



Electromagnetic Compatibility Test Report

Test Report No: HMI 191107

Issued on: November 19, 2007

Product Name
IRF V2 8x9

Tested According to
FCC 47 CFR, Part 15, Subparts B & C

Tests Performed for
AURMANET Sarl

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1633.01

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Test personnel



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QA and Lab. Manager
QualiTech EMC Laboratory



1633.01

Test Report details:

Issued on: 19.11.2007

Assessment information:

This report contains an assessment of the EUT against Electromagnetic Compatibility based upon tests carried out on the samples submitted. The results contained in this report relate only to the items tested. Manufactured products will not necessarily give identical results due to production and measurement tolerances. QualiTech, EMC Lab does not assume responsibility for any conclusion and generalization drawn from the test results with regards to other specimens or samples of type of the equipment represented by test item.

The EUT was set up and exercised using the configuration, modes of operation and arrangements defined in this report only.

Modifications:

Modifications made to the EUT

None.

Modifications made to the Test Standard

None.

Summary of Compliance Status

Bluetooth: FCC 47 CFR, Part 15, Subparts B & C,

Test Spec. Clause	Test Case	Remarks
§15.247 (a) (1) (ii)	Spectrum Bandwidth of a FHSS system/ Maximum 20dB BW	Pass
§15.247 (a) (1)	Carrier Frequency Separation	Pass
§15.247 (a) (1)(iii)	Number of Hopping Channels	Pass
§15.247 (a) (1)(iii)	Time Occupancy (Dwell Time)	Pass
§15.247 (b) (1)	Maximum Peak Output Power	Pass
§15.247 (d)	Band-Edge compliance of RF Conducted Emission	Pass
§15.205&	Radiated Emission, Restricted Bands	Pass
§15.247 (d)	Spurious Emission Conducted	Pass
§15.247 (d)	Spurious Emission Radiated	Pass
§15.109	Radiated Emission (receiver)	Pass
§15.107	Power line Emission measurements	Pass
§15.203	Antenna Connector requirement	Pass



1633.01

Test Facility & Uncertainty of Measurement

Accreditation/ Registration reference:

- A2LA Certificate Number: 1633.01

Test Facility description

The tests were performed at the EMC Laboratory, QualiTech Division, ECI Telecom Group

Address: 30, Hasivim St., Petah Tikva, Israel.
Tel: 972-3-926-8443

3m Anechoic Chamber:

The 3m-screened chamber is used in two configurations: the semi-anechoic configuration for Radiated Emission measurements and the full-anechoic configuration for Radiated Immunity tests.

Semi Anechoic Configuration:

Measurement distance	3m
Chamber dimensions	9.5m x 6.5m x 5.2m
Antenna height	1 - 4m
Shielding Effectiveness	Magnetic field ≥ 80 dB at 15 kHz ≥ 90 dB at 100 kHz Electric field > 120 dB from 1MHz to 1GHz > 110 dB from 1GHz to 10GHz
Absorbing material	Ferrite tiles on the walls and ceiling Frankonia hybrid absorbing material in selected positions on the walls
Normalized Site Attenuation measured at 5 positions	± 3.49 dB, 30MHz to 1GHz
Transmission Loss measured at 5 positions, at 1.5m height	± 3 dB, 1GHz to 18GHz

Full-Anechoic Configuration:

Measurement distance	3m
Chamber dimensions	7m x 4m x 3m
Antenna height	1.55m at Horizontal & Vertical polarizations
Shielding Effectiveness	Magnetic field ≥ 80 dB at 15 kHz ≥ 90 dB at 100 kHz Electric field > 120 dB from 1MHz to 1GHz > 110 dB from 1GHz to 10GHz
Absorbing material	Ferrite tiles on the walls and ceiling Frankonia hybrid absorbing material in selected positions on the walls and floor
Field Uniformity to EN61000-4-3	± 3 dB 80MHz to 18GHz

Uncertainty of Measurement:

Test Name	Test Method & Range	Uncertainty	
		Combined std. Uc(y)	Expanded U
Radiated Emission	30MHz÷230MHz, Horiz. polar.	[dB]	[dB]
	30MHz÷230MHz, Ver. polar.	1.8	3.6
	230MHz÷1000MHz, Horiz. polar.	1.967	3.934
	230MHz÷1000MHz, Vert. polar.	1.487	2.973
		1.499	2.998
Conducted Emission	9 kHz÷150 kHz	[dB]	[dB]
	150 kHz÷30MHz	1.378	2.756
		1.095	2.190

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1. General Description

1.1. Description of the EUT system/test Item:

Product name: IRF V2 8x9

FCC ID: VXY70001

The IRF V2 8x9 is a transceiver which is connected to a PC through the USB interface. It is able to communicate with UCF to send order like: lock, unlock etc.

It can also receive information from the UCF like: ambient temperature, the status of door cabinet (open or close) and the status of the locker (locked or unlocked). The case is made with ABS and the dimensions are: 78mm x 54mm x 21mm. The data transfer method to communicate is FSK

2. Method of Measurements

2.1. Conducted Measurements:

The RF output of the transmitter under test was directly connected to the input of the Spectrum analyzer through a specialized antenna connector provided by the manufacturer, and an attenuator as specified. The external attenuator and cable loss were added to the reading. Worst-case results of in the various modulation modes (where applicable) were reported.

For carrier frequency separation, number of hopping frequencies, time of occupancy, 20dB BW, peak output power, band edge emissions, and spurious emissions were measured according the guidelines in DA 00-705.

For Dwell Time, using a Spectrum Analyzer with Span = 0, the "On time" was determined. The Transmitter was observed to be "On" on average, 2 times in any 10 second period.

For PSD, emission peak was zoomed within the pass band with spectrum analyzer's settings as reported (Sweep time=Span/3kHz).

2.2. Radiated Emissions Measurements in the restricted bands:

For radiated emissions, which fall in the restricted bands the spectrum from 1MHz to 25GHz was investigated following the guidelines in ANSI C63.4-2003, with the transmitter set to the lowest, middle and highest channel frequencies. Measurements were performed with peak detector and repeated averaged with VBW=10Hz.

2.3. Radiated Emission measurements:

During the testing process, the EUT was controlled via dedicated software. The EUT was operated at in receive mode.

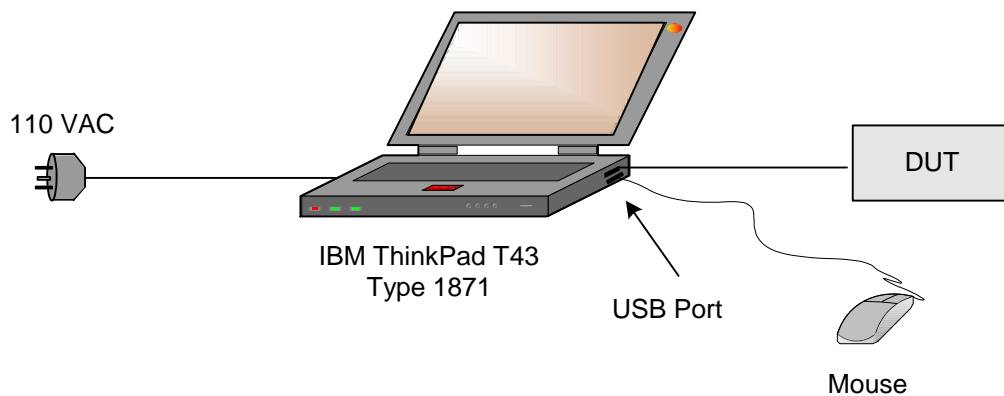
Measurements were performed at a 3-meter measurement distance in the semi-anechoic chamber in order to evaluate the radiated electromagnetic interference characteristics of the EUT. The EUT was placed on a non-metallic table/support, 0.8m above the turntable, was configured, arranged and operated in a manner consistent with typical application and load conditions.

An appropriate antenna depending upon the frequency range, per ANSI C63.4-2003 clause 4.1.5 was used. While the turntable was being rotated, the height of the antenna was varied from 1 to 4m for the frequency range of 9kHz to 25GHz. The highest radiated emission was detected by manipulating the system cables to the worst-case position. This process was repeated for both antenna polarizations. The amplitudes of worst-case emission were measured with the detector modes and resolution bandwidths over various frequency ranges according to the requirements of ANSI C63.4-2003 clause 4.2.

2.4. Power line Emission measurements:

The EUT was placed on a non-conductive table/support 80 cm above the reference ground plane. The EUT was configured in accordance with ANSI C63.4-2003 using a 50 μ H/50 ohm LISN.

Compliance with the provisions was based on the measurements of the radio frequency voltage between each line and the ground at the power terminal.



3. Report of Measurements and examinations

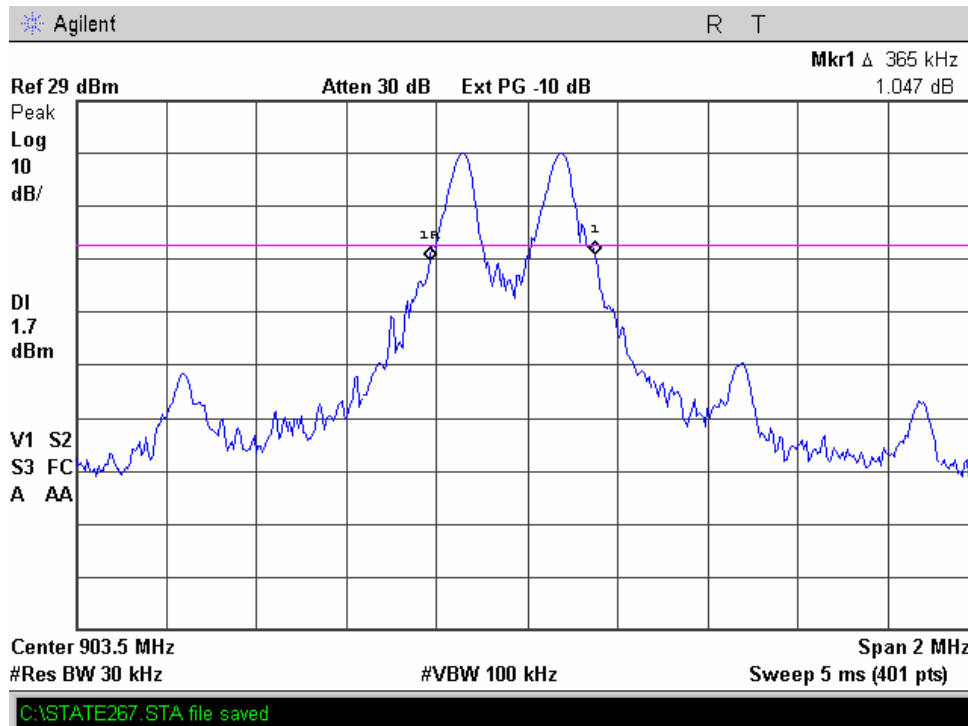
3.1. 20dB Bandwidth

Reference document:	47 CFR §15.247 (a) (1)(i) & DA 00-705		
Test Requirements:	For frequency hopping systems operating in the 902-928 MHz band, the maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.		
Test setup:	See Sec. 2.1	Pass	
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted		
S.A. Settings:	RBW: 30kHz, VBW: 100kHz, Span: 2MHz		
Hopping function:	Disabled		
Environment conditions:	Ambient Temperature: 22°C	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plot 3.1.1 – Plot 3.1.3	

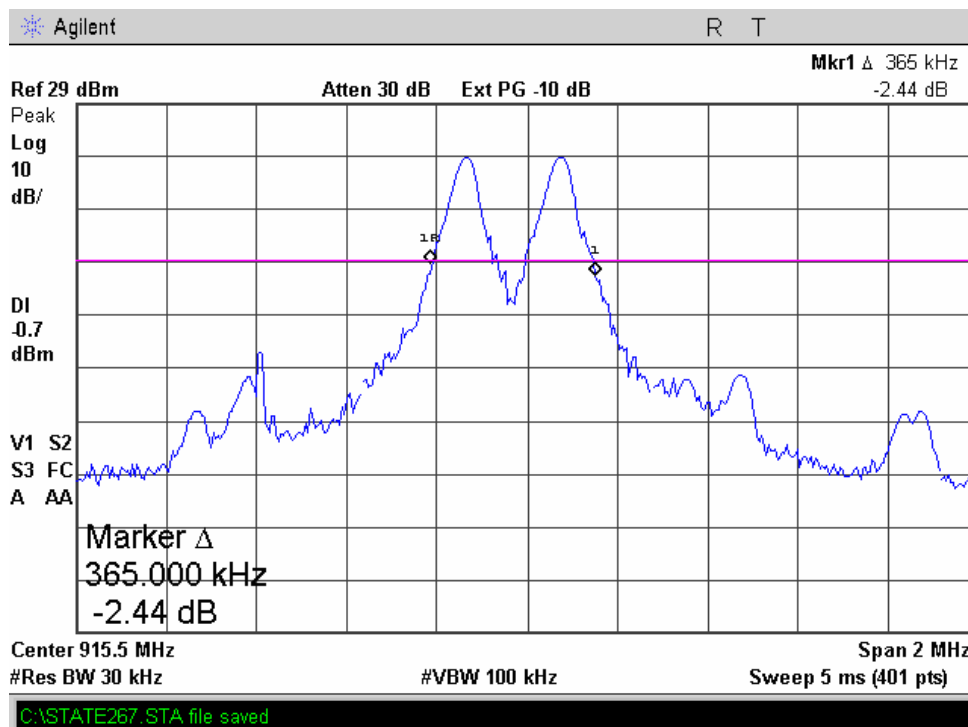
Test results:

Frequency [GHz]	20dB BW [kHz]	Reference	Result
903.5	365	Plot 3.1.1	Pass
915.5	365	Plot 3.1.2	Pass
927.5	360	Plot 3.1.3	Pass

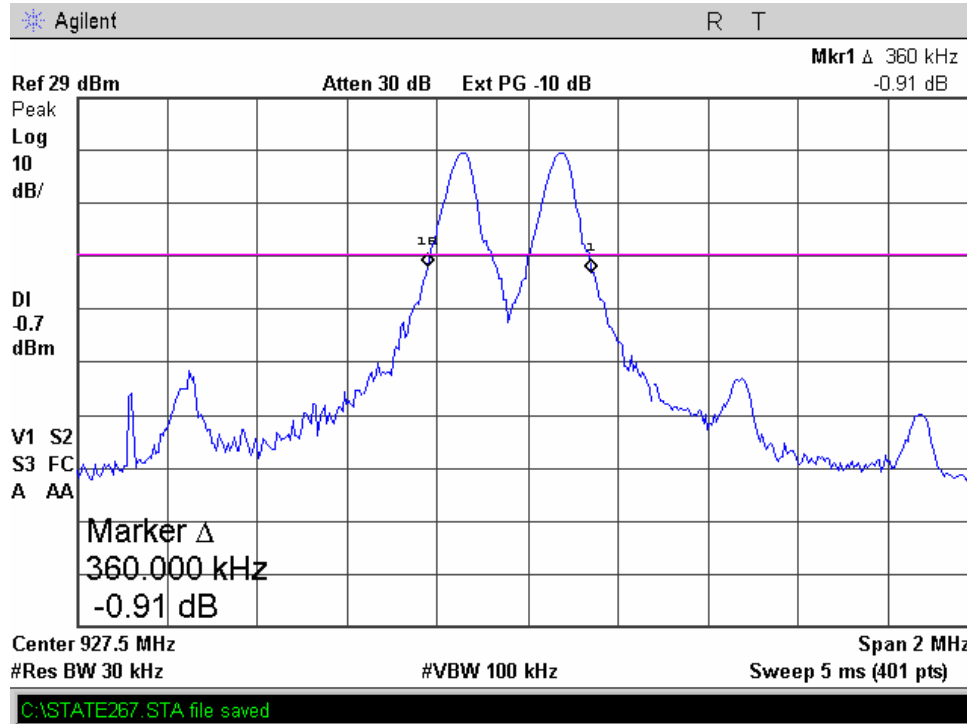
Plot 3.1.1



Plot 3.1.2



Plot 3.1.3



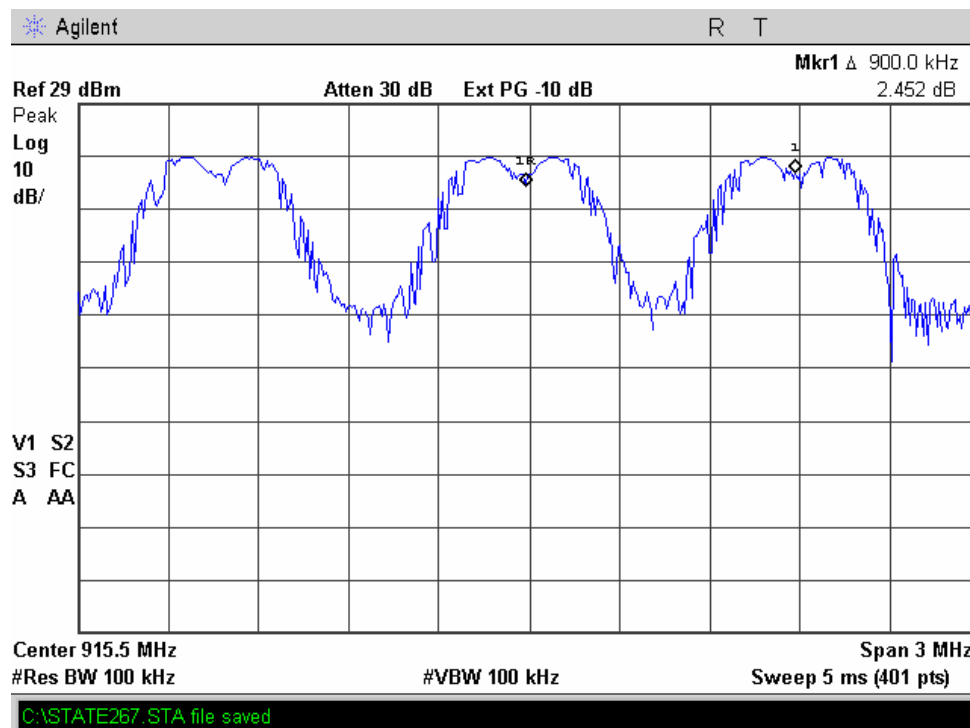
3.2. Carrier Frequency Separation

Reference document:	47 CFR §15.247 (a) (1) & DA 00-705		
Test Requirements:	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.		
Test setup:	See Sec. 2.1	Pass	
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted		
S.A. Settings:	RBW: 100kHz, VBW: 100kHz		
Hopping function:	Enabled		
Environment conditions:	Ambient Temperature: 22°C	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	Plot 3.2	

Test results:

20dB BW [kHz]	Carrier separation [kHz]	Result
365	900	Pass

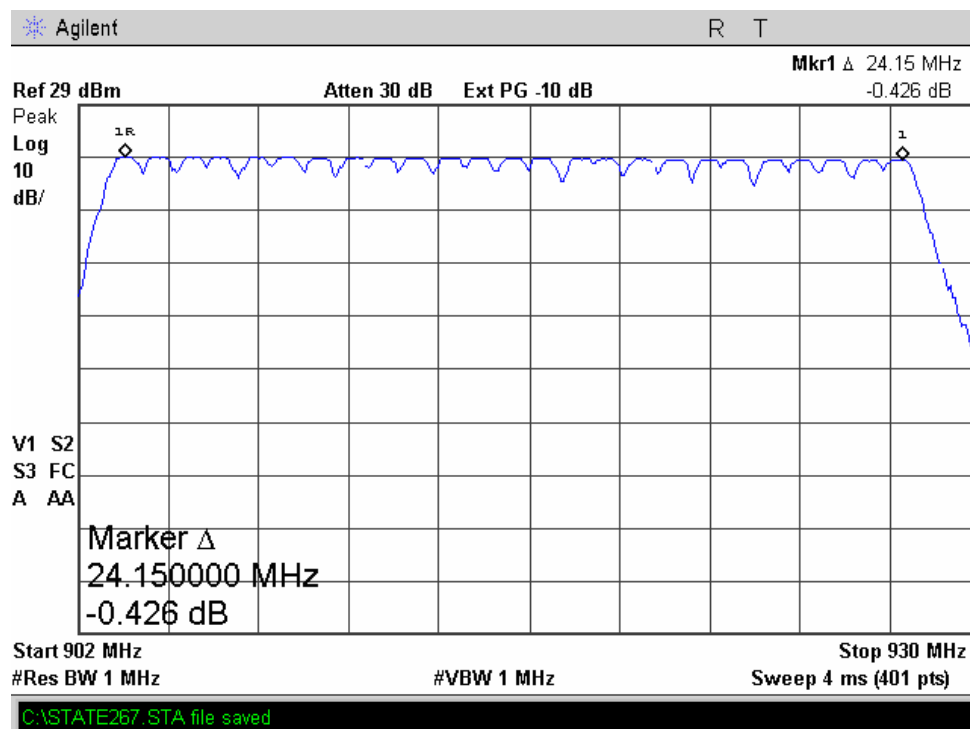
Plot 3.2



3.3. Number of Hopping Channels

Reference document:	47 CFR §15.247 (a) (1)(iii) & DA 00-705		
Test Requirements:	For frequency hopping systems operating in the 902-928 MHz band, if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies.		
Test setup:	See Sec. 2.1	Pass	
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted		
S.A. Settings:	RBW: 1MHz, VBW: 3MHz		
Hopping function:	Enabled		
Environment conditions:	Ambient Temperature: 22°C	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	25 hopping channels	Plot 3.3	

Plot 3.3



3.4. Average Time of Occupancy (Dwell Time)

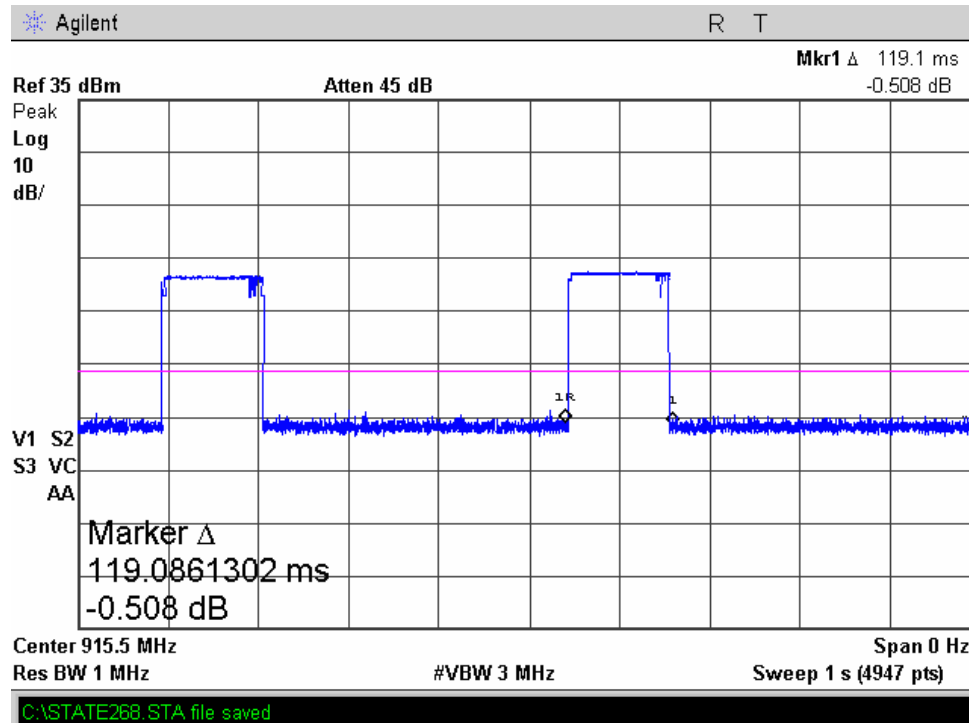
Reference document:	47 CFR §15.247 (a) (1) (iii) & DA 00-705		
Test Requirements:	For frequency hopping systems operating in the 902-928 MHz band , if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.		
Test setup:	See Sec. 2.1	Pass	
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted		
S.A. Settings:	RBW: 1MHz, VBW: 3MHz, Span:0 centered on hopping channel		
Hopping function:	Disabled		
Environment conditions:	Ambient Temperature: 22°C	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plot 3.4.1– Plot 3.4.2	

Test results:

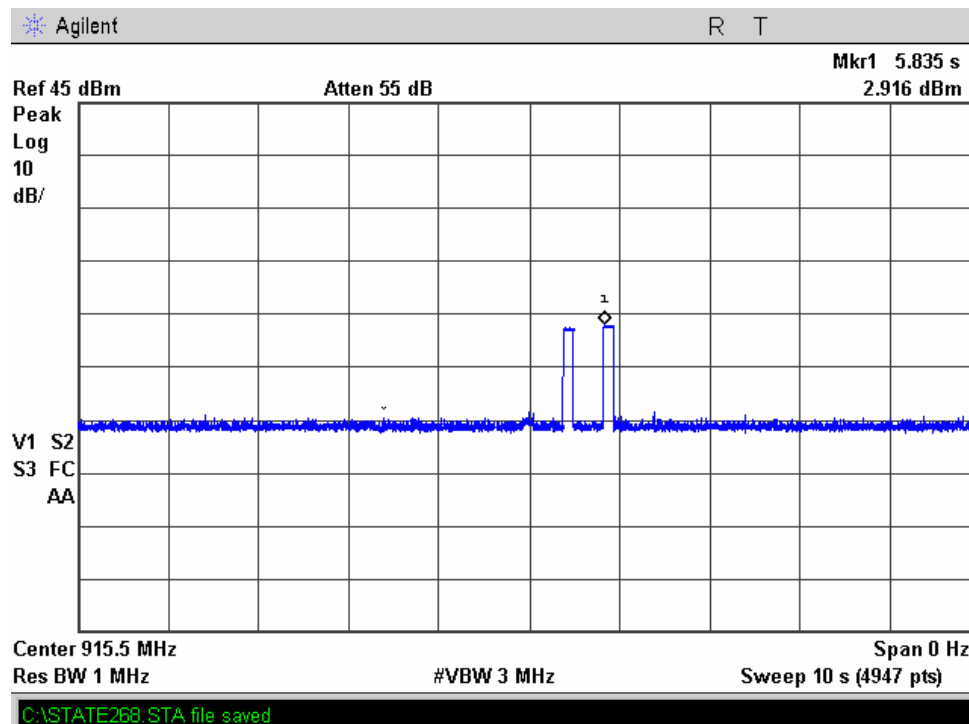
Frequency [GHz]	Time slot length [Sec]	Reference	Dwell time* [Sec]	Limit [Sec]	Result
915.5	0.119	Plot 3.4.1	0.238	0.4	Pass

*Dwell Time calculation: “On” time = 0.119 sec, Number of “On times = 2, Dwell Time = 0.119sec X 2 = 0.238sec.

Plot 3.4.1



Plot 3.4.2



3.5. Maximum Peak Output Power

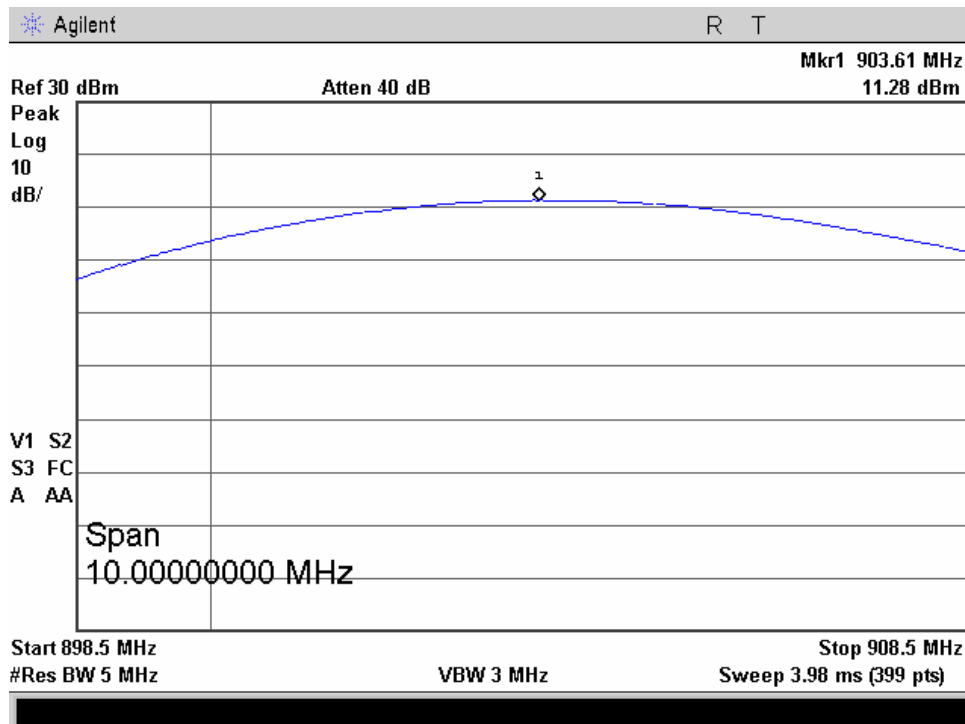
Reference document:	47 CFR §15.247 (b) (1) & DA 00-705		
Test Requirements:	The maximum peak conducted output power of the intentional radiator shall not exceed the following : For frequency hopping systems operating in the 902-928 MHz band: 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.		
Test setup:	See Sec. 2.1	Pass	
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted		
S.A. Settings:	RBW: 3MHz, VBW: 3MHz,		
Hopping function:	Disabled		
Environment conditions:	Ambient Temperature: 22°C	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plot 3.5.1 – Plot 3.5.3	

Test results:

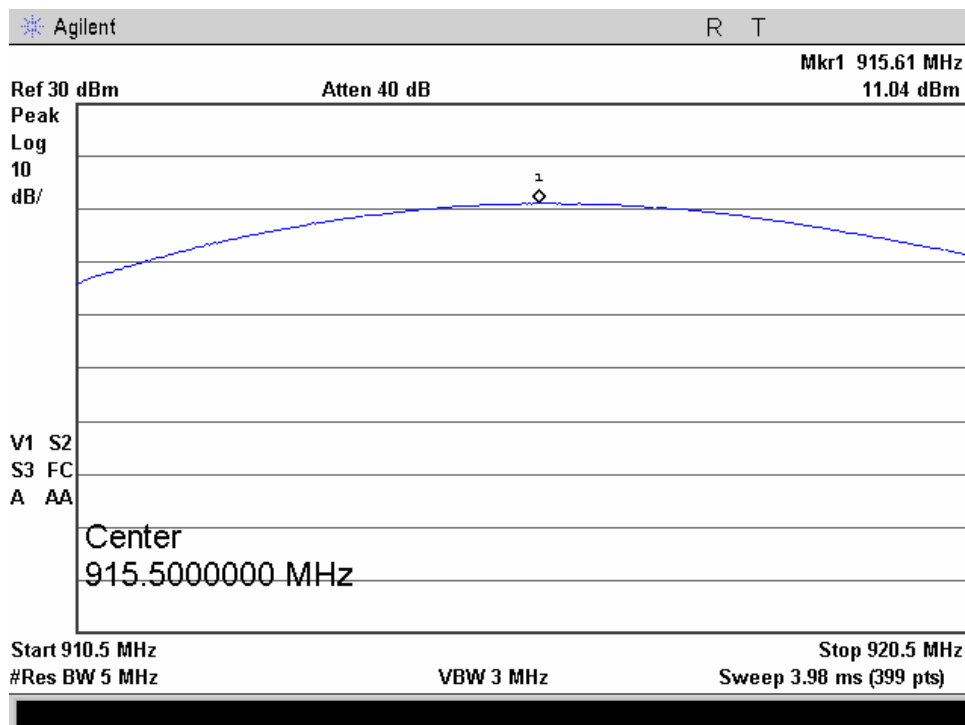
Frequency [GHz]	Max. Peak Output power* [dBm]	Max. Peak Output power* [mW]	Limit Max. Peak Output power* [mW]	Reference	Result
903.5	11.28	10.52	250	Plot 3.5.1	Pass
915.5	11.04	10.43	250	Plot 3.5.2	Pass
927.5	10.79	10.33	250	Plot 3.5.3	Pass

*Corrected for external attenuations and cable

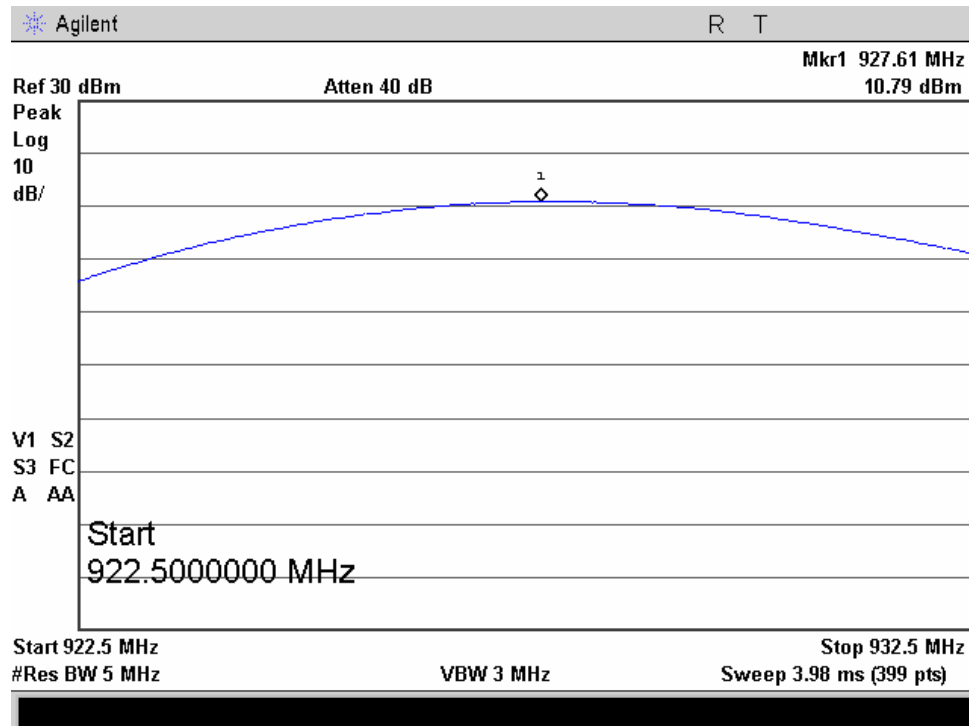
Plot 3.5.1



Plot 3.5.2



Plot 3.5.3



3.6. Band-edge compliance of RF Conducted Emission

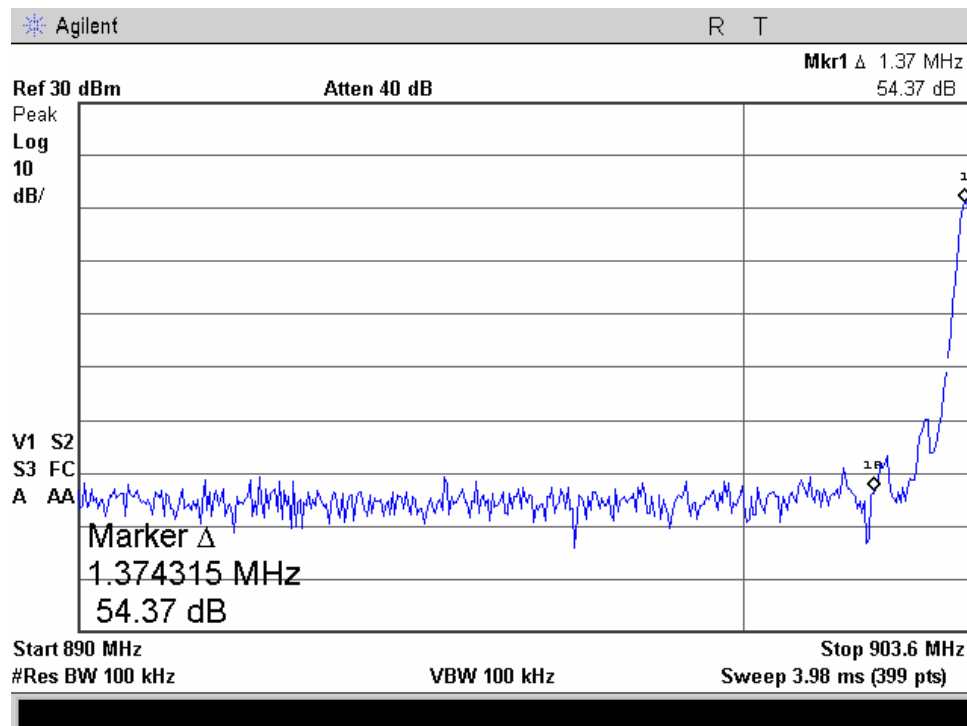
Reference document:	47 CFR §15.247 (d) & DA 00-705		
Test Requirements and limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.		
Test setup:	See Sec. 2.1	Pass	
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted		
S.A. Settings:	RBW: 100kHz, VBW: 100kHz		
Hopping function:	Disabled/Enabled		
Environment conditions:	Ambient Temperature: 22°C	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plot 3.6.1 – Plot 3.6.4	

Test results of

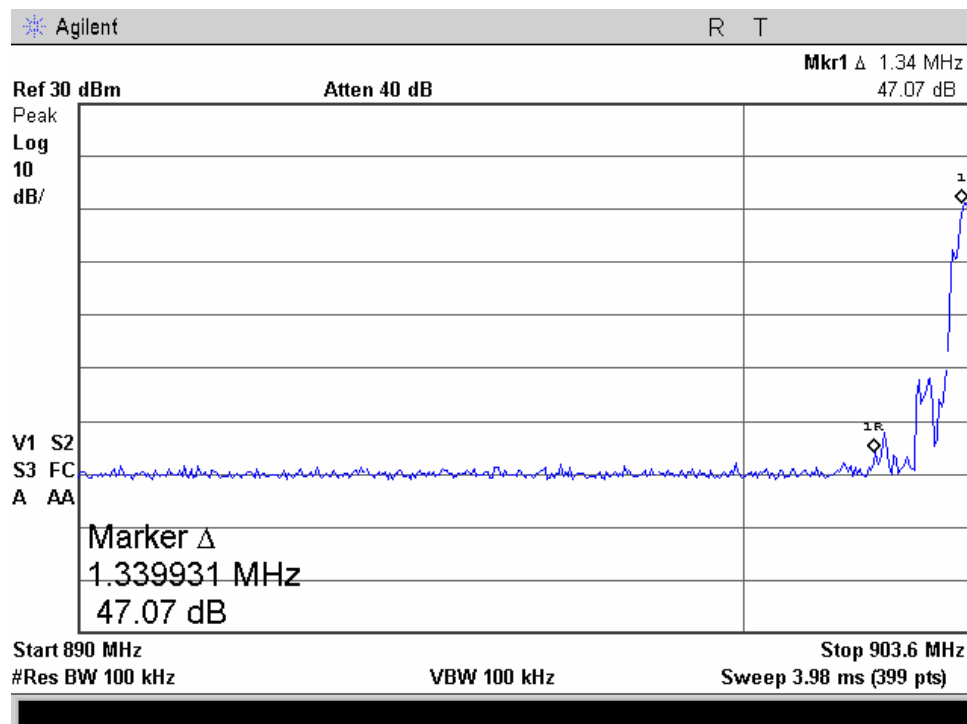
Activity	Measured emission* [dBc]	Limit [dBc]	Reference	Result
Hopping off, lowest frequency	-54.37	-20	Plot 3.6.1	Pass
Hopping on, lowest frequency	-47.07	-20	Plot 3.6.2	Pass
Hopping off, highest frequency	-41.07	-20	Plot 3.6.3	Pass
Hopping on, highest frequency	-36.06	-20	Plot 3.6.4	Pass

*Corrected for external attenuations and cable

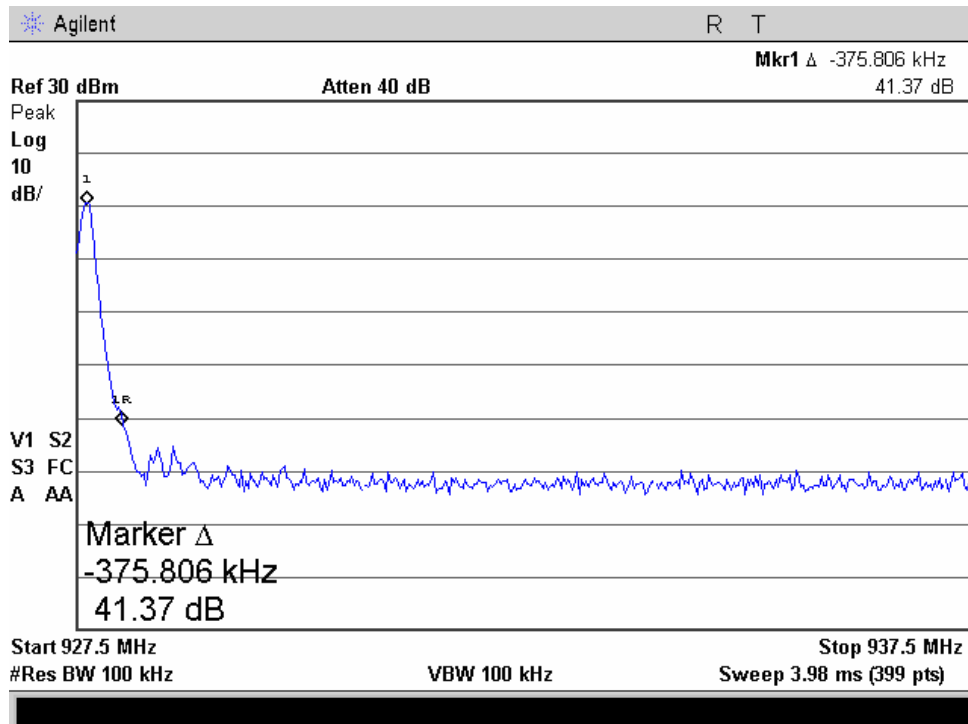
Plot 3.6.1



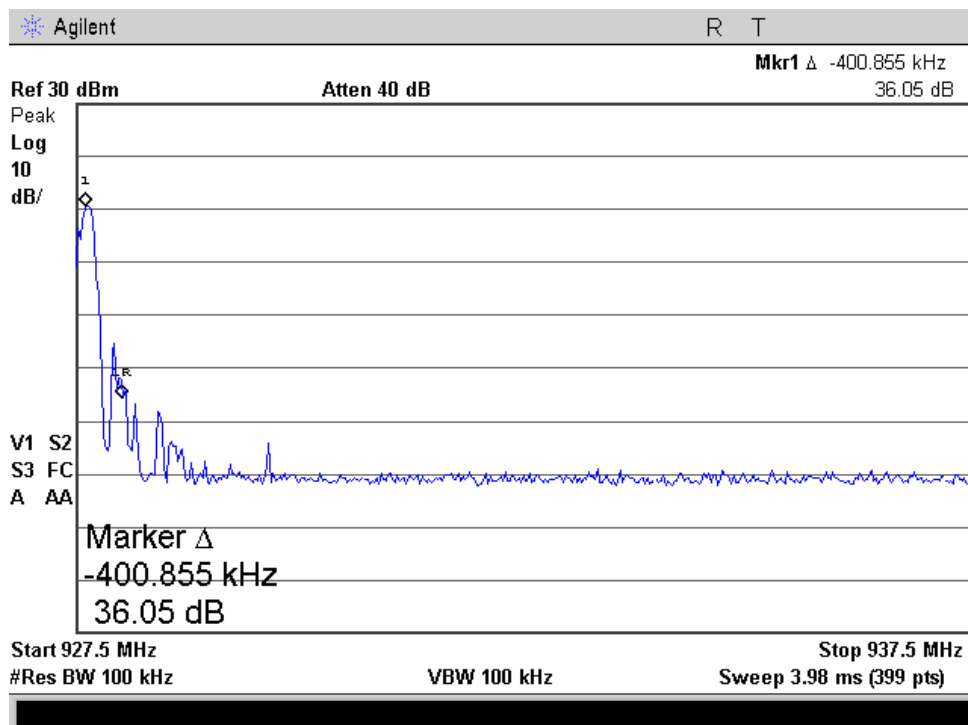
Plot 3.6.2



Plot 3.6.3



Plot 3.6.4



3.7. Radiated Spurious Emissions, Restricted Bands

Reference document:	47 CFR §15.247 (d) & §15.209(a) & DA 00-705		
Test Requirements:	The emissions from an intentional radiator shall not exceed the field strength levels specified in §15.209(a).		
Test setup:	See Sec. 2.2, 2.3	Pass	
Operating conditions:	Under normal test conditions		
Method of testing:	Radiated		
S.A. Settings:	f <1GHz: RBW: 120kHz, VBW: 1MHz f >1GHz: RBW: 1MHz, VBW: 3MHz		
Hopping function:	Disabled (lowest, middle, and highest)		
Environment conditions:	Ambient Temperature: 22°C	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plot 3.7.1 – Plot 3.7.11	

Test result

All measurements were done in horizontal and vertical polarizations; the results show the worst case

Lowest channel, 903.5 MHz					
Frequency [MHz]	Detector	Spurious level [dBμV/m]	Limit [dBμV/m]	Reference Plot	Result
1130	Avg	47.86	54	Plot 3.7.1	Pass
1130	Peak	49.78	74	Plot 3.7.1	Pass
1807	Avg	47.83	54	Plot 3.7.1	Pass
1807	Peak	50.19	74	Plot 3.7.1	Pass
4517.5	Avg	46.01	54	Plot 3.7.2	Pass
4517.5	Peak	48.47	74	Plot 3.7.2	Pass

Middle channel, 915.5 MHz					
Frequency [MHz]	Detector	Spurious level [dBμV/m]	Limit [dBμV/m]	Reference Plot	Result
1130	Avg	46.13	54	Plot 3.7.4	Pass
1130	Peak	48.60	74	Plot 3.7.4	Pass
1831	Avg	48.75	54	Plot 3.7.4	Pass
1831	Peak	51.11	74	Plot 3.7.4	Pass
4577.5	Avg	44.43	54	Plot 3.7.5	Pass
4577.5	Peak	46.79	74	Plot 3.7.5	Pass

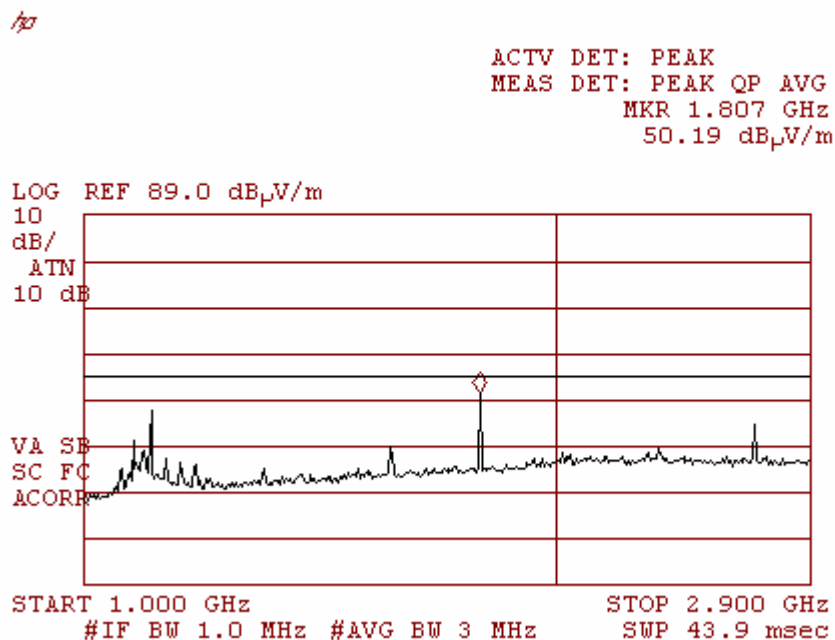
Highest channel, 927.5 MHz					
Frequency [MHz]	Detector	Spurious level [dBμV/m]	Limit [dBμV/m]	Reference Plot	Result
1130	Avg	45.76	54	Plot 3.7.7	Pass
1130	Peak	47.31	74	Plot 3.7.7	Pass
1855	Avg	50.67	54	Plot 3.7.7	Pass
1855	Peak	53.03	74	Plot 3.7.7	Pass
4637.5	Avg	45.1	54	Plot 3.7.8	Pass
4637.5	Peak	47.46	74	Plot 3.7.8	Pass

Note: Radiated Emission [dBμV/m] = measured [dBμV] + Correction-factor [dB(1/m)]
Correction Factor = Antenna factor + Cable Loss

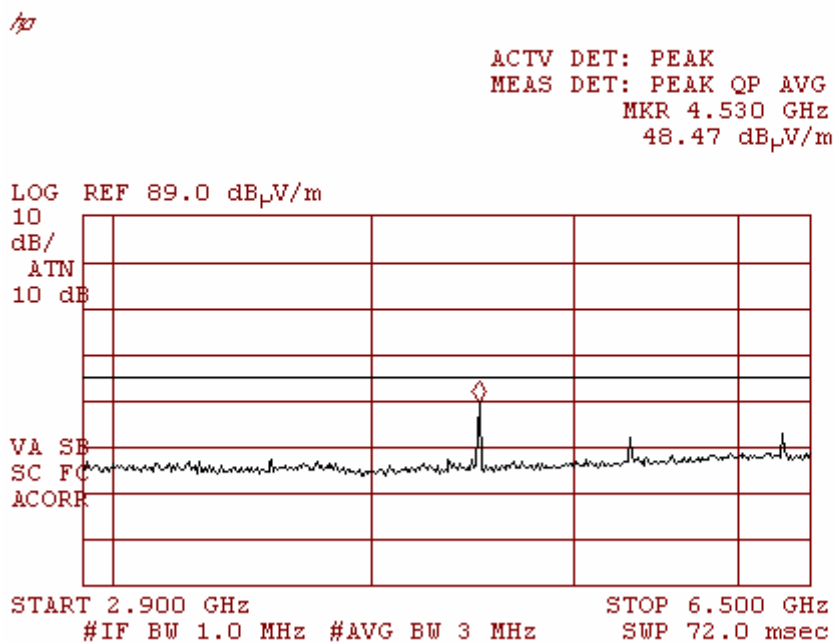
Below 1 GHz				
Frequency [MHz]	Detector	Spurious level [dBμV/m]	Limit [dBμV/m]	Result
35.98	QP	32.3	40	Pass
47.99	QP	36.7	40	Pass
96	QP	40.8	43.5	Pass
320.01	QP	36.9	46.5	Pass
400.01	QP	40.6	46.5	Pass
486.57	QP	37.6	46.5	Pass

Note: Radiated Emission [dBμV/m] = measured [dBμV] + Correction-factor [dB(1/m)]
Correction Factor = Antenna factor + Cable Loss

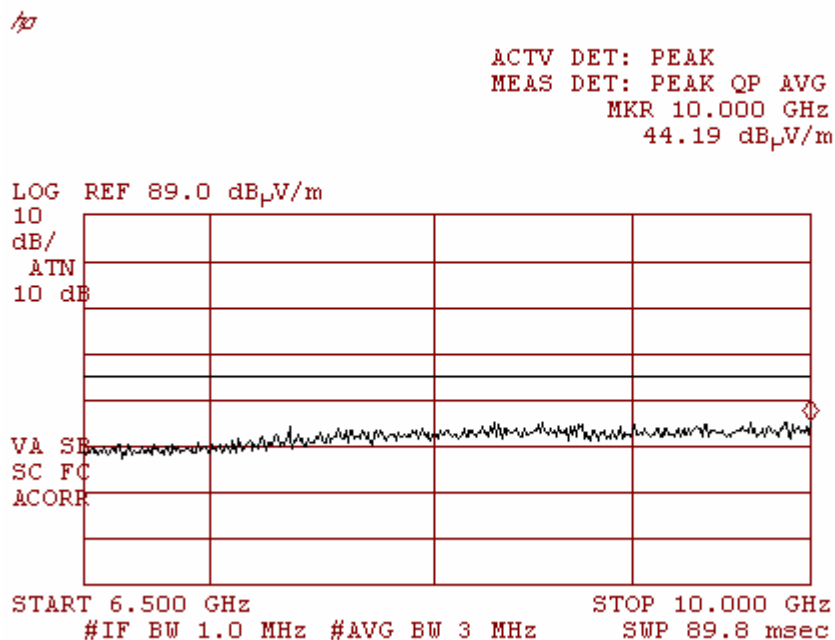
Lowest Frequency Horizontal & Vertical Plot 3.7.1



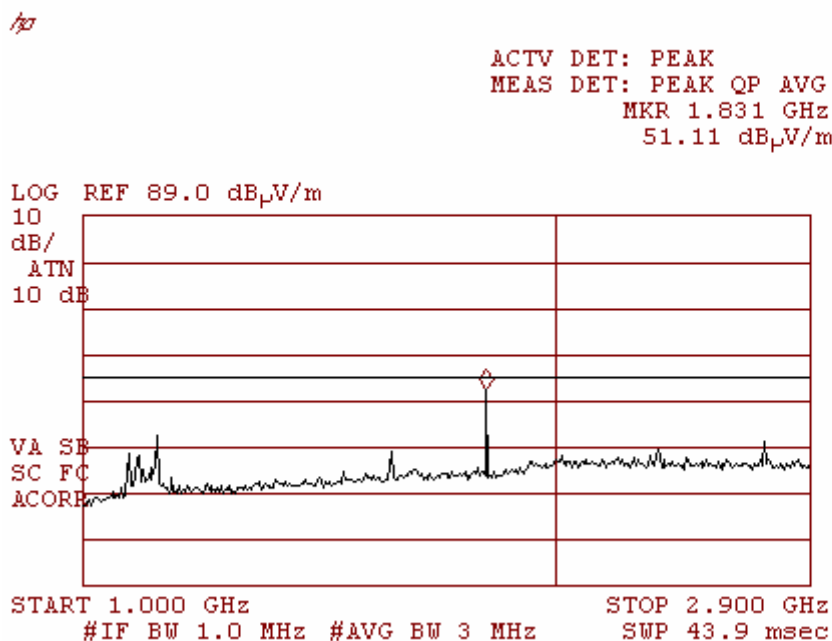
Horizontal & Vertical Polarization Plot 3.7.2



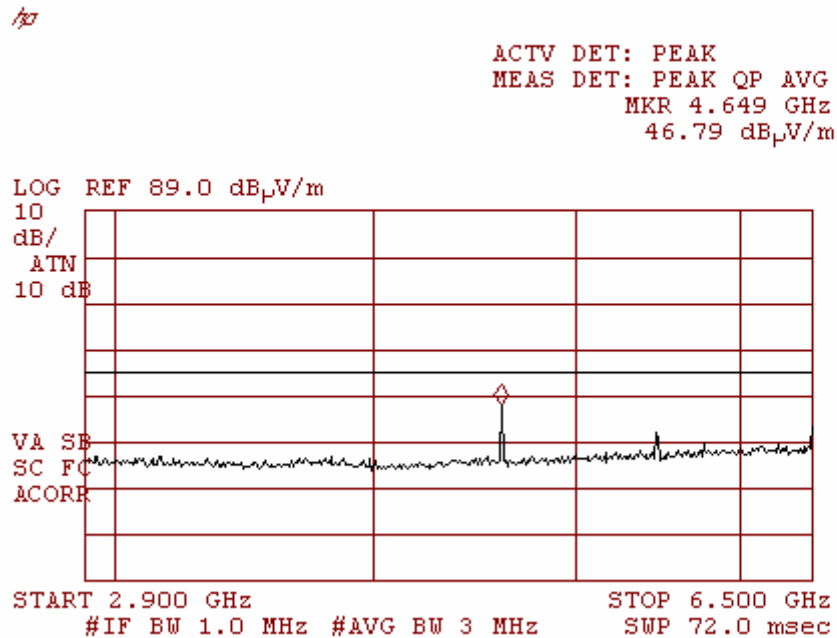
Horizontal & Vertical Polarization Plot 3.7.3



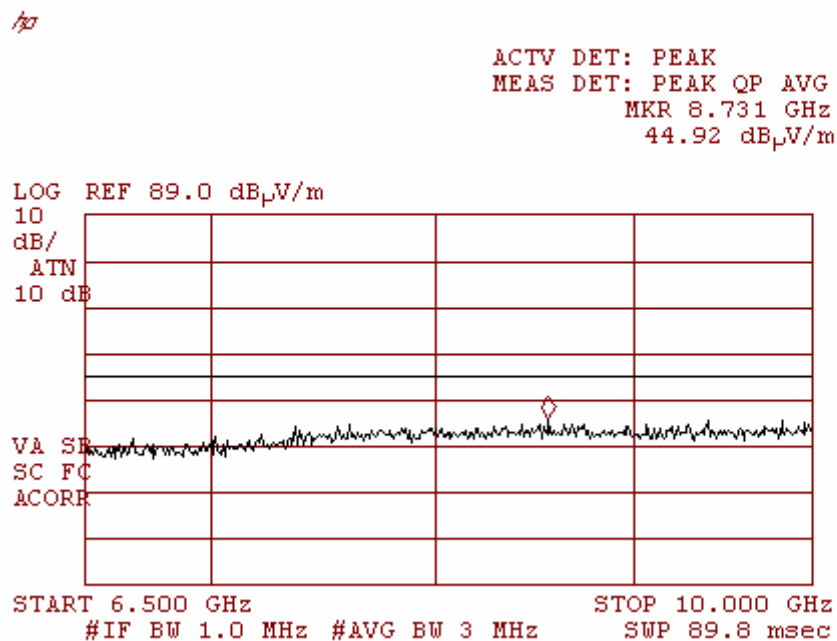
Middle Frequency Horizontal & Vertical Polarization Plot 3.7.4



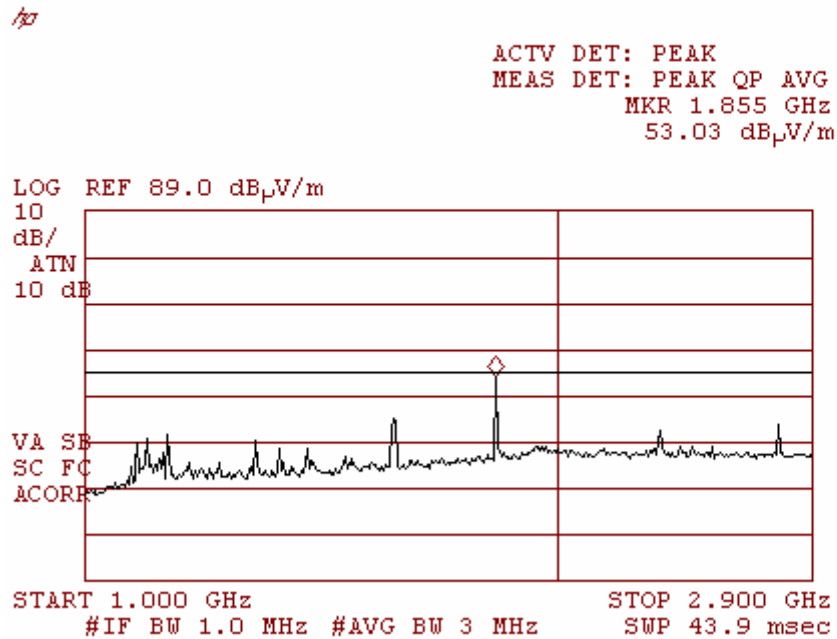
Horizontal & Vertical Polarization Plot 3.7.5



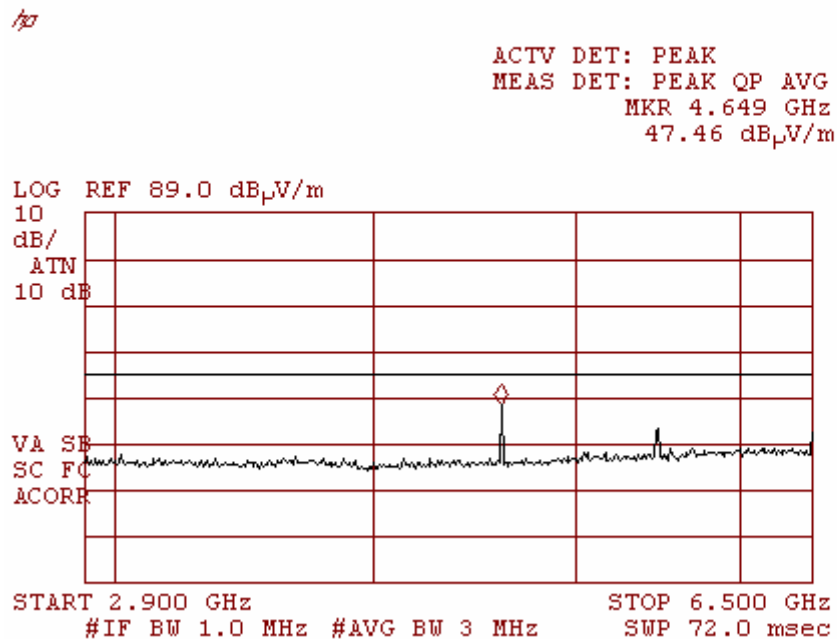
Horizontal & Vertical Polarization Plot 3.7.6



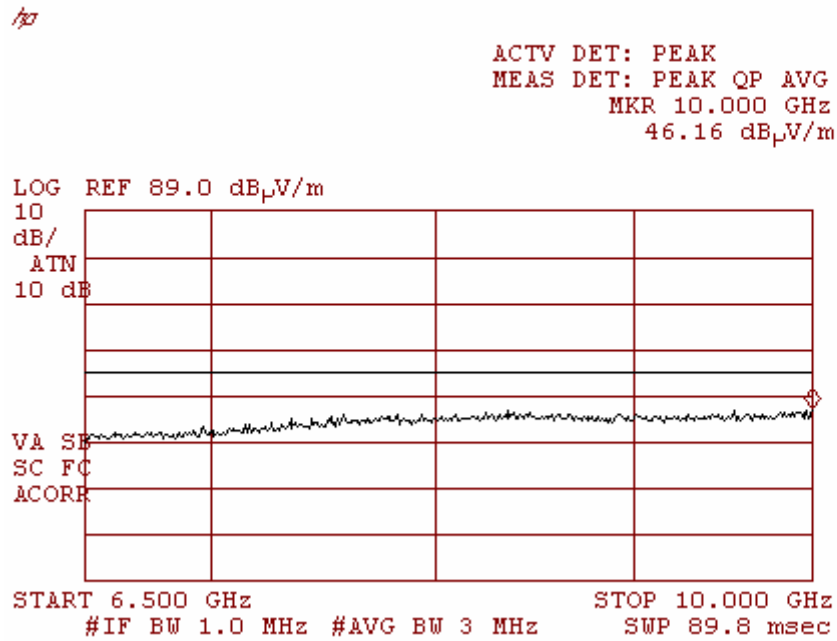
**Highest Frequency
Horizontal & Vertical Polarization
Plot 3.7.7**



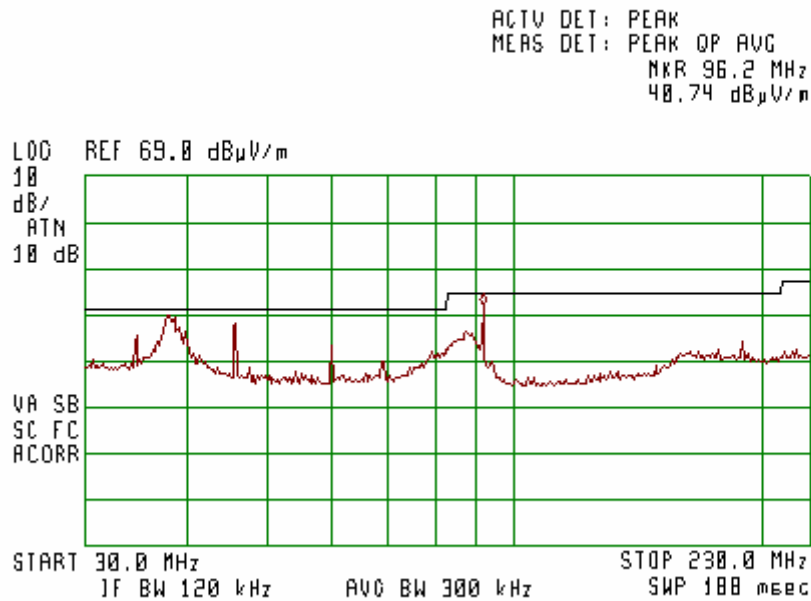
**Horizontal & Vertical Polarization
Plot 3.7.8**



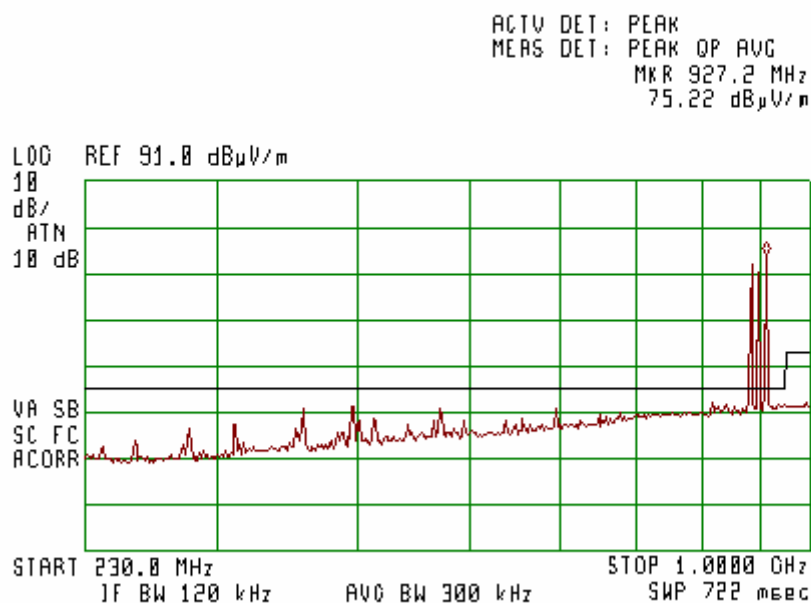
**Horizontal & Vertical Polarization
Plot 3.7.9**



**Below 1 GHz Worst Case Of All Channels
Horizontal & Vertical Polarization
Plot 3.7.10**



Plot 3.7.11



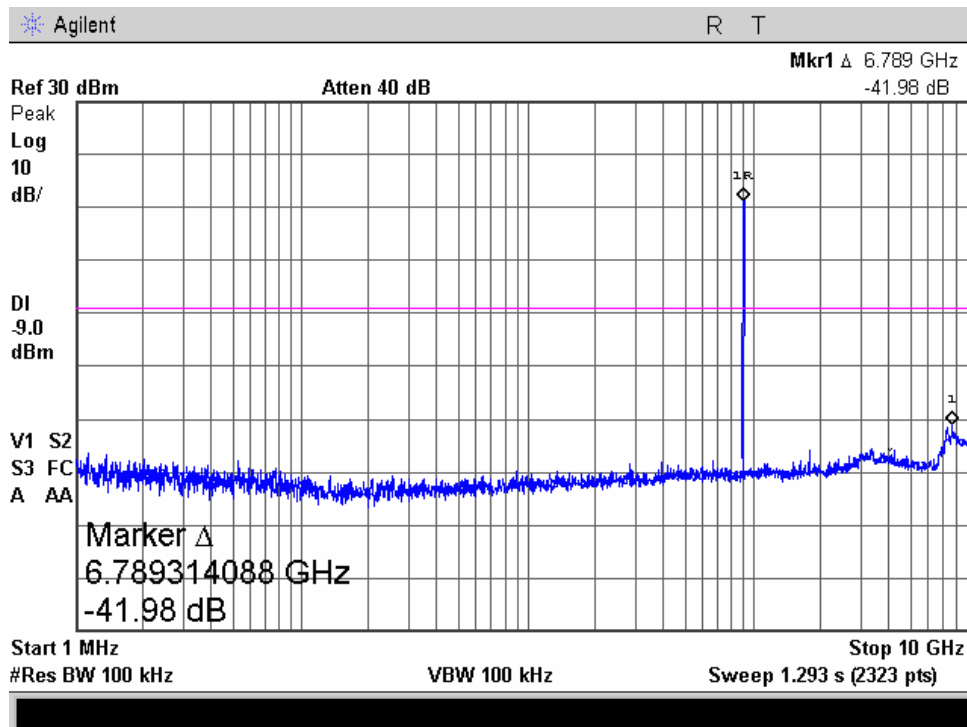
3.8. Conducted Spurious Emissions

Reference document:	47 CFR §15.247 (d) & DA 00-705		
Test Requirements:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.		
Test setup:	See Sec. 2.1	Pass	
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted		
S.A. Settings:	RBW: 100kHz, VBW: 100kHz,		
Hopping function:	Disabled (lowest, middle, and highest)		
Environment conditions:	Ambient Temperature: 22°C	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plot 3.8.1 – Plot 3.8.3	

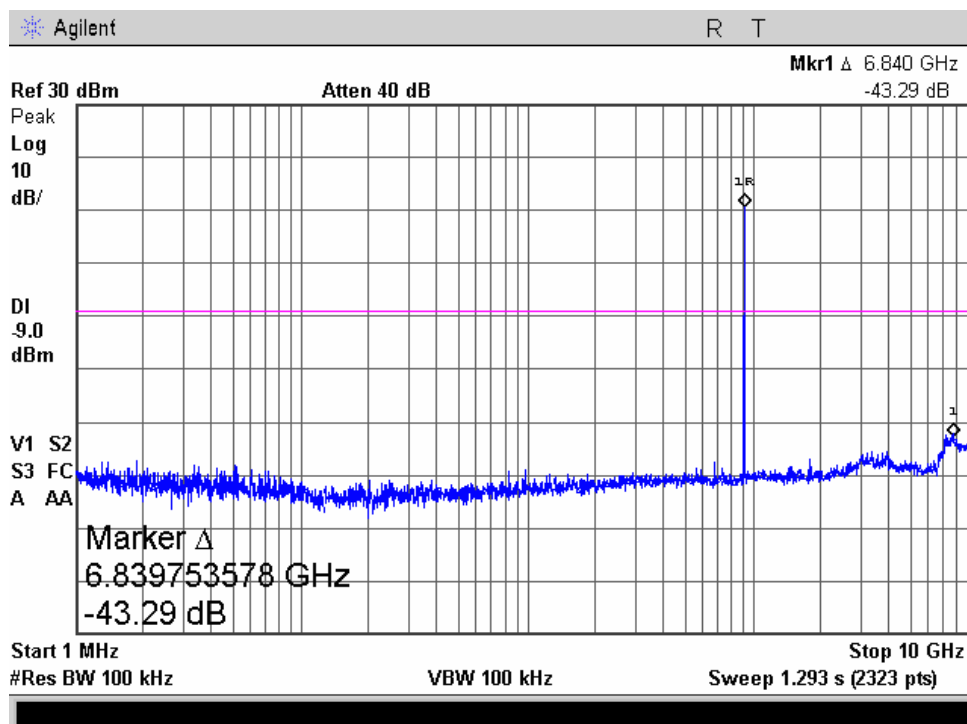
Test results:

Frequency [GHz]	Spurious Frequency [GHz]	Emissions limit	Reference	Result
903.5	All readings At least -40dBc	-20dBc	Plot 3.8.1	Pass
915.5	All readings At least -40dBc		Plot 3.8.2	Pass
927.5	All readings At least -40dBc		Plot 3.8.3	Pass

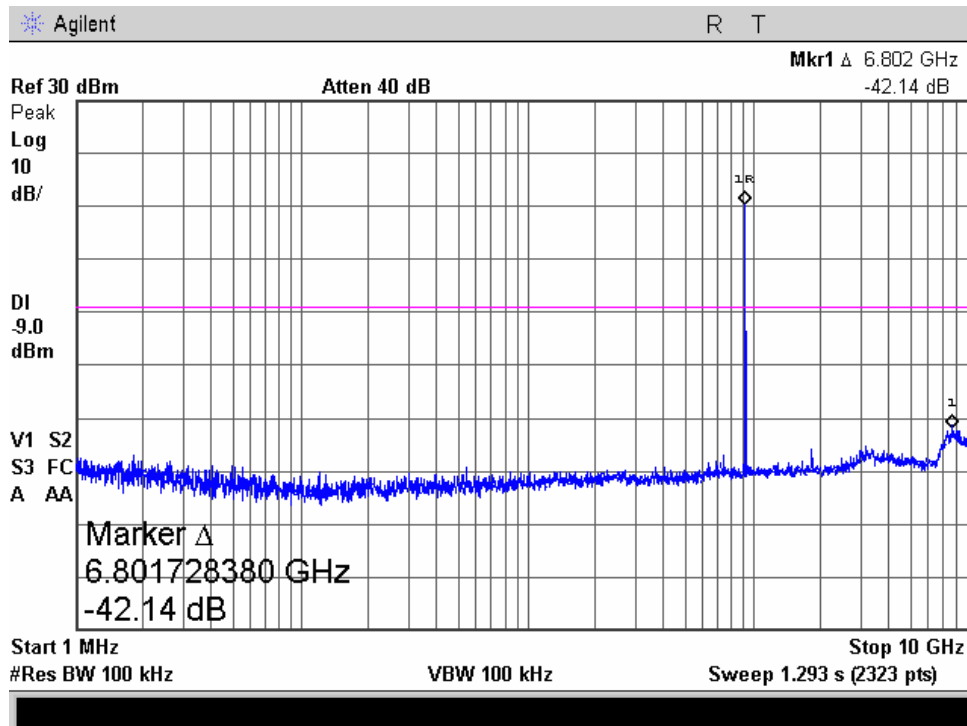
Spurious Emission- Conducted
Low frequency
Plot 3.8.1



Middle frequency
Plot 3.8.2



High frequency
Plot 3.8.3



3.9. Radiated Emission- (Receive mode)

Reference document:	47 CFR §15.109		
Test Requirements:	Emission Level shall not exceed §15.109 limits		
Test setup:	See Sec. 2.3	Pass	
Operating conditions:	Under normal test conditions		
Method of testing:	Radiated		
S.A. Settings:	F <1GHz: RBW: 120kHz, VBW: 1MHz F >1GHz: RBW: 1MHz, VBW: 3MHz		
Mode of operation:	Receive		
Environment conditions:	Ambient Temperature: 22°C	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	All readings were at least 10 db below the limit	See Plot 3.9.1 – Plot 3.9.4	

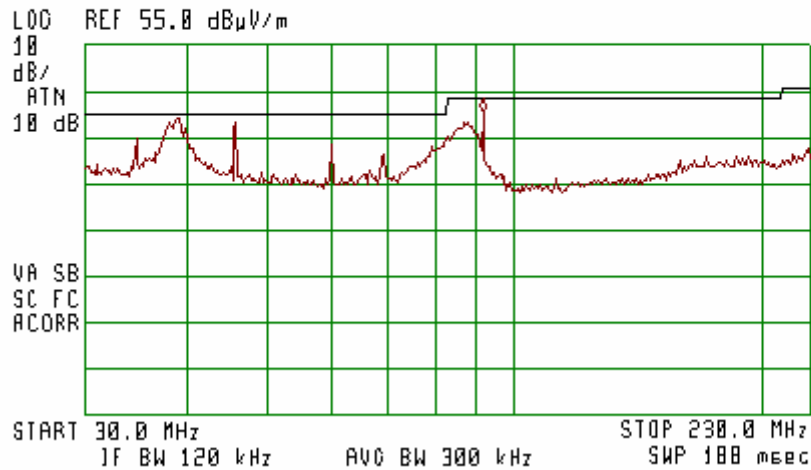
Frequency [MHz]	Detector	Spurious level [dBμV/m]	Limit [dBμV/m]	Result
35.98	QP	33.04	40	Pass
47.99	QP	37.37	40	Pass
96	QP	41.81	43.5	Pass
320.01	QP	37.52	46.5	Pass
400.01	QP	41.66	46.5	Pass
486.57	QP	42.87	46.5	Pass

Note: Radiated Emission [dBμV/m] = measured [dBμV] + Correction-factor [dB(1/m)]
Correction Factor = Antenna factor + Cable Loss

Vertical & Horizontal Polarization
Plot 3.9.1



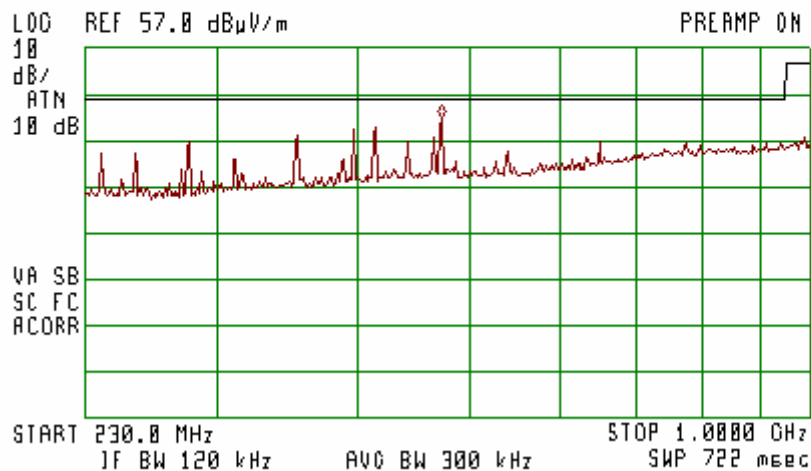
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 96.2 MHz
40.51 dB μ V/m



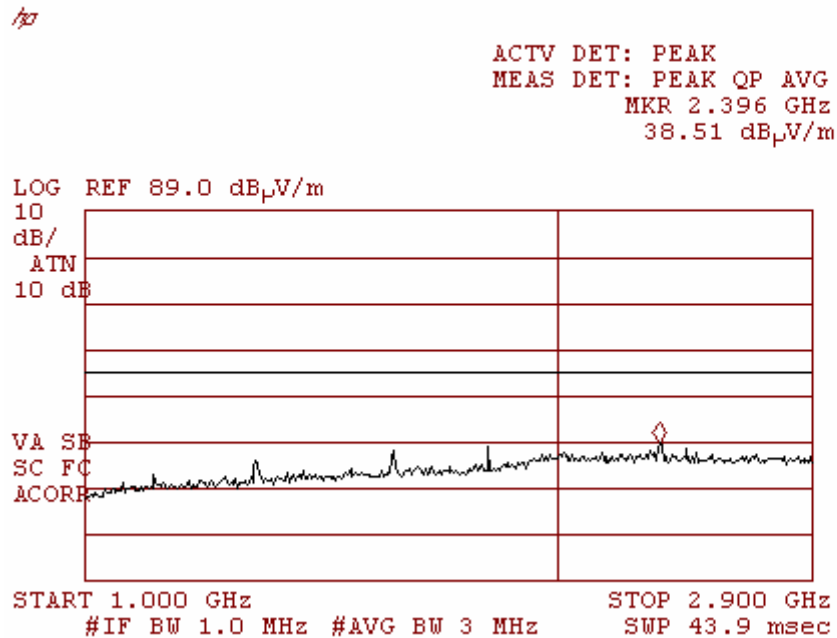
Vertical & Horizontal Polarization
Plot 3.9.2



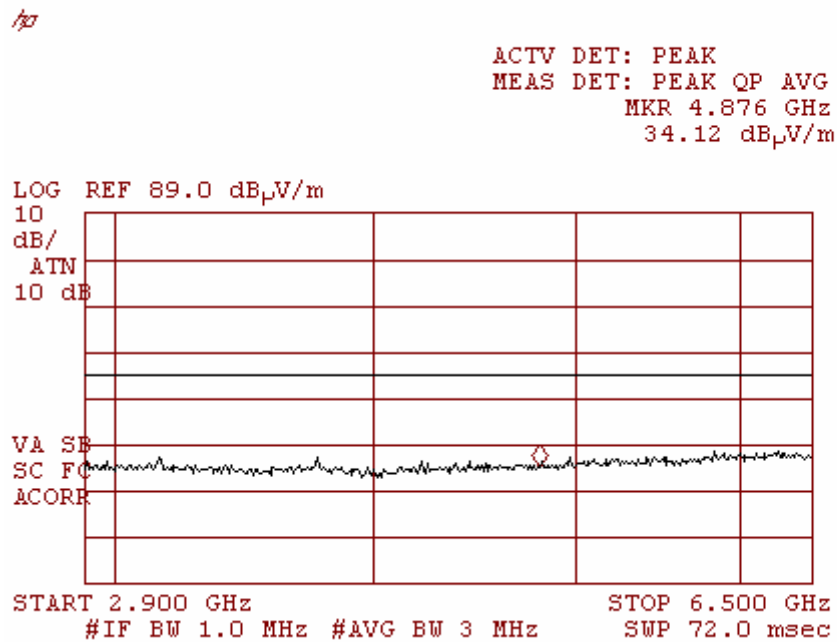
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 486.9 MHz
41.99 dB μ V/m



**High Range
Vertical & Horizontal Polarization
Plot 3.9.3**



Plot 3.9.4



3.10. Power line Emission measurements

Reference document:	47 CFR §15.107		
Test Requirements:	The radio frequency voltage that is conducted back onto the AC power line shall not exceed the limits specified in §15.107 & §15.207		
Test setup:	See Sec. 2.4	Pass	
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted		
S.A. Settings:	f <30MHz: RBW: 9kHz, VBW:30kHz		
Environment conditions:	Ambient Temperature: 22°C	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plots 3.10.1 – 3.10.4	

Test Results:

Transmit Mode: 110 VAC

“Phase” Lead

Frequency [MHz]	Measured Result [dBμV]		Class B Limits [dBμV]		Margin [dB]		Pass/Fail
	QP	AVR	QP	AVR	QP	AVR	
0.159462	54.6	24.5	65.49	55.49	-10.89	-30.99	Pass
0.918278	29.1	19.2	56.00	46.00	-26.90	-26.80	Pass
3.043701	35.1	28.4	56.00	46.00	-20.90	-17.60	Pass
11.714792	28.3	22.1	60.00	50.00	-31.70	-27.90	Pass
19.008244	36	29.4	60.00	50.00	-24.00	-20.60	Pass
29.04	27.6	21.7	60.00	50.00	-32.40	-28.30	Pass

“Neutral” Lead

Frequency [MHz]	Measured Result [dBμV]		Class B Limits [dBμV]		Margin [dB]		Pass/Fail
	QP	AVR	QP	AVR	QP	AVR	
0.159462	54.1	28.1	65.49	55.49	-11.39	-27.39	Pass
0.918278	23.8	13.1	56.00	46.00	-32.20	-32.90	Pass
3.043701	27.6	20	56.00	46.00	-28.40	-26.00	Pass
11.714792	27	20.4	60.00	50.00	-33.00	-29.60	Pass
19.008244	33.8	26.8	60.00	50.00	-26.20	-23.20	Pass
29.03599	25.1	18.1	60.00	50.00	-34.90	-31.90	Pass

Receive Mode: 110 VAC

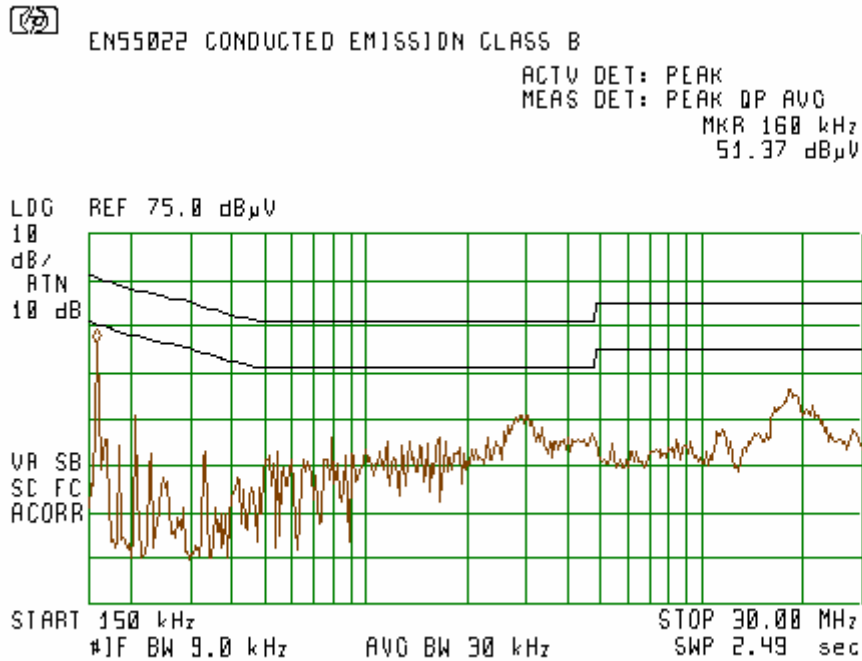
“Phase” Lead

Frequency [MHz]	Measured Result [dBμV]		Class B Limits [dBμV]		Margin [dB]		Pass/Fail
	QP	AVR	QP	AVR	QP	AVR	
0.159462	58	31.9	65.49	55.49	-7.49	-23.59	Pass
0.918278	25.2	14.7	56.00	46.00	-30.80	-31.30	Pass
3.043701	29.4	22.2	56.00	46.00	-26.60	-23.80	Pass
11.714792	25.8	19.6	60.00	50.00	-34.20	-30.40	Pass
19.008244	33.3	25.9	60.00	50.00	-26.70	-24.10	Pass
29.03599	24.3	18.8	60.00	50.00	-35.70	-31.20	Pass

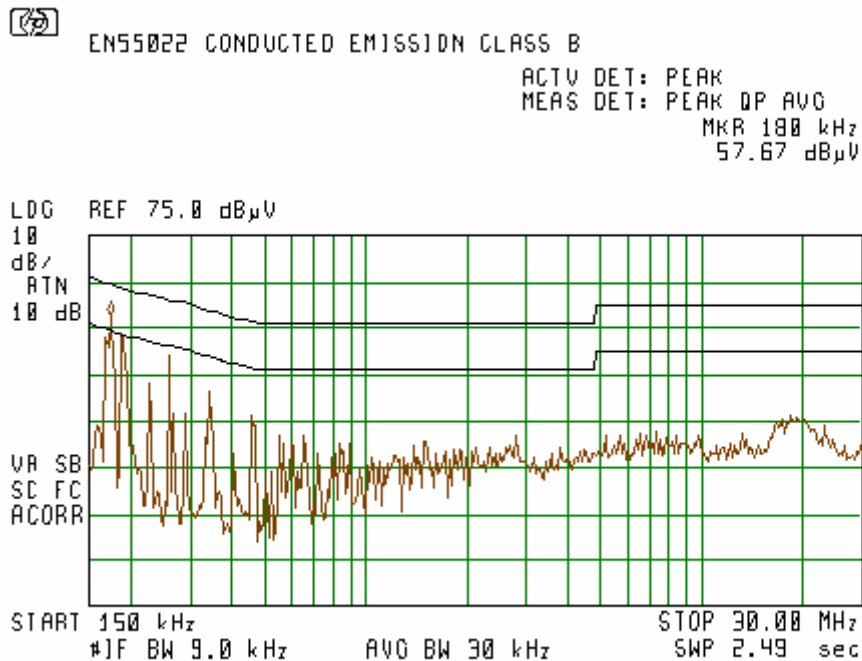
“Neutral” Lead

Frequency [MHz]	Measured Result [dBμV]		Class B Limits [dBμV]		Margin [dB]		Pass/Fail
	QP	AVR	QP	AVR	QP	AVR	
0.159462	57.4	35.6	65.49	55.49	-8.09	-19.89	Pass
0.918278	23.9	11.2	56.00	46.00	-32.10	-34.80	Pass
3.043701	27	18	56.00	46.00	-29.00	-28.00	Pass
11.714792	25.6	19.2	60.00	50.00	-34.40	-30.80	Pass
19.008244	32.5	25.7	60.00	50.00	-27.50	-24.30	Pass
29.03599	24	15.7	60.00	50.00	-36.00	-34.30	Pass

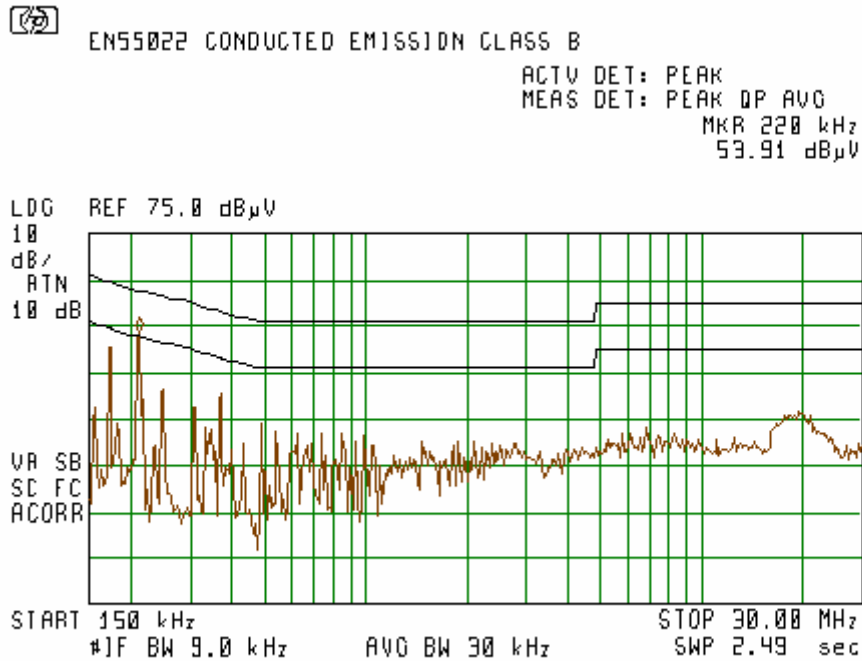
Transmit Mode
Plot 3.10.1
"Phase" Lead



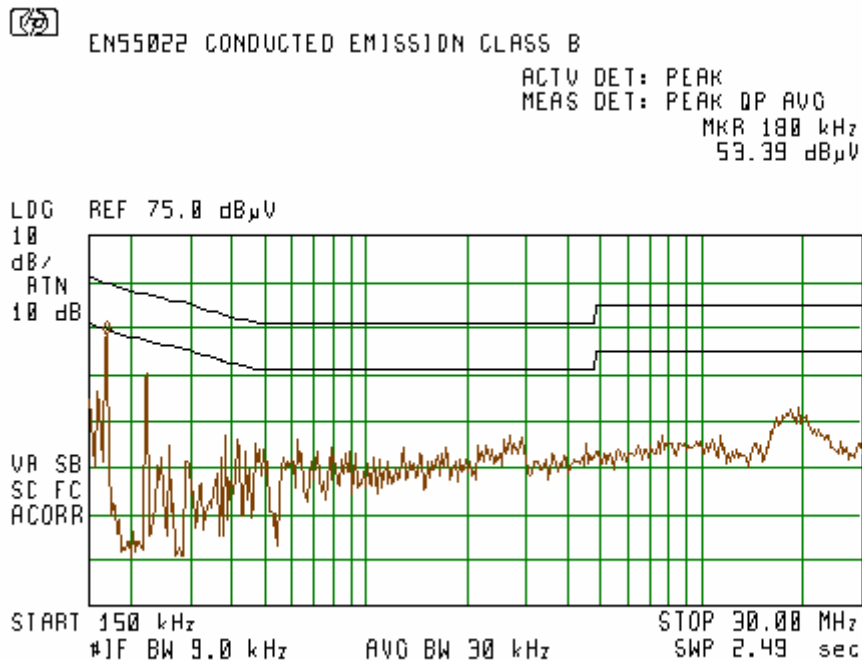
Plot 3.10.2
"Neutral" Lead



Receive Mode
Plot 3.10.3
"Phase" Lead



Plot 3.10.4
"Neutral" Lead



3.11. Antenna Connector Requirements

Reference document:	47 CFR §15.203	
Test Requirements:	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with provisions of this section.	
Test Result:	The IRF employs a unique Integral (on board) permanently attached antenna.	Pass

4. Appendix

Appendix A: List of Measuring Equipment used:

Equipment	Manufacturer/ Model	Serial Number	Due date
CISPR16 EMI Receiver	HP8546A	3710A00392	30.06.2008
Spectrum Analyzer 9kHz ÷ 22 GHz	HP 8593EM	3536A00131	30.06.2008
LNA Amplifier 1 GHz ÷ 18 GHz	AMP – 5D-010180-30-10P-GW	618653	01.01.2008
Dual Ridged Guide Ant.1-18 GHz	EMCO 3115	9602-4677	01.01.2008
Turn table	HD100	100/693	-
Antenna Mast	HD 100	100/693	-
Biconical 20 –200 MHz	Schwarzbeck VHBB9124	9124/0255	30.06.2008
Log-Periodic 200 – 1000 MHz	Schwarzbeck VUSLP9111	VUSLP9111184	30.06.2008
Pre-Amplifier	MiTeq, AMF-5F-18002650-30-10P	945372	01.01.2008
High pass Filter	Wainwright WHK 1.2/15G-10EF	3	30.06.2008

Appendix B: Accreditation Certificate



End of the Test Report