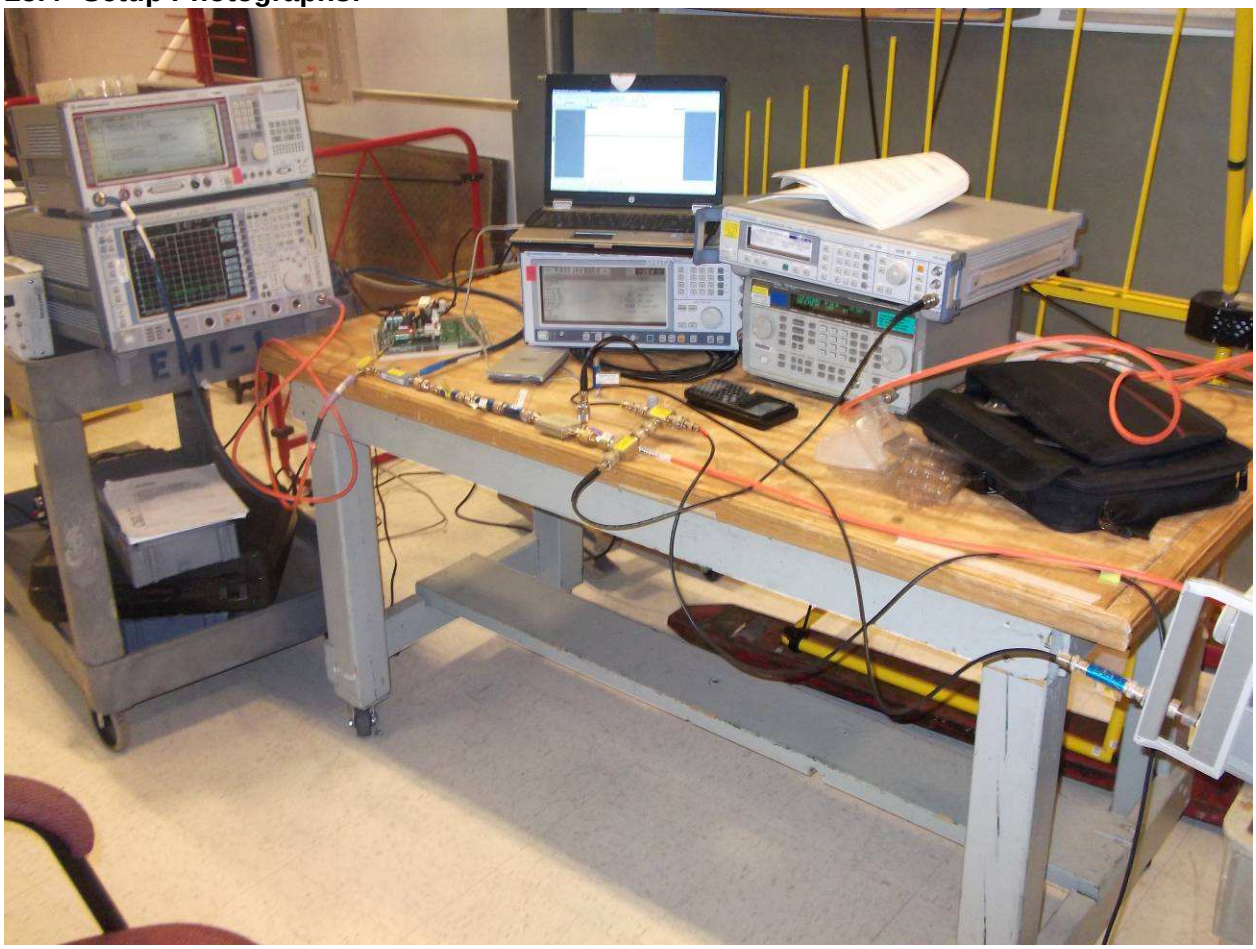
25.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004	Weather Station	Davis Instruments	7400	PE80529A61A	06/11/2010	06/11/2011
ROS001	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	12/04/2009	12/04/2010
ROS003	DECT Test Set	Rohde & Schwartz	CMD60	829902026	03/30/2010	03/30/2011
ROS004	Vector Signal Generator, 300kHz-3.3GHz	Rohde & Schwartz	SMIQ03B	100338	03/30/2010	03/30/2011
NAR003	Directional Coupler 1.7-26.5GHz	Narda / L-3	4227-16	03135	02/26/2010	02/26/2011
CBL030	High Frequency Cable 40GHz	Megaphase	TM40 K1K180	CBL030	01/04/2010	01/04/2011
147-306	Rental Signal Generator	Rohde & Schwarz	SML03	102824	10/01/2010	10/01/2011
HEW62	Synthesized Sweep Generator	Hewlett Packard	83620A	3213A01244	03/26/2010	03/26/2011
HEW63	Generator, Signal	Hewlett Packard	8648C	3847A05291	01/14/2009	01/14/2011
147058	Signal Generator	Hewlett Packard	83620B	3722A00552	03/03/2010	03/03/2011
MIN003	Splitter/Combiner 2-Way DC-2000 MHz	Mini Circuits	ZFRSC-2050	none	12/02/2003	Verified
MIN002	Splitter/Combiner 3-Way 650-1050 MHz	Mini-Circuits	ZN3PD	00337	12/02/2003	Verified
MIN005	Splitter/Combiner 2-Way 10-2000 MHz	Mini Circuits	ZESC-2-11	none	12/02/2003	Verified
MIN006	Splitter/Combiner 2-Way DC-4200 MHz	Mini Circuits	ZFRSC-42	none	12/02/2003	Verified

25.3 Results:

The sample was found to Comply.

25.4 Setup Photographs:



25.5 Test Data:

The reaction time is the min. duration of the interference present during the monitoring interval that must be detected by the EUT to determine that the monitored time and spectrum window is occupied.

	Test	Reaction of EUT	Verdict
1	With Interference Pulse >= [ ] 50us [X] 50√ (1.25/ EBW)us	B	Pass
2	With Interference Pulse >= [ ] 35us [X] 35√ (1.25/ EBW)us	B	Pass

A – Could be Connected in at least one channel
B – Could not be Connected in all channels

	Nicholas Abbondante	Test Date:	11/29/2010
Test Personnel:			
	FCC Part 15 Subpart D; IC	Test Levels:	N/A
Product Standard:	RSS-213		
Input Voltage:	120V/60Hz		
		Ambient Temperature:	22 ºC
Pretest Verification w/ BB Source:	**No**	Relative Humidity:	21 %
		Atmospheric Pressure:	1023 mbars

Deviations, Additions, or Exclusions: None

26 Monitoring Antenna

26.1 Method

Tests are performed in accordance with CFR47 Part 15.323(c8); ANSI C63.17 Clause 4; and IC RSS-213 4.3.4(b)(8).

TEST SITE: 10m Chamber Building

26.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
None						

26.3 Results:

The sample was found to Comply.

26.4 Test Data:

Criteria: The monitoring system shall use the same antenna used for transmission, or an antenna that yields equivalent reception at that location.

Conclusion

The monitoring antenna refers to the EUT antenna used to monitor the RF signal on the channel prior to transmission, which

[✓] Same as the transmitting antenna, therefore it complies with the requirement.

[ ] Different from the transmitting antenna, tests according to ANSI 63.17 sub-clause 4.7 and 4.9 are needed.

Test Personnel:	N/A	Test Date:	N/A
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	N/A		
		Ambient Temperature:	N/A ºC
Pretest Verification w/ BB Source:	**N/A**	Relative Humidity:	N/A %
		Atmospheric Pressure:	N/A mbars

Deviations, Additions, or Exclusions: None

27 Duplex Connections

27.1 Method

Tests are performed in accordance with CFR47 Part 15.323(c10); ANSI C63.17 Sub-Clause 8.3; and IC RSS-213 4.3.4(b)(10).

TEST SITE: 10m Chamber Building

27.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
None						

27.3 Results:

The sample was found to Comply.

27.4 Test Data:

The EUT is exempt from this test as according to the manufacturer, duplex operation is not implemented.

Please find the manufacturer attestation in exhibit FCC15D_App-SD_Form2.doc

Test Personnel:	N/A	Test Date:	N/A
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	N/A		
		Ambient Temperature:	N/A ºC
Pretest Verification w/ BB Source:	**N/A**	Relative Humidity:	N/A %
		Atmospheric Pressure:	N/A mbars

Deviations, Additions, or Exclusions: None

28 Co-Located Devices

28.1 Method

Tests are performed in accordance with CFR47 Part 15.323(c11); ANSI C63.17 Sub-Clause 8.4; and IC RSS-213 4.3.4(b)(11))

TEST SITE: 10m Chamber Building

28.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
None						

28.3 Results:

The sample was found to Comply.

28.4 Test Data:

[✓] Not appropriate as it is Cordless Telephone application and the manufacturer has indicated that a co-located device protocol is not used.

[ ] Appropriate as it is Co-located Device, in which the monitoring system will be blocked from the Transmission of a co-located (Within one meter) transmitters of the same system.

Please find the manufacturer attestation in exhibit FCC15D_App-SD_Form2.doc

Test Personnel:	N/A	Test Date:	N/A
Product Standard:	FCC Part 15 Subpart D; IC RSS-213	Test Levels:	N/A
Input Voltage:	N/A		
Pretest Verification w/ BB Source:	**N/A**	Ambient Temperature:	N/A ºC
		Relative Humidity:	N/A %
		Atmospheric Pressure:	N/A mbars

Deviations, Additions, or Exclusions: None

29 Revision History

Revision Level	Date	Report Number	Notes
0	12/16/2010	100058757BOX-003	Original Issue