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EMC Test Report

Application for Grant of Equipment Authorization

Industry Canada RSS-Gen Issue 4 / RSS 210 Issue 8 FCC Part 15, Subpart E

Model: 260-E255040

FCC ID:	PGR5G4360M
APPLICANT:	Pace Americas Inc. 310 Providence Mine Road Nevada City, CA 95959
TEST SITE(S):	National Technical Systems - Silicon Valley 41039 Boyce Road. Fremont, CA. 94538-2435
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REVISION HISTORY

Rev#	Date	Comments	Modified By
-	March 8, 2016	First release	
1	March 15, 2016	Corrected typographical error on page 6, repeated band edge and spurious emissions tests for results on pages 76, 77, 80, 81, 82, 88, 90 and 120	

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SCOPE

An electromagnetic emissions test has been performed on the Pace Americas Inc. model 260-E255040, pursuant to the following rules:

FCC Part 15, Subpart E requirements for UNII Devices

Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in the following reference standards and as outlined in National Technical Systems - Silicon Valley test procedures:

ANSI C63.10-2013 FCC General UNII Test Procedures KDB789033

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant Industry Canada performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.



OBJECTIVE

The primary objective of the manufacturer is compliance with the regulations outlined in the previous section.

Prior to marketing in the USA, all unlicensed transmitters and transceivers require certification. Receive-only devices operating between 30 MHz and 960 MHz are subject to either certification or a manufacturer's declaration of conformity, with all other receive-only devices exempt from the technical requirements.

Prior to marketing in Canada, Class I transmitters, receivers and transceivers require certification. Class II devices are required to meet the appropriate technical requirements but are exempt from certification requirements.

Certification is a procedure where the manufacturer submits test data and technical information to a certification body and receives a certificate or grant of equipment authorization upon successful completion of the certification body's review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units, which are subsequently manufactured.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

STATEMENT OF COMPLIANCE

The tested sample of Pace Americas Inc. model 260-E255040 complied with the requirements of the following regulations:

FCC Part 15, Subpart E requirements for UNII Devices

Maintenance of compliance is the responsibility of the manufacturer. Any modifications to the product should be assessed to determine their potential impact on the compliance status of the device with respect to the standards detailed in this test report.

The test results recorded herein are based on a single type test of Pace Americas Inc. model 260-E255040 and therefore apply only to the tested sample. The sample was selected and prepared by Mark Rieger of Pace Americas Inc.

DEVIATIONS FROM THE STANDARDS

No deviations were made from the published requirements listed in the scope of this report.

TEST RESULTS SUMMARY

UNII / LELAN DEVICES

OPERATION IN THE 5.15 – 5.25 GHZ BAND – MOBILE AND PORTABLE CLIENT DEVICE

FCC Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.407 (a) (1) (iv)	UUTOUT POWER		24 dBm (250 mW) 22.1 dBm (162 mW) ¹ 22.1 dBm (162 mW) ¹ 22.1 dBm (162 mW) ¹ EIRP <= 1 W	Complies
15.407 (a) (1) (iv)	Power Spectral Density	802.11a: 12.6 mW/MHz n20: 7.8 mW/MHz n40: 6.9 mW/MHz ac80: 1.0 mW/MHz	11 dBm/MHz 9.1 dBm/MHz ¹ 9.1 dBm/MHz ¹ 9.1 dBm/MHz ¹	Complies
15.407(b) (1) / 15.209 Spurious Emissions above 1GHz		53.9 dBµV/m @ 5380.9 MHz (-0.1 dB)	Refer to the limits section (p19) for restricted bands, all others -27 dBm/MHz EIRP	Complies
Note 1 – The limit was	s reduced as the effective antenna gain	exceeded 6 dBi		

OPERATION IN THE 5.725 - 5.85 GHZ BAND

		0.00 ONE DAND			
FCC Rule Part	Description		Measured Value / Comments	Limit / Requirement	Result (margin)
15.407(e)	6dB Bandwidth		6 dB BW is > 500 kHz	>= 500 kHz	Complies
15.407(a) (3) Output Power (multipoint systems)		802.11a: 0.166 W n20: 0.480 W n40: 0.173 W ac80: 0.090 W (Max eirp: 3.299 W)	30 dBm (1 W) 27.6 dBm (575 mW) ¹ 27.6 dBm (575 mW) ¹ 27.6 dBm (575 mW) ¹ EIRP <= 4W	Complies	
15.407(a) (3)	15.407(a) (3) Power Spectral Density		802.11a: 12.9 mW/MHz 30 dBm / 500 kHz n20: 15.7 dBm/MHz 27.6 dBm / 500 kHz1 n40: 7.5 dBm/MHz 27.6 dBm / 500 kHz1 ac80: 2.0 dBm/MHz 27.6 dBm / 500 kHz1		Complies
15 407(b) (4) / Sourious Emissions 53 8 dBu V/m @ Refer to the limits section (p19) for restricted bands, all					Complies
Note 1 – The lim	it was reduc	ced as the effective antenna gain	exceeded 6 dBi		

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.407	RSS-247 6.1	Modulation	OFDM Digital Modulation is used	Digital modulation is required	Complies
15.407(b) (6) / 15.209		Spurious Emissions below 1GHz	33.7 dBµV/m @ 30.27 MHz (-6.3 dB)	Refer to page 20	Complies
15.31 (m) Channel Selection		Channel Selection	Emissions tested at outermost and middle channels in each band	Device was tested on the top, bottom and center channels in each band	N/A
15.407 (c) Operation in the absence of information to transmit		absence of information	Operation is discontinued in the absence of information (refer to Operational Description)	Device shall automatically discontinue operation in the absence of information to transmit	Complies
15.407 (g) Frequency Stability		Frequency stability is better than 10 ppm.	Signal shall remain within the allocated band	Complies	
15.407 (h1) 15.407 (h2)		Transmit Power Control Dynamic frequency Selection (device with radar detection)	Device does not operate in either 5470 – 5725 or 5250 – 5350 MHz bands.		N/A

REQUIREMENTS FOR ALL U-NII/LELAN BANDS

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	RF Connector	u.fl connector used	Unique or integral antenna required	Complies
15.407 (b) (6)	AC Conducted Emissions	39.4 dBµV @ 0.474 MHz (-7.0 dB)	Refer to page 19	Complies
15.247 (i) 15.407 (f)	RF Exposure Requirements	Refer to MPE calculations in separate exhibit and User Manual statements.	Refer to OET 65, FCC Part 1 and RSS 102	Complies



MEASUREMENT UNCERTAINTIES

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with UKAS document LAB 34.

Measurement Type	Measurement Unit	Frequency Range	Expanded Uncertainty
RF power, conducted (power meter)	dBm	25 to 7000 MHz	± 0.52 dB
RF power, conducted (Spectrum analyzer)	dBm	25 to 7000 MHz	± 0.7 dB
Conducted emission of transmitter	dBm	25 to 26500 MHz	± 0.7 dB
Conducted emission of receiver	dBm	25 to 26500 MHz	± 0.7 dB
Radiated emission (substitution method)	dBm	25 to 26500 MHz	± 2.5 dB
Redicted omission (field strength)	dDu\//m	25 to 1000 MHz	± 3.6 dB
Radiated emission (field strength)	dBµV/m	1000 to 40000 MHz	± 6.0 dB
Conducted Emissions (AC Power)	dBµV	0.15 to 30 MHz	± 2.4 dB

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Pace Americas Inc. model 260-E255040 is an 802.11anac radio module that used 20, 40 and 80 MHz nominal bandwidths.

The sample was received on January 6, 2016 and tested on January 4, 6, 7, 8, 11, 28 and 29, February 1, 2, 4, 5, 10 and 16, and March 11, 2016. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Pace Americas	260-E255040	Wi-Fi module	F56154520246	PGR5G4360M

OTHER EUT DETAILS

The following EUT details should be noted: The EUT operates only on 1 chain in legacy mode and only with all 3 chains in MIMO modes. The EUT was tested stand-alone on the interface board that will be used in a final product.

ANTENNA SYSTEM

The antenna system consists of three PCB antennas with attached coaxial cables for connection to the module. The Pace N319 5 GHz antennas were used for the testing.

ENCLOSURE

The EUT has no enclosure. The PCB measures 7 cm by 7 cm. It is designed to be installed within the enclosure of a host.

MODIFICATIONS

No modifications were made to the EUT during the time the product was at NTS Silicon Valley.

SUPPORT EQUIPMENT

The following equipment was used as support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
Delta	ADP-66DR A	Power Adapter	HUGD5B9005J	-
Pace	-	Interface board	-	-

The following equipment was used as remote support equipment for emissions testing:

Company	Model	Description	Serial Number	FCC ID
Dell	Latitude D610	Laptop	6XYYQ91	-

EUT INTERFACE PORTS

The I/O cabling configuration during testing was as follows:

Port	Connected To		Cable(s)	-
TOIL	Connected To	Description	Shielded or Unshielded	Length(m)
Antenna port (x3)	Antenna	Coax	Shielded	Varies, Integral to antenna

The module connects to the interface board via PCI-E connector.

The cabling configuration of the support equipment used during testing was as follows:

Port	Connected To	Cable(s)			
TOIL	Connected 10	Description	Shielded or Unshielded	Length(m)	
Interface board serial	Remote Laptop	Adapter to Dsub and standard serial	Unshielded Shielded	10	
Interface board Ethernet	Remote Laptop	Cat 5	Unshielded	10	

EUT OPERATION

During testing, the EUT was configured to transmit continuously on the selected channel, in the selected mode at the maximum power.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken at the test sites listed below. Pursuant to section 2.948 of the FCC's Rules and section 3.3 of RSP-100, construction, calibration, and equipment data has been filed with the Commission and with industry Canada.

Site	Designation / Registration Numbers FCC Canada		Location
Chamber 7	US0027	2845B-7	41039 Boyce Road Fremont, CA 94538-2435

ANSI C63.4 recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement. The test site(s) contain separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements of ANSI C63.4.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.10. Measurements are made with the EUT connected to the public power network through a nominal, standardized RF impedance, which is provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment or in a semi-anechoic chamber. The test sites are maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4 guidelines and meet the Normalized Site Attenuation (NSA) requirements of ANSI C63.4.

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 2000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements. If the repetition frequency of the signal being measured is below 20Hz, peak measurements are made in lieu of Quasi-Peak measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz, unless the signal is pulsed in which case the average (or video) bandwidth of the measuring instrument is reduced to onset of pulse desensitization and then increased.

INSTRUMENT CONTROL COMPUTER

Software is used to view and convert receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers. The software used for radiated and conducted emissions measurements is NTS EMI Test Software (rev 2.10)

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

Line conducted measurements utilize a fifty microhenry Line Impedance Stabilization Network as the monitoring point. The LISN used also contains a 250 uH CISPR adapter. This network provides for calibrated radio frequency noise measurements by the design of the internal low pass and high pass filters on the EUT and measurement ports, respectively.



FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.

ANTENNAS

A loop antenna is used below 30 MHz. For the measurement range 30 MHz to 1000 MHz either a combination of a biconical antenna and a log periodic or a bi-log antenna is used. Above 1000 MHz, horn antennas are used. The antenna calibration factors to convert the received voltage to an electric field strength are included with appropriate cable loss and amplifier gain factors to determine an overall site factor, which is then programmed into the test receivers or incorporated into the test software.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a nonconductive antenna mast equipped with a motor-drive to vary the antenna height. Measurements below 30 MHz are made with the loop antenna at a fixed height of 1m above the ground plane.

ANSI C63.10 specifies that the test height above ground for table mounted devices shall be 80 centimeters. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor as specified in ANSI C63.4. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An exhibit of this report contains the list of test equipment used and calibration information.

TEST PROCEDURES

EUT AND CABLE PLACEMENT

The regulations require that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.10, and the worst-case orientation is used for final measurements.

CONDUCTED EMISSIONS

Conducted emissions are measured at the plug end of the power cord supplied with the EUT. Excess power cord length is wrapped in a bundle between 30 and 40 centimeters in length near the center of the cord. Preliminary measurements are made to determine the highest amplitude emission relative to the specification limit for all the modes of operation. Placement of system components and varying of cable positions are performed in each mode. A final peak mode scan is then performed in the position and mode for which the highest emission was noted on all current carrying conductors of the power cord.

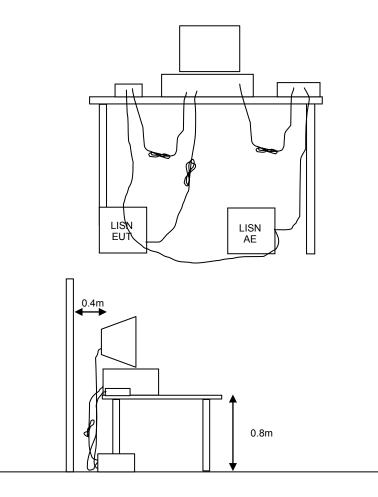


Figure 1 Typical Conducted Emissions Test Configuration



RADIATED EMISSIONS

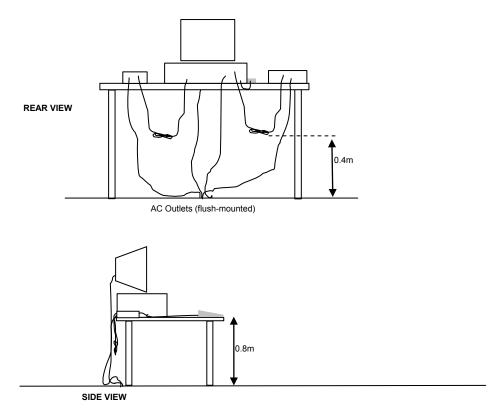
A preliminary scan of the radiated emissions is performed in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed, one scan for each antenna polarization (horizontal and vertical; loop parallel and perpendicular to the EUT). During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied (for measurements above 30 MHz) and cable positions are varied to determine the highest emission relative to the limit. Preliminary scans may be performed in a fully anechoic chamber for the purposes of identifying the frequencies of the highest emissions from the EUT.

A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

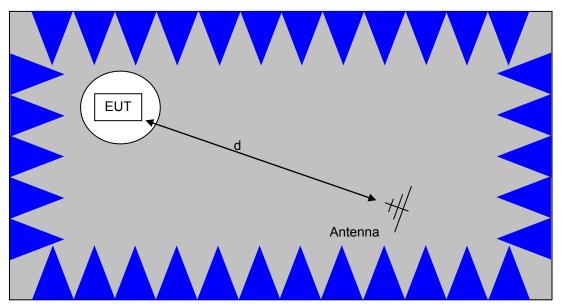
Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth, which results in the highest emission is then maintained while varying the antenna height from one to four meters (for measurements above 30 MHz, measurements below 30 MHz are made with the loop antenna at a fixed height of 1m). The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain.

When testing above 18 GHz, the receive antenna is located at 1 meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.



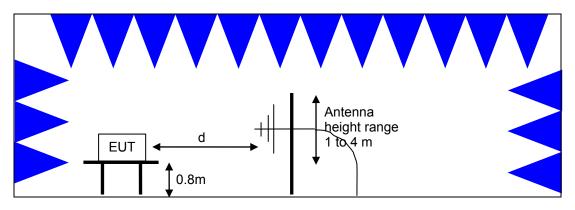


Typical Test Configuration for Radiated Field Strength Measurements



The anechoic materials on the walls and ceiling ensure compliance with the normalized site attenuation requirements of CISPR 16 / CISPR 22 / ANSI C63.4 for an alternate test site at the measurement distances used.

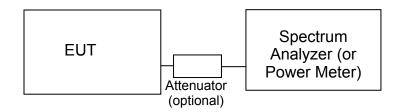
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



<u>Test Configuration for Radiated Field Strength Measurements</u> <u>Semi-Anechoic Chamber, Plan and Side Views</u>

CONDUCTED EMISSIONS FROM ANTENNA PORT

Direct measurements of power, bandwidth and power spectral density are performed, where possible, with the antenna port of the EUT connected to either the power meter or spectrum analyzer via a suitable attenuator and/or filter. These are used to ensure that the front end of the measurement instrument is not overloaded by the fundamental transmission.



Test Configuration for Antenna Port Measurements

Measurement bandwidths (video and resolution) are set in accordance with the relevant standards and NTS Silicon Valley's test procedures for the type of radio being tested. When power measurements are made using a resolution bandwidth less than the signal bandwidth the power is calculated by summing the power across the signal bandwidth using either the analyzer channel power function or by capturing the trace data and calculating the power using software. In both cases the summed power is corrected to account for the equivalent noise bandwidth (ENBW) of the resolution bandwidth used.

If power averaging is used (typically for certain digital modulation techniques), the EUT is configured to transmit continuously. Power averaging is performed using either the built-in function of the analyzer or, if the analyzer does not feature power averaging, using external software. In both cases the average power is calculated over a number of sweeps (typically 100). When the EUT cannot be configured to continuously transmit then either the analyzer is configured to perform a gated sweep to ensure that the power is averaged over periods that the device is transmitting or power averaging is disabled and a max-hold feature is used.

If a power meter is used to make output power measurements the sensor head type (peak or average) is stated in the test data table.

BANDWIDTH MEASUREMENTS

The 6dB, 20dB, 26dB and/or 99% signal bandwidth are measured using the bandwidths recommended by ANSI C63.10 and RSS GEN.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

The limits for conducted emissions are given in units of microvolts, and the limits for radiated emissions are given in units of microvolts per meter at a specified test distance. Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The results are then converted to the linear forms of uV and uV/m for comparison to published specifications.

For reference, converting the specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. These limits in both linear and logarithmic form are as follows:

CONDUCTED EMISSIONS SPECIFICATION LIMITS: FCC 15.207; FCC 15.107(a), RSS GEN

The table below shows the limits for the emissions on the AC power line from an intentional radiator and a receiver.

Frequency (MHz)	Average Limit (dBuV)	Quasi Peak Limit (dBuV)
0.150 to 0.500	Linear decrease on logarithmic frequency axis between 56.0 and 46.0	Linear decrease on logarithmic frequency axis between 66.0 and 56.0
0.500 to 5.000	46.0	56.0
5.000 to 30.000	50.0	60.0

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands¹ (with the exception of transmitters operating under FCC Part 15 Subpart D and RSS 210 Annex 9), the limits for all emissions from a low power device operating under the general rules of RSS 310 (tables 3 and 4), RSS 210 (table 2) and FCC Part 15 Subpart C section 15.209.

Frequency Range (MHz)	Limit (uV/m)	Limit (dBuV/m @ 3m)
0.009-0.490	2400/F _{KHz} @ 300m	67.6-20*log ₁₀ (F _{KHz}) @ 300m
0.490-1.705	^{24000/F} KHz @ 30m	87.6-20*log ₁₀ (F _{KHz}) @ 30m
1.705 to 30	30 @ 30m	29.5 @ 30m
30 to 88	100 @ 3m	40 @ 3m
88 to 216	150 @ 3m	43.5 @ 3m
216 to 960	200 @ 3m	46.0 @ 3m
Above 960	500 @ 3m	54.0 @ 3m

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from receivers as detailed in FCC Part 15.109, RSS 210 Table 2, RSS GEN Table 1 and RSS 310 Table 3. Note that receivers operating outside of the frequency range 30 MHz – 960 MHz are exempt from the requirements of 15.109.

Frequency Range (MHz)	Limit (uV/m @ 3m)	Limit (dBuV/m @ 3m)
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

¹ The restricted bands are detailed in FCC 15.203, RSS 210 Table 1 and RSS 310 Table 2

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands².

Frequency Range (MHz)	Limit (uV/m)	Limit (dBuV/m @ 3m)
0.009-0.490	2400/F _{KHz} @ 300m	67.6-20*log ₁₀ (F _{KHz}) @ 300m
0.490-1.705	24000/F _{KHz} @ 30m	87.6-20*log ₁₀ (F _{KHz}) @ 30m
1.705 to 30	30 @ 30m	29.5 @ 30m
30 to 88	100 @ 3m	40 @ 3m
88 to 216	150 @ 3m	43.5 @ 3m
216 to 960	200 @ 3m	46.0 @ 3m
Above 960	500 @ 3m	54.0 @ 3m

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from receivers as detailed in FCC Part 15.109 and RSS GEN Table 2. Note that receivers operating outside of the frequency range 30 MHz - 960 MHz are exempt from the requirements of 15.109 and receivers that are not stand-alone are exempt from the ISED Canada requirements per RSS-GEN.

Frequency Range (MHz)	Limit (uV/m @ 3m)	Limit (dBuV/m @ 3m)
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

² The restricted bands are detailed in FCC 15.205 and RSS-Gen Table 6

FCC 15.407 (a) OUTPUT POWER LIMITS

The table below shows the limits for output power and output power density. For the 5250-5350 and 5470-5725 MHz bands, where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
5150 – 5250	1Watt (30 dBm)	17 dBm/MHz
5250 – 5350 and 5470-5725	250 mW (24 dBm)	11 dBm/MHz
5725 – 5825	1 Watt (30 dBm)	30 dBm/500kHz

For system using antennas with gains exceeding 6dBi, the output power and power spectral density limits are reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 - 5825 MHz band may use antennas with gains of up to 23dBi without this limitation. If the gain exceeds 23dBi then the output power limit of 1 Watt is reduced by 1dB for every dB the gain exceeds 23dBi.

OUTPUT POWER LIMITS – LELAN DEVICES

The table below shows the limits for output power and output power density defined by RSS 247. Where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
5150 – 5250	200mW (23 dBm) eirp	10 dBm/MHz eirp
5250 – 5350 and 5470 - 5725	250 mW (24 dBm)3 1W (30dBm) eirp	11 dBm/MHz
5725 – 5825	1 Watt (30 dBm) 4W eirp	30 dBm/500kHz

Fixed point-to-point applications using the 5725 - 5825 MHz band may use antennas with gains of up to 23dBi without this limitation. If the gain exceeds 23dBi then the output power limit of 1 Watt is reduced by 1dB for every dB the gain exceeds 23dBi.

SPURIOUS EMISSIONS LIMITS – UNII and LELAN DEVICES

The spurious emissions limits for signals below 1GHz are the FCC/RSS-GEN general limits. For emissions above 1GHz, signals in restricted bands are subject to the FCC/RSS GEN general limits. All other signals have a limit of -27dBm/MHz, which is a field strength of 68.3dBuV/m/MHz at a distance of 3m. For devices operating in the 5725-5850MHz bands under the LELAN/UNII rules, the limit within 10MHz of the allocated band is increased to -17dBm/MHz.

³ If EIRP exceeds 500mW the device must employ TPC

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form) as follows:

 $R_r - S = M$ where: $R_r =$ Receiver Reading in dBuV S = Specification Limit in dBuV M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

A distance factor, when used for electric field measurements above 30MHz, is calculated by using the following formula:

 $F_{d} = 20*LOG_{10} (D_{m}/D_{s})$ where: $F_{d} = Distance Factor in dB$ $D_{m} = Measurement Distance in meters$ $D_{s} = Specification Distance in meters$

For electric field measurements below 30MHz the extrapolation factor is either determined by making measurements at multiple distances or a theoretical value is calculated using the formula:

 $F_d = 40*LOG_{10} (D_m/D_s)$

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$\begin{array}{rcl} R_c &=& R_r \,+\, F_d \\ & \text{and} \\ M &=& R_c \,-\, L_S \\ & \text{where:} \\ R_r &=& \text{Receiver Reading in dBuV/m} \\ F_d &=& \text{Distance Factor in dB} \\ R_c &=& \text{Corrected Reading in dBuV/m} \\ L_S &=& \text{Specification Limit in dBuV/m} \end{array}$$

M = Margin in dB Relative to Spec

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

Where the radiated electric field strength is expressed in terms of the equivalent isotropic radiated power (eirp), or where a field strength measurement of output power is made in lieu of a direct measurement, the following formula is used to convert between eirp and field strength at a distance of d (meters) from the equipment under test:

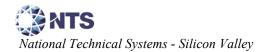
 $E = \frac{1000000 \sqrt{30 P}}{d}$ microvolts per meter

where P is the eirp (Watts)

For a measurement at 3m the conversion from a logarithmic value for field strength (dBuV/m) to an eirp power (dBm) is -95.3dB.

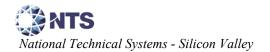
Appendix A Test Equipment Calibration Data

<u>Manufacturer</u> Radiated Emissions	<u>Description</u> , 1000 - 6,000 MHz, 04, 06-Jan-1	<u>Model</u> I6	<u>Asset #</u>	Calibrated	Cal Due
EMCO Rohde & Schwarz	Antenna, Horn, 1-18GHz EMI Test Receiver, 20 Hz-7 GHz	3115 ESIB7	868 1538	6/26/2014 12/19/2015	6/26/2016 12/19/2016
Radiated Emissions, EMCO Hewlett Packard	, 1000 - 18,000 MHz, 07-Jan-16 Antenna, Horn, 1-18GHz Microwave Preamplifier, 1- 26.5GHz	3115 8449B	868 870	6/26/2014 2/20/2015	6/26/2016 2/20/2016
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300- 80039	1156	6/2/2015	6/2/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/19/2015	12/19/2016
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	7/8/2015	7/8/2016
Radiated Emissions	, 1000 - 40,000 MHz, 08-Jan-16				
EMCO Hewlett Packard	Antenna, Horn, 1-18GHz Microwave Preamplifier, 1-	3115 8449B	868 870	6/26/2014 2/20/2015	6/26/2016 2/20/2016
HP / Miteq	26.5GHz SA40 Head (Red)	TTA1840-45-5P-	1145	7/17/2015	7/17/2016
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	HG-S 8564E (84125C)	1148	10/17/2015	10/17/2016
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300-	1156	6/2/2015	6/2/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	80039 ESIB7	1538	12/19/2015	12/19/2016
A. H. Systems	Purple System Horn, 18- 40GHz	SAS-574, p/n: 2581	2160	8/28/2014	8/28/2017
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	2241	9/16/2015	9/16/2016
Padiatod Emissions	, 30 - 1,000 MHz, 11-Jan-16				
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/19/2015	12/19/2016
Sunol Sciences Hewlett Packard	Biconilog, 30-3000 MHz 9KHz-1300MHz pre-amp	JB3 8447F	1549 2777	6/2/2015 3/4/2015	6/2/2017 3/5/2016
Radiated Emissions	, 1000 - 6,000 MHz, 28, 29-Jan-1	16			
EMCO Rohde & Schwarz	Antenna, Horn, 1-18GHz EMI Test Receiver, 20 Hz-7 GHz	3115 ESIB7	868 1756	6/26/2014 6/20/2015	6/26/2016 6/20/2016
Radiated Emissions, EMCO Rohde & Schwarz	, 1000 - 6,000 MHz, 01-Feb-16 Antenna, Horn, 1-18 GHz EMI Test Receiver, 20 Hz-40 GHz	3115 ESIB40 (1088.7490.40)	1561 2493	6/27/2014 1/23/2015	6/27/2016 2/23/2016
Radiated Emissions, EMCO	, 1000 - 40,000 MHz, 02-Feb-16 Antenna, Horn, 1-18GHz	3115	868	6/26/2014	6/26/2016



Project number JD100297 Report Date: March 8, 2016, Re-Issued: March 15, 2016

		Report Date: Mar	ch 8, 2010, 1	ke-Issuea: Marc	n 13, 2010
<u>Manufacturer</u> Hewlett Packard	Description Microwave Preamplifier, 1-	<u>Model</u> 8449B	<u>Asset #</u> 870	<u>Calibrated</u> 1/21/2016	<u>Cal Due</u> 1/21/2017
HP / Miteq	26.5GHz SA40 Head (Red)	TTA1840-45-5P- HG-S	1145	7/17/2015	7/17/2016
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300- 80039	1156	6/2/2015	6/2/2016
A. H. Systems	Purple System Horn, 18- 40GHz	SAS-574, p/n: 2581	2160	8/28/2014	8/28/2017
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2251	9/16/2015	9/16/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/19/2015	12/19/2016
Radiated Emissions,	, 1000 - 40,000 MHz, 03, 04-Feb	-16			
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/26/2014	6/26/2016
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	870	1/21/2016	1/21/2017
HP / Miteq	SA40 Head (Red)	TTA1840-45-5P- HG-S	1145	7/17/2015	7/17/2016
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300- 80039	1156	6/2/2015	6/2/2016
A. H. Systems	Purple System Horn, 18- 40GHz	SAS-574, p/n: 2581	2160	8/28/2014	8/28/2017
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2251	9/16/2015	9/16/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/19/2015	12/19/2016
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	2241	9/16/2015	9/16/2016
Radiated Emissions	, 1000 - 40,000 MHz, 05-Feb-16				
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300- 80039	1156	6/2/2015	6/2/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/19/2015	12/19/2016
EMCO HP / Miteq	Antenna, Horn, 1-18 GHz SA40 Head (Purple)	3115 TTA1840-45-5P- HG-S	1561 1772	6/27/2014 12/21/2015	6/27/2016 12/21/2016
A. H. Systems	Spare System Horn, 18- 40GHz	SAS-574, p/n: 2581	2162	7/29/2015	7/29/2017
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	2199	10/9/2015	10/9/2016
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	2241	9/16/2015	9/16/2016
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2251	9/16/2015	9/16/2016
Hewlett Packard	Spectrum Analyzer (SA40) Purple 9 kHz - 40 GHz,	8564E (84125C)	2415	3/7/2015	3/7/2016
Radio Antenna Port	(Power and Spurious Emission	ns), 10-Feb-16			
Rohde & Schwarz	Signal Analyzer 20 Hz - 26.5 GHz	FSQ26	2327	5/6/2015	5/6/2016



Manufacturer Rohde & Schwarz	Description Open Switch and Control Unit, p/s	Model OSP120 with B157	<u>Asset #</u> 3000	<u>Calibrated</u> 6/8/2015	<u>Cal Due</u> 6/8/2016
Radio Antenna Port Rohde & Schwarz	(Power and Spurious Emission Signal Analyzer 20 Hz - 26.5		2327	5/6/2015	5/6/2016
Rohde & Schwarz	GHz Open Switch and Control	FSQ26 OSP120 with	3000	6/8/2015	6/8/2016
	Unit, p/s	B157			
Radiated Emissions	, 1000 - 18,000 MHz, 11-Mar-16				
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	785	10/12/2015	10/12/2016
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300- 80039	1156	6/2/2015	6/2/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	7/6/2015	7/6/2016
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1682	7/8/2015	7/8/2016
EMCO	Antenna, Horn, 1-18 GHz	3115	2733	11/18/2014	11/18/2016
Hewlett Packard	Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	8564E (84125C)	3810	3/1/2016	3/12017



Appendix B Test Data

T100356 Pages 29 - 151



WE ENGINEER S	UCCESS				
Client:	Pace Americas, Inc.	Job Number:	JD100297		
Product	Wi-Fi Module 5 GHz	T-Log Number:	T100356		
System Configuration:		Project Manager:	Irene Radamacher		
Contact:	Mark Rieger	Project Coordinator:			
Emissions Standard(s):	FCC Part 15.407	Class:	В		
Immunity Standard(s):		Environment:	Radio		

EMC Test Data

For The

Pace Americas, Inc.

Product

Wi-Fi Module 5 GHz

Date of Last Test: 3/11/2016

WE ENGINEER SUCCESS			C Test Data
Client:	Pace Americas, Inc.	Job Number:	JD100297
Madal		T-Log Number:	T100356
Model.	Wi-Fi Module 5 GHz	Project Manager:	Irene Radamacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC Part 15.407	Class:	N/A

Power vs. Data Rate

In normal operating modes the card uses power settings stored on EEPROM to set the output power. For a given nominal output power the actual transmit power normally is reduced as the data rate increases, therefore testing was performed at the data rate in the mode with highest power to determine compliance with the requirements.

The following power measurements were made using a GATED average power meter and with the device configured in a continuous transmit mode on Chain 1 at the various data rates in each mode to verify the highest power mode:

Sample Notes

Sample S/N: F56154520246 Driver: 7.14.89.21.571.206

> Date of Test: 1/6/2016 Test Engineer: Mehran Birgani Test Location: Fremont Chamber #7

Mode	Data Rate	Power (dBm)	Power setting	
	6	18.6		
	9	18.6		
	12	18.6		
802.11a	18	18.6	20.0	
002.11d	24	18.5	20.0	
	36	18.5		
	48	18.5		
	54	18.5		

nt: Pace Americas, Inc.			Job Number: JD100297 T-Log Number: T100356
el: Wi-Fi Module 5 GHz			Project Manager: Irene Radamache
ct: Mark Rieger			Project Coordinator: -
-			
d: FCC Part 15.407			Class: N/A
Mode	Data Rate	Power (dBm)	Power setting
	6.5	12.0	
	13.0	12.2	
	19.5	12.4	
802.11n/ac	26.0	12.6	
20MHz	39.0	12.9	
20101112	52.0	13.3	
	58.5	13.4	
	65.0	13.5	
	78.0	13.7	<11ac mode only
	13.5	12.6	
	27.0	12.9	
	40.5	13.3	
	54.0	13.6	
802.11n/ac	81.0	14.0	
40MHz	108.0	14.3	
	121.5	14.4	
	135.0	14.6	
	162.0	14.9	<<-11ac mode only
	180.0	15.1	<11ac mode only
	29.3	12.3	
	58.5	13.0	
	87.8	13.4	
000.44	117.0	13.6	
802.11ac	175.5	14.2	
80MHz	234.0	14.5	
	266.3	14.7	4
I	292.5	14.9	4
	351.0	15.1 15.2	⊣ I

	VE ENGINEER SUCCESS		
Client:	Pace Americas, Inc.	Job Number:	JD100297
Model:	Wi-Fi Module 5 GHz	T-Log Number:	T100356
wouer.		Project Manager:	Irene Radamacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC Part 15.407	Class:	N/A

Duty Cycle

Date of Test: 1/4/16 & 1/29/2016 Test Engineer: David Bare & Joseph Cadigal Test Location: Fremont Chamber #7 & EMC Lab #4A

NTS

Duty cycle measurements performed on the worse case data rate for power.

Notes: Measurements taken with maximum RBW/VBW settings allowed. Non-beamforming

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6 Mb/s	98.0%	Yes	1.302	0	0	10
n20	VHT8	99.1%	Yes	1.935	0	0	10
n40	VHT9	98.1%	Yes	0.952	0	0	10
ac80	VHT9	93.7%	Yes	0.448	0.3	0.6	2232

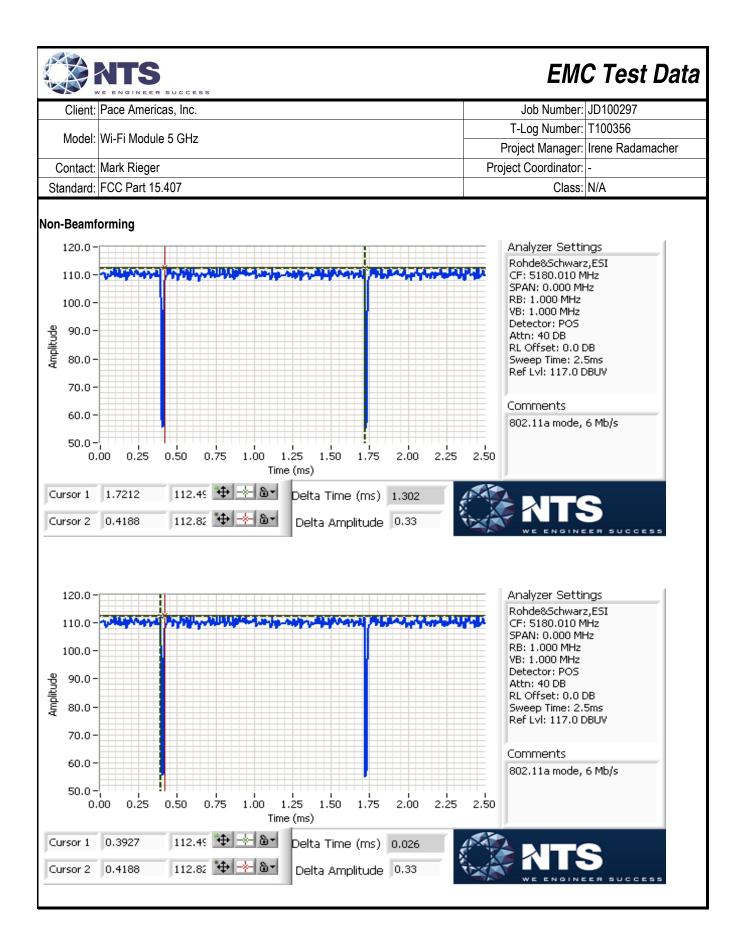
Beamforming

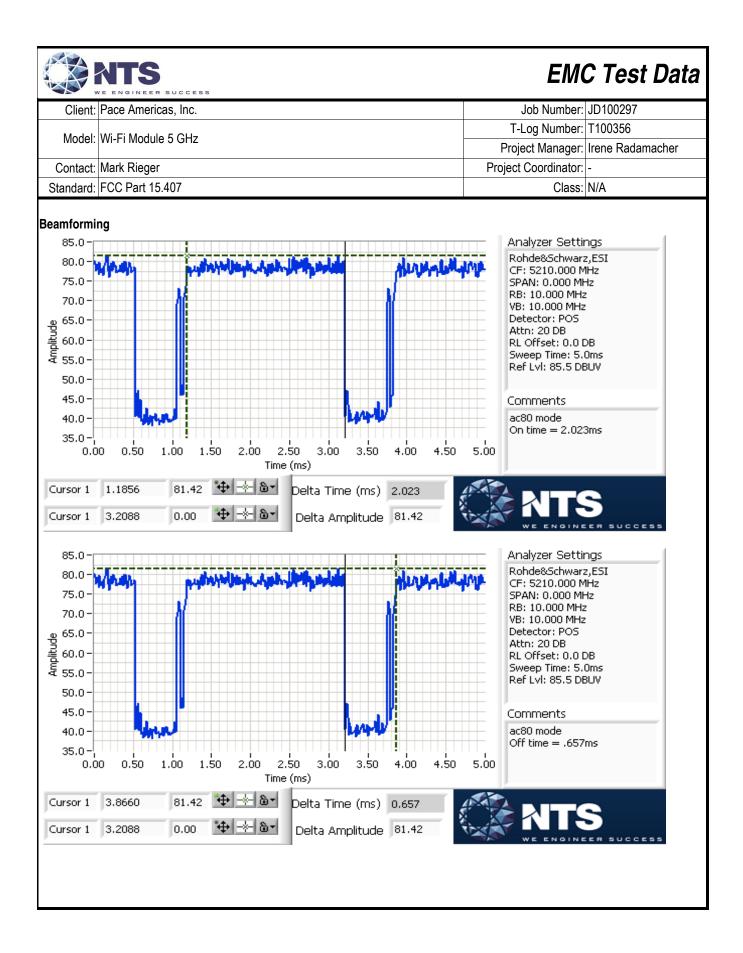
Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)	
n20	VHT8	92.6%	No	1.935	0.3	0.7	517	1k
n40	VHT9	95.2%	No	0.952	0.2	0.4	1050	3k
ac80	VHT9	75.5%	Yes	2.023	1.2	2.4	494	1k

* Correction factor when using RMS/Power averaging - 10*log(1/x)

** Correction factor when using linear voltage average - 20*log(1/x)

T = Minimum transmission duration





Client:	Pace Americas, Inc.	Job Number:	JD100297
Model:	Wi-Fi Module 5 GHz	T-Log Number:	T100356
	WI-FI Module 3 GHz	Project Manager:	Irene Radamacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC Part 15.407	Class:	N/A

RSS-247 (LELAN) and FCC 15.407(UNII) Antenna Port Measurements Power, PSD, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5150 - 5250MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 162 mW n20: 81.4 mW n40: 126 mW ac80: 37 mW
1	PSD, 5150 - 5250MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 12.6 mW/MHz n20: 7.8 mW/MHz n40: 6.9 mW/MHz ac80: 1 mW/MHz
2	99% Bandwidth	RSS-247 (Information only)	N/A	a: 17.0 MHz n20: 17.9 MHz n40: 36.9 MHz ac80: 76.1 MHz

General Test Configuration

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators and cables used.

Ambient Conditions:

Temperature:	22.1 °C
Rel. Humidity:	34 %

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

EMC Test Dat				
Client:	Pace Americas, Inc.	Job Number:	JD100297	
Madal	Wi-Fi Module 5 GHz	T-Log Number:	T100356	
woder.		Project Manager:	Irene Radamacher	
Contact:	Mark Rieger	Project Coordinator:	-	
Standard:	FCC Part 15.407	Class:	N/A	

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033 D01

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6 Mb/s	0.98	Yes	1.302	0	0	10
11n20	VHT8	0.99	Yes	1.935	0	0	10
11n40	VHT9	0.98	Yes	0.952	0	0	10
ac80	VHT9	0.94	Yes	0.448	0.28	0.56	2232

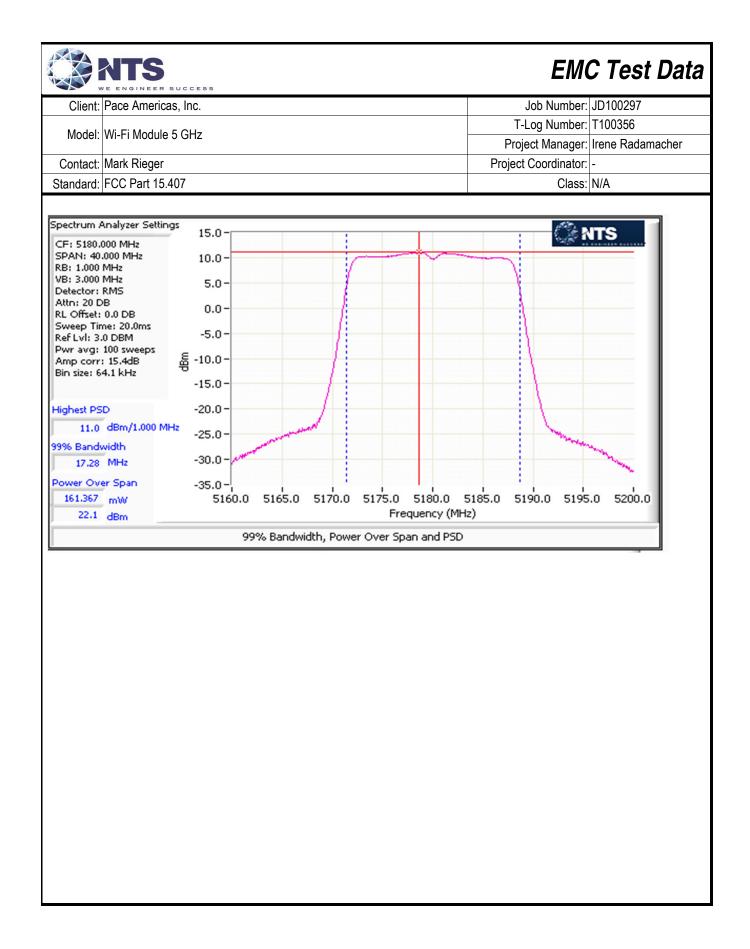
Sample Notes

Sample S/N: F56154520246 Driver: 7.14.89.21.571.206

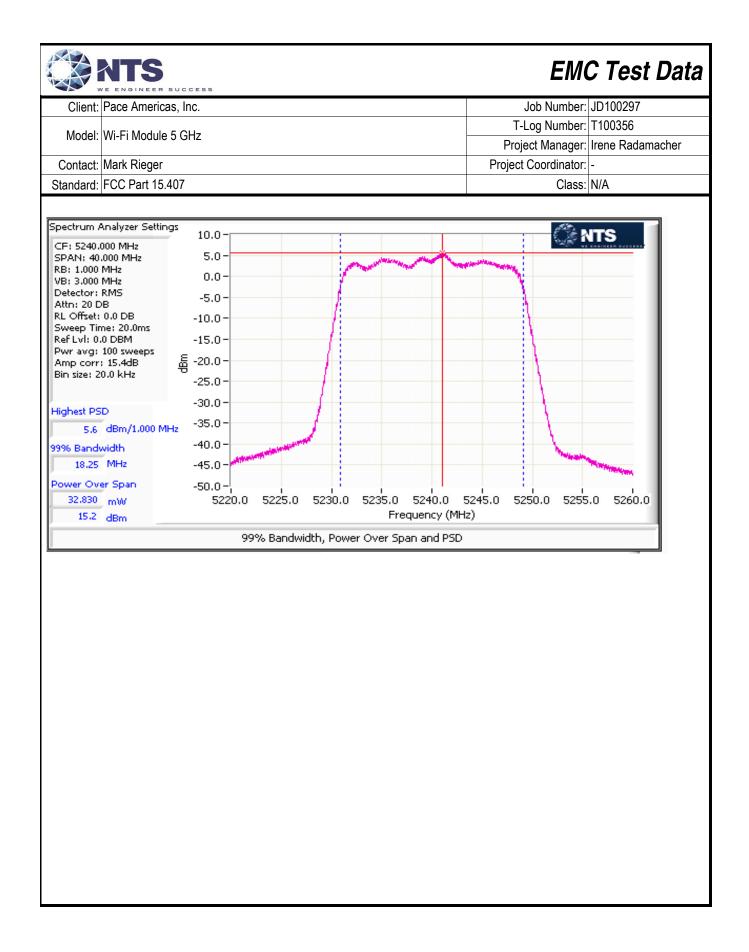
	NTS	EMO	C Test Data
Client:	Pace Americas, Inc.	Job Number:	JD100297
NA 1		T-Log Number:	T100356
Model:	Wi-Fi Module 5 GHz		Irene Radamacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC Part 15.407	Class:	N/A
[ndwidth, Output Power and Power Spectral Density - MIMO Systems Date of Test: 2/10/2016 8:00 Config. Used:		
	est Engineer: John Caizzi / R. Varelas Config Change: est Location: Lab 4B EUT Voltage:		
Note 1:	Duty Cycle \ge 98% for a, n20 and n40 modes. Output power measured usin RBW=1MHz, VB=3 MHz, Span > OBW, # of points in sweep \ge 2*span/RBV on (transmitted signal was continuous, duty cycle \ge 98%) and power integration of the state of the second secon	N, auto sweep, RMS dete ation over the OBW (meth	ector, power averaging od SA-1 of ANSI
Note 2:	Constant Duty Cycle < 98% for ac80 mode. Output power measured using RBW=1MHz, VB=3 MHz, Span > OBW, # of points in sweep \ge 2*span/RBW averaging on and power integration over the OBW. The measurements we 10log(1/x), where x is the duty cycle. (method SA-2 of ANSI C63.10)	/, RMS detector, trace av	erage 100 traces, power
	Measured using the same analyzer settings used for output power.		
Note 4:	For RSS-247 the limit for the 5150 - 5250 MHz band accounts for the anten 10dBm/MHz. The limits are also corrected for instances where the highest r PSD (calculated from the measured power divided by the measured 99% bat the measured value exceeds the average by more than 3dB.	measured value of the PS	D exceeds the average
Note 5:	99% Bandwidth measured in accordance with C63.10 - RB between 1-5 % of times OBW.		
Note 6:	For MIMO systems the total output power and total PSD are calculated from (in linear terms). The antenna gain used to determine the EIRP and limits from mode of the MIMO device. If the signals on the non-coherent between the the limits is the highest gain of the individual chains and the EIRP is the sun chain. If the signals are coherent then the effective antenna gain is the surre the EIRP is the product of the effective gain and total power.	or PSD/Output power dep transmit chains then the n of the products of gain a	pends on the operating gain used to determine and power on each

Model: V Contact: N	Pace Americas, Inc.						EMO	C Test	Data
Contact: N						L.	Job Number:	JD100297	
Contact: N						T-L	og Number:	T100356	
	Wi-Fi Module 5 GHz					Proje	ect Manager:	Irene Radar	nacher
	Mark Rieger						Coordinator:		
Standard F	FCC Part 15.407						Class:		
otanadia.							01000.	1.0// (
Antenna Gai	in Information								
	Antenna Gain	(dBi) / Chai	n		MultiChain		Sectorized	Dir G	Dir G
Freq	1 2	3	4	BF	Legacy	CDD	/ Xpol	(PWR)	(PSD)
5150-5250	2.5 4.1	2.6		Yes	No	Yes, n mode only	No	7.9	7.9
N M	that support CDD mode Min # of spatial streams: Max # of spatial streams: BF = beamforming mode	3 3	Multichain Le	egacy = 802.	11 legacy dat	a rates supp	orted for mul	tichain trans	missions.
Notes: C	CDD = Cyclic Delay Dive cross polarized.	rsity (or Cyc	lic Shift Diver	rsity) modes	supported, S	ectorized / X	pol = antenna	as are secto	ized or
Notes: F	Dir G (PWR) = total gain FCC KDB 662911. Depe value.								
	Array gain for power/psd								
Notes: 0	For systems with Beamfo Option 1: Delays are opt calculated based on bear	imized for be	eamforming,				delay table c	f 802.11; Arı	ay gains
FCC UNII-1 L		Pwr	PSD						
	Outdoor AP	30	17						
	Indoor AP	30	17						
X	Station (e.g. Client)	24	11						
	Outdoor AP (>30° Elv.)	21	-						

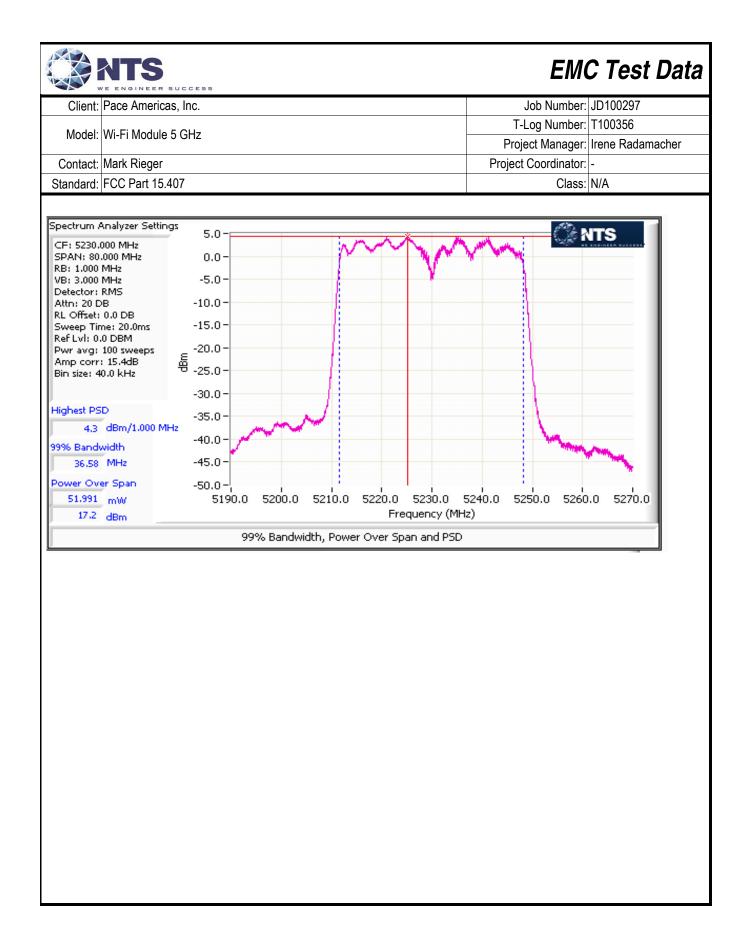
4 2 22.1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1											
Model: Wi-Fi Module 5 GHz T-Log Number: T100356 Project Manager: True Radamacher Contact: Mark Rieger Project Coordinator: - <			SUCCESS						EM	C Test	Data
Mode: Wr-H Module 5 GH2 Project Manager Irene Radamacher Contact: Mark Rieger Project Coordinator: - Standard: FCC Part 15.407 Class: N/A MIMO Device - 5150-5250 MHz Band - FCC Max EIRP (mW): 416.9182 Frequency (MHz) Software 26dB BW Duty Cycle Power ¹ Total Power FCC Limit Max Power Result 5180 3 21 98 162.2 22.1 24.0 Pass 5200 4 18.5 98 107.2 20.3 24.0 0.162 Pass 5240 4 19 98 107.2 20.3 24.0 0.162 Pass 5150-5250 PSD - FCC Mode: 11 SISO only with diversity (worst chain selected) FCC Limit Resu 6180 4 21 98 107.2 20.3 24.0 Pass 5150-5250 PSD - FCC Mode: 11 SiSO only with diversity (worst chain selected) FCC Limit Bm/MHz Bm/MHz	Client:	Pace Americ	as, Inc.						Job Number:	JD100297	
Project Manager, Irene Radamacher Contact: Mark Rieger Project Coordinator: - Standard: FCC Part 15.407 Class: N/A Mode: 11a Slo only with diversity (worst chain selected) Max EIRP (mW): 416.9182 Frequency Chain Software 264 BW Duty Cycle Power Total Power FCC Limit Max ERP (mW): 416.9182 Frequency Chain Software 264 BW Duty Cycle Power Total Power FCC Limit Max Power Result 5180 1 21 98 162.2 22.1 24.0 0.162 Pass 5200 1 18.5 98 107.2 20.3 24.0 0.162 Pass Sito-5250 PSD - FCC Mode: 11a SiSO only with diversity (worst chain selected) FCC Limit Result 5180 1 98 107.2 20.3 24.0 0.162 Pass Sito-5250 PSD - FCC Mode:	Model:	Wi-Ei Modul	a 5 CH7					T-L	og Number:	T100356	
Standard: FCC Part 15.407 Class: N/A Mode: 11a SISO only with diversity (worst chain selected) Max EIRP (mW): 416.9182 Frequency (MHz) Chain Software Setting 26dB BW (MHz) Duty Cycle % Power dBm Total Power mW GC Limit Max EIRP (mW): 416.9182 Pass 5180 1 2	MOUEI.		6 3 6112					Proje	ect Manager:	Irene Radam	acher
IMO Device - 5150-5250 MHz Band - FCC Mode: 11a SISO only with diversity (worst chain selected) Max EIRP (mW): 416.9182 Frequency Chain Software 26d BW Duty Cycle Power' Total Power FCC Limit Max Power Resu 5180 1 3 21 98 162.2 22.1 24.0 Pass 5200 1 1 2 98 162.2 22.1 24.0 Pass 5200 1 18.5 98 85.1 19.3 24.0 0.162 Pass 5240 1 19 98 107.2 20.3 24.0 0.162 Pass frequency 1 19 98 107.2 20.3 24.0 Pass 5180 2 118 SISO only with diversity (worst chain selected) FCC Limit Resu frequency Chain Software 99% BW Duty Cycle PSD Total PSD ³ FCC Limit dBm/MHz	Contact:	Mark Rieger						Project	Coordinator:	-	
Mode: 11a SISO only with diversity (worst chain selected) Max EIRP (mW): 416.9182 Frequency (MHz) Chain Software Setting 26dB BW (MHz) Duty Cycle % Power ¹ dBm Total Power mW FCC Limit Max Power (W) Resu (W) 5180 1 21 98 1 162.2 22.1 24.0 Pass 5200 1 18.5 98 1 19.3 24.0 0.162 Pass 5240 1 19 98 107.2 20.3 24.0 0.162 Pass 105-5250 PSD - FCC 11 SISO only with diversity (worst chain selected) 107.2 20.3 24.0 0.162 Pass Frequency (MHz) Chain Software Setting 99% BW (MHz) 0uty Cycle PSD dBm/MHz mW/MHz dBm/MHz Resu 5180 1 21 98 11.0 11.0 11.0 11.0 Pass 5200 1 1 21 98 6.9 8.4 11.0 <t< td=""><td>Standard:</td><td>FCC Part 15</td><td>.407</td><td></td><td></td><td></td><td></td><td></td><td>Class:</td><td>N/A</td><td></td></t<>	Standard:	FCC Part 15	.407						Class:	N/A	
Mode: 11a SISO only with diversity (worst chain selected) Max EIRP (mW): 416.9182 Frequency (MHz) Chain Software Setting 26dB BW (MHz) Duty Cycle % Power ¹ dBm Total Power mW FCC Limit Max Power (W) Resu (W) 5180 1 21 98 1 162.2 22.1 24.0 Pass 5200 1 1 21 98 1 162.2 22.1 24.0 0.162 Pass 5200 1 1 18.5 98 107.2 20.3 24.0 0.162 Pass 5240 1 19 98 107.2 20.3 24.0 0.162 Pass frequency (MHz) Chain Software Setting 99% BW Duty Cycle % PSD Total PSD ³ FCC Limit dBm/MHz Resu 5180 1 21 98 11.0 11.0 11.0 11.0 Pass 5200 1 2 98 6.9 8.4 11.0	/IMO Devi	ce - 5150-52	50 MHz Ban	d - FCC							
(MHz) Chain Setting (MHz) % dBm mW dBm dBm dBm (W) Result 5180 4 2 98 162.2 22.1 24.0 Pass Pass 5200 4 2 98 162.2 22.1 24.0 0.162 Pass 5200 4 2 98 19.3 19.3 24.0 0.162 Pass 5240 3 19 98 107.2 20.3 24.0 0.162 Pass 5240 4 19 98 107.2 20.3 24.0 0.162 Pass 5240 4 19 98 107.2 20.3 24.0 0.162 Pass 150-5250 PSD - FCC 107.2 20.3 24.0 107.2 20.3 24.0 108 108 108 108 108 108 108 108 108 108 108 108 108 108					vith diversity (worst chain	selected)	Max	EIRP (mW):	416.9182	
(MHz) Setting (MHz) % dBm mW dBm dBm (W) 5180 1 2 98 162.2 22.1 24.0 Pass 5200 1 2 22.1 162.2 22.1 24.0 0.162 Pass 5200 1 18.5 98 19.3 24.0 0.162 Pass 5240 1 19.3 19.3 24.0 0.162 Pass 5240 1 19.3 107.2 20.3 24.0 0.162 Pass 5240 1 19.3 107.2 20.3 24.0 0.162 Pass 5240 1 19.9 98 107.2 20.3 24.0 0.162 Pass 150-5250 PSD - FCC SISO only with diversity (worst chain selected) 107.2 20.3 FCC Limit Resu 160+ Software 99% BW Duty Cycle PSD Total PSD ³ FCC Limit Pass 11.0		Chain			Duty Cycle	Power ¹	Total	Power	FCC Limit		Result
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	(MHz)		Setting	(MHz)	%	dBm	mW	dBm	dBm	(W)	Result
3100 4 21 96 102.2 22.1 24.0 Pass 5200 3 18.5 98 85.1 19.3 24.0 0.162 Pass 5240 4 19 98 107.2 20.3 24.0 0.162 Pass 5240 4 19 98 107.2 20.3 24.0 0.162 Pass 5240 4 19 98 107.2 20.3 24.0 0.162 Pass 150-5250 PSD - FCC Mode: 11a SISO only with diversity (worst chain selected) 107.2 20.3 FCC Limit Resu (MHz) Chain Software 99% BW Duty Cycle PSD Total PSD ³ FCC Limit Resu 6180 3 21 98 11.0 11.0 11.0 11.0 11.0 Pass 5200 3 18.5 98 6.9 8.4 11.0 11.0 Pass 5240 4 19 98 8.4 8.7 9.4 11.0 Pass <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		-									
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	5180		21		98		162.2	22.1	24.0		Pass
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$						22.1					
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$											
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	5200		18 5		08		85 1	10.3	24.0	0 162	Pass
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	5200		10.5		30		00.1	10.0	24.0	0.102	1 033
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$						19.3					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $											
220.3150-5250 PSD - FCCMode:11aSISO only with diversity (worst chain selected)Frequency (MHz)ChainSoftware Setting99% BW (MHz)Duty Cycle %PSD dBm/MHzTotal PSD3 mW/MHzFCC Limit dBm/MHzResul518013219812.611.011.011.0Pass5200318.598	5240		19		98		107.2	20.3	24.0		Pass
150-5250 PSD - FCCMode:11aSISO only with diversity (worst chain selected)Trequency (MHz)ChainSoftware Setting99% BW (MHz)Duty Cycle %PSD dBm/MHzTotal PSD ³ mW/MHzFCC Limit dBm/MHzResu5180 $\frac{1}{3}$ 22198 $\frac{1}{12.6}$ 11.011.011.0Pass5200 $\frac{3}{4}$ 218.598 $\frac{1}{8.4}$ 8.4 $\frac{1}{8.4}$ $\frac{1}{8.4}$ $\frac{1}{8.4}$ $\frac{1}{8.4}$ $\frac{1}{8.4}$ $\frac{1}{8.4}$ 5240 $\frac{3}{4}$ 41998 $\frac{1}{8.7}$ 98 8.7 9.4 11.0 Pass						20.3					
Mode:11aSISO only with diversity (worst chain selected)Frequency (MHz)ChainSoftware Setting99% BW (MHz)Duty Cycle %PSD dBm/MHzTotal PSD3FCC Limit dBm/MHzResult dBm/MHz51801321981111111151801219898112.611.011.011.011.01011.0<											
Mode:11aSISO only with diversity (worst chain selected)Frequency (MHz)ChainSoftware Setting99% BW (MHz)Duty Cycle %PSD dBm/MHzTotal PSD3FCC Limit dBm/MHzResult dBm/MHz5180 $\frac{3}{4}$ 21 $\frac{8}{6}$ $\frac{8}{6}$ $\frac{11.0}{11.0}$ 11.0 11.0 11.0 11.0 5180 $\frac{4}{4}$ 21 $\frac{8}{6}$ $\frac{11.0}{11.0}$ $\frac{11.0}{11.0}$ 11.0 11.0 11.0 11.0 11.0 5200 $\frac{3}{4}$ 18.5 8.4 $\frac{11.0}{11.0}$ 8.4 11.0 11.0 11.0 11.0 5200 $\frac{3}{4}$ 19 98 $\frac{16}{11.0}$ 8.7 9.4 11.0 11.0 11.0											
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $					with divorsity (worst chain	colocted)				
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			Software					PSD ³	FCC	Limit	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		Chain									Result
3 21 98 12.6 11.0 11.0 $Pass$ 2 11.0 11.0 11.0 11.0 $Pass$ 5200 3 18.5 98 a 6.9 8.4 11.0 $Pass$ 5200 4 18.5 98 a 6.9 8.4 11.0 $Pass$ 5200 4 18.5 98 a 6.9 8.4 11.0 $Pass$ 5200 4 18.5 98 a 6.9 8.4 11.0 $Pass$ 5240 3 19 98 a 8.7 9.4 11.0 $Pass$	()	1		()	70	QDIII/IVII IZ	1111 07/1011 12	QDITI/WITIZ	d Din		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	5190		01		00		10.6	11.0	14	0	Deee
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	5160	•	21		90		12.0	11.0		.0	F 855
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$						11.0					
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$											
2 8.4 4 4 5240 10 98 8.7 9.4 11.0 Pass	5200		18.5		98		6.9	8.4	11	.0	Pass
5240 1 3 4 19 98 8.7 9.4 11.0 Pass						84					
5240 <u>4</u> 19 96 0.7 9.4 11.0 Pass											
4	5240		10		98		87	9.4	11	0	Pace
2 9.4	5240		15		30		0.7	5.4		.0	1 833
		2				9.4					



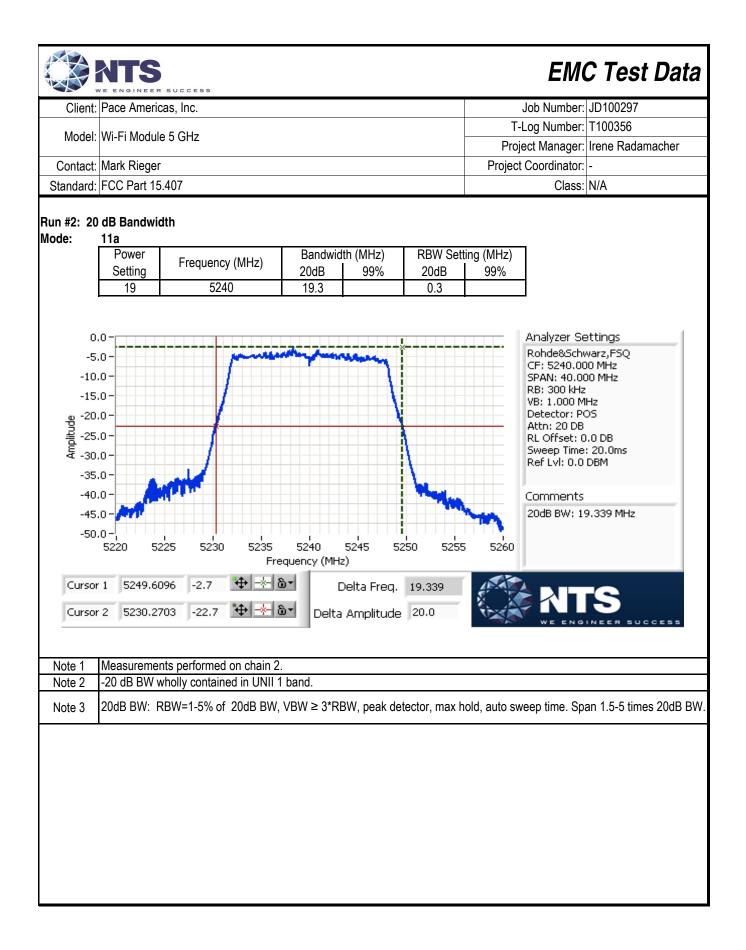
	VE ENGINEER	SUCCESS						EM	C Test	Data
Client:	Pace Americ	cas, Inc.						Job Number:	JD100297	
Model [.]	Wi-Fi Modul								T100356	
									Irene Radam	nacher
	Mark Rieger						Project	Coordinator:		
Standard:	FCC Part 15	5.407						Class:	N/A	
/IMO Devi Mode:	ce - 5150-52 n20	50 MHz Ban	d - FCC				Мах	FIRP (mW).	498.37093	
requency		Software	26dB BW	Duty Cycle	Power ¹	Total	Power	FCC Limit	Max Power	D
(MHz)	Chain	Setting	(MHz)	%	dBm	mW	dBm	dBm	(W)	Result
	1				13.5					
5180	3	14.5		99	14.7	81.4	19.1	22.1		Pass
	2				14.7 13.6					
5000	3			00	14.8	00.7	10.1	00.4	0.004	Deee
5200	4	14.5		99		80.7	19.1	22.1	0.081	Pass
	2				14.4					
	1				13.2 15.2					
5240	4	14.5		99	15.2	79.7	19.0	22.1		Pass
	2				14.1					
Mode:	PSD - FCC n20									
requency		Software	99% BW	Duty Cycle	PSD	Total	PSD ³	FCC	Limit	
roquonoy		Soliware								
(MHz)	Chain	Setting	(MHz)	%	dBm/MHz	mW/MHz	dBm/MHz	dBm	/MHz	Result
	1		(MHz)	%	2.4	mW/MHz	dBm/MHz	dBm	/MHz	Result
	1		(MHz)	% 99		mW/MHz	dBm/MHz 8.9		/MHz .1	Pass
(MHz)	1 3 4	Setting	(MHz)		2.4 5.1					
(MHz)	1	Setting	(MHz)		2.4 5.1 4.3					
(MHz) 5180	1 3 4 2 1 3	Setting 14.5	(MHz)	99	2.4 5.1	7.7	8.9	9	.1	Pass
(MHz)	1 3 4 2 1 3 4	Setting	(MHz)		2.4 5.1 4.3 2.7 5.2			9		
(MHz) 5180	1 3 4 2 1 3 4 2	Setting 14.5	(MHz)	99	2.4 5.1 4.3 2.7 5.2 4.1	7.7	8.9	9	.1	Pass
(MHz) 5180 5200	1 3 4 2 1 3 4 2 1	Setting 14.5 14.5	(MHz)	99 99	2.4 5.1 4.3 2.7 5.2 4.1 2.1	7.7	8.9 8.9	9	.1 .1	Pass Pass
(MHz) 5180	1 3 4 2 1 3 4 2	Setting 14.5	(MHz)	99	2.4 5.1 4.3 2.7 5.2 4.1	7.7	8.9	9	.1	

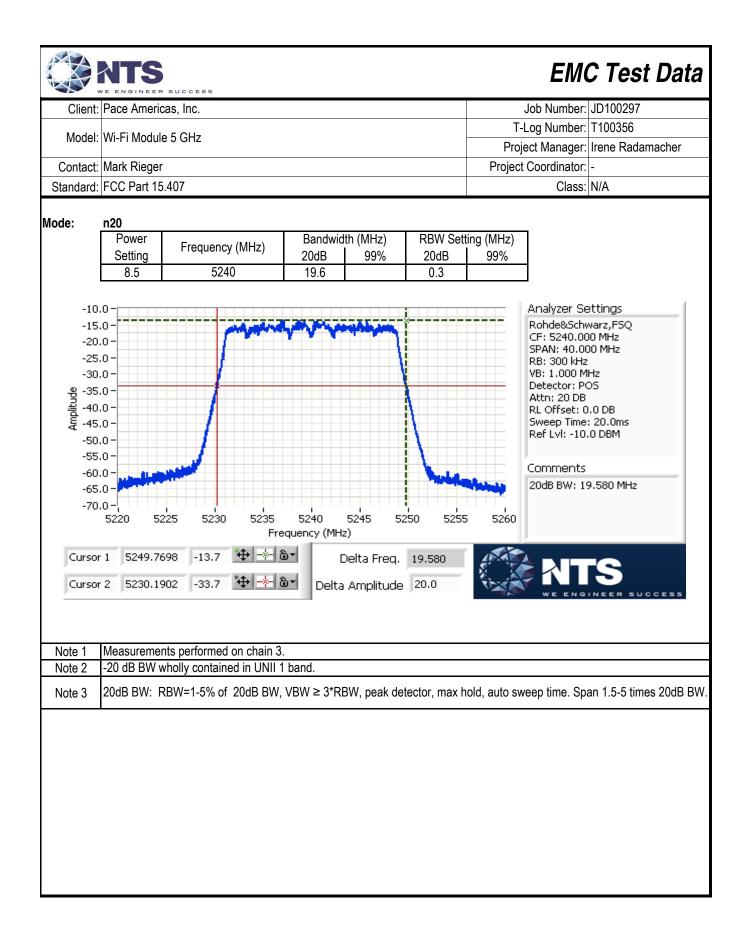


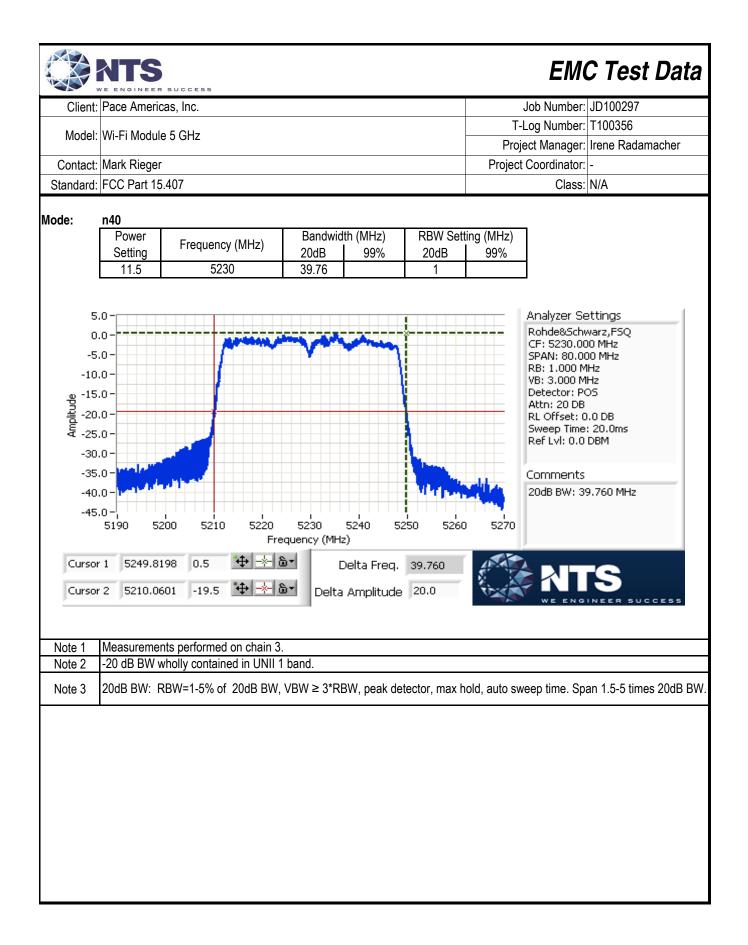
(MHz) Chain Setting (MHz) % dBm mW dBm dBm 5190 1 3 11.5 98 10.2 11.7 37.6 15.8 22.1 1 1 15.5 15.5 15.8 22.1	T100356 rene Radamache N/A 771.43412 Max Power	er
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	T100356 rene Radamache N/A 771.43412 Max Power	er
Model: Wi-Fi Module 5 GHz Project Manager: Ir Contact: Mark Rieger Project Coordinator: - Standard: FCC Part 15.407 Class: N MIMO Device - 5150-5250 MHz Band - FCC Max EIRP (mW): T Frequency (MHz) Chain Software 26dB BW Duty Cycle Power Total Power ¹ FCC Limit N 5190 1 3 11.5 98 10.2 11.7 37.6 15.8 22.1 1 1 10.9 15.5 15.8 22.1 10.9 10.9 15.5 15.8 16.8 16.8 16.8 <	rene Radamache N/A 771.43412 Max Power	er
Contact: Mark Rieger Project Coordinator: - Standard: FCC Part 15.407 Class: N MIMO Device - 5150-5250 MHz Band - FCC Max EIRP (mW): T Mode: n40 Max EIRP (mW): T Frequency (MHz) Chain Software Setting 26dB BW (MHz) Duty Cycle % Power dBm Total Power ¹ FCC Limit MBm M 5190 1 1 98 10.2 11.7 37.6 15.8 22.1 1 1 15.5 10.9 15.5 10.9 15.8 22.1	N/A 771.43412 Max Power _R .	
Standard: FCC Part 15.407 Class: N MIMO Device - 5150-5250 MHz Band - FCC Max EIRP (mW):	771.43412 Max Power R	
MIMO Device - 5150-5250 MHz Band - FCC Max EIRP (mW): Max EIRP (mW):<	771.43412 Max Power R	
Mode: n40 Max EIRP (mW):	Max Power R	
Frequency (MHz) Chain Software Setting 26dB BW (MHz) Duty Cycle % Power dBm Total Power ¹ mW FCC Limit dBm M dBm 1 3 11.5 98 10.2 37.6 15.8 22.1 1 1 10.9 10.9 10.9 10.9 10.9 10.9 10.9	Max Power R	
(MHz) Chain Setting (MHz) % dBm mW dBm dBm 5190 3 11.5 98 10.2 11.7 37.6 15.8 22.1 1 1 15.5 15.5 15.8 22.1		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	(W)	lesult
5190 3 11.5 98 11.7 37.6 15.8 22.1 2 10.9 15.5 15.5 15.8 </td <td></td> <td></td>		
5190 4 11.5 98 37.6 15.8 22.1 2 10.9 15.5 15.8 10.9 10.9		
2 10.9 15.5	F	Pass
1 15.5		
	0.126	
5230 3 16.5 98 17.2 126.0 21.0 22.1		Dass
4		ass
2 15.8		
Mode: n40 Frequency (MHz) Chain Software Setting 99% BW (MHz) Duty Cycle PSD Total PSD ³ FCC Li dBm/MHz		lesult
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	I F	Dass
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	I F	Dass

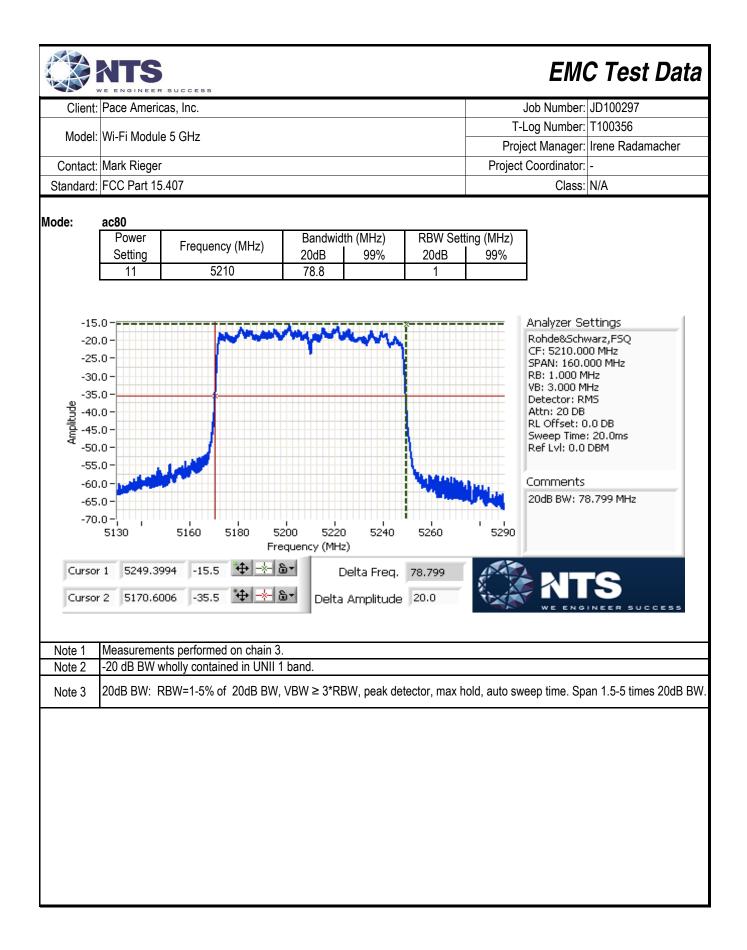


		SUCCESS						EM	C Test	Data
Client:	Pace Americ							Job Number:	JD100297	
Madal							T-L	og Number:	T100356	
Model:	Wi-Fi Modul	e 5 GHz					Proje	ect Manager:	Irene Radam	acher
Contact:	Mark Rieger	•					Project	Coordinator:	-	
Standard:	FCC Part 15	5.407						Class:	N/A	
/IMO Devi Mode:	ce - 5150-52 ac80							EIRP (mW):	228.36899	
Frequency	Chain	Software	26dB BW	Duty Cycle	Power		Power ²	FCC Limit	Max Power	Result
(MHz)		Setting	(MHz)	%	dBm	mW	dBm	dBm	(W)	
5210	1 3 4 2	11		94	10.1 11.3 10.6	37.3	15.7	22.1	0.037	Pass
Mode: Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total mW/MHz	PSD ³ dBm/MHz		Limit /MHz	Result
5210	1 3 4 2	11		94	-6.5 -4.1 -4.6	1.0	0.0	9	.1	Pass
CF: 5210. SPAN: 16 RB: 1.000 VB: 3.000 Detector: Attn: 20 [RL Offset: Sweep Til Ref Lvl: 0 Pwr avg: Amp corr Bin size: 8 Highest PS -4.1 9996 Band	0.000 MHz MHz MHz RMS 0.0 DB me: 20.0ms .0 DBM 100 sweeps : 15.4dB 20.1 kHz 5D dBm/1.000 M width MHz	0.0 -5.0 -10.0 -15.0 -20.0 -25.0 -35.0 -35.0 -45.0 -55.0		5160.0 5	180.0 520	6.0 5220.	0 5240.0	5260.0	S290.0	









EMC Test Data

Client:	Pace Americas, Inc.	Job Number:	JD100297
Madal	Wi-Fi Module 5 GHz	T-Log Number:	T100356
wouer.	WI-FI Module 3 GHz	Project Manager:	Irene Radamacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC Part 15.407	Class:	N/A

RSS-247 (LELAN) and FCC 15.407(UNII) Antenna Port Measurements Power, PSD, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5725 - 5850MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 166 mW n20: 480 mW n40: 173 mW ac80: 90.0 mW
1	PSD, 5725 - 5850MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 12.9 mW/MHz n20: 15.7 mW/MHz n40: 7.5 mW/MHz ac80: 2.0 mW/MHz
1	99% Bandwidth	RSS-GEN (Information only)	N/A	a: 17.4 MHz n20: 17.5 MHz n40: 36.9 MHz ac80: 76.1 MHz

General Test Configuration

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators and cables used.

Ambient Conditions:

Temperature:	22.3 °C
Rel. Humidity:	35 %

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

	NTS He engineer success	EM	C Test Data
Client:	Pace Americas, Inc.	Job Number:	JD100297
Madal	Wi-Fi Module 5 GHz	T-Log Number:	T100356
woder.		Project Manager:	Irene Radamacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC Part 15.407	Class:	N/A

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033 D01

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6 Mb/s	0.98	Yes	1.302	0	0	10
11n20	VHT8	0.99	Yes	1.935	0	0	10
11n40	VHT9	0.98	Yes	0.952	0	0	10
ac80	VHT9	0.94	Yes	0.448	0.28	0.56	2232

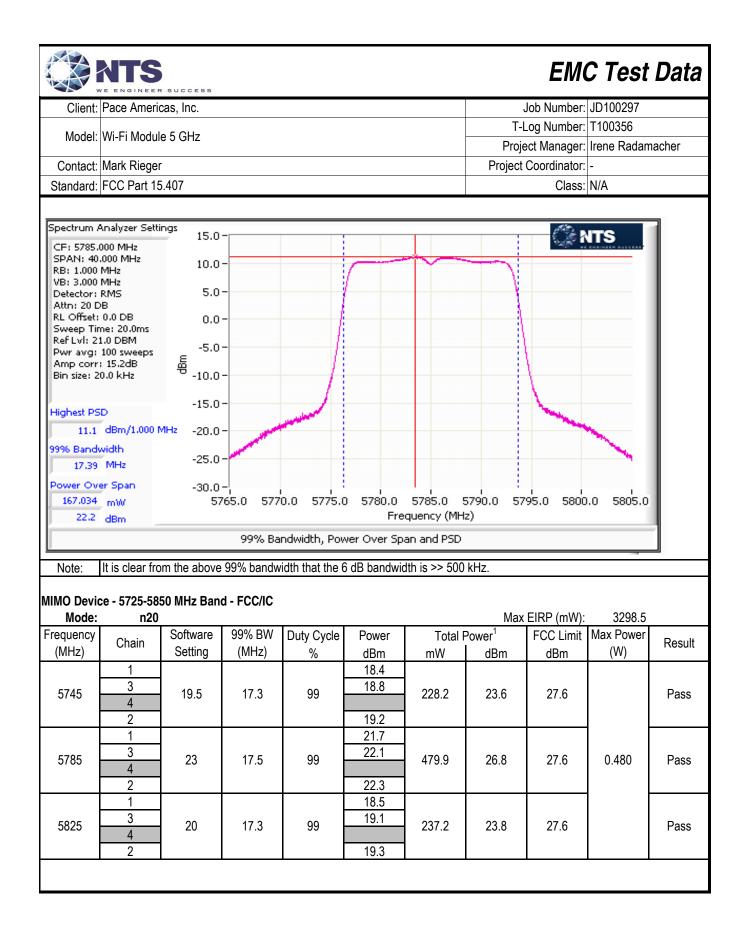
Sample Notes

Sample S/N: F56154520246 Driver: 7.14.89.21.571.206

	NTS	EMO	C Test Data			
Client:	Pace Americas, Inc.	Job Number:	JD100297			
Madala	Wi Ei Madula 5 Olla	T-Log Number:	T100356			
iviodel:	Wi-Fi Module 5 GHz	Project Manager:	Irene Radamacher			
Contact:	Mark Rieger	Project Coordinator:	-			
Standard:	FCC Part 15.407	Class:	N/A			
[Te	ndwidth, Output Power and Power Spectral Density - MIMO Systems Date of Test: 2/16/2016 0:00 Config. Used: est Engineer: Rafael Varelas Config Change: est Location: FT Lab #4B EUT Voltage:	None				
Note 1:	Duty Cycle \geq 98% for a, n20 and n40 modes. Output power measured usin RBW=1MHz, VB=3 MHz, Span > OBW, # of points in sweep \geq 2*span/RBV on (transmitted signal was continuous, duty cycle \geq 98%) and power integra C63.10).	<i>N</i> , auto sweep, RMS dete ation over the OBW (meth	ector, power averaging od SA-1 of ANSI			
Note 2:	Constant Duty Cycle < 98% for ac80 mode. Output power measured using RBW=1MHz, VB=3 MHz, Span > OBW, # of points in sweep \ge 2*span/RBW averaging on and power integration over the OBW. Tthe measurements we 10log(1/x), where x is the duty cycle. (method SA-2 of ANSI C63.10)	V, RMS detector, trace av	erage 100 traces, power			
Note 3:	Measured using the same analyzer settings used for output power.					
Note 4:	Note 4: 99% Bandwidth measured in accordance with C63.10 - RB between 1-5 % of OBW and VB ≥ 3*RB, Span between 1.5 and 5 times OBW.					
Note 5:	For MIMO systems the total output power and total PSD are calculated from (in linear terms). The antenna gain used to determine the EIRP and limits f mode of the MIMO device. If the signals on the non-coherent between the the limits is the highest gain of the individual chains and the EIRP is the sur chain. If the signals are coherent then the effective antenna gain is the sun the EIRP is the product of the effective gain and total power.	or PSD/Output power dep transmit chains then the n of the products of gain a	pends on the operating gain used to determine and power on each			

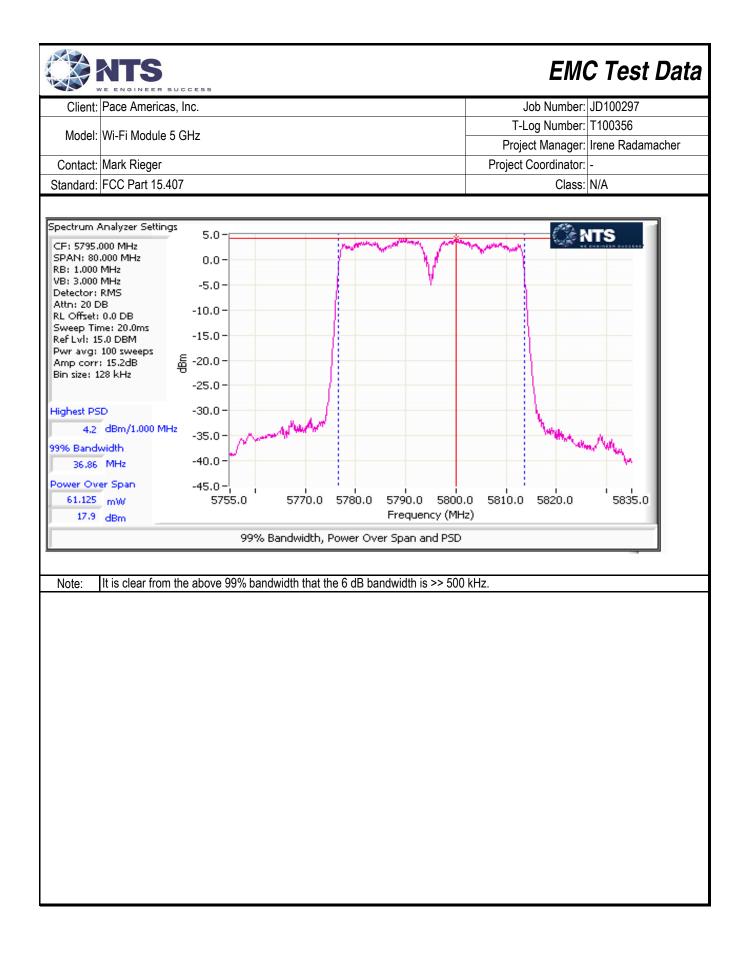
		SUCCESS							C Test	' Data	
Client:	Pace Americ	cas, Inc.						Job Number:			
Model:	Wi-Fi Modul	e 5 GHz				-		Log Number:		nachar	
Contact:	Mark Rieger Project Coordina								Irene Radamacher		
	FCC Part 15						Class: N/A				
		-									
Antenna Ga	ain Informati				r	MultiChain		Contarinad		Dir O	
Freq	<i>F</i>	Antenna Gain 2	(dBi) / Chain 3	4	BF	MultiChain Legacy	CDD	Sectorized / Xpol	Dir G (PWR)	Dir G (PSD)	
5150-5250	2.5	4.1	2.6	·	Yes	No	Yes	No	(*****)	(
5250-5350	2.8	4.3	2.3		Yes	No	Yes	No			
5470-5725	3.1	3.5	3		Yes	No	Yes	No			
5725-5825	3.6	3.7	3.5		Yes	No	Yes	No	8.4	8.4	
Notes: Notes:	cross polariz Dir G (PWR) FCC KDB 66	zed.) = total gain	(Gant + Array	/ Gain) for p	ower calcul	ations; GA (PS Array Gain valu	SD) = total	gain for PSD	calculations	based on	
Notes:	value. Arrav gain fo	or power/psd	calculated pe	er KDB 6629)11 D01.						
Notes:	For systems Option 1: D	with Beamfo elays are opt	orming and CI	DD, choose amforming,	one the foll	owing options: being selected		c delay table c	of 802.11; An	ray gains	

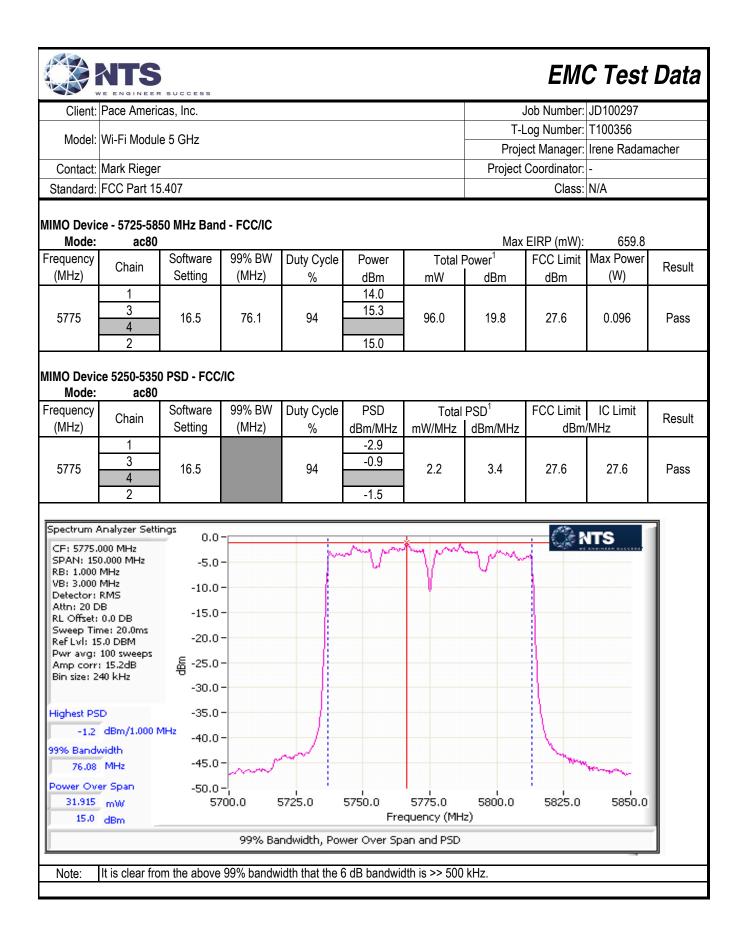
	ATS							EM	C Test	Data
Client:	Pace Americ	success						Job Number:		Bata
Madal	Wi-Fi Module						T-L	og Number:	T100356	
wodel.		e 5 GHZ					Proje	ect Manager:	Irene Radam	acher
	Mark Rieger						Project	Coordinator:		
Standard:	FCC Part 15	.407						Class:	N/A	
MIMO Devi	ce - 5725-58	50 MHz Ban	d - FCC/IC							
Mode:	11a			<mark>vith diversity (</mark>				EIRP (mW):	-	
Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power dBm	Total F mW	Power ¹ dBm	Limit dBm	Max Power (W)	Result
5745	1 3 4 2	19.5	17.3	98	19.4	87.1	19.4	30.0		Pass
5785	1 3 4 2	23	17.4	98	22.2	166.0	22.2	30.0	0.166	Pass
	1									
5825	3 4 2	22.5	17.3	98	21.1	128.8	21.1	30.0		Pass
5725-5850 I Mode: Frequency	3 4	Software	<mark>SISO only v</mark> 99% BW	vith diversity (Duty Cycle	<mark>worst chain :</mark> PSD	<mark>selected)</mark> Total	PSD ¹	FCC Limit		Pass
5725-5850 I Mode:	3 4 2 PSD - FCC/IC 11a Chain 1 3 4	;	SISO only v	vith diversity (<mark>′worst chain s</mark> PSD dBm/MHz	selected)		FCC Limit	IC Limit 00kHz 30.0	
5725-5850 I Mode: Frequency (MHz)	3 4 2 PSD - FCC/IO 11a Chain 1 3	Software Setting	<mark>SISO only v</mark> 99% BW	vith diversity (Duty Cycle %	<mark>worst chain :</mark> PSD	<mark>selected)</mark> Total mW/MHz	PSD ¹ dBm/MHz	FCC Limit dBm/5	00kHz	Result



		SUCCESS						EMO	C Test	Data
Client:	Pace Americ	cas, Inc.						Job Number:	JD100297	
Model [.]	Wi-Fi Modul	e 5 GHz						_og Number:		
							-	ect Manager:	Irene Radan	nacher
	Mark Rieger						Project	Coordinator:	-	
Standard:	FCC Part 15	5.407						Class:	N/A	
Mode:	PSD - FCC/IC n20									
requency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total mW/MHz	PSD ¹ dBm/MHz	FCC Limit dBm	IC Limit /MHz	Result
5745	1 3 4 2	19.5		99	7.3 7.7 8.1	17.7	12.5	27.6	27.6	Pass
5785	1 3 4 2	23		99	10.7 11.0 11.2	37.5	15.7	27.6	27.6	Pass
5825	1 3 4 2	20		99	7.4 8.0 8.3	18.6	12.7	27.6	27.6	Pass
CF: 5785. SPAN: 40 RB: 1.000 VB: 3.000 Detector: Attn: 20 E RL Offset: Sweep Tin Ref Lvl: 2 Pwr avg: Amp corr Bin size: 2 Highest PS 11.2 99% Band 17.39 Power Ov 170.587	.000 MHz MHz MHz RMS DB 0.0 DB me: 20.0ms 1.0 DBM 100 sweeps : 15.2dB 0.0 kHz 0.0 kHz	15.0 10.0 5.0 0.0 <u>∰</u> -5.0 -10.0 4Hz -15.0 -20.0	-	0.0 5775.0		5785.0 5		95.0 5800	ITS .0 5805.0	
			99% Ba	ndwidth, Pov						

Client:	Pace Americ	cas, Inc.						Job Number:	JD100297	
Model:	Wi-Fi Modul	o 5 CH7					T-L	og Number:	T100356	
wouer.		e 5 GHZ		-	Project Manager: Irene Radamacher					
Contact:	Mark Rieger									
Standard:	FCC Part 15	5.407						Class:	N/A	
IIMO Devi	ce - 5725-58	50 MHz Ban	d - FCC/IC							
Mode:	n40						Max	EIRP (mW):		
requency	Chain	Software	99% BW	Duty Cycle	Power	Total F	Power ¹	FCC Limit	Max Power	Resul
(MHz)	Onain	Setting	(MHz)	%	dBm	mW	dBm	dBm	(W)	T COU
	1				13.8					
5755	3	15.5	36.6	98	14.9	85.8	19.3	27.6		Pass
	4				44.0					
	2				14.9				0.173	
	1				17.0 17.9					
	3	19.5	36.9	98	17.9	173.4	22.4	27.6		Pass
5795		10.0	00.0							
IMO Devie Mode:	4 2 ce 5250-5350 n40) PSD - FCC	/IC		17.9	Tatal		ECC Limit		
IMO Devia Mode: requency	4 2 ce 5250-5350) PSD - FCC Software	/ IC 99% BW	Duty Cycle	PSD		PSD ¹	FCC Limit		Resu
IMO Devi	4 2 ce 5250-5350 n40 Chain) PSD - FCC	/IC		PSD dBm/MHz	Total mW/MHz	PSD ¹ dBm/MHz		IC Limit /MHz	Resu
IMO Devie Mode: requency (MHz)	4 2 ce 5250-5350 n40 Chain 1) PSD - FCC Software Setting	/ IC 99% BW	Duty Cycle %	PSD dBm/MHz 0.0	mW/MHz	dBm/MHz	dBm	/MHz	
IMO Devia Mode: requency	4 2 ce 5250-5350 n40 Chain) PSD - FCC Software	/ IC 99% BW	Duty Cycle	PSD dBm/MHz		_			
IMO Devie Mode: requency (MHz)	4 2 ce 5250-5350 n40 Chain 1 3) PSD - FCC Software Setting	/ IC 99% BW	Duty Cycle %	PSD dBm/MHz 0.0	mW/MHz	dBm/MHz	dBm	/MHz	
IMO Devie Mode: requency (MHz)	4 2 ce 5250-5350 n40 Chain 1 3 4) PSD - FCC Software Setting	/ IC 99% BW	Duty Cycle %	PSD dBm/MHz 0.0 1.0 1.0 3.3	mW/MHz	dBm/MHz	dBm	/MHz	
IMO Devie Mode: requency (MHz) 5755	4 2 ce 5250-5350 n40 Chain 1 3 4 2 1 3	D PSD - FCC Software Setting 15.5	/ IC 99% BW	Duty Cycle % 98	PSD dBm/MHz 0.0 1.0 1.0	mW/MHz 3.5	dBm/MHz 5.4	dBm 27.6	/MHz 27.6	Pass
IMO Devie Mode: requency (MHz)	4 2 ce 5250-5350 n40 Chain 1 3 4 2 1) PSD - FCC Software Setting	/ IC 99% BW	Duty Cycle %	PSD dBm/MHz 0.0 1.0 1.0 3.3	mW/MHz	dBm/MHz	dBm	/MHz	Resu Pass





EMC Test Data

Client:	Pace Americas, Inc.	Job Number:	JD100297
Madal	Wi-Fi Module 5 GHz	T-Log Number:	T100356
woder.		Project Manager:	Irene Radamacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC Part 15.407	Class:	N/A

RSS-247 and FCC 15.407 (UNII) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

General Test Configuration

S

SUCCESS

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. For radiated emissions testing the measurement antenna was located 3 meters from the EUT, unless otherwise noted.

Ambient Conditions:	Temperature:	22-25 °C
	Rel. Humidity:	30-35 %

Summary of Results

Summary	o nesul	13							
Run #	Mode	Channel	Target Power	Passing Power	Test Performed	Limit	Result / Margin		
20MHz Ban	dwith Modes	1							
	а	36 - 5180MHz	23.0	21.5	Restricted Band Edge at 5150 MHz	15.209	53.1 dBµV/m @ 5150.0 MHz (-0.9 dB)		
	а	48 - 5240MHz	23.0	19.0	Restricted Band Edge at 5350 MHz	15.209	53.5 dBµV/m @ 5360.8 MHz (-0.5 dB)		
1	а	44 - 5220MHz	23.0	18.0	Restricted Band Edge at 5350 MHz	15.209	53.9 dBµV/m @ 5380.9 MHz (-0.1 dB)		
	а	40 - 5200MHz	23.0	18.5	Restricted Band Edge at 5350 MHz	15.209	53.5 dBµV/m @ 5360.9 MHz (-0.5 dB)		
	а	36 - 5180MHz	23.0	21.5	Restricted Band Edge at 5350 MHz	15.209	53.1 dBµV/m @ 5422.2 MHz (-0.9 dB)		
	а	149 -	23.0	19.5	Band Edge 5725MHz	15E	77.7 dBµV/m @ 5725.0 MHz (-0.6 dB)		
2	a	5745MHz	23.0	19.0	Band Edge 5715MHz	15L	66.1 dBµV/m @ 5714.0 MHz (-2.2 dB)		
2	2	a 153 - 5765MHz	153 -	153 -	23.0	23.0	Band Edge 5725MHz	15E	69.9 dBµV/m @ 5717.4 MHz (-8.4 dB)
	a		23.0	23.0	Band Edge 5715MHz	IJE	68.1 dBµV/m @ 5686.4 MHz (-0.2 dB)		

Continued on the Next Page -->

Client:	Pace Ameri	cas, Inc.				Job Number:	JD100297
						T-Log Number:	T100356
Model:	Wi-Fi Modu	le 5 GHz			_	Project Manager:	Irene Radamacher
Contact:	Mark Riege	r				Project Coordinator:	-
	FCC Part 1					Class:	
Continu	ed from the	Last Page					
ummary	of Resul	ts (continu	,		<u>г</u>		T
Run #	Mode	Channel	Target Power	Passing Power	Test Performed	Limit	Result / Margin
)MHz Ban	dwith Modes	(continued)		1	Г Г		
3	а	165 -	23.0	22.5	Band Edge 5850MHz	15E	76.8 dBµV/m @ 5853 MHz (-1.5 dB)
Ū	u	5825MHz	20.0	22.0	Band Edge 5860MHz		52.3 dBµV/m @ 5863 MHz (-1.7 dB)
	n20	36 - 5180MHz	23.0	21.5	Restricted Band Edge at 5150 MHz	15.209	52.5 dBµV/m @ 5150 MHz (-1.5 dB)
4	n20	48 - 5240MHz	23.0	23.0	Restricted Band Edge at 5350 MHz	15.209	53.3 dBµV/m @ 5355 MHz (-0.7 dB)
		149 -			Band Edge 5725MHz		75.2 dBµV/m @ 5724 MHz (-3.1 dB)
	n20	5745MHz	23.0	19.5	Band Edge 5715MHz	15E	61.7 dBµV/m @ 5711 MHz (-6.6 dB)
5		153 -			Band Edge 5725MHz		62.2 dBµV/m @ 5723
	n20	5765MHz	23.0	23.0	Band Edge 5715MHz	15E	MHz (-16.1 dB) 64.1 dBµV/m @ 5686 MHz (-4.2 dB)
		165 -			Band Edge 5850MHz		75.8 dBµV/m @ 5850 MHz (-2.5 dB)
6	n20	5825MHz	23.0	20.0	Band Edge 5860MHz	15E	66.9 dBµV/m @ 5860 MHz (-1.4 dB)
0MHz Ban	dwith Modes						Will (-1.4 dD)
	n40	38 - 5190MHz	23	17	Restricted Band Edge at 5150 MHz	15.209	53.7 dBµV/m @ 5149 MHz (-0.3 dB)
7	n40	46 - 5230MHz	23	23	Restricted Band Edge at 5350 MHz	15.209	50.9 dBµV/m @ 5353 MHz (-3.1 dB)
		151 -			Band Edge 5725MHz		73.2 dBµV/m @ 5724 MHz (-5.1 dB)
8	n40	5755MHz	23.0	16.5	Band Edge 5715MHz	15E	66.6 dBµV/m @ 5714
		159 -			Band Edge 5850MHz		MHz (-1.7 dB) 63.4 dBµV/m @ 5850 MHz (-14.9 dB)
9	n40	5795MHz	23.0	19.5	Band Edge 5860MHz	15E	66.8 dBµV/m @ 5853 MHz (-11.5 dB)

Cilent.	Pace Ameri	cas, Inc.				Job Number:		
Model:	Wi-Fi Modu	le 5 GHz				T-Log Number:		
	Project Manager: Irene Radamacher							
	Mark Riege					Project Coordinator:	-	
Standard:	d: FCC Part 15.407 Class: N/A							
- Continu	ed from the	Last Page						
MHz Ban	dwith Modes							
		42 -			Restricted Band Edge	45.000	53.7 dBµV/m @ 5142	
10	ac80	5210MHz	23	16	at 5150 MHz	15.209	MHz (-0.3 dB)	
10	ac80	42 -	23	16	Restricted Band Edge	15.209	48.8 dBµV/m @ 5353	
	acou	5210MHz	25	10	at 5350 MHz	15.205	MHz (-5.2 dB)	
					Band Edge 5725MHz		68.5 dBµV/m @ 5722	
11	ac80	155 -	23	16.5		15E	MHz (-9.8 dB)	
		5775MHz			Band Edge 5715MHz		66.4 dBµV/m @ 5713 MHz (-1.9 dB)	
							60.3 dBµV/m @ 5850	
		155 -	155 -		10.5	Band Edge 5850MHz		MHz (-18.0 dB)
12	ac80	5775MHz	23	16.5	Dand Edge 5900MUs	15E	59.5 dBµV/m @ 5860	
					Band Edge 5860MHz		MHz (-8.8 dB)	

	ATS	EMC Test Data			
Client:	Pace Americas, Inc.	Job Number:	JD100297		
Madal	Wi-Fi Module 5 GHz	T-Log Number:	T100356		
woder.		Project Manager:	Irene Radamacher		
Contact:	Mark Rieger	Project Coordinator:	-		
Standard:	FCC Part 15.407	Class:	N/A		

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033

Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time Unless otherwise stated/noted, emission has duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold 50 traces. (method VB of KDB 789033)

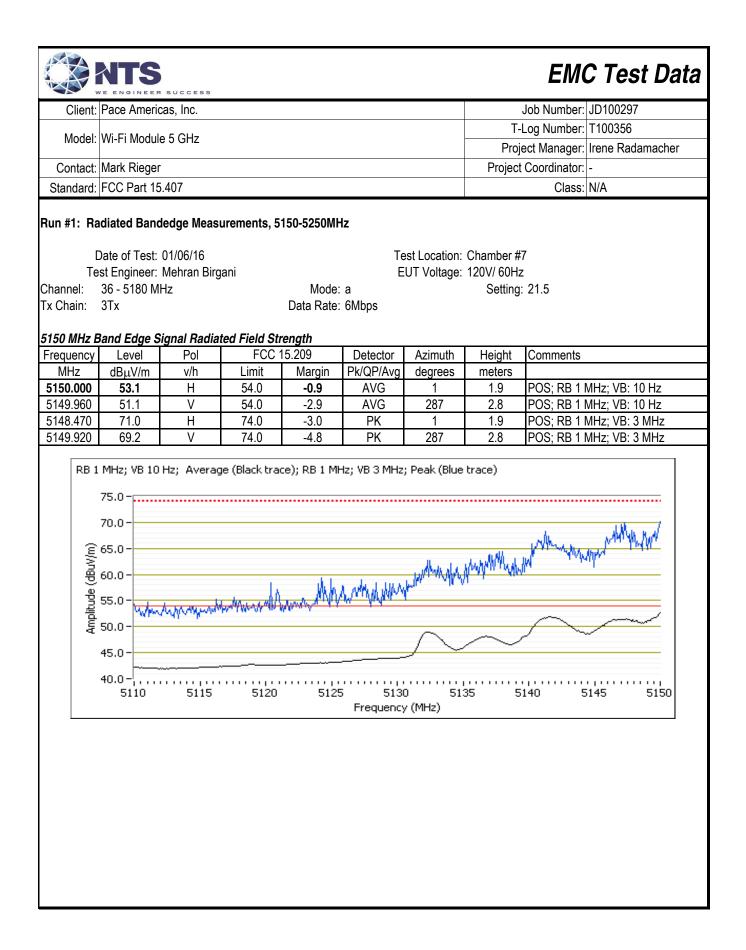
Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)	
11a	6 Mbps	98.0%	Yes	1.302	0	0	10	
n20	VHT8	99.1%	Yes	1.935	0	0	10	
n40	VHT9	98.1%	Yes	0.952	0	0	10	
ac80	VHT9	93.7%	Yes	0.448	0.3	0.6	2232	3k

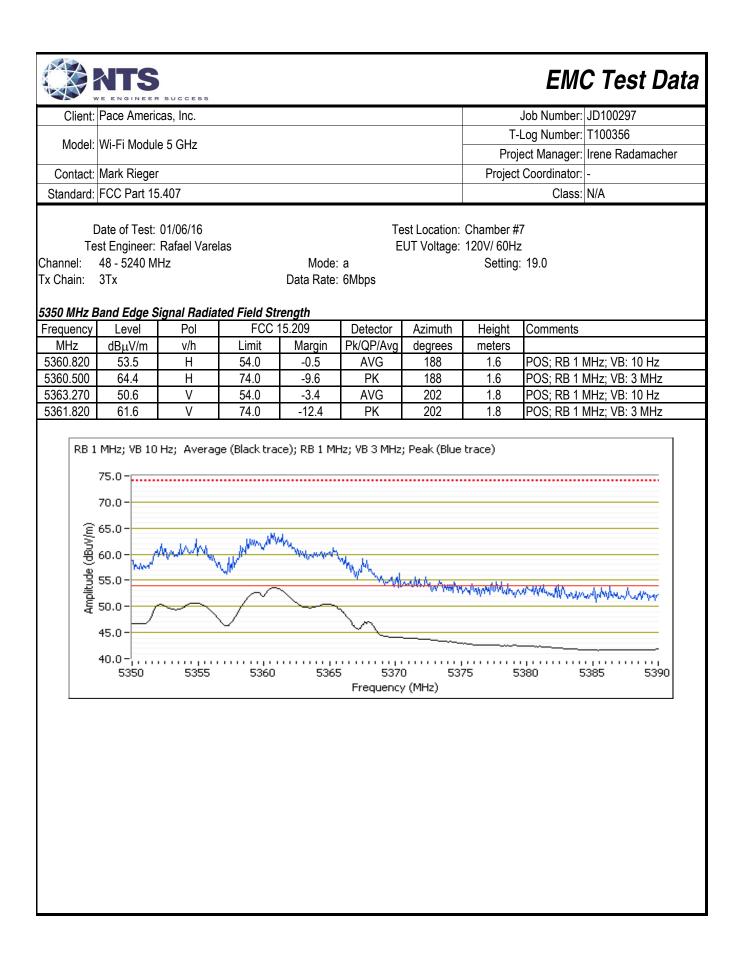
Sample Notes

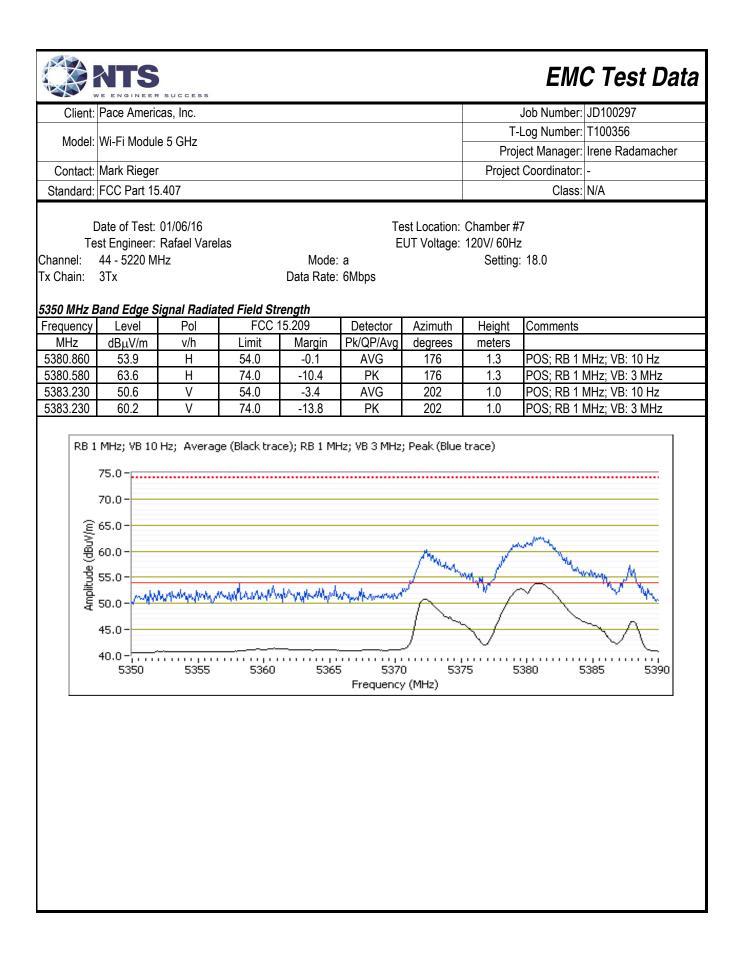
Sample S/N: F56154520246 Driver: 7.14.89.21.571.206 Antenna: 3x3 Non-Beamforming

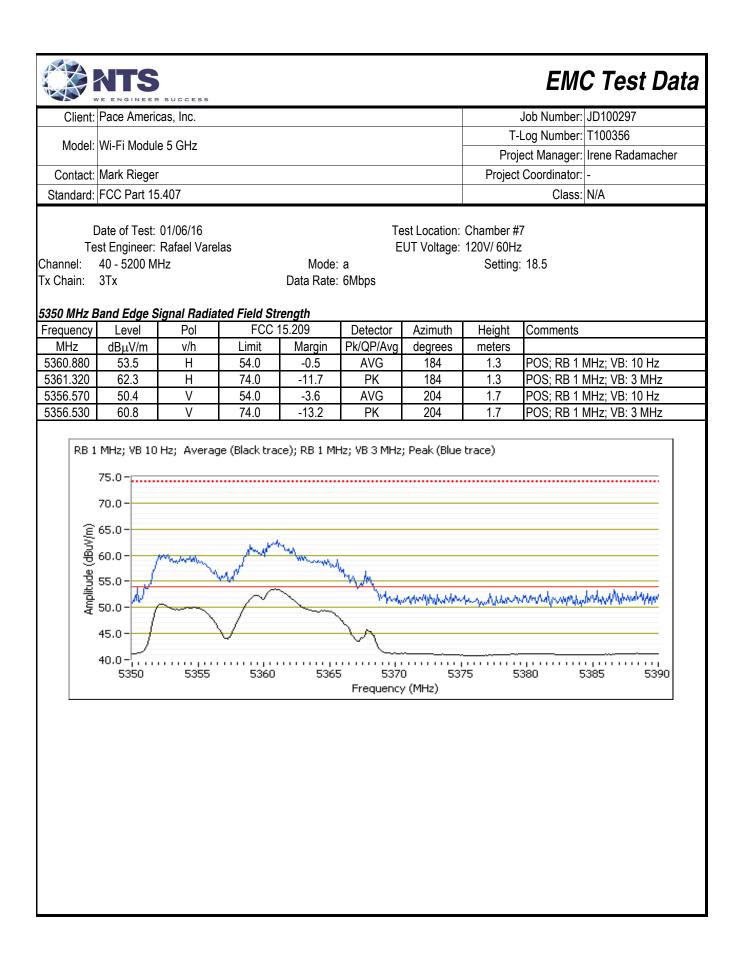
Measurement Specific Notes:

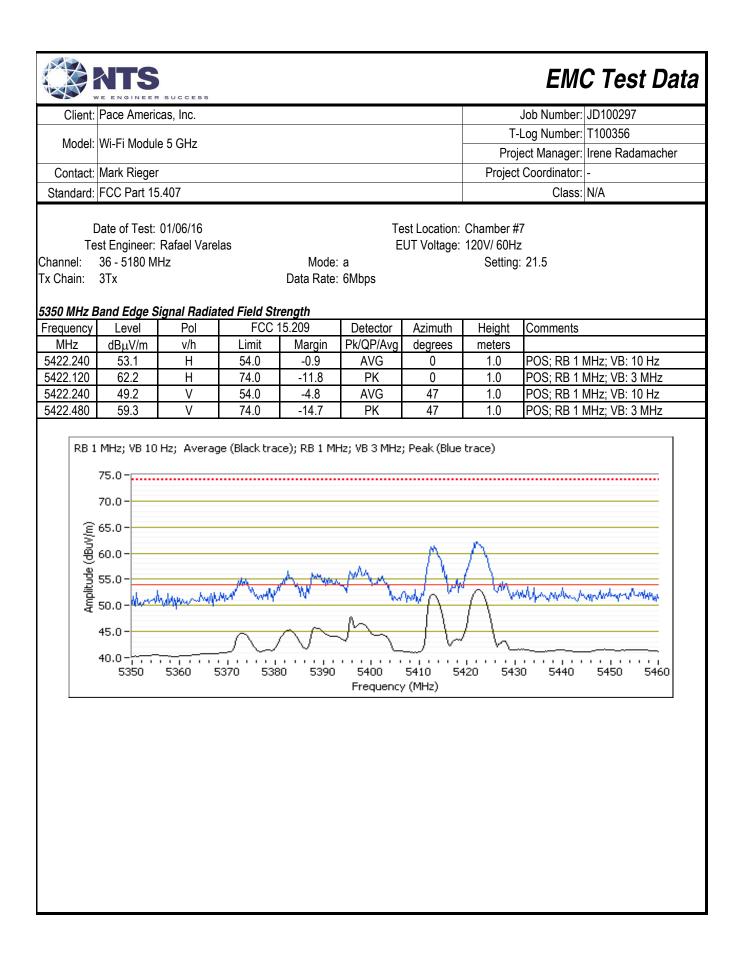
	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method
Note 1:	required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be
	demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 2:	Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto
NOLE Z.	sweep, trace average 100 traces (method AD of KDB 789033)
Note 3:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz,
Note 5.	peak detector, linear averaging, auto sweep,max hold 50*1/DC traces (method VB of KDB 789033)
Note 4:	Emission has a duty cycle < 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto
Note 4.	sweep, trace average 100*1/DC traces, measurement corrected by Pwr correction factor (method AD of KDB 789033)
Noto E	Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final
Note 5:	measurements.

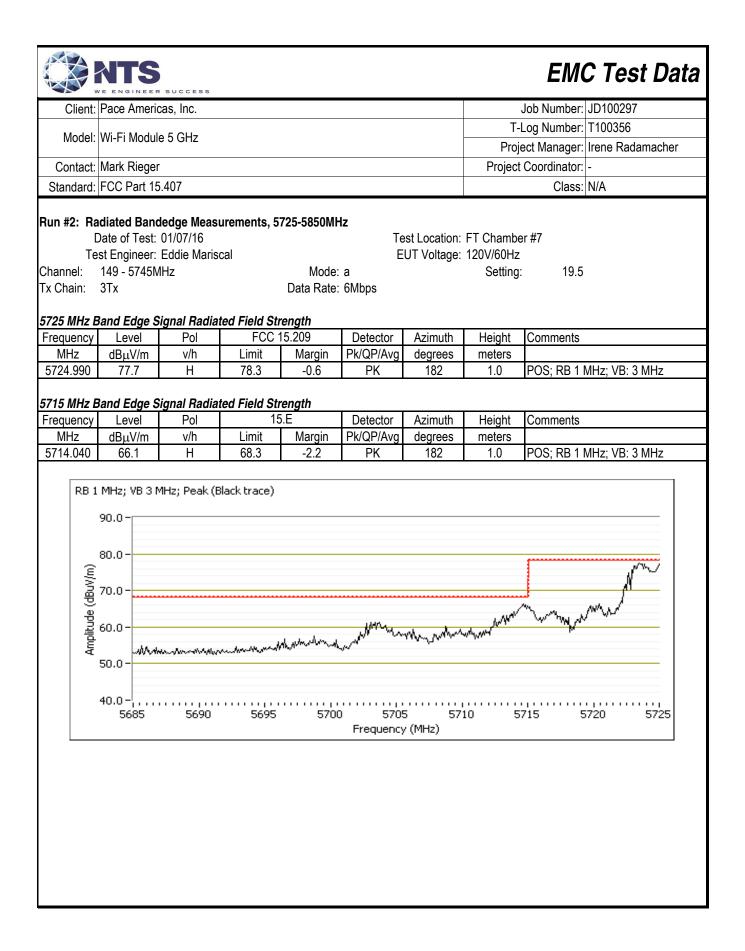






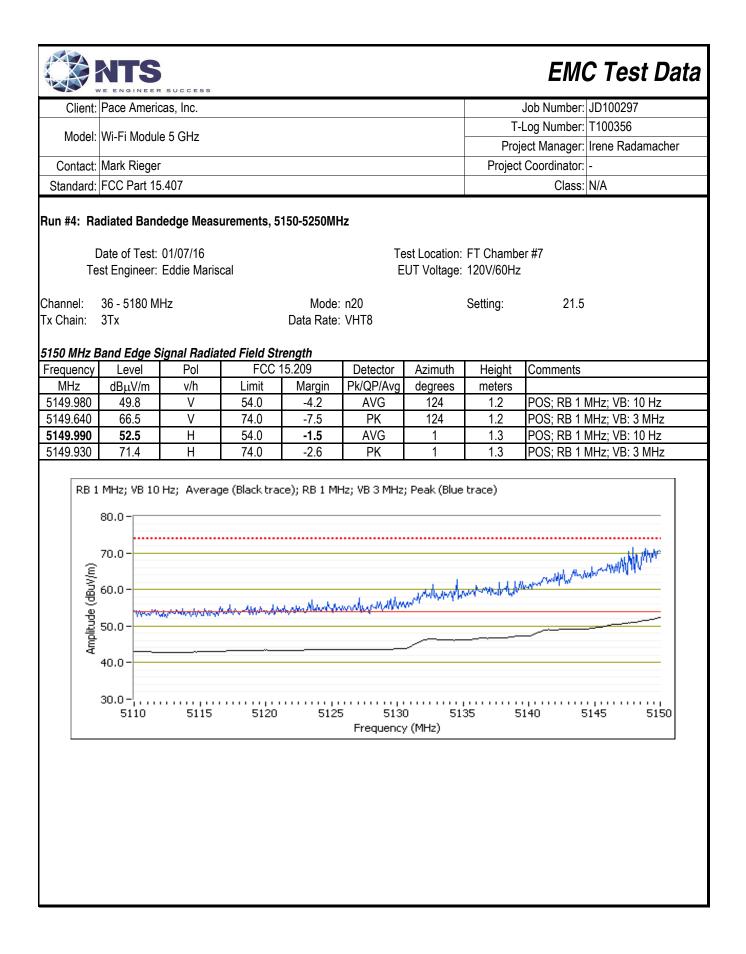


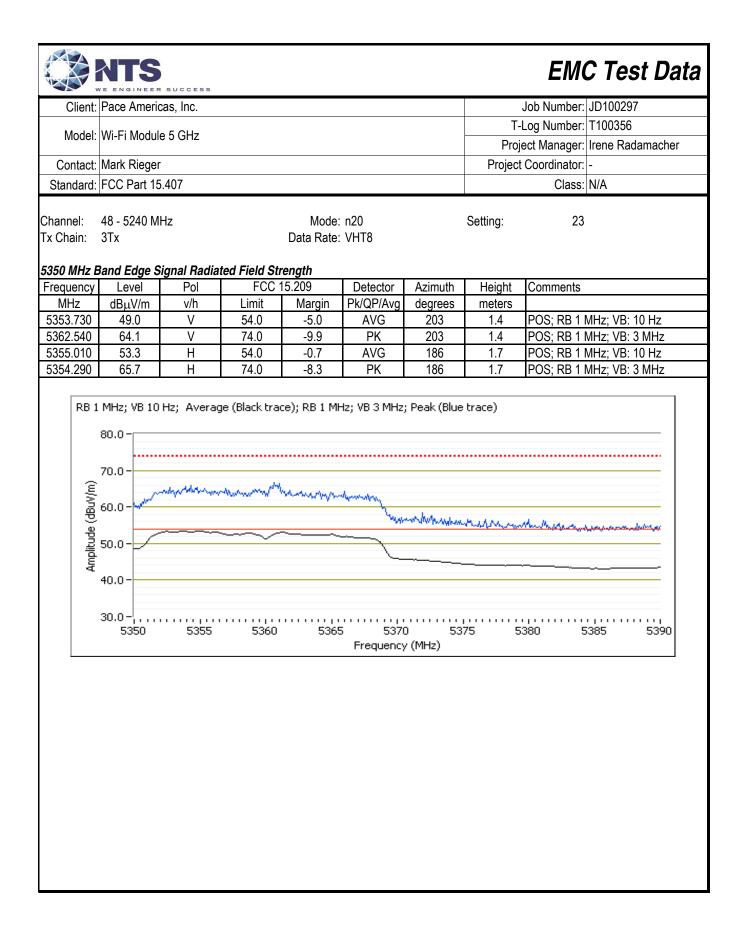




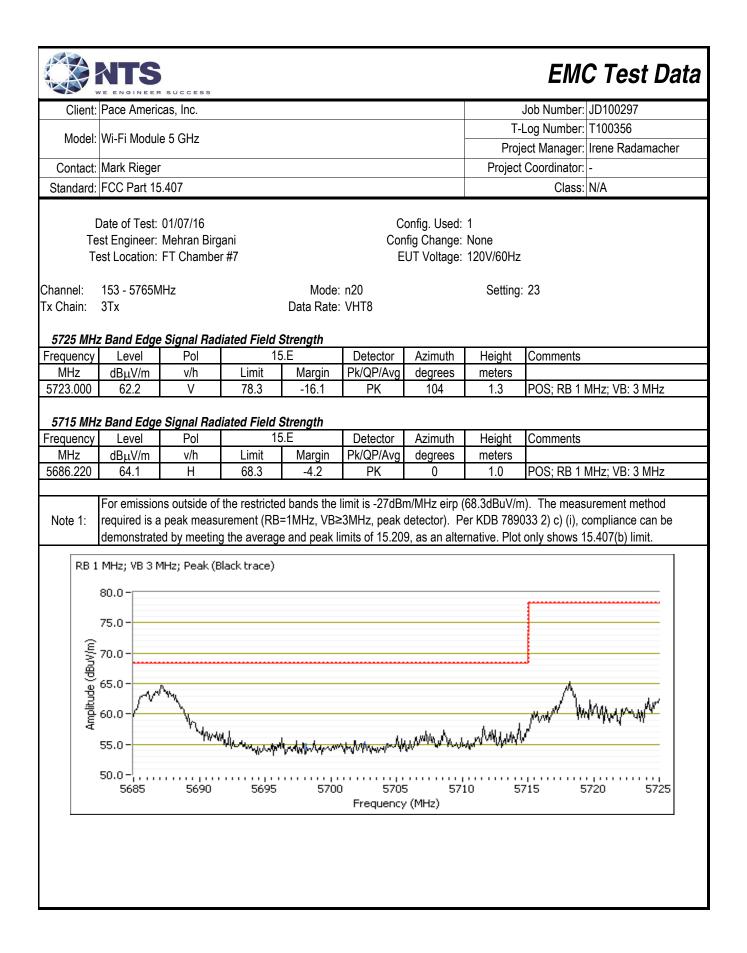
Client:	ient: Pace Americas, Inc.							Job Number: JD100297			
Model:	del: Wi-Fi Module 5 GHz							T-Log Number: T100356			
							Project Manager: Irene Radamacher				
	Contact: Mark Rieger							Project Coordinator: -			
Standard: FCC Part 15.407							Class: N/A				
[Te Channel:	Date of Test	Eddie Maris		725-5850MH Mode: Data Rate:	Te E a	est Location: UT Voltage:					
		Signal Radia			-						
Frequency	Level	Pol		15.209	Detector	Azimuth	Height	Comments			
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	2	meters				
5720.750	66.9	V	78.3	-11.4	PK	76	1.0	POS; RB 1 MHz; VB: 3 MHz			
5717.400	69.9	Н	78.3	-8.4	PK	356	1.1	POS; RB 1 MHz; VB: 3 MHz			
715 MH 2 F	and Edge	Signal Radia	ted Field St	renath							
-requency	Level	Pol		ö.E	Detector	Azimuth	Height	Comments			
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters				
5685.960	62.6	V	68.3	-5.7	PK	76	1.0	POS; RB 1 MHz; VB: 3 MHz			
5686.360	68.1	Н	68.3	-0.2	PK	356	1.1	POS; RB 1 MHz; VB: 3 MHz			
Amplitude (dBuV/m)	90.0 - 80.0 - 70.0 - 60.0 - 50.0 -										
	40.0- <mark> </mark> ,,,, 5685	5690	5695	570() 5705 Frequency	5 571	10 5	715 5720 5725			

Date of Test: 01/07/16 Test Location: FT Chamber #7 Test Engineer: Eddie Mariscal EUT Voltage: 120V/60Hz Channel: 165 - 5825MHz Mode: a Setting: 22.5 Tx Chain: 3Tx Data Rate: 6Mbps Data Rate: 6Mbps 5850 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5851.580 76.2 V 78.3 -2.1 PK 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5860 MHz Band Edge Signal Radiated Field Strength 5853.050 76.8 H 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860 MHz Band Edge Signal Radiated Field Strength 5860 MHz Band Edge Signal Radiated Field Strength 5860 MHz Band Edge Signal Radiated Field Strength		Pace America	as, Inc.				Job Number:	ID100297			
Model: Wi-Fi Module 5 GHz Project Manager. Irene Radamacher Contact: Mark Rieger Project Manager. Irene Radamacher Standard: FCC Part 15.407 Class: IN/A Run #3: Radiated Bandedge Measurements, 5725-5850MHz Date of Test: 01/07/16 Test Location: FT Chamber #7 Test Engineer: Eddie Mariscal EUT Voltage: 120//60Hz Channel: 165 - 5825MHz Mode: a Setting: 22.5 x Chain: 31x Data Rate: 6Mbps Biblo MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBj_uV/m v/h Limit Margin PK/QP/Avg degrees meters 5851.580 76.2 V 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz Stafi 200 53.1 V 54.0 -9.9 AVG 342 1.0 POS; RB 1 MHz; VB: 10 Hz Stafi 200 52.3 H 54.0 -1.7 AVG 191 1.2 POS; RB 1 MHz; VB: 10 Hz Stal											
Contact: Mark Rieger Project Coordinator. Standard: FCC Part 15.407 Class: N/A Aun #3: Radiated Bandedge Measurements, 5725-5850MHz EUT Voltage: 120V/60Hz Test Location: FT Chamber #7 Test Engineer: Edite Mariscal EUT Voltage: 120V/60Hz Setting: 22.5 x Chain: 3Tx Data Rate: Mode: a Setting: 22.5 sk850 MHz dbju/m Vinit Limit Mark Rieger 22.5 sk850 MHz Baluy/m Vinit Limit Mark Rieger 22.5 sk850 76.2 V 78.3 -2.1 PK 342 1.0 POS; RB 1 MHz; VB: 3 MHz Sta50.500 76.8 H 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz Sta60 MHz Bdju/m Vinit Margin Pk/QP/Avg degrees meters Sta63 Sta70 53.1 V 54.0 -0.9 AVG 342 1.0 P	Model:	Wi-Fi Module 5 GHz							•		
Standard: FCC Part 15.407 Class: N/A Run #3: Radiated Bandedge Measurements, 5725-5850MHz Date of Test: 01/07/16 Test Location: FT Chamber #7 Test Engineer: Eddie Mariscal EUT Voltage: 120V/60Hz Channel: 165 - 5825MHz Mode: a Setting: 22.5 X Chain: 3Tx Data Rate: 6Mbps BBSO MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dby//m Vinit Mark Mark dby//m Vinit NHz BAS 1.0 POS; RB 1 MHz; VB: 3 MHz S853.05 76.8 H 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz S860.04 72.5 V 74.0 -0.9 AVG 342 1.0 POS; RB 1 MHz; VB: 10 Hz S863.790 52.3 H 54.0 -0.9 AVG 342 1.0 POS; RB 1 MHz; VB: 3 MHz S863.790 52.3 <t< td=""><td>Contact[.]</td><td colspan="7">Mark Rieger</td><td colspan="3"></td></t<>	Contact [.]	Mark Rieger									
Run #3: Radiated Bandedge Measurements, 5725-5850MHz Date of Test: 01/07/16 Test Engineer: EUT Voltage: 120V/60Hz Channel: 165-5825MHz Mode: a Setting: 22.5 Ix Chain: 3Tx Data Rate: 6Mbps 5850 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBuV/m v/h Limit Margin PK/QP/Avg degrees meters 5851.050 76.2 V 78.3 -2.1 PK 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5853.050 76.8 H 78.3 -2.1 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5863.050 76.8 H 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 10 Hz 5863.050 72.5 V 74.0 -1.5 PK 342 1.0 POS; RB 1 MHz; VB: 10 Hz 5863.730 52.3 H 54.0 -1.7 AVG 191 1.2 POS;		-	/07								
Date of Test: 01/07/16 Test Engineer: Eddie Mariscal Test Location: FT Chamber #7. EUT Voltage: 120V/60Hz Channel: 165 - 5825MHz Mode: a Setting: 22.5 x Chain: 3T x Data Rate: 6Mbps BOB MHZ Band Edge Signal Radiated Field Strength Frequency Evel Pol 15.E Detector Azimuth Height Comments MHz dBjuV/m v/h Limit Margin Pk/QP/Avg degrees meters Setting: 23.1 5851.580 76.2 V 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5861.380 76.8 H 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5861.380 72.5 V 74.0 -1.5 PK 342 1.0 POS; RB 1 MHz; VB: 10 Hz 5861.380 72.5 V 74.0 -1.7 AVG 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860.									01033.	W/A	
Test Engineer: Eddie Mariscal EUT Voltage: 120V/60Hz Channel: 165 - 5825MHz Mode: a Setting: 22.5 Sk50 MHz Band Edge Signal Radiated Field Strength Erequency Level Pol 15.E Detector Azimuth Height Comments MHz dBj.V/m v/h Limit Margin Pk/QP/Avg degrees meters 5850 5850 76.2 V 78.3 -2.1 PK 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5850 MHz Ball Zege Signal Radiated Field Strength Erequency Level Pol 15.E Detector Azimuth Height Comments MHz dBj.V/m v/h Limit Margin Pk/QP/Avg degrees meters 5860.1320 53.1 V 54.0 -0.9 AVG 342 1.0 POS; RB 1 MHz; VB: 10 Hz 5861.320 53.1 V 54.0 -1.7 AVG 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5860.1300 72.5 V 74.0 -1.7 PK G 342 1.0 POS; RB 1 MHz; VB: 3 M			-	irements, 5	/25-5850MF						
Channel: 165 - 5825MHz Data Rate: 6Mbps 2x Chain: 3Tx Data Rate: 6Mbps 2850 MHz Badiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµtV/m v/h Limit Margin Pk/QP/Avg degrees meters 5851.580 76.2 V 78.3 2.1 PK 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5851.580 76.8 H 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 586:300 72.5 V 74.0 -1.5 PK 342 1.0 POS; RB 1 MHz; VB: 10 Hz 586:300 72.5 V 74.0 -1.7 AVG 191 1.2 POS; RB 1 MHz; VB: 3 MHz 586:0180 72.1 H <td></td>											
Tx Chain: 3Tx Data Rate: 6Mbps 26850 MHz Band Edge Signal Radiated Field Strength Energuency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin PK/QP/Avg degrees meters 5861.580 76.2 V 78.3 -2.1 PK 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5865.050 76.8 H 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5866.050 76.8 H 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5866.060 72.5 V 74.0 -1.5 PK 342 1.0 POS; RB 1 MHz; VB: 10 Hz 5860.180 72.1 H 74.0 -1.9 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK 191		-		cal	M		-				
3850 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments 5851.580 76.2 V 78.3 -2.1 PK 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5851.580 76.2 V 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5861.320 53.1 V 54.0 -0.9 AVG 342 1.0 POS; RB 1 MHz; VB: 10 Hz 5861.320 72.5 V 74.0 -1.5 PK 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK <t< td=""><td></td><td></td><td>ΠZ</td><td></td><td></td><td></td><td></td><td>Setting:</td><td>22.5</td><td></td></t<>			ΠZ					Setting:	22.5		
Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5851.580 76.2 V 78.3 -2.1 PK 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5850.050 76.8 H 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5861.320 53.1 V 54.0 -0.9 AVG 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5863.790 52.3 H 54.0 -1.7 AVG 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK 191 1.2 <td>x Unain:</td> <td>JIX</td> <td></td> <td></td> <td></td> <td>ownps</td> <td></td> <td></td> <td></td> <td></td>	x Unain:	JIX				ownps					
Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5851.580 76.2 V 78.3 -2.1 PK 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5850.050 76.8 H 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5861.320 53.1 V 54.0 -0.9 AVG 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5863.790 52.3 H 54.0 -1.7 AVG 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK 191 1.2 <td>5850 MHz H</td> <td>Band Edge Si</td> <td>anal Radiat</td> <td>ed Field St</td> <td>renath</td> <td></td> <td></td> <td></td> <td></td> <td></td>	5850 MHz H	Band Edge Si	anal Radiat	ed Field St	renath						
MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5851.580 76.2 V 78.3 -2.1 PK 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5850.050 76.8 H 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5861.320 53.1 V 54.0 -0.9 AVG 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5862.340 72.5 V 74.0 -1.5 PK 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK						Detector	Azimuth	Heiaht	Comments		
5851.580 76.2 V 78.3 -2.1 PK 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5853.050 76.8 H 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin PK/QP/Avg degrees meters 5861.320 53.1 V 54.0 -0.9 AVG 342 1.0 POS; RB 1 MHz; VB: 10 Hz 5863.790 52.3 H 54.0 -1.7 AVG 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz solo:180 70.											
5853.050 76.8 H 78.3 -1.5 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dB _{LI} V/m v/h Limit Margin Pk/QP/Avg degrees meters 5861.320 53.1 V 54.0 -0.9 AVG 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5863.790 52.3 H 54.0 -1.7 AVG 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz S601.180 72.1 H 74.0 -1.9 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=11MHz, VB ≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative. Plot only shows 15.407(b) lim						U. U			POS; RB 1 M	Hz; VB: 3 MHz	
FrequencyLevelPol15.EDetectorAzimuthHeightCommentsMHzdBµV/mv/hLimitMarginPk/QP/Avgdegreesmeters5861.32053.1V54.0-0.9AVG3421.0POS; RB 1 MHz; VB: 10 Hz5862.34072.5V74.0-1.5PK3421.0POS; RB 1 MHz; VB: 3 MHz5863.79052.3H54.0-1.7AVG1911.2POS; RB 1 MHz; VB: 10 Hz5860.18072.1H74.0-1.9PK1911.2POS; RB 1 MHz; VB: 3 MHzFor emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement methodrequired is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative. Plot only shows 15.407(b) limit.RB 1 MHz; VB 10 Hz; Average (Black trace); RB 1 MHz; VB 3 MHz; Peak (Blue trace)90.090.090.090.090.060.090.0<	5853.050	76.8	H	78.3	-1.5	PK	191	1.2	POS; RB 1 M	Hz; VB: 3 MHz	
FrequencyLevelPol15.EDetectorAzimuthHeightCommentsMHzdBµV/mv/hLimitMarginPk/QP/Avgdegreesmeters5861.32053.1V54.0-0.9AVG3421.0POS; RB 1 MHz; VB: 10 Hz5862.34072.5V74.0-1.5PK3421.0POS; RB 1 MHz; VB: 3 MHz5863.79052.3H54.0-1.7AVG1911.2POS; RB 1 MHz; VB: 10 Hz5860.18072.1H74.0-1.9PK1911.2POS; RB 1 MHz; VB: 3 MHzFor emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement methodrequired is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative. Plot only shows 15.407(b) limit.RB 1 MHz; VB 10 Hz; Average (Black trace); RB 1 MHz; VB 3 MHz; Peak (Blue trace)90.0 90.0 90.0 					_						
$\frac{\text{MHz}}{\text{MHz}} \frac{\text{dB}\mu\text{V/m}}{\text{dB}\mu\text{V/m}} \frac{\text{vh}}{\text{vh}} \frac{\text{Limit}}{\text{Limit}} \frac{\text{Margin}}{\text{Margin}} \frac{\text{Pk/QP/Avg}}{\text{Pk/QP/Avg}} \frac{\text{degrees}}{\text{degrees}} \frac{\text{meters}}{\text{meters}} \frac{\text{meters}}{\text{s}}$ $\frac{\text{S861.320}}{\text{53.1}} \frac{\text{S3.1}}{\text{V}} \frac{\text{V}}{54.0} \frac{\text{-0.9}}{\text{-1.5}} \frac{\text{AVG}}{\text{PK}} \frac{342}{1.0} \frac{1.0}{\text{POS}; \text{RB 1 MHz}; \text{VB: 3 MHz}} \frac{\text{S862.340}}{\text{S663.790}} \frac{\text{72.5}}{\text{S2.3}} \frac{\text{V}}{\text{H}} \frac{\text{54.0}}{\text{-1.7}} \frac{\text{-1.5}}{\text{AVG}} \frac{\text{PK}}{342} \frac{1.0}{1.0} \frac{\text{POS}; \text{RB 1 MHz}; \text{VB: 3 MHz}}{1.2} \frac{\text{POS}; \text{RB 1 MHz}; \text{VB: 3 MHz}}{\text{S663.790}} \frac{\text{52.3}}{\text{F2.3}} \frac{\text{H}}{\text{54.0}} \frac{\text{54.0}}{-1.7} \frac{\text{AVG}}{1.9} \frac{191}{1.2} \frac{\text{POS}; \text{RB 1 MHz}; \text{VB: 3 MHz}}{1.2} \frac{\text{POS}; \text{RB 1 MHz}; \text{VB: 3 MHz}}{1.2} \frac{\text{POS}; \text{RB 1 MHz}; \text{VB: 3 MHz}}{\text{VB: 3 MHz}} \frac{\text{S660.180}}{1.2} \frac{\text{POS}; \text{RB 1 MHz}; \text{VB: 3 MHz}}{1.2} \frac{\text{POS}; \text{RB 1 MHz}; \text{VB: 3 MHz}}{1.2} \frac{\text{POS}; \text{RB 1 MHz}; \text{VB: 3 MHz}}{1.2} \frac{\text{POS}; \text{RB 1 MHz}; \text{VB: 3 MHz}}{\text{required is a peak measurement (RB=1MHz, VB\geq3MHz, peak detector)}. Per KDB 789033 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative. Plot only shows 15.407(b) limit.} \frac{\text{RB 1 MHz}; \text{VB 10 Hz}; \text{ Average} (\text{Black trace}); \text{RB 1 MHz}; \text{VB 3 MHz}; \text{Peak} (\text{Blue trace})}{\frac{90.0}{60.0}} \frac{90.0}{\frac{90.0}{60.0}} 9$							A : 11				
5861.320 53.1 V 54.0 -0.9 AVG 342 1.0 POS; RB 1 MHz; VB: 10 Hz 5862.340 72.5 V 74.0 -1.5 PK 342 1.0 POS; RB 1 MHz; VB: 3 MHz 5863.790 52.3 H 54.0 -1.7 AVG 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz 5860.180 72.1 H 74.0 -1.9 PK 191 1.2 POS; RB 1 MHz; VB: 3 MHz For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB=3MHz, Peak detector). Per KDB 7890332) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative. Plot only shows 15.407(b) limit. Note 1: For missions outside of the restricted bands the limit so 15.209, as an alternative. Plot only shows 15.407(b) limit. Output Output											





	Pace Americ	as, Inc.						Job Number:	JD100297
Madal	Wi-Fi Modul						T-	Log Number:	T100356
Model.		B D GHZ					Proj	ect Manager:	Irene Radamacher
Contact:	Mark Rieger						Project	Coordinator:	-
Standard:	FCC Part 15	.407						Class:	N/A
lun #5∙ Ba	adiated Banc	ledge Meas	urements 5	725-5850MF	17				
		-		20 0000111		<i>c</i>			
	Date of Test: est Engineer:					onfig. Used: fig Change:			
	est Location:					UT Voltage:			
					-	e i renagei			
Channel:	149 - 5745N	lHz		Mode:			Setting:	19.5	
x Chain:	3Tx			Data Rate:	VHT8				
5725 MH	z Band Edge	Signal Rad	iated Field	Strenath					
Frequency	Level	Pol		5.E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5724.490	75.2	Н	78.3	-3.1	PK	188	1.0	POS; RB 1 N	MHz; VB: 3 MHz
5715 MH	z Band Edge	Signal Bad	iated Field	Strenath					
Frequency	Level	Pol		5.E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5711.510	61.7	Н	68.3	-6.6	PK	188	1.0	POS; RB 1 N	MHz; VB: 3 MHz
Note 1:	required is a	peak measu d by meeting	rement (RB the averag	=1MHz, VB≥	3MHz, peak	detector). P	er KDB 7890)33 2) c) (i), c	urement method ompliance can be 5.407(b) limit.
Amplitude (dBuV/m)	90.0 - 80.0 - 70.0 - 60.0 -		1 dd. a	mahaan	madeling	mand	un and a start and a start and a start	h Maplemaked	MANNAMAN



EMC TO					
Client:	Pace Americas, Inc.	Job Number:	JD100297		
Madal	Wi-Fi Module 5 GHz	T-Log Number:	T100356		
woder.		Project Manager:	Irene Radamacher		
Contact:	Mark Rieger	Project Coordinator:	-		
Standard:	FCC Part 15.407	Class:	N/A		

Run #6: Radiated Bandedge Measurements, 5725-5850MHz

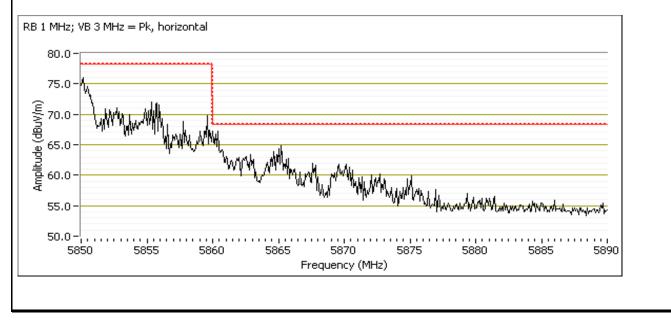
Date of Test: 2/4/2016 and 3/11/16 Test Engineer: Joseph Cadigal & Rafael Valeras Test Location: FT Chamber#4 Config. Used: 1 Config Change: none EUT Voltage: 120V/60Hz

Channel: 165 - 5825MHz Setting: 20 Tx Chain: 3x3 Mode: n20 Data Rate: VHT8

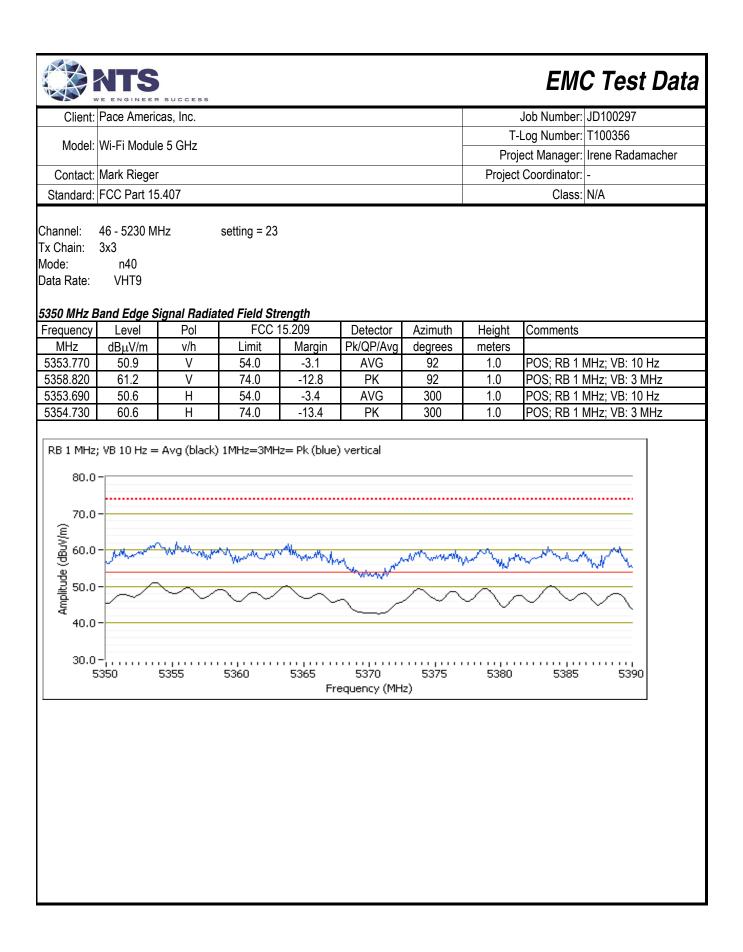
5850 MHz Band Edge Signal Radiated Field Strength

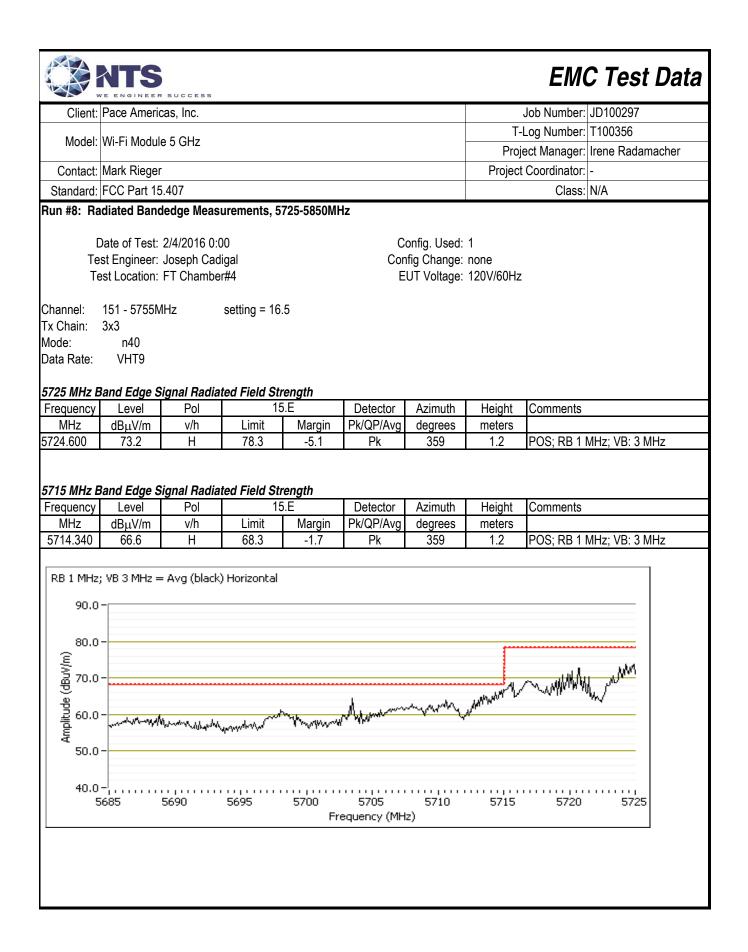
Frequency	Level	Pol	15	i.E	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5850.080	73.6	V	78.3	-4.7	Pk	97	0.9	POS; RB 1 MHz; VB: 3 MHz
5850.240	75.8	Н	78.3	-2.5	Pk	175	1.0	POS; RB 1 MHz; VB: 3 MHz

Frequency	Level	Pol	15	i.E	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5860.000	64.8	V	78.3	-13.5	Pk	97	0.9	POS; RB 1 MHz; VB: 3 MHz
5860.000	66.9	Η	68.3	-1.4	Pk	175	1.0	POS; RB 1 MHz; VB: 3 MHz



Client	Pace Americ	as Inc						Job Number: JD100297
								Log Number: T100356
Model:	Wi-Fi Module	5 GHz						ect Manager: Irene Radamacher
Contact:	Mark Rieger						Project	Coordinator: -
	FCC Part 15.							Class: N/A
un #7: Ra	adiated Band	edge Meas	urements, 5	150-5250MH	łz			
I	Date of Test: 2	2/4/2016 an	d 3/11/16		Co	onfig. Used:	1	
	est Engineer:			Valeras		fig Change:		
T	est Location:	T Chambe	r#4		E	JT Voltage:	120V/60Hz	
hannel:	38 - 5190MH	Z	Setting: 17					
x Chain:	3x3		5					
ode:	n40							
ata Rate:	VHT9							
150 MHz I	Band Edge Si	gnal Radia						
requency	Level	Pol		15.209	Detector	Azimuth	Height	Comments
MHz 5149.920	dBµV/m 53.7	v/h H	Limit 54.0	Margin -0.3	Pk/QP/Avg AVG	degrees 299	meters 1.1	POS; RB 1 MHz; VB: 10 Hz
5139.740	69.4	H	74.0	-4.6	PK	299	1.1	POS; RB 1 MHz; VB: 3 MHz
5146.870	48.7	V	54.0	-5.3	AVG	61	1.0	POS; RB 1 MHz; VB: 10 Hz
5144.870	62.3	V	74.0	-11.7	PK	61	1.0	POS; RB 1 MHz; VB: 3 MHz
80.0	-							mumpound





	EMC Test I					
Client:	Pace Americas, Inc.	Job Number:	JD100297			
Madalı	Wi-Fi Module 5 GHz	T-Log Number:	T100356			
woder.		Project Manager:	Irene Radamacher			
Contact:	Mark Rieger	Project Coordinator:	-			
Standard:	FCC Part 15.407	Class:	N/A			

Run #9: Radiated Bandedge Measurements, 5725-5850MHz

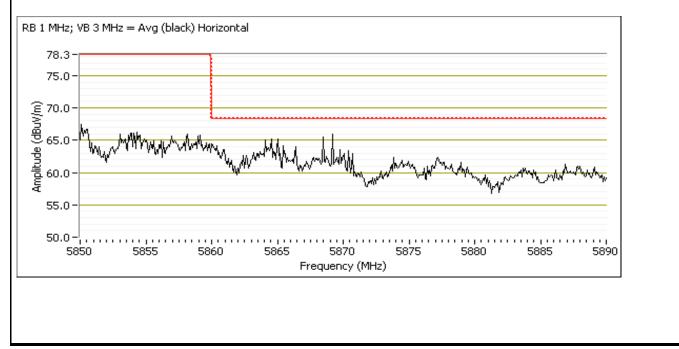
Date of Test: 2/4/2016 and 3/11/16 Test Engineer: Joseph Cadigal & Rafael Valeras Test Location: FT Chamber#4

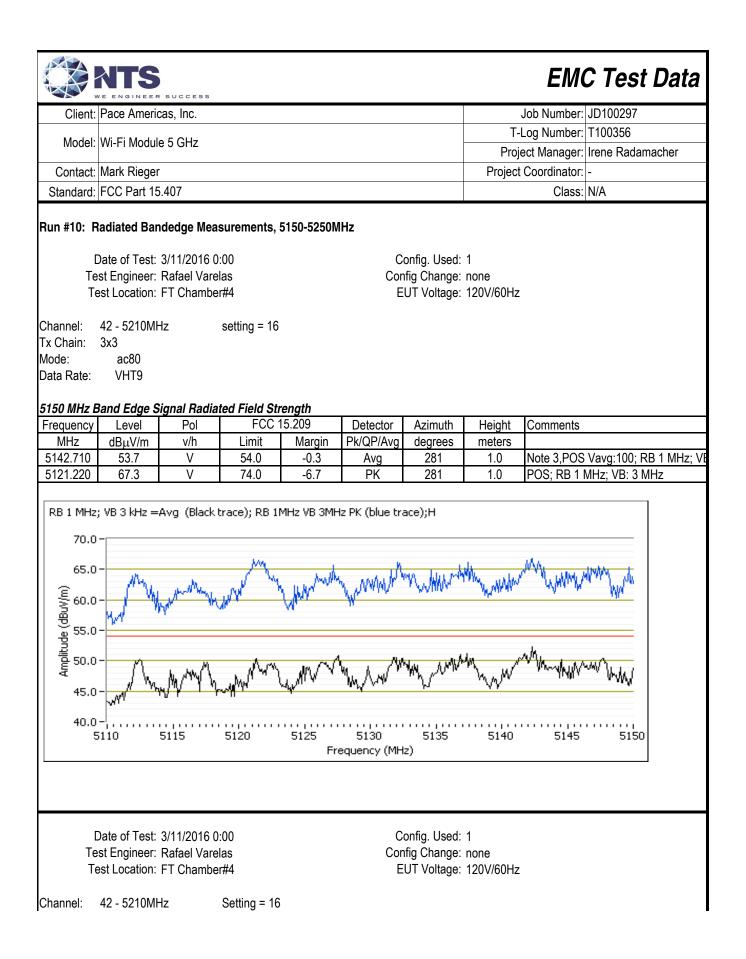
Channel: 159 - 5795MHz setting = 19.5 Tx Chain: 3x3 Mode: n40 Data Rate: VHT9 Config. Used: 1 Config Change: none EUT Voltage: 120V/60Hz

5850 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol		δ.Ε	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5850.480	63.4	Н	78.3	-14.9	Pk	359	1.3	POS; RB 1 MHz; VB: 3 MHz

Frequency Level Pol 15.E Detector Azimuth Height Comments	Frequency								
	ricqueriej	/ Level	Pol			Detector	Azimuth	Height	Comments
MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees meters	MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5853.530 66.8 H 78.3 -11.5 Pk 359 1.3 POS; RB 1 MHz; VB: 3 MHz	5853.530	66.8	Н	78.3	-11.5		359	1.3	POS; RB 1 MHz; VB: 3 MHz





Client: Pace Americas, Inc. Job Number: JD100297 Model: Wi-Fi Module 5 GHz T-Log Number: T100356 Project Manager: Irene Rada Contact: Mark Rieger Project Coordinator: Standard: FCC Part 15.407 Class: N/A Tx Chain: 3x3 Mode: ac80 Data Rate: VHT9 VHT9 S350 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5355.130 59.6 H 74.0 -14.4 PK 187 1.0 Note 3,POS Vavg:100; F 5356.510 57.0 V 54.0 -8.1 Avg 260 1.1 Note 3,POS Vavg:100; F 5366.510 57.0 V 74.0 -17.0 PK 260 1.1 POS; RB 1 MHz; VB 3 I 70.0 - <td< th=""><th>macher</th></td<>	macher
Model: Wr-Fi Module 5 GHz Project Manager: Irene Radat Contact: Mark Rieger Project Coordinator: - Standard: FCC Part 15.407 Class: N/A Tx Chain: 3x3 Mode: ac80 Data Rate: VHT9 VHT9 S550 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5353.770 48.8 H 54.0 -5.2 Avg 1.0 Note 3,POS Vavg:100; F 5355.130 59.6 H 74.0 -14.4 PK 187 1.0 POS; RB 1 MHz; VB:3 1 5366.510 57.0 V 74.0 -17.0 PK 260 1.1 POS; RB 1 MHz; VB:3 1 70.0 - - - 70.0 - 1.0 POS; RB 1 MHz; VB:3 1 70.0 - -	macher
Contact: Mark Rieger Project Manager: Irene Radat Contact: Mark Rieger Project Coordinator: - Standard: FCC Part 15.407 Class: N/A Tx Chain: 3x3 Mode: ac80 Data Rate: VHT9 VHT9 S350 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5355.130 59.6 H 74.0 -14.4 PK 187 1.0 Note 3,POS Vavg:100; F 5355.130 59.6 H 74.0 -14.4 PK 187 1.0 POS; RB 1 MHz; VB:31 5358.980 45.9 V 54.0 -8.1 Avg 260 1.1 Note 3,POS Vavg:100; F 5366.510 57.0 V 74.0 -17.0 PK 260 1.1 POS; RB 1 MHz; VB:31 70.0<	macher
Standard: FCC Part 15.407 Class: N/A Fx Chain: 3x3 3x3 Mode: ac80 Data Rate: VHT9 VHT9 VHT9 S350 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5353.770 48.8 H 54.0 -5.2 Avg 187 1.0 Note 3,POS Vavg:100; F 5355.130 59.6 H 74.0 -14.4 PK 187 1.0 POS; RB 1 MHz; VB 3 I 5358.980 45.9 V 54.0 -8.1 Avg 260 1.1 Note 3,POS Vavg:100; F 5366.510 57.0 V 74.0 -17.0 PK 260 1.1 POS; RB 1 MHz; VB 3 I RB 1 MHz; VB 3 kHz =Avg (Black trace); RB 1MHz VB 3MHz PK (blue trace); H 70.0 - - - - - - - - - - - - </td <td></td>	
Standard: FCC Part 15.407 Class: N/A Tx Chain: 3x3 3x3 Wode: ac80 Data Rate: VHT9 VHT9 VHT9 S5350 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5353.770 48.8 H 54.0 -5.2 Avg 187 1.0 Note 3,POS Vavg:100; F 5355.130 59.6 H 74.0 -14.4 PK 187 1.0 POS; RB 1 MHz; VB 3 I 5358.980 45.9 V 54.0 -8.1 Avg 260 1.1 Note 3,POS Vavg:100; F 5366.510 57.0 V 74.0 -17.0 PK 260 1.1 POS; RB 1 MHz; VB 3 I RB 1 MHz; VB 3 kHz =Avg (Black trace); RB 1MHz VB 3MHz PK (blue trace); H 70.0	
Fix Chain: 3x3 Mode: ac80 Data Rate: VHT9 5350 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5355.130 59.6 H 74.0 -14.4 PK 187 1.0 Note 3,POS Vavg:100; F 5358.980 45.9 V 54.0 -8.1 Avg 260 1.1 Note 3,POS Vavg:100; F 5366.510 57.0 V 74.0 -17.0 PK 260 1.1 Note 3,POS Vavg:100; F 65.0 - - - - - - - - RB 1 MHz; VB 3 kHz =Avg Back trace); RB 1MHz VB 3MHz PK (blue trace); H - - - - 70.0 - - - - - - - - 65.0 - - - - - - -	
Mode: ac80 Data Rate: VHT9 5350 MHz Band Edge Signal Radiated Field Strength Erequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5353.770 48.8 H 54.0 -5.2 Avg 187 1.0 Note 3,POS Vavg:100; F 5355.130 59.6 H 74.0 -14.4 PK 187 1.0 POS; RB 1 MHz; VB:3 I 5358.980 45.9 V 54.0 -8.1 Avg 260 1.1 Note 3,POS Vavg:100; F 5366.510 57.0 V 74.0 -17.0 PK 260 1.1 POS; RB 1 MHz; VB:3 I RB 1 MHz; VB 3 kHz =Avg (Black trace); RB 1MHz VB 3MHz PK (blue trace); H 70.0 - - - - - - - - - - - - - - - - - <t< td=""><td></td></t<>	
Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5353.770 48.8 H 54.0 -5.2 Avg 187 1.0 Note 3,POS Vavg:100; F 5355.130 59.6 H 74.0 -14.4 PK 187 1.0 POS; RB 1 MHz; VB:3 f 5358.980 45.9 V 54.0 -8.1 Avg 260 1.1 Note 3,POS Vavg:100; F 5366.510 57.0 V 74.0 -17.0 PK 260 1.1 POS; RB 1 MHz; VB:3 f 70.0	
MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees meters 5353.770 48.8 H 54.0 -5.2 Avg 187 1.0 Note 3,POS Vavg:100; F 5355.130 59.6 H 74.0 -14.4 PK 187 1.0 POS; RB 1 MHz; VB 3 f 5358.980 45.9 V 54.0 -8.1 Avg 260 1.1 Note 3,POS Vavg:100; F 5366.510 57.0 V 74.0 -17.0 PK 260 1.1 Note 3,POS Vavg:100; F 5366.510 57.0 V 74.0 -17.0 PK 260 1.1 POS; RB 1 MHz; VB 3 f RB 1 MHz; VB 3 kHz =Avg (Black trace); RB 1 MHz VB 3MHz PK (blue trace); H 70.0	
5353.770 48.8 H 54.0 -5.2 Avg 187 1.0 Note 3,POS Vavg:100; F 5355.130 59.6 H 74.0 -14.4 PK 187 1.0 POS; RB 1 MHz; VB: 3 I 5358.980 45.9 V 54.0 -8.1 Avg 260 1.1 Note 3,POS Vavg:100; F 5366.510 57.0 V 74.0 -17.0 PK 260 1.1 Note 3,POS Vavg:100; F 5366.510 57.0 V 74.0 -17.0 PK 260 1.1 POS; RB 1 MHz; VB: 3 I RB 1 MHz; VB 3 kHz =Avg (Black trace); RB 1 MHz VB 3MHz PK (blue trace);H 70.0	
5355.130 59.6 H 74.0 -14.4 PK 187 1.0 POS; RB 1 MHz; VB: 3 1 5358.980 45.9 V 54.0 -8.1 Avg 260 1.1 Note 3,POS Vavg:100; F 5366.510 57.0 V 74.0 -17.0 PK 260 1.1 Note 3,POS Vavg:100; F 5366.510 57.0 V 74.0 -17.0 PK 260 1.1 POS; RB 1 MHz; VB: 3 1 RB 1 MHz; VB 3 kHz =Avg (Black trace); RB 1MHz VB 3MHz PK (blue trace);H 70.0	RB 1 MHz· `
5358.980 45.9 V 54.0 -8.1 Avg 260 1.1 Note 3,POS Vavg:100; F 5366.510 57.0 V 74.0 -17.0 PK 260 1.1 POS; RB 1 MHz; VB: 3 I RB 1 MHz; VB 3 kHz = Avg (Black trace); RB 1 MHz VB 3MHz PK (blue trace);H 70.0 65.0 (8.0	
5366.510 57.0 V 74.0 -17.0 PK 260 1.1 POS; RB 1 MHz; VB: 3 f RB 1 MHz; VB 3 kHz = Avg (Black trace); RB 1 MHz VB 3MHz PK (blue trace); H 70.0 65.0	
70.0- 65.0-	
(u) 55.0)

Clinet.	Dooo Ameri	SUCCESS						Job Number	10100207
Client:	Pace Americ	as, inc.						Job Number:	
Model:	Wi-Fi Modul	e 5 GHz						Log Number:	
Cantast	Mork Diama						-	Coordinator:	Irene Radamacher
	Mark Rieger						Project		
	FCC Part 15	0.407						Class:	N/A
Fx Chain: Mode:	3x3 ac80								
Data Rate:	VHT9								
5725 MHz E	Band Edge S	ignal Radia						•	
Frequency	Level	Pol		5.E	Detector	Azimuth	Height	Comments	
MHz 5722.660	dBµV/m 68.5	v/h H	Limit 78.3	Margin -9.8	Pk/QP/Avg PK	degrees 4	meters 1.2		MHz; VB: 3 MHz
5722.680	64.9	V	78.3	-9.0	PK	4 113	1.2		MHZ; VB: 3 MHZ
	•								<u></u> ,
	Band Edge S						-		
Frequency	Level	Pol		5.E	Detector	Azimuth	Height	Comments	
MHz 5713.020	dBµV/m 66.4	v/h H	Limit 68.3	Margin -1.9	Pk/QP/Avg PK	degrees 4	meters 1.2		MHz; VB: 3 MHz
5707.540	63.0	V N	68.3	-1.9 -5.3	PK PK	4 113	1.2		MHz; VB: 3 MHz
70.0 (@/\ngb app tilldwy 50.0 40.0 30.0		••••••••••••••••••••••••••••••••••••••		5700	5705	5710	5715	۸۸۰۰۰۰۰ 5720	5725
	adiated Bar	ndedge Mea	surements,		equency (MH				

Ullent.	Pace America	SUCCESS						Job Number:	10100207
	Face America	as, inc.						Log Number:	
Model:	Wi-Fi Module	5 GHz						-	Irene Radamacher
Contact	Mark Diagon							Coordinator:	
	Mark Rieger	407					Projeci		
	FCC Part 15.	407						Class:	N/A
x Chain: Iode:	3x3 ac80								
Data Rate:	VHT9								
	VIIIJ								
850 MHz I	Band Edge Sig	gnal Radia	ted Field St	rength					
requency	Level	Pol		5.E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5850.620	60.3	Н	78.3	-18.0	PK	192	1.0	,	MHz; VB: 3 MHz
5851.380	59.5	V	78.3	-18.8	PK	71	1.0	POS; RB 1	MHz; VB: 3 MHz
~~~			=						
	Band Edge Sig			<i>rength</i> 5.E	Detector	A —i.ee. th	Llaight	Commonto	
Frequency MHz	Level dBµV/m	Pol v/h	Limit	.∟ Margin	Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments	
5860.000	59.5	H	68.3	-8.8	PK	192	1.0	POS: RB 1	MHz; VB: 3 MHz
5860.660	58.2	V	68.3	-10.1	PK	71	1.0		MHz; VB: 3 MHz
RB 1 MHz	;; VB 3 MHz =	PK ; Horizo	ontal						
80.0									
	-		_						
70.0									
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	mound				11.	- M		1 <b>4</b> *	
	- What when the second se								
de (dBuV/m) 0.09									
(m/wblitude (dBuv/m) 20.00									
(m/vuge (dBu/v) 50.0 40.0									
(w/\ng 60.0 9 50.0 40.0 30.0	-			5865	5870	5875	5880	5885	5890

## EMC Test Data

	E ENGINEER SUCCESS		
Client:	Pace Americas, Inc.	Job Number:	JD100297
Madal	Wi-Fi Module 5 GHz	T-Log Number:	T100356
wouer.		Project Manager:	Irene Radamacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC Part 15.407	Class:	N/A

### RSS-247 and FCC 15.407 (UNII) Radiated Spurious Emissions

#### Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

#### General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. For radiated emissions testing the measurement antenna was located 3 meters from the EUT, unless otherwise noted.

#### Ambient Conditions:

Temperature:	22-25 °C
Rel. Humidity:	30-35 %

#### Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
20MHz Ban	dwith Modes	i					
n20		36 - 5180MHz	18.5	18.5	Restricted Band Edge at 5150 MHz	15.209	53.6 dBµV/m @ 5149.5 MHz (-0.4 dB)
5	n20	48 - 5240MHz	23.0	23.0	Restricted Band Edge at 5350 MHz	15.209	50.6 dBµV/m @ 5353.9 MHz (-3.4 dB)
n20	n20	149 -	19.5	19.5	Band Edge 5725MHz	15E	78.1 dBµV/m @ 5723.2 MHz (-0.2 dB)
4	1120	5745MHz	19.5	19.5	Band Edge 5715MHz	15E	65.8 dBµV/m @ 5715.0 MHz (-2.5 dB)
4	<b>2</b> 0	20 165 - 5825MHz	20.0	20.0	Band Edge 5850MHz	15E	76.3 dBµV/m @ 5851.1 MHz (-2.0 dB)
	n20				Band Edge 5860MHz	IJE	67.4 dBµV/m @ 5864.7 MHz (-0.9 dB)
40MHz Ban	dwith Modes						
5	n40	38 - 5190MHz	11.5	11.5	Restricted Band Edge at 5150 MHz	15.209	52.7 dBµV/m @ 5148.2 MHz (-1.3 dB)
5	n40	46 - 5230MHz	19.5	19.5	Restricted Band Edge at 5350 MHz	15.209	53.6 dBµV/m @ 5384.7 MHz (-0.4 dB)
	-	-		-			•

Continued on the Next Page -->

		RSUCCESS				EMO	C Test Data	
Client:	Pace Ameri	cas, Inc.				Job Number:	JD100297	
Madalı						T-Log Number: T100356		
wodel:	Wi-Fi Modul	e 5 GHZ				Project Manager:	Irene Radamacher	
Contact:	Mark Rieger	ſ				Project Coordinator:	-	
Standard:	FCC Part 15	5.407				Class:	N/A	
< Continu	ed from the	Last Page						
6			15.5	15.5	Band Edge 5725MHz	15E	73.6 dBµV/m @ 5718.5 MHz (-4.7 dB)	
0 1140	1140	5755MHz	10.0	15.5	Band Edge 5715MHz	IJL	65.6 dBµV/m @ 5713.0 MHz (-2.7 dB)	
7	n40	159 -	20.0	20	Band Edge 5850MHz	15E	73.2 dBµV/m @ 5851.0 MHz (-5.1 dB)	
I	1140	5795MHz	20.0	20	Band Edge 5860MHz	IJE	67.4 dBµV/m @ 5860.7 MHz (-0.9 dB)	
80MHz Ban	dwith Modes							
10	ac80	42 - 5210MHz	11.0	11.0	Restricted Band Edge at 5150 MHz	15.209	53.1 dBµV/m @ 5149.7 MHz (-0.9 dB)	
10	ac80	42 - 5210MHz	11.0	11.0	Restricted Band Edge at 5350 MHz	15.209	44.2 dBµV/m @ 5356.4 MHz (-9.8 dB)	
44	00	155 -	40 F	40 F	Band Edge 5725MHz	455	69.2 dBµV/m @ 5717.3 MHz (-9.1 dB)	
11	ac80	5775MHz	16.5	16.5	Band Edge 5715MHz	15E	67.2 dBµV/m @ 5708.5 MHz (-1.1 dB)	
10	aa ⁹⁰	155 -	16.5	16 F	Band Edge 5850MHz	155	64.6 dBµV/m @ 5852.3 MHz (-13.7 dB)	
12	acou	ac80 5775MHz		16.5	Band Edge 5860MHz	15E	63.5 dBµV/m @ 5863.9 MHz (-4.8 dB)	

Modifications Made During Testing No modifications were made to the EUT during testing

#### Deviations From The Standard

No deviations were made from the requirements of the standard.

EMC Tes							
Client:	Pace Americas, Inc.	Job Number:	JD100297				
Madal	Wi-Fi Module 5 GHz	T-Log Number:	T100356				
wouer.		Project Manager:	Irene Radamacher				
Contact:	Mark Rieger	Project Coordinator:	-				
Standard:	FCC Part 15.407	Class:	N/A				

#### Procedure Comments:

Measurements performed in accordance with FCC KDB 789033

Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time

Unless otherwise stated/noted, emission has duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold 50 traces. (method VB of KDB 789033)

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)	
n20	VHT8	92.6%	No	1.935	0.3	0.7	517	1k
n40	VHT9	95.2%	No	0.952	0.2	0.4	1050	3k
ac80	VHT9	75.5%	Yes	2.023	1.2	2.4	494	1k

#### Sample Notes

Sample S/N: F56154520246 Driver: 7.14.89.21.571.206 Antenna: 3x3 Beamforming

#### Measurement Specific Notes:

	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method
Note 1:	required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be
	demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 2:	Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto
NOLE Z.	sweep, trace average 100 traces (method AD of KDB 789033)
Note 3:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz,
NOLE 5.	peak detector, linear averaging, auto sweep,max hold 50*1/DC traces (method VB of KDB 789033)
Note 4:	Emission has a duty cycle < 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto
NOLE 4.	sweep, trace average 100*1/DC traces, measurement corrected by Pwr correction factor (method AD of KDB 789033)
Note 5:	Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final
Note 5.	measurements.
Nata Ci	Emission has non constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW> 1/T, peak detector,
Note 6:	linear average mode, sweep time auto, max hold. Max hold for 50*(1/DC) traces

	NTS							EMC Test Data	
Client:	Pace Americ	cas, Inc.						Job Number: JD100297	
Model.	Wi-Fi Modul	9 5 CH7					T-Log Number: T100356		
						-	ect Manager: Irene Radamacher		
	Mark Rieger						Project	Coordinator: -	
Standard:	FCC Part 15	5.407						Class: N/A	
Run #3: Ra	adiated Band	ledge Meas	urements, 5	150-5250MF	lz				
Te	Date of Test: est Engineer: est Location:	Joseph Cad	igal & Rafael	Varelas	Con	onfig. Used: ifig Change: UT Voltage:	none		
Channel: Tx Chain: Mode: Data Rate:									
	Band Edge S	<b>ignal Radia</b> Pol		r <b>ength</b> 15.209	Detector	Animuth	Hoight	Comments	
Frequency MHz	Level dBµV/m	v/h	Limit	Margin	Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments	
5149.520	53.6	H	54.0	-0.4	Avg	349	1.1	POS; RB 1 MHz; VB: 1 kHz, note 6	
5148.880	68.7	H	74.0	-5.3	PK	349	1.1	POS; RB 1 MHz; VB: 3 MHz	
5148.560	47.9	V	54.0	-6.1	Avg	57	1.0	POS; RB 1 MHz; VB: 1 kHz	
5145.430	60.1	V	74.0	-13.9	PK	57	1.0	POS; RB 1 MHz; VB: 3 MHz	
80.0	) - - - - - - - - - - - - - -	Married Married	alla harris frontif	4/		Y 5135	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	цуулуууууууууууууууууууууууууууууууууу	

				<u> </u>				
Frequency	Level	Pol	FCC 1	15.209	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5149.520	53.6	Н	54.0	-0.4	Avg	349	1.1	POS; RB 1 MHz; VB: 1 kHz, note 6
5148.880	68.7	Н	74.0	-5.3	PK	349	1.1	POS; RB 1 MHz; VB: 3 MHz
5148.560	47.9	V	54.0	-6.1	Avg	57	1.0	POS; RB 1 MHz; VB: 1 kHz
5145.430	60.1	V	74.0	-13.9	PK	57	1.0	POS; RB 1 MHz; VB: 3 MHz

	NTS							EM	C Test Data
Client:	Pace Americ	as, Inc.						Job Number:	JD100297
Model.	Wi-Fi Module	o 5 GHz						Log Number:	
wouer.		6 3 6112					Proj	ect Manager:	Irene Radamacher
	Mark Rieger				Project	Coordinator:			
Standard:	FCC Part 15	.407						Class:	N/A
Run #3: Ra	adiated Band	ledge Meası	urements, 5	150-5250MH	łz				
[	Date of Test:	1/28/2016 0:	00		C	onfig. Used:	1		
	est Engineer:					fig Change:			
Te	est Location:	FT Chamber	#3		E	UT Voltage:	120V/60Hz		
Channel:	48 - 5240MF	47							
Tx Chain:	3x3	-							
Node:	n20								
Data Rate:	VHT8								
5350 MHz E	Band Edge S	ianal Radiat	ed Field St	renath					
Frequency	Level	Pol		15.209	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5353.930	50.6	V	54.0	-3.4	Avg	302	1.0		MHz; VB: 1 kHz, note 6
5353.050	60.4	V	74.0	-13.6	PK	302	1.0		MHz; VB: 3 MHz
5364.030 5362.500	46.8 57.3	H H	54.0 74.0	-7.2 -16.7	Avg PK	360 360	1.0 1.0		MHz; VB: 1 kHz, Note 6 MHz; VB: 3 MHz
0002.000	57.5	11	74.0	-10.7		500	1.0	1 00, ND 1	
75.0 70.0 65.0 (W/MB) 55.0 55.0 950.0 45.0 40.0 35.0			muuluudu W	5365	Mm,	^M Maryhadaad ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	h.M.M.Manuret.Man 	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	

Client.	Face Americ	cas, inc.						JOD NUITIDEL.	
Model	Wi-Fi Modul	o 5 CH7					T-I	Log Number:	T100356
							Proje	ect Manager:	Irene Radamacher
Contact:	Mark Rieger						Project	Coordinator:	-
Standard:	FCC Part 15	5.407						Class:	N/A
[ Te	Date of Test: st Engineer:	<b>dedge Meas</b> 1/28/2016 & Joseph Cad FT Chambe	3/11/2016 igal & Rafae		C Cor	onfig. Used: ıfig Change: UT Voltage:	none		
x Chain: lode: lata Rate:		IHz Signal Rad	liated Field S	Strenath					
Frequency	Level	Pol		5.E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5723.240	78.1	V	78.3	-0.2	PK	62	1.0	POS: RB 1	MHz; VB: 3 MHz
5718.670	53.3	H	78.3	-25.0	PK	343	1.0		MHz; VB: 3 MHz
5715 MHz Frequency MHz 5715.000	z Band Edge Level dBμV/m 65.8	e <i>Signal Rad</i> Pol v/h V		5.E Margin -2.5	Detector Pk/QP/Avg PK	Azimuth degrees 60	Height meters 1.0	Comments	MHz; VB: 3 MHz
5713.800	60.5	H	68.3	-7.8	PK	344	1.0		MHz; VB: 3 MHz
80.0 70.0 (w/\ngp) 60.0 50.0 40.0 30.0	- 	= Pk (blue) v	- mater produce		Junan				
5	685	5690	5695	5700	5705 equency (MH	5710	5715	5720	5725

## WE ENGINEER SUCCESS

Client: Pace Americas, Inc.

## EMC Test Data

Job Number: JD100297

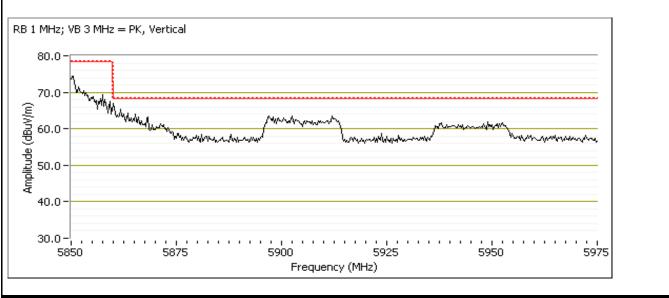
#### EMC Test Data SUCCESS Client: Pace Americas, Inc. Job Number: JD100297 T-Log Number: T100356 Model: Wi-Fi Module 5 GHz Project Manager: Irene Radamacher **Project Coordinator:** Contact: Mark Rieger Standard: FCC Part 15.407 Class: N/A Date of Test: 2/1/2016 0:00 Config. Used: 1 Test Engineer: Rafael Varelas Config Change: None Test Location: FT Chamber #5 EUT Voltage: 120V/60Hz Channel: 165 - 5825MHz Tx Chain: 3x3 Mode: n20 Data Rate: VHT8 5850 MHz Band Edge Signal Radiated Field Strength

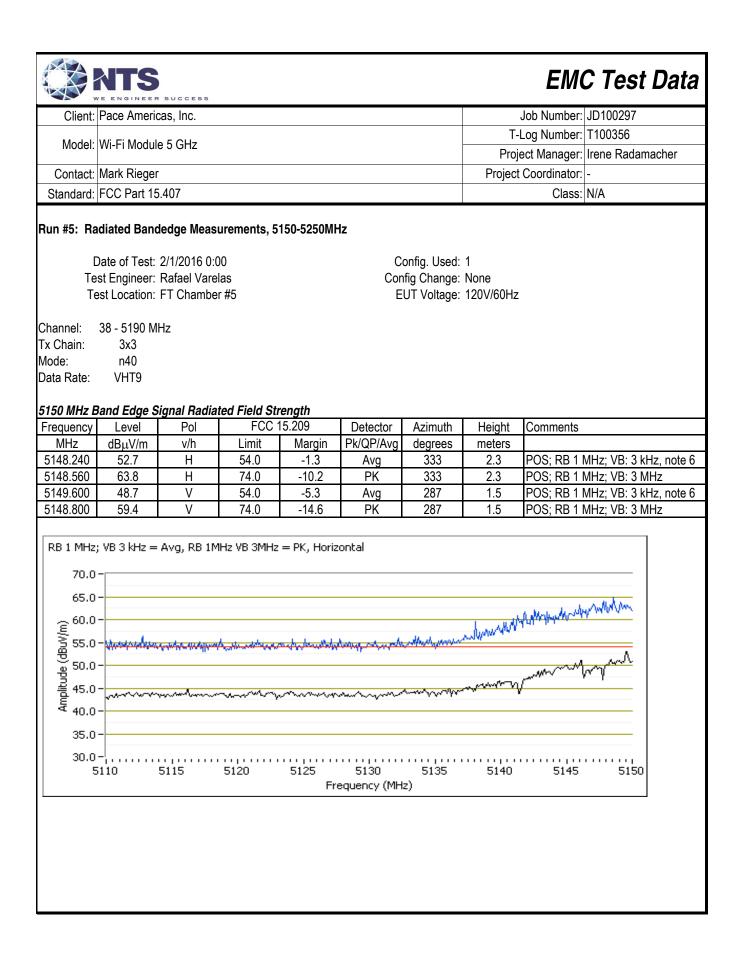
	eeee mini Dana Dago eigina naanatea nena enengin											
Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments				
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters					
5851.080	76.3	V	78.3	-2.0	PK	58	1.0	POS; RB 1 MHz; VB: 3 MHz				
5850.480	75.3	Н	78.3	-3.0	PK	352	1.0	POS; RB 1 MHz; VB: 3 MHz				

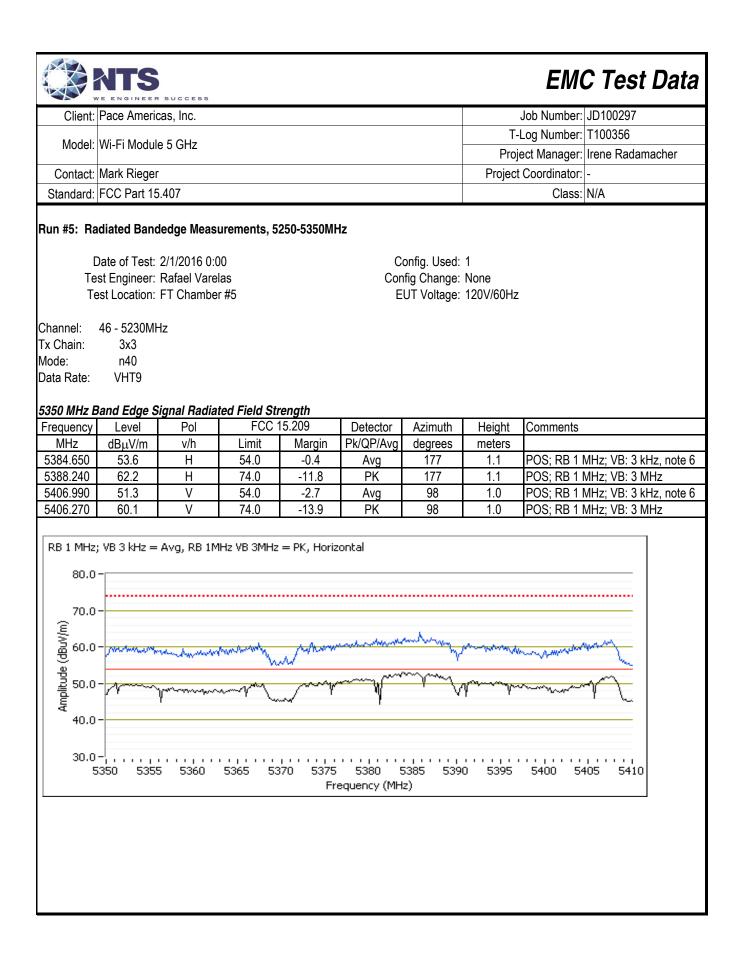
#### 5860 MHz Band Edge Signal Radiated Field Strength

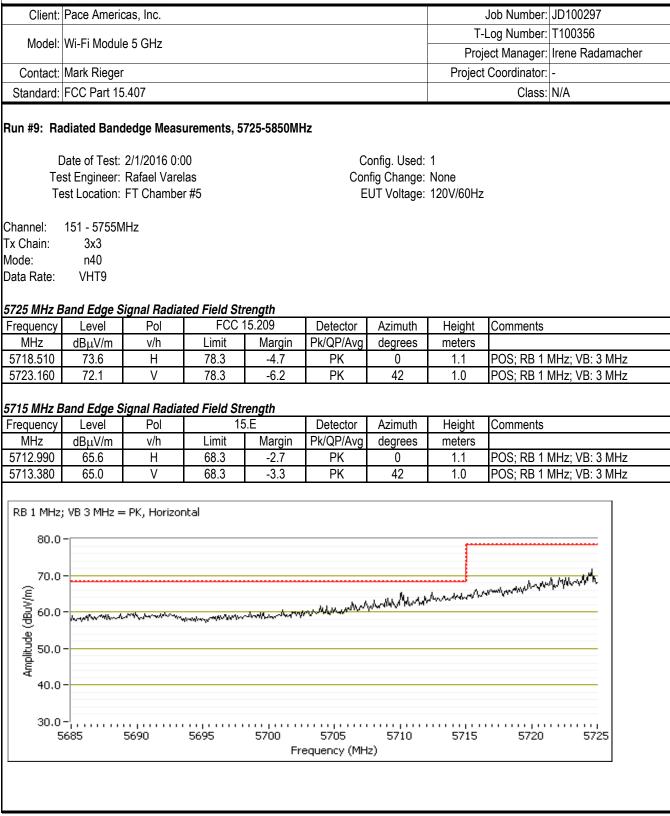
Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5864.710	67.4	V	68.3	-0.9	PK	58	1.0	POS; RB 1 MHz; VB: 3 MHz
5860.780	67.0	Η	68.3	-1.3	PK	352	1.0	POS; RB 1 MHz; VB: 3 MHz

For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method note 1: required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative. Only the 15.407(b) limit on the plot.





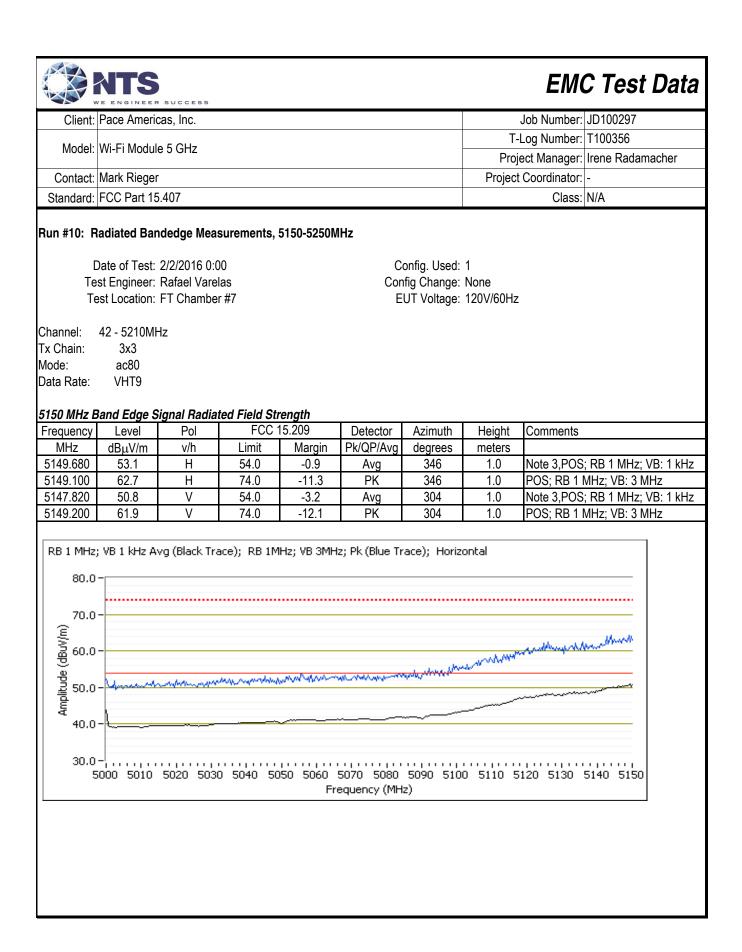




# 

## EMC Test Data

	NTS E ENGINEER	SUCCESS						ЕМС	C Test Data
Client:	Pace Americ	as, Inc.						Job Number:	JD100297
Madal	Wi-Fi Module						T-	Log Number:	T100356
woder.		5 GHZ					Project Manager: Irene Radamacher		
Contact:	Mark Rieger						Project Coordinator: -		
Standard:	FCC Part 15	.407					Class: N/A		
Tx Chain: Mode: Data Rate:	159 - 5795M 3x3 n40 VHT9		ad Field St	onath					
Frequency	and Edge Si Level	<b>gnai Radia</b> Pol		engin .E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	.∟ Margin	Pk/QP/Avg	degrees	meters	Johnnenta	
5851.000	73.2	H	78.3	-5.1	PK	0	1.0	POS: RB 1 M	MHz; VB: 3 MHz
5852.710	69.2	V	78.3	-9.1	PK	45	1.0		MHz; VB: 3 MHz
	and Edge Si			ength	Detector	A –inc. th	Llaight	Commonte	
Frequency MHz	Level dBµV/m	Pol v/h	Limit	.∟ Margin	Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments	
5860.660	авµv/ш 67.4	H	68.3	-0.9	PK	0 0	1.0	POS: RB 1 M	MHz; VB: 3 MHz
5860.420	65.8	V	68.3	-2.5	PK	45	1.0		MHz; VB: 3 MHz
80.0 70.0 (w/\ngp 60.0 to,0 40.0 30.0		M.M. M.M. M.	www.www.	5890	بیہ اس	5910 S		⁹ 930 594	



	Doog Ameri	success						Job Number	
Client:	Pace Americ	cas, inc.						Job Number: Log Number:	
Model:	Wi-Fi Modul	e 5 GHz						•	Irene Radamacher
Contact	Mark Rieger						-		
	FCC Part 15						Project Coordinator: - Class: N/A		
otanadia.	10010111							01000.	
Channel:	42 - 5210MH	Ηz							
x Chain:	3x3								
Node:	ac80								
)ata Rate:	VHT9								
5350 MHz E	Band Edge S	ignal Radia	ted Field Sti	rength					
Frequency	Level	Pol	FCC 2	15.209	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5356.410 5355.450	44.2 54.6	H H	54.0 74.0	-9.8 -19.4	Avg PK	210 210	1.5 1.5		; <u>RB 1 MHz; VB: 1 kHz</u> MHz; VB: 3 MHz
5355.950	42.7	V	54.0	-19.4	Avg	87	1.0		; RB 1 MHz; VB: 1 kHz
5356.650	52.6	V	74.0	-21.4	PK	87	1.0		MHz; VB: 3 MHz
(m//nge (dBu//m) 20.0 40.0									
30.0 5	-¦ 5350 536	0 5370	5380	5390 5	400 5410 equency (MH	) 5420	5430	5440 54	50 5460

	ATS	EM	C Test Data
Client:	Pace Americas, Inc.	Job Number:	JD100297
Model: Wi-Fi Module 5 GHz	Wi Ei Modulo 5 GHz	T-Log Number:	T100356
MOUEI.		Project Manager:	Irene Radamacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC Part 15.407	Class:	N/A

#### Run #11: Radiated Bandedge Measurements, 5725-5850MHz

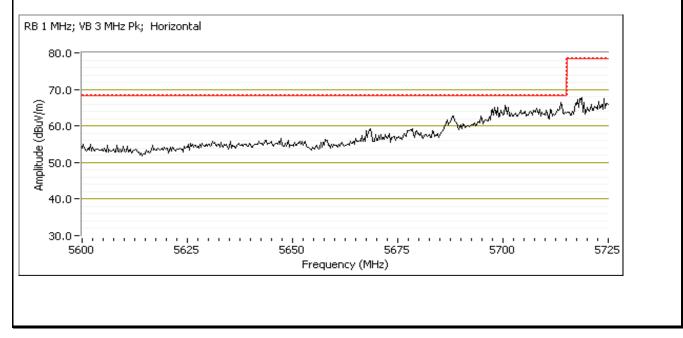
Date of Test: 2/2/2016 0:00 Test Engineer: Rafael Varelas Test Location: FT Chamber #7 Config. Used: 1 Config Change: None EUT Voltage: 120V/60Hz

Channel: 155 - 5775MHz Tx Chain: 3x3 Mode: ac80 Data Rate: VHT9

#### 5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5717.280	69.2	Н	78.3	-9.1	PK	360	1.0	POS; RB 1 MHz; VB: 3 MHz
5723.860	67.9	V	78.3	-10.4	PK	68	1.0	POS; RB 1 MHz; VB: 3 MHz

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5708.450	67.2	Н	68.3	-1.1	PK	360	1.0	POS; RB 1 MHz; VB: 3 MHz	
5708.510	65.5	V	68.3	-2.8	PK	68	1.0	POS; RB 1 MHz; VB: 3 MHz	



	NTS VE ENGINEER SUCCESS	EM	C Test Data
Client:	Pace Americas, Inc.	Job Number:	JD100297
Madal	Wi-Fi Module 5 GHz	T-Log Number:	T100356
MOUEI.		Project Manager:	Irene Radamacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC Part 15.407	Class:	N/A

#### Run #12: Radiated Bandedge Measurements, 5725-5850MHz

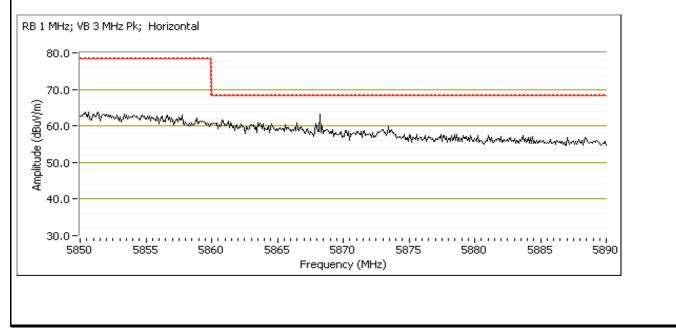
Date of Test: 2/2/2016 0:00 Test Engineer: Rafael Varelas Test Location: FT Chamber #7 Config. Used: 1 Config Change: None EUT Voltage: 120V/60Hz

Channel: 155 - 5775MHz Tx Chain: 3x3 Mode: ac80 Data Rate: VHT9

#### 5850 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 1	15.209	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5852.340	64.6	Н	78.3	-13.7	PK	354	2.2	POS; RB 1 MHz; VB: 3 MHz
5852.520	62.2	V	78.3	-16.1	PK	360	1.0	POS; RB 1 MHz; VB: 3 MHz

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5863.910	63.5	Н	68.3	-4.8	PK	354	2.2	POS; RB 1 MHz; VB: 3 MHz	
5862.220	58.1	V	68.3	-10.2	PK	360	1.0	POS; RB 1 MHz; VB: 3 MHz	



## EMC Test Data

	VE ENGINEER SUCCESS		
Client:	Pace Americas, Inc.	Job Number:	JD100297
Model	Wi-Fi Module 5 GHz	T-Log Number:	T100356
WOUEI.		Project Manager:	Irene Radamacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC Part 15.407	Class:	N/A

### RSS-247 and FCC 15.407 (UNII) Radiated Spurious Emissions

#### Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

#### **General Test Configuration**

TS

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. For radiated emissions testing the measurement antenna was located 3 meters from the EUT, unless otherwise noted.

Ambient Conditions:	Temperature:	18-20 °C
	Rel. Humidity:	35-40 %

#### Summary of Results

o anna 1 y	ornooun		Power	Measured						
Run #	Mode	Channel	Setting	Power	Test Performed	Limit	Result / Margin			
Scans on "c	enter" chann	el in all four (			e the worst case mode.					
		40 -			Radiated Emissions,		53.5 dBµV/m @ 5042.2			
	а	5200MHz	23.0	23.0	1 - 40 GHz	FCC 15.209 / 15 E	MHz (-0.5 dB)			
	n20	40 -	23.0	23.0	Radiated Emissions,	FCC 15.209 / 15 E	47.0 dBµV/m @ 5041.4			
1	TIZU	5200MHz	23.0	23.0	1 - 40 GHz	1 CC 13.2097 13 L	MHz (-7.0 dB)			
UNII-1	n40	38 -	23.0	23.0	Radiated Emissions,	FCC 15.209 / 15 E	48.0 dBµV/m @ 5042.6			
	ΠŦΨ	5190MHz	20.0	20.0	1 - 40 GHz	10010.2007102	MHz (-6.0 dB)			
	ac80	42 -	23.0	23.0 Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	51.2 dBµV/m @ 5043.9				
		5210MHz					MHz (-2.8 dB)			
Measurements on low and high channels in worst-case OFDM mode.										
	а	36 -	21.0	21.0	Radiated Emissions,	FCC 15.209 / 15 E	53.2 dBµV/m @ 5021.9			
2		5180MHz	21.0	21.0	1 - 40 GHz	100 10.2007 10 2	MHz (-0.8 dB)			
2	а	48 -	23.0	23.0	Radiated Emissions,	FCC 15.209 / 15 E	68.2 dBµV/m @ 5473.4			
	-	5240MHz			1 - 40 GHz	100 10:2007 10 E	MHz (-0.1 dB)			
Scans on "c	enter" chann	el for all OFE	OM modes to	determine th	ne worst case mode.					
	а	157 -	23.0	23.0	Radiated Emissions	FCC 15.209 / 15 E	53.8 dBµV/m @			
	a	5785MHz	20.0	20.0	1 - 40 GHz	1 00 10.2007 10 E	11569.7 MHz (-0.2 dB)			
	n20	157 -	23.0	23.0	Radiated Emissions	FCC 15.209 / 15 E	53.3 dBµV/m @			
3	1120	5785MHz	20.0	20.0	1 - 40 GHz	100 10:2007 10 E	11569.5 MHz (-0.7 dB)			
UNII-3	n40	151 -	23.0	23.0	Radiated Emissions	FCC 15.209 / 15 E	66.4 dBµV/m @ 5990.7			
	1140	5755MHz	20.0	20.0	1 - 40 GHz	100 10.2007 10 E	MHz (-1.9 dB)			
	ac80	155 -	23.0	22.0	Radiated Emissions	FCC 15.209 / 15 E	67.0 dBµV/m @ 5606.4			
	4000	5775MHz	20.0	22.0	1 - 40 GHz	100 10:2007 10 E	MHz (-1.3 dB)			
						Continu	ed on the Next Page>			

		R SUCCESS			EMO	C Test Data		
Client:	Pace Ameri	cas, Inc.	Job Number: JD100297					
Madalı	Wi Fi Madul		T-Log Number:	T100356				
woder.	Model: Wi-Fi Module 5 GHz						Irene Radamacher	
Contact:	Mark Riege	r				Project Coordinator: -		
Standard:	FCC Part 1	5.407				Class: N/A		
< Continu	ed from the	Last Page						
Measureme	nts on low a	nd high chan	nels in worst	-case OFDM	mode.			
	a <u>149</u> - 23.0 23.0		9 - 23 0 23 0 Radiated Emissions		Radiated Emissions	FCC 15.209 / 15 E	52.1 dBµV/m @	
4	a	5745MHz	20.0	20.0	1 - 40 GHz	100 10.2007 10 L	11489.4 MHz (-1.9 dB)	
UNII-3	2	165 -	23.0	23.0	Radiated Emissions	ECC 15 209 / 15 E	53.8 dBµV/m @	

1 - 40 GHz

FCC 15.209 / 15 E

11650.1 MHz (-0.2 dB)

## Modifications Made During Testing

No modifications were made to the EUT during testing

5825MHz

#### **Deviations From The Standard**

а

No deviations were made from the requirements of the standard.

#### Procedure Comments:

Measurements performed in accordance with FCC KDB 789033

Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time Unless otherwise stated/noted, emission has duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector,

linear average mode, auto sweep time, max hold 50 traces. (method VB of KDB 789033)

23.0

23.0

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)	
11a	6 Mb/s	98.0%	Yes	1.302	0	0	10	
n20	VHT8	99.1%	Yes	1.935	0	0	10	
n40	VHT9	98.1%	Yes	0.952	0	0	10	
ac80	VHT9	93.7%	Yes	0.448	0.3	0.6	2232	3k

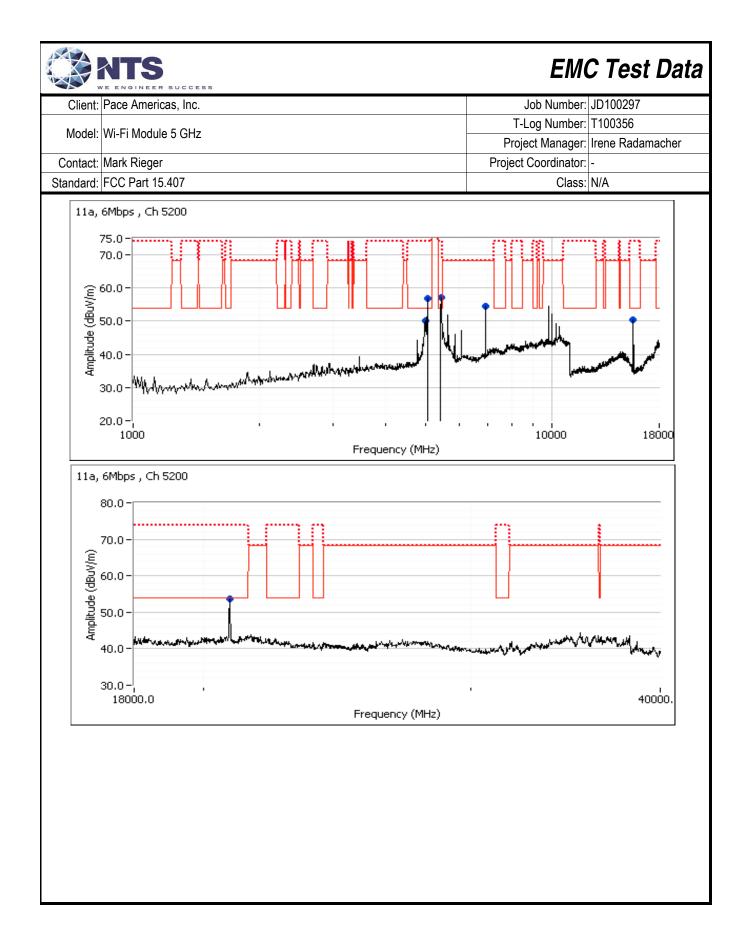
#### Sample Notes

Sample S/N: F56154520246 Driver: 7.14.89.21.571.206 Antenna: 3x3 Non-Beamforming

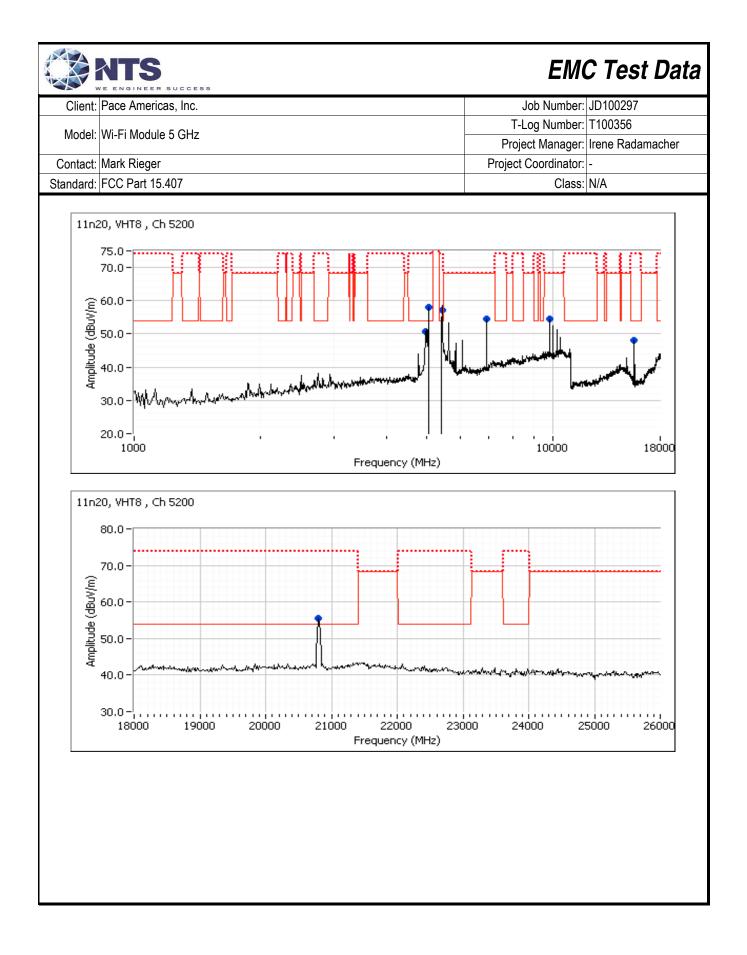
#### Measurement Specific Notes:

	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method
Note 1:	required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be
	demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 2:	Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto
Note 2.	sweep, trace average 100 traces (method AD of KDB 789033)
Note 2	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz,
Note 3:	peak detector, linear averaging, auto sweep,max hold 50*1/DC traces (method VB of KDB 789033)

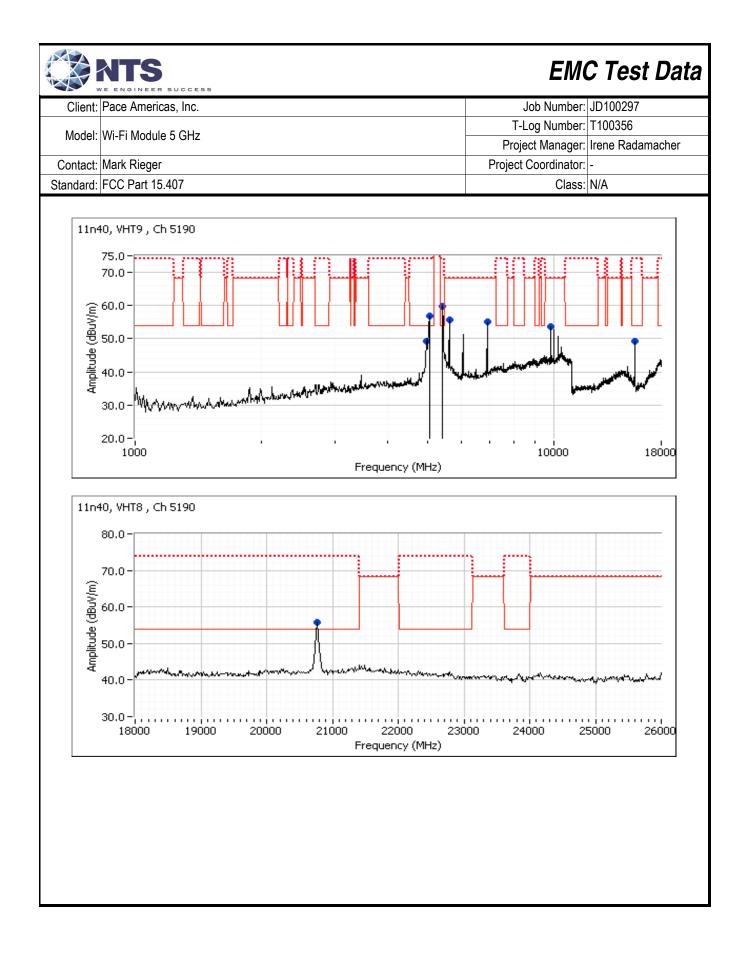
	NTS				EMC Test Da				
Client:	Pace Americ	as, Inc.			Job Number:	JD100297			
		5.011			T-	T100356			
Model:	Wi-Fi Module	e 5 GHz		Project Manager: Irene Radamache					
Contact [.]	Mark Rieger		-	Coordinator:					
	FCC Part 15		110,000	N/A					
Stanuaru.	I CO Fait IJ	.407						01855.	IN/A
Run #1a: C	diated Spurio enter Chann Date of Test:	el	ons, 1,000 -	40,000 MHz	. Operation i	n the 5150-5			
	est Engineer:		ani / R. Vare	las		UT Voltage:			
Channel:	40 - 5200M⊦	lz		Mode	: a		Setting	: 23.0	
Tx Chain:	3Tx			Data Rate	: 6 Mbps	Colling. 2010			
Frequency	Level	Pol	15.209	9 / 15E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5042.210	53.5	Н	54.0	-0.5	AVG	1	1.0	POS; RB 1	MHz; VB: 10 Hz
5442.340	53.5	Н	54.0	-0.5	AVG	1	1.0		MHz; VB: 10 Hz
4982.560	46.5	Н	54.0	-7.5	AVG	194	1.6	-	MHz; VB: 10 Hz
5443.210	63.8	Н	74.0	-10.2	PK	1	1.0		MHz; VB: 3 MHz
5042.150	63.6	Н	74.0	-10.4	PK	1	1.0		MHz; VB: 3 MHz
6933.420	57.1	Н	68.3	-11.2	PK	14	1.1		/B 3 MHz;Peak
4982.120	57.3	Н	74.0	-16.7	PK	194	1.6		MHz; VB: 3 MHz
15601.220	50.5	V	54.0	-3.5	AVG	318	2.0		/B 10 Hz;Peak
15602.420	67.9	V	74.0	-6.1	PK	318	2.0	RB 1 MHz;\	/B 3 MHz;Peak
20799.620	50.3	V	54.0	-3.7	AVG	326	1.1	RB 1 MHz;\	/B 10 Hz;Peak
20799.590	64.3	V	74.0	-9.7	PK	326	1.1	RB 1 MHz;\	/B 3 MHz;Peak
Note 1:	For omission	o in rostricto	d banda tha	limit of 15 '	209 was used	which roquir		and noak mo	acuramanta
NOLE T.									surement method
Note 2:					≥3MHz, peak	• •	00.3000 0/11	n). The meas	
	required is a	peak measu		- I IVI ΠΖ, V D4	≤oivi⊓z, peak				



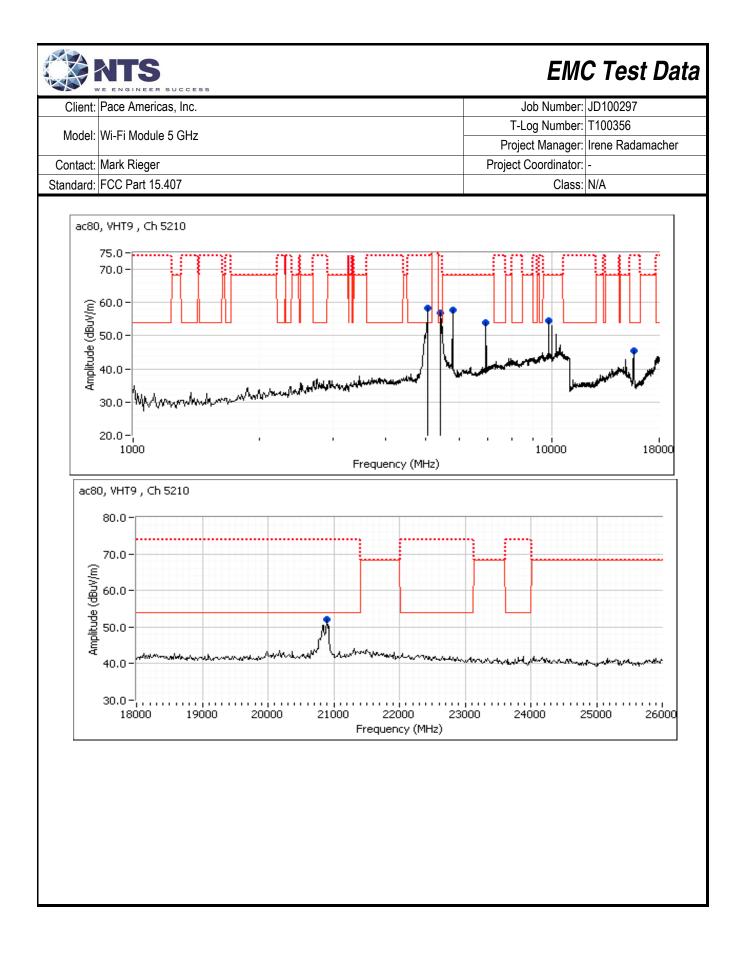
Client:	Pace Americ	as, Inc.	Client: Pace Americas, Inc.							
							T-Log Number: T100356			
Model:	Wi-Fi Module	e 5 GHz						Project Manager: Irene Radamache		
Contact.	Mark Rieger						Project Coordinator: -			
	FCC Part 15	107					Class: N/A			
Stanuaru.		.407						01833.	IN/73	
[	Center Chanr Date of Test: Ist Engineer:	01/07/16	ani / R. Vare	las		st Location: UT Voltage:				
	40 - 5200M⊦ 3Tx	łz		Mode: Data Rate:			Setting	: 23.0		
Frequency	Level	Pol	15.209	9 / 15E	Detector	Azimuth	Height	Comments		
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	5 chillion to		
5041.360	47.0	H	54.0	-7.0	AVG	354	1.0	POS: RB 1	MHz; VB: 10 Hz	
5438.760	46.1	H	54.0	-7.9	AVG	162	1.3		MHz; VB: 10 Hz	
9800.010	58.7	V	68.3	-9.6	PK	345	2.2		/B 3 MHz;Peak	
5042.340	62.8	Н	74.0	-11.2	PK	354	1.0	POS; RB 1	MHz; VB: 3 MHz	
6933.430	56.7	Н	68.3	-11.6	PK	154	1.9		/B 3 MHz;Peak	
5439.280	60.8	Н	74.0	-13.2	PK	162	1.3	POS; RB 1	MHz; VB: 3 MHz	
4962.490	40.3	Н	54.0	-13.7	AVG	308	1.6	POS; RB 1	MHz; VB: 10 Hz	
4961.050	55.9	Н	74.0	-18.1	PK	308	1.6	POS; RB 1	MHz; VB: 3 MHz	
15597.760	43.5	V	54.0	-10.5	AVG	273	1.0	RB 1 MHz;V	/B 10 Hz;Peak	
15589.710	57.3	V	74.0	-16.7	PK	273	1.0	RB 1 MHz;V	/B 3 MHz;Peak	
20799.630	50.5	V	54.0	-3.5	AVG	326	1.1	RB 1 MHz;V	/B 10 Hz;Peak	
20793.900	64.4	V	74.0	-9.6	PK	326	1.1	RB 1 MHz;V	/B 3 MHz;Peak	
Note: Note 1:	the device in For emissior	dicated there is in restricte	e were no sig d bands, the	nificant emi limit of 15.2	ssions in this 09 was used	frequency ra which requir	inge es average	and peak me		
Note 2:						· · · ·	00.30BUV/II	i). The meas	urement method	
	required is a	peak measu	Irement (RB	= IIVIHZ, VB≥	:3MHz, peak o	detector).				



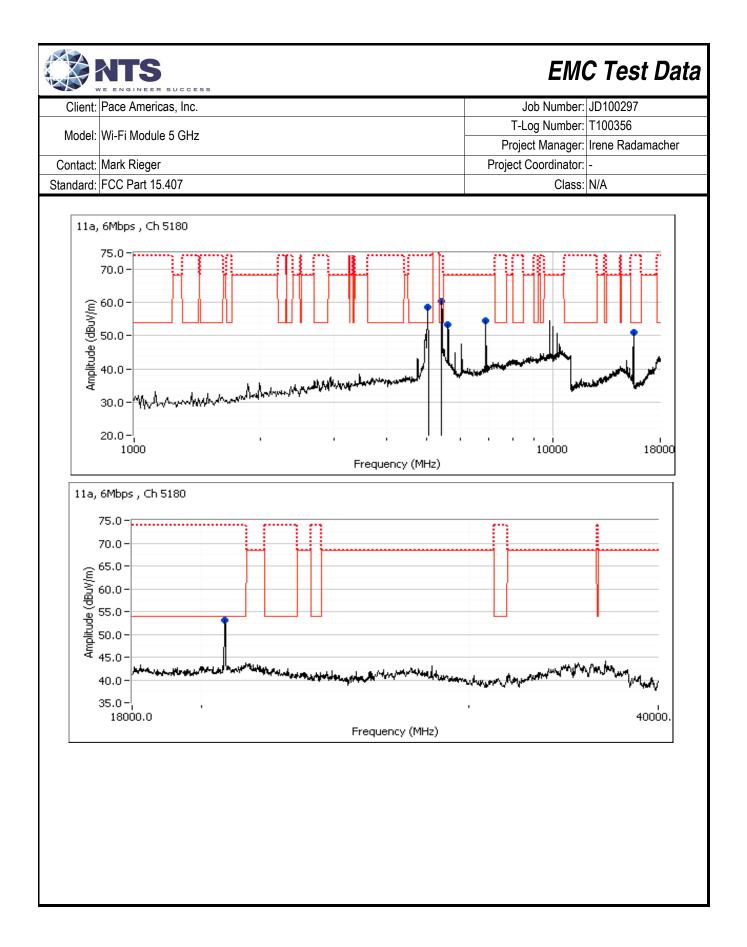
Client:	Pace Americ	as, Inc.			Job Number: JD100297			
				T-Log Number: T100356				
Model:	Wi-Fi Module	e 5 GHz			Project Manager: Irene Radamacher			
Contact.	Mark Rieger				t Coordinator: -			
	FCC Part 15	107	1 10,000	Class: N/A				
olanuaru.	1001 att 10							
[	<b>Center Chann</b> Date of Test: st Engineer:	01/07/16	ani / R. Vare	las		st Location: UT Voltage:		
Channel: Tx Chain:	38 - 5190MH 3Tx	lz		Setting	: 23.0			
Frequency	Level	Pol	15.209	) / 15E	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5042.570	48.0	H	54.0	-6.0	AVG	0	1.2	POS; RB 1 MHz; VB: 10 Hz
5042.310	61.6	Н	74.0	-12.4	PK	0	1.2	POS; RB 1 MHz; VB: 3 MHz
4963.900	41.4	Н	54.0	-12.6	AVG	302	1.2	POS; RB 1 MHz; VB: 10 Hz
4959.650	54.7	Н	74.0	-19.3	PK	302	1.2	POS; RB 1 MHz; VB: 3 MHz
5415.000	46.9	Н	54.0	-7.1	AVG	190	1.5	POS; RB 1 MHz; VB: 10 Hz
5412.880	59.1	Н	74.0	-14.9	PK	190	1.5	POS; RB 1 MHz; VB: 3 MHz
6919.980	57.1	Н	68.3	-11.2	PK	166	1.7	RB 1 MHz;VB 3 MHz;Peak
9799.870	57.6	V	68.3	-10.7	PK	338	1.0	RB 1 MHz;VB 3 MHz;Peak
5622.450	59.1	Н	68.3	-9.2	PK	355	2.3	RB 1 MHz;VB 3 MHz;Peak
15568.950	44.5	V	54.0	-9.5	AVG	94	1.9	RB 1 MHz;VB 10 Hz;Peak
15568.230	58.3	V	74.0	-15.7	PK	94	1.9	RB 1 MHz;VB 3 MHz;Peak
20764.870 20769.840	49.1 61.2	V V	54.0 74.0	-4.9 -12.8	AVG PK	326 326	1.2 1.2	RB 1 MHz;VB 10 Hz;Peak RB 1 MHz;VB 3 MHz;Peak
Note: Note 1:	Scans made the device in For emission	dicated there is in restricte	- 40 GHz wi e were no siç d bands, the	th the measu nificant emi- limit of 15.2	ssions in this 09 was used	nna moved a frequency ra which requir	inge es average	ard and its antennas 20-50cm fro and peak measurements.
Note 2:							68.3dBuV/n	n). The measurement method
	required is a	peak measu	urement (RB:	=1MHz, VB≥	3MHz, peak	detector).		



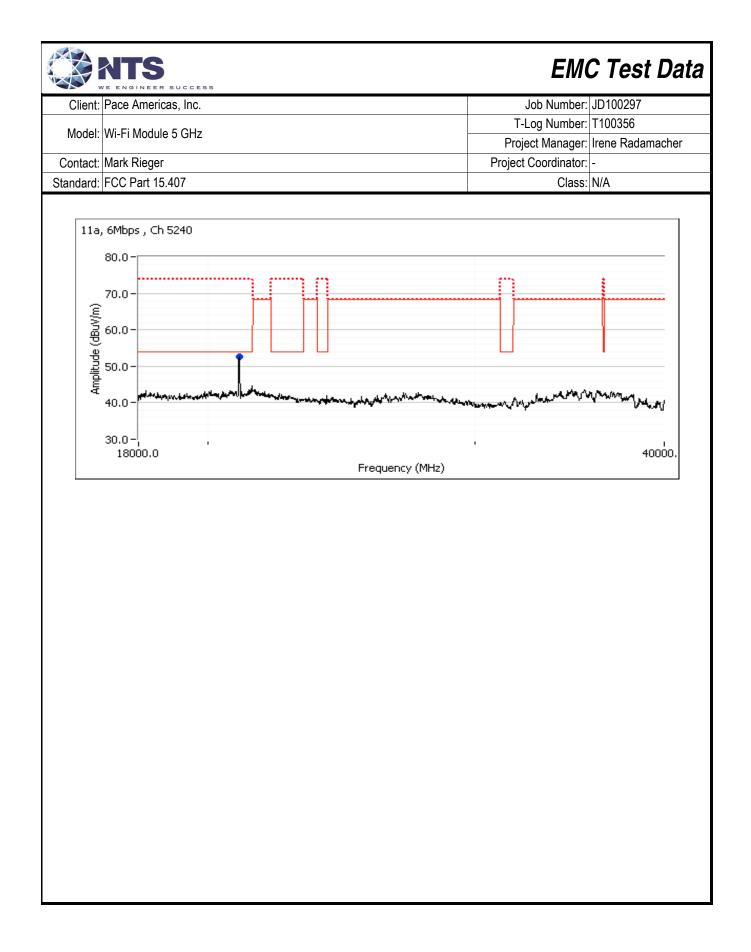
Client:	Pace Americ	cas, Inc.	Job Number: JD100297						
					T-Log Number: T100356				
Model:	Wi-Fi Modul	e 5 GHz					Project Manager: Irene Radamacher		
Contact	Mark Rieger								
	-			Project Coordinator: - Class: N/A					
Standard:	FCC Part 15	.407		Class:	IN/A				
D	<b>Center Chanı</b> Date of Test: st Engineer:	01/07/16	las			st Location: UT Voltage:			
Channel:	42 - 5210MH	łz		Mode:	11ac80		Setting:	23.0	
Tx Chain:	3Tx			Data Rate:	VHT9		Ū		
Frequency	Level	Pol	15.209	9 / 15E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5043.880	51.2	Н	54.0	-2.8	Avg	193	1.9	AVG; RB 1 I	MHz; VB: 3 kHz
5045.770	64.7	Н	74.0	-9.3	PK	193	1.9	POS; RB 1 I	MHz; VB: 3 MHz
5788.990	59.7	Н	68.3	-8.6	PK	27	2.3	RB 1 MHz;V	'B 3 MHz;Peak
6946.600	52.6	Н	68.3	-15.7	PK	196	1.0	RB 1 MHz;V	'B 3 MHz;Peak
9799.910	57.5	V	68.3	-10.8	PK	340	1.0	RB 1 MHz;V	'B 3 MHz;Peak
5414.980	48.8	Н	54.0	-5.2	Avg	233	1.7	AVG; RB 1 I	VHz; VB: 3 kHz
5415.190	60.4	Н	74.0	-13.6	PK	233	1.7	POS; RB 1 I	MHz; VB: 3 MHz
5670.990	43.6	V	54.0	-10.4	Avg	324	1.8	RB 1 MHz;V	'B 3 kHz;Peak
5670.620	57.6	V	74.0	-16.4	PK	324	1.8	RB 1 MHz;V	'B 3 MHz;Peak
20890.000	44.1	V	54.0	-9.9	AVG	326	1.1	RB 1 MHz;V	'B 10 Hz;Peak
20900.040	56.7	V	74.0	-17.3	PK	326	1.1	RB 1 MHz;V	'B 3 MHz;Peak
Note:	the device in For emission For emission	ndicated there ns in restricte ns outside of	e were no sig ed bands, the the restricted	gnificant emi limit of 15.2 d bands the	ssions in this 09 was used	frequency ra which requir n/MHz eirp (	inge es average	and peak me	tennas 20-50cm from asurements. urement method



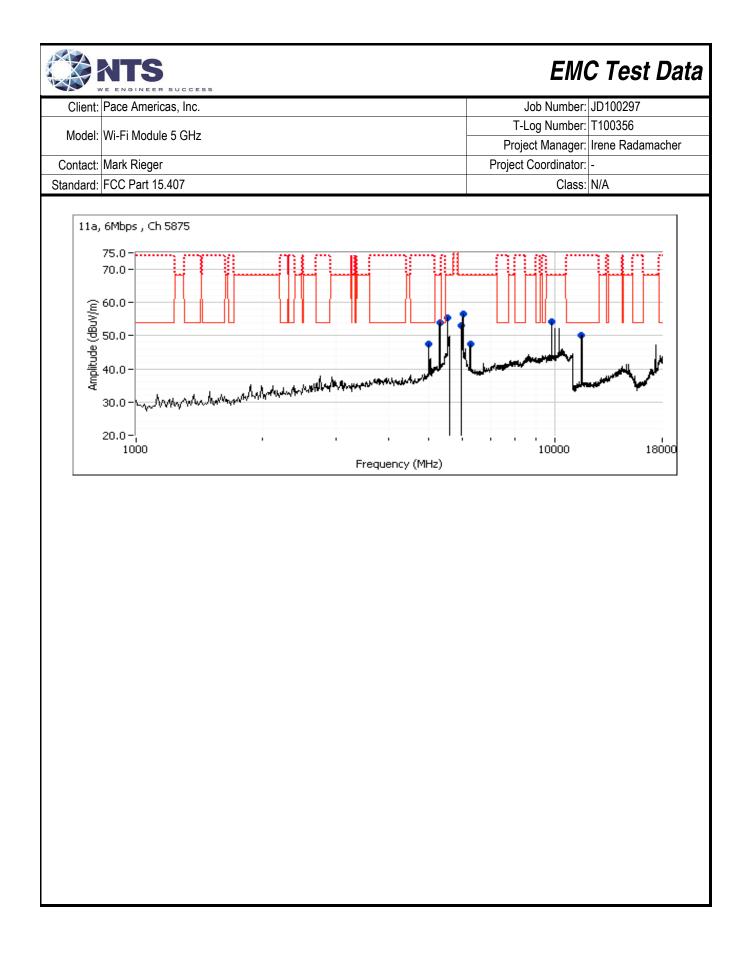
Client:	Pace Americ	cas, Inc.						Job Number:	JD100297
							T-Log Number: T100356		
Model:	Wi-Fi Modul	e 5 GHz						-	Irene Radamacher
Contact:	Mark Rieger	•						Coordinator:	
	FCC Part 15						110,000	Class:	
I Te	adiated Spur Date of Test: est Engineer: est Location:	1/8/2016 0:0 Eddie Maris	)0 cal / R. Varel		Con	<i>llode: Wors</i> onfig. Used: ifig Change: UT Voltage:	1 None	n Run #1	
un #2a: L	.ow Channel					0			
nannel:	36 - 5180MF	47	Mode:	а					
Chain:	3Tx		Data Rate:	-					
requency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
021.900	53.2	Н	54.0	-0.8	AVG	353	1.0		MHz; VB: 10 Hz
022.540	63.3	Н	74.0	-10.7	PK	353	1.0		MHz; VB: 3 MHz
423.090	52.2	Н	54.0	-1.8	AVG	229	1.6		MHz; VB: 10 Hz
422.910	62.1	Н	74.0	-11.9	PK	229	1.6		MHz; VB: 3 MHz
604.840	53.2	Н	68.3	-15.1	AVG	342	1.0		B 10 Hz;Peak
605.440	63.3	Н	68.3	-5.0	PK	342	1.0		B 3 MHz;Peak
906.730	55.5	Н	68.3	-12.8	AVG	174	1.7		B 10 Hz;Peak
906.740	58.4	H	68.3	-9.9	PK	174	1.7		B 3 MHz;Peak
541.770	51.8	V V	54.0	-2.2	AVG	293	2.0		B 10 Hz;Peak
5541.750	69.5	V	74.0	-4.5	PK	293	2.0		B 3 MHz;Peak
717.800	49.9 62.6	V	54.0 74.0	-4.1	AVG PK	42 42	2.0		B 10 Hz;Peak
728.930	02.0	V	74.0	-11.4	Ph	42	2.0	RB I MHZ;V	B 3 MHz;Peak



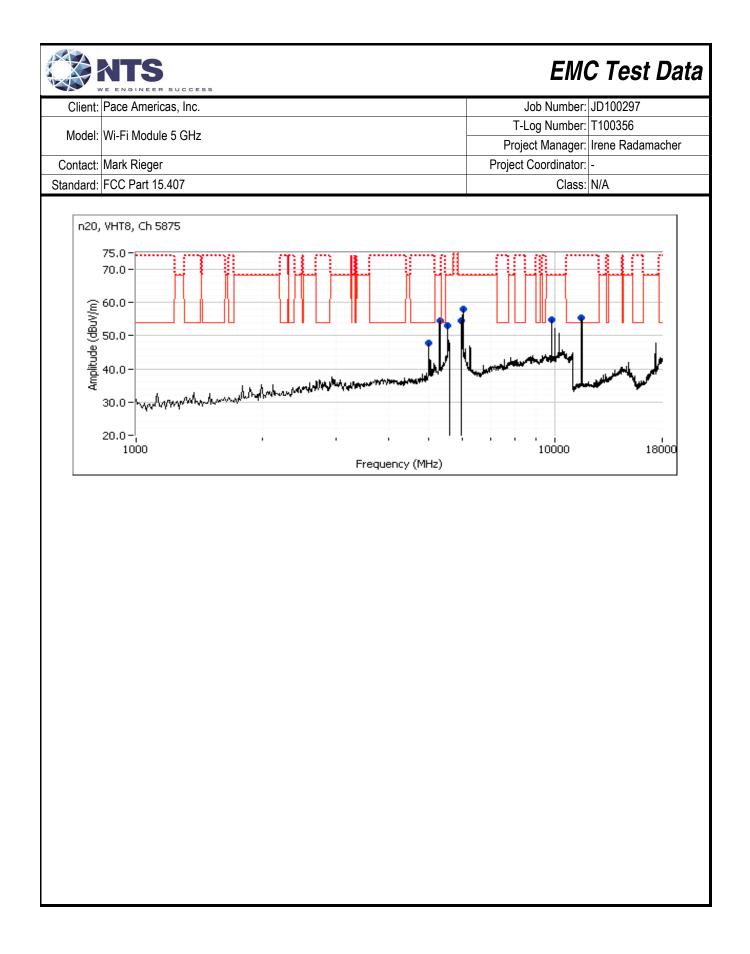
Olianti		SUCCESS						Job Number:	10100207
Client	Pace Americ	cas, inc.							
Model:	Wi-Fi Modul	e 5 GHz						Log Number:	
									Irene Radamacher
Contact:	Mark Rieger						Project	Coordinator:	-
Standard:	FCC Part 15	.407						Class:	N/A
Run #2b: H	ligh Channel								
Channel: Tx Chain:	48 - 5240MH 3Tx	łz	Mode: Data Rate:	a 6Mbps					
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5019.790	51.5	Н	54.0	-2.5	AVG	195	1.8	RB 1 MHz;V	/B 10 Hz;Peak
5019.280	62.6	Н	74.0	-11.4	PK	195	1.8		'B 3 MHz;Peak
5441.210	53.1	Н	54.0	-0.9	AVG	183	1.5		/B 10 Hz;Peak
5441.380	63.9	Н	74.0	-10.1	PK	183	1.5		'B 3 MHz;Peak
5472.880	58.7	Н	68.3	-9.6	AVG	360	1.0		/B 10 Hz;Peak
5473.410	68.2	H	68.3	-0.1	PK	360	1.0		/B 3 MHz;Peak
5679.570	51.8	Н	68.3	-16.5	AVG	356	1.2		/B 10 Hz;Peak
5679.640	62.8	<u>H</u>	68.3	-5.5	PK	356	1.2		/B 3 MHz;Peak
6986.690 6986.680	51.4 55.8	<u>Н</u> Н	68.3 68.3	-16.9	AVG PK	2	<u>1.2</u> 1.2		/B 10 Hz;Peak
9799.940	55.0	V N	68.3	-12.5 -14.1	AVG	348	2.2		'B 3 MHz;Peak 'B 10 Hz;Peak
9799.940	58.6	V	68.3	-14.1	PK	348	2.2		/B 3 MHz;Peak
15720.720	53.9	V	54.0	-0.1	AVG	318	1.9		/B 10 Hz;Peak
15720.780	71.4	V	74.0	-2.6	PK	318	1.9		/B 3 MHz;Peak
20958.520	48.7	V	54.0	-5.3	AVG	358	1.1		/B 10 Hz;Peak
20959.420	62.6	V	74.0	-11.4	PK	358	1.1	,	/B 3 MHz;Peak
Amplitude (dBuV/m)	, 6Mbps , Ch 75.0 - 70.0 - 60.0 - .50.0 - .40.0 - .30.0 - .20.0 - .1000		uconselected with					10000	
	1000				Frequency	(MHz)		10000	18000



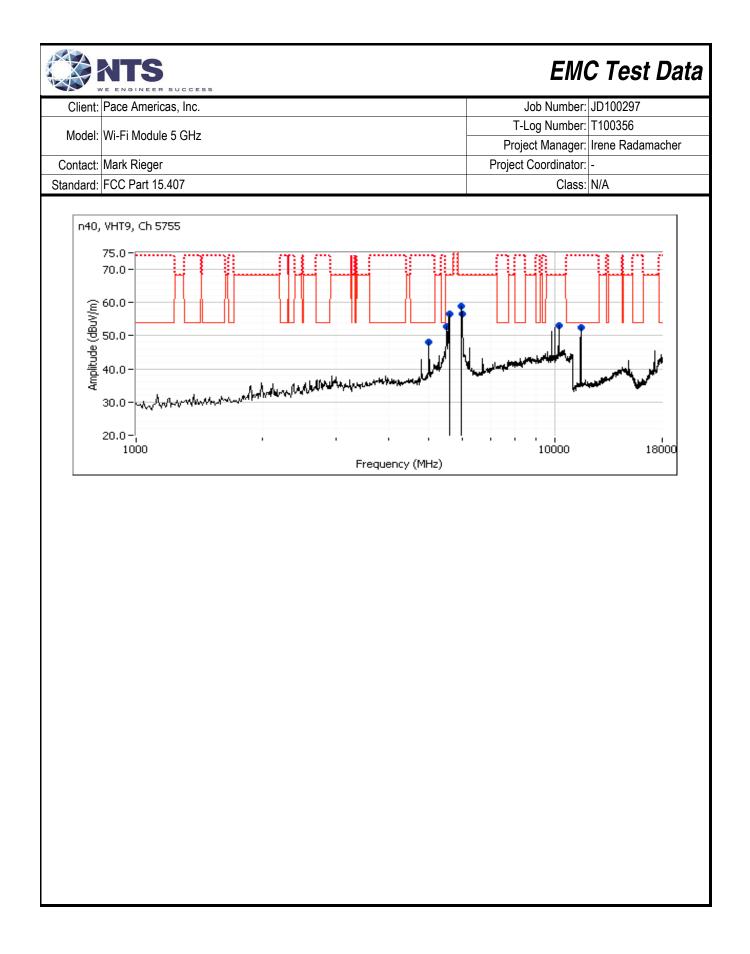
Client:	Pace Americ	cas, Inc.						Job Number:	JD100297
M. I.I		5.011					T-	Log Number:	T100356
wodel:	Wi-Fi Module	e 5 GHZ					Proj	ect Manager:	Irene Radamacher
Contact:	Mark Rieger						Project	Coordinator:	-
	FCC Part 15						,	Class:	
Te Te	diated Spurie Date of Test: st Engineer: est Location: enter Chann	1/8/2016 0:0 Eddie Maris FT Chambe	)0 cal	40,000 MHz	Cor	n the 5725-5 onfig. Used: ifig Change: UT Voltage:	1 None	and	
hannel:	157		Mode:	а					
	3Tx		Data Rate:	a 6 Mb/s					
	- 17		2410 1 1010.	0 110/0					
Frequency	Level	Pol	15.209	9 / 15E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5546.340	55.4	Н	68.3	-12.9	AVG	360	1.0	RB 1 MHz;V	/B 10 Hz;Peak
5546.140	66.0	Н	68.3	-2.3	PK	360	1.0	RB 1 MHz;V	/B 3 MHz;Peak
9799.950	54.3	V	68.3	-14.0	AVG	351	2.2	RB 1 MHz;V	/B 10 Hz;Peak
9799.900	58.4	V	68.3	-9.9	PK	351	2.2	RB 1 MHz;V	/B 3 MHz;Peak
5000.000	46.5	Н	54.0	-7.5	AVG	343	2.5		/B 10 Hz;Peak
5000.010	51.8	Н	74.0	-22.2	PK	343	2.5		/B 3 MHz;Peak
6022.340	54.3	Н	68.3	-14.0	AVG	252	2.0		/B 10 Hz;Peak
6021.740	64.6	Н	68.3	-3.7	PK	252	2.0		/B 3 MHz;Peak
5307.600	53.6	H	68.3	-14.7	AVG	249	2.2		/B 10 Hz;Peak
5307.570	63.0	H	68.3	-5.3	PK	249	2.2		/B 3 MHz;Peak
6260.690	44.7	H	68.3	-23.6	AVG	8	1.1		/B 10 Hz;Peak
6260.870	56.0	<u>H</u>	68.3	-12.3	PK	8	1.1		/B 3 MHz;Peak
5988.720	52.4	H	68.3	-15.9	AVG	1	1.1		/B 10 Hz;Peak
5989.290	63.4	<u>Н</u> V	68.3	-4.9	PK	1	1.1		/B 3 MHz;Peak
1569.730	<b>53.8</b> 66.6	V V	54.0 74.0	<b>-0.2</b> -7.4	AVG PK	345 345	2.2 2.2		/B 10 Hz;Peak /B 3 MHz;Peak
1509.070	00.0	V	74.0	-7.4	۲N	340	Z.Z	RD I IVINZ,V	
Note: lote 1:	the device in For emissior	idicated ther	e were no sig d bands, the	gnificant emi limit of 15.2	ssions in this 209 was used	frequency ra which requir	nge es average	and peak me	
lote 2:							68.3dBuV/m	i). The meas	urement method
	required is a	peak measu	urement (RB	=1MHz, VB2	≥3MHz, peak	detector).			



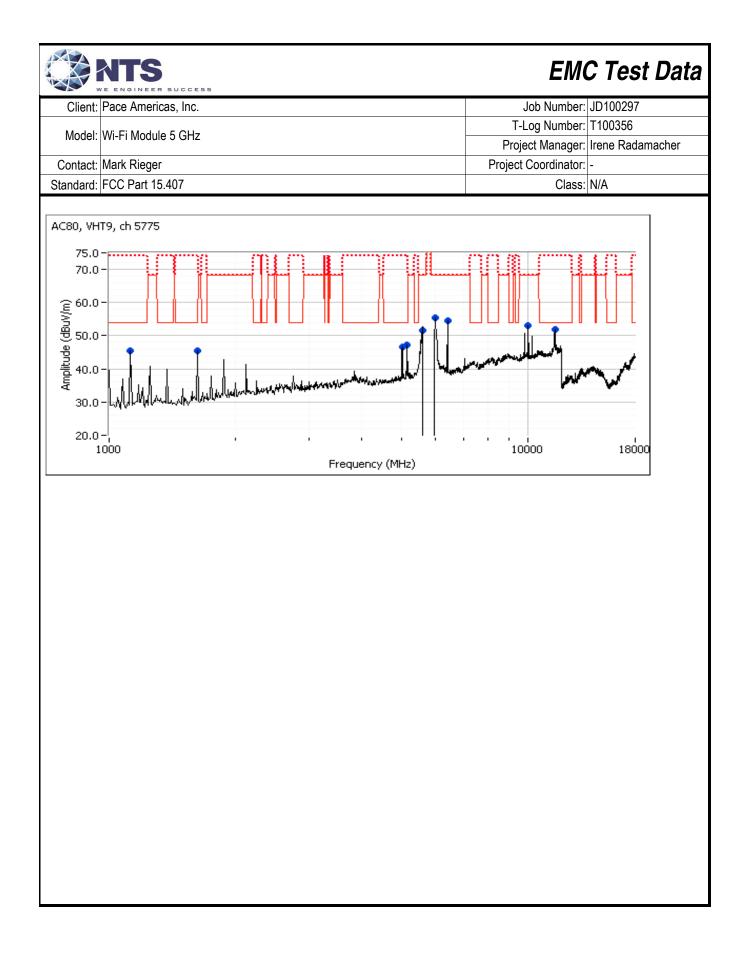
Contact: Ma Standard: FC Run #3b: Cent Channel: Tx Chain: 3T	CC Part 15.4 ter Channe 157	407					Proj	Log Number: T100356 ect Manager: Irene Radamacher Coordinator: - Class: N/A
Contact: Ma Standard: FC Run #3b: Cent Channel: Tx Chain: 3T	ark Rieger C Part 15.4 ter Channe 157	407					Proj	ect Manager: Irene Radamacher Coordinator: -
Standard: FC Run #3b: Cent Channel: Fx Chain: 3T	CC Part 15.4 ter Channe 157							Coordinator: -
Standard: FC Run #3b: Cent Channel: Fx Chain: 3T	CC Part 15.4 ter Channe 157						,	
Run #3b: Cent Channel: Tx Chain: 3Tz	<b>ter Channe</b> 157							
Channel: Tx Chain: 3T:	157	el						
Tx Chain: 3T								
Tx Chain: 3T			Mode:	11n20				
			Data Rate:	VHT8				
	^		Data Mate.	VIIIO				
Frequency	Level	Pol	15.209	) / 15E	Detector	Azimuth	Height	Comments
	lBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5546.430	46.9	Η	68.3	-21.4	AVG	5	1.0	RB 1 MHz;VB 10 Hz;Peak
5546.290	64.2	Н	68.3	-4.1	PK	5	1.0	RB 1 MHz;VB 3 MHz;Peak
6026.140	53.9	Н	68.3	-14.4	AVG	0	1.1	RB 1 MHz;VB 10 Hz;Peak
6027.390	65.1	Н	68.3	-3.2	PK	0	1.1	RB 1 MHz;VB 3 MHz;Peak
6022.630	51.0	Н	68.3	-17.3	AVG	249	2.2	RB 1 MHz;VB 10 Hz;Peak
6020.810	63.2	Н	68.3	-5.1	PK	249	2.2	RB 1 MHz;VB 3 MHz;Peak
5303.100	50.4	Н	68.3	-17.9	AVG	244	2.0	RB 1 MHz;VB 10 Hz;Peak
5297.600	61.3	Н	68.3	-7.0	PK	244	2.0	RB 1 MHz;VB 3 MHz;Peak
5000.030	48.2	Н	54.0	-5.8	AVG	345	2.5	RB 1 MHz;VB 10 Hz;Peak
4999.900	52.9	Н	74.0	-21.1	PK	345	2.5	RB 1 MHz;VB 3 MHz;Peak
9800.080	54.8	V	68.3	-13.5	PK	352	2.2	RB 1 MHz;VB 3 MHz;Peak
11569.480	53.3	V	54.0	-0.7	AVG	345	2.1	RB 1 MHz;VB 10 Hz;Peak
11569.920	66.5	V	74.0	-7.5	PK	345	2.1	RB 1 MHz;VB 3 MHz;Peak
			40.011					
Noto:								ard and its antennas 20-50cm fron
the			v		ssions in this		v	
								and peak measurements.
							68.3dBuV/m	n). The measurement method
req	quired is a p	peak measu	urement (RB=	=1MHz, VB≥	≥3MHz, peak o	detector).		



Model:         M-Fi Module 5 GHz         T-Log Number: T100366           Contact:         Mark Rieger         Project Coordinator:           Standard:         FCC Part 15.407         Class: N/A           Run #3c:         Center Channel         Class:         N/A           Channel:         151         Mode:         11n40           Tx Chain:         3Tx         Data Rate:         VHT9           Frequency         Level         Pol         15.209 / 15E         Detector         Azimuth         Height         Comments           MHz         dBu//m         v/h         Limit         Margin:         PKOP/Avg         degrees         meters           5000.020         46.0         H         54.0         -8.0         AVG         346         2.2         RB 1 MHz/VB 10 Hz/Peak           4999.60         52.1         H         74.0         -21.9         PK         346         1.7         RB 1 MHz/VB 10 Hz/Peak           5510.300         49.7         H         663.3         -15.8         AVG         186         1.7         RB 1 MHz/VB 10 Hz/Peak           5577.650         64.3         H         663.3         -15.8         AVG         199         1.6         RB 1 MHz/VB 10 Hz/Peak	Client:	Pace Americ	as, Inc.						Job Number: JD100297
Project Manager:         Irene Radamache           Contact:         Mark Rieger         Project Coordinator:         -           Standard:         FCC Part 15.407         Class:         N/A           Aun #3c:         Center Channel         Class:         N/A           Channel:         151         Mode:         11n40         .           frequency         Level         Pol         15.209 / 15E         Detector         Azimuth         Height         Comments           MHz         dBµV/m         w/h         Limit         Margin         Pk/QP/Avg         degrees         meters         5000.020         46.0         H         54.0         -8.0         AVG         346         2.2         RB 1 MHz;/VB 10 Hz;Peak           5510.630         62.0         H         68.3         -18.6         AVG         186         1.7         RB 1 MHz;/VB 3 MHz;Peak           5577.830         52.5         H         68.3         -15.8         AVG         199         1.6         RB 1 MHz;/VB 3 MHz;Peak           590.650         66.4         H         68.3         -15.6         AVG         199         1.6         RB 1 MHz;/VB 3 MHz;Peak           6000.240         52.7         H         68.3	Madali							T-	Log Number: T100356
Standard:         FCC Part 15.407         Class:         N/A           Run #3c:         Center Channel         Channel:         151         Mode:         11n40           Channel:         151         Data Rate:         VHT9         VHT9           Frequency         Level         Pol         15.209 / 15E         Detector         Azimuth         Height         Comments           MHz         dBjuV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           500.020         46.0         H         54.0         -8.0         AVG         346         2.2         RB 1 MHz;VB 10 Hz;Peak           5510.300         49.7         H         68.3         -18.6         AVG         186         1.7         RB 1 MHz;VB 3 MHz;Peak           5510.630         62.0         H         68.3         -15.8         AVG         344         1.1         RB 1 MHz;VB 3 MHz;Peak           5577.850         64.3         H         68.3         -13.9         AVG         199         1.6         RB 1 MHz;VB 3 MHz;Peak           6000.240         52.7         H         68.3         -15.6         AVG         197         1.6         RB 1 MHz;VB 3 MHz;Peak	woder:		9 3 GHZ					Proj	ect Manager: Irene Radamach
Run #3c:         Center Channel           Channel:         151         Mode:         11n40           Tx Chain:         3Tx         Data Rate:         VHT9           Frequency         Level         Pol         15.209 / 15E         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           5000.020         46.0         H         54.0         -8.0         AVG         346         2.2         RB 1 MHz;VB 10 Hz;Peak           5510.300         49.7         H         68.3         -18.6         AVG         186         1.7         RB 1 MHz;VB 3 MHz;Peak           5510.630         62.0         H         68.3         -15.8         AVG         344         1.1         RB 1 MHz;VB 10 Hz;Peak           5577.830         52.5         H         68.3         -13.9         AVG         199         1.6         RB 1 MHz;VB 3 MHz;Peak           590.650         64.4         H         68.3         -1.9         PK         199         1.6         RB 1 MHz;VB 3 MHz;Peak           6000.240         52.7         H         68.3         -15.6         AVG	Contact:	Mark Rieger						Project	Coordinator: -
Run #3c:         Center Channel           Channel:         151         Mode:         11n40           Tx Chain:         3Tx         Data Rate:         VHT9           Frequency         Level         Pol         15.209 / 15E         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           5000.020         46.0         H         54.0         -8.0         AVG         346         2.2         RB 1 MHz;VB 10 Hz;Peak           5510.300         49.7         H         68.3         -18.6         AVG         186         1.7         RB 1 MHz;VB 3 MHz;Peak           5510.630         62.0         H         68.3         -15.8         AVG         344         1.1         RB 1 MHz;VB 10 Hz;Peak           5577.830         52.5         H         68.3         -13.9         AVG         199         1.6         RB 1 MHz;VB 3 MHz;Peak           590.650         64.4         H         68.3         -1.9         PK         199         1.6         RB 1 MHz;VB 3 MHz;Peak           6000.240         52.7         H         68.3         -15.6         AVG	Standard:	FCC Part 15	.407						Class: N/A
Channel:         151         Mode:         11n40           Tx Chain:         3Tx         Data Rate:         VHT9           Frequency         Level         Pol         15.209 / 15E         Detector         Azimuth         Height         Comments           MHz         dBµU/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           5000.020         46.0         H         54.0         -8.0         AVG         346         2.2         RB 1 MHz;VB 10 Hz;Peak           5510.300         49.7         H         68.3         -18.6         AVG         186         1.7         RB 1 MHz;VB 10 Hz;Peak           5510.630         62.0         H         68.3         -15.8         AVG         344         1.1         RB 1 MHz;VB 3 MHz;Peak           5577.850         64.3         H         68.3         -13.9         AVG         199         1.6         RB 1 MHz;VB 3 MHz;Peak           590.530         54.4         H         68.3         -15.6         AVG         197         1.6         RB 1 MHz;VB 3 MHz;Peak           590.650         66.4         H         68.3         -15.6         AVG         197         1.6         RB 1 MHz;VB 3 MHz;Peak<	Run #3c: C	enter Chann	el						
Tx Chain:         3Tx         Data Rate:         VHT9           Frequency         Level         Pol         15.209 / 15E         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           5000.020         46.0         H         54.0         -8.0         AVG         346         2.2         RB 1 MHz;VB 10 Hz;Peak           4999.900         52.1         H         74.0         -21.9         PK         346         2.2         RB 1 MHz;VB 10 Hz;Peak           5510.630         62.0         H         68.3         -18.6         AVG         186         1.7         RB 1 MHz;VB 3 MHz;Peak           5577.830         52.5         H         68.3         -15.8         AVG         344         1.1         RB 1 MHz;VB 10 Hz;Peak           5577.850         64.3         H         68.3         -1.9         PK         199         1.6         RB 1 MHz;VB 10 Hz;Peak           5900.530         54.4         H         68.3         -1.9         PK         199         1.6         RB 1 MHz;VB 3 MHz;Peak           6000.240         52.7         H         68.3									
Frequency         Level         Pol         15.209 / 15E         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           5000.020         46.0         H         54.0         -8.0         AVG         346         2.2         RB 1 MHz;VB 10 Hz;Peak           4999.960         52.1         H         74.0         -21.9         PK         346         2.2         RB 1 MHz;VB 3 MHz;Peak           5510.300         49.7         H         68.3         -18.6         AVG         186         1.7         RB 1 MHz;VB 3 MHz;Peak           5510.630         62.0         H         68.3         -6.3         PK         186         1.7         RB 1 MHz;VB 3 MHz;Peak           5577.850         64.3         H         68.3         -1.5.8         AVG         344         1.1         RB 1 MHz;VB 3 MHz;Peak           5900.530         54.4         H         68.3         -13.9         AVG         199         1.6         RB 1 MHz;VB 3 MHz;Peak           6000.240         52.7         H         68.3         -15.6         AVG         197         1.6         RB 1 MHz;VB 3 MHz									
MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           5000.020         46.0         H         54.0         -8.0         AVG         346         2.2         RB 1 MHz;VB 10 Hz;Peak           4999.960         52.1         H         74.0         -21.9         PK         346         2.2         RB 1 MHz;VB 3 MHz;Peak           5510.300         49.7         H         68.3         -18.6         AVG         186         1.7         RB 1 MHz;VB 3 MHz;Peak           5510.630         62.0         H         68.3         -6.3         PK         186         1.7         RB 1 MHz;VB 3 MHz;Peak           5577.830         52.5         H         68.3         -15.8         AVG         344         1.1         RB 1 MHz;VB 3 MHz;Peak           5577.850         64.3         H         68.3         -13.9         AVG         199         1.6         RB 1 MHz;VB 10 Hz;Peak           5990.530         54.4         H         68.3         -15.6         AVG         197         1.6         RB 1 MHz;VB 3 MHz;Peak           6000.240         52.7         H         68.3         -3.5         PK         197         1.6         RB 1 MHz	Tx Chain:	3Tx		Data Rate:	VHT9				
MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           5000.020         46.0         H         54.0         -8.0         AVG         346         2.2         RB 1 MHz;VB 10 Hz;Peak           4999.960         52.1         H         74.0         -21.9         PK         346         2.2         RB 1 MHz;VB 3 MHz;Peak           5510.300         49.7         H         68.3         -18.6         AVG         186         1.7         RB 1 MHz;VB 3 MHz;Peak           5510.630         62.0         H         68.3         -6.3         PK         186         1.7         RB 1 MHz;VB 3 MHz;Peak           5577.830         52.5         H         68.3         -15.8         AVG         344         1.1         RB 1 MHz;VB 3 MHz;Peak           5577.850         64.3         H         68.3         -13.9         AVG         199         1.6         RB 1 MHz;VB 10 Hz;Peak           5990.530         54.4         H         68.3         -15.6         AVG         197         1.6         RB 1 MHz;VB 3 MHz;Peak           6000.240         52.7         H         68.3         -3.5         PK         197         1.6         RB 1 MHz	Frequency	l evel	Pol	15,209	) / 15E	Detector	Azimuth	Height	Comments
5000.020         46.0         H         54.0         -8.0         AVG         346         2.2         RB 1 MHz;VB 10 Hz;Peak           4999.960         52.1         H         74.0         -21.9         PK         346         2.2         RB 1 MHz;VB 10 Hz;Peak           5510.300         49.7         H         68.3         -18.6         AVG         186         1.7         RB 1 MHz;VB 10 Hz;Peak           5510.630         62.0         H         68.3         -6.3         PK         186         1.7         RB 1 MHz;VB 3 MHz;Peak           5577.830         52.5         H         68.3         -15.8         AVG         344         1.1         RB 1 MHz;VB 10 Hz;Peak           5577.850         64.3         H         68.3         -13.9         AVG         199         1.6         RB 1 MHz;VB 3 MHz;Peak           5990.530         54.4         H         68.3         -1.9         PK         199         1.6         RB 1 MHz;VB 3 MHz;Peak           6000.240         52.7         H         68.3         -15.6         AVG         197         1.6         RB 1 MHz;VB 3 MHz;Peak           10200.000         53.0         V         68.3         -15.3         AVG         356         2.								<u> </u>	
4999.960         52.1         H         74.0         -21.9         PK         346         2.2         RB 1 MHz;VB 3 MHz;Peak           5510.300         49.7         H         68.3         -18.6         AVG         186         1.7         RB 1 MHz;VB 3 MHz;Peak           5510.630         62.0         H         68.3         -6.3         PK         186         1.7         RB 1 MHz;VB 3 MHz;Peak           5577.830         52.5         H         68.3         -15.8         AVG         344         1.1         RB 1 MHz;VB 3 MHz;Peak           5577.850         64.3         H         68.3         -4.0         PK         344         1.1         RB 1 MHz;VB 3 MHz;Peak           590.530         54.4         H         68.3         -13.9         AVG         199         1.6         RB 1 MHz;VB 3 MHz;Peak           590.650         66.4         H         68.3         -15.6         AVG         197         1.6         RB 1 MHz;VB 3 MHz;Peak           6000.240         52.7         H         68.3         -15.3         AVG         197         1.6         RB 1 MHz;VB 3 MHz;Peak           10200.000         53.0         V         68.3         -15.3         AVG         356         2.2									RB 1 MHz;VB 10 Hz;Peak
5510.300       49.7       H       68.3       -18.6       AVG       186       1.7       RB 1 MHz;VB 10 Hz;Peak         5510.630       62.0       H       68.3       -6.3       PK       186       1.7       RB 1 MHz;VB 3 MHz;Peak         5577.830       52.5       H       68.3       -15.8       AVG       344       1.1       RB 1 MHz;VB 3 MHz;Peak         5577.850       64.3       H       68.3       -4.0       PK       344       1.1       RB 1 MHz;VB 3 MHz;Peak         5990.530       54.4       H       68.3       -13.9       AVG       199       1.6       RB 1 MHz;VB 3 MHz;Peak         5990.650       66.4       H       68.3       -1.9       PK       199       1.6       RB 1 MHz;VB 3 MHz;Peak         6000.240       52.7       H       68.3       -15.6       AVG       197       1.6       RB 1 MHz;VB 3 MHz;Peak         6000.810       64.8       H       68.3       -3.5       PK       197       1.6       RB 1 MHz;VB 10 Hz;Peak         10200.000       53.0       V       68.3       -15.3       AVG       356       2.2       RB 1 MHz;VB 3 MHz;Peak         11509.530       49.4       V       54.0									
5577.830         52.5         H         68.3         -15.8         AVG         344         1.1         RB 1 MHz;VB 10 Hz;Peak           5577.850         64.3         H         68.3         -4.0         PK         344         1.1         RB 1 MHz;VB 10 Hz;Peak           5990.530         54.4         H         68.3         -13.9         AVG         199         1.6         RB 1 MHz;VB 3 MHz;Peak           5990.650         66.4         H         68.3         -1.9         PK         199         1.6         RB 1 MHz;VB 3 MHz;Peak           6000.240         52.7         H         68.3         -15.6         AVG         197         1.6         RB 1 MHz;VB 10 Hz;Peak           6000.810         64.8         H         68.3         -3.5         PK         197         1.6         RB 1 MHz;VB 3 MHz;Peak           10200.000         53.0         V         68.3         -15.3         AVG         356         2.2         RB 1 MHz;VB 10 Hz;Peak           10199.850         57.8         V         68.3         -10.5         PK         356         2.2         RB 1 MHz;VB 3 MHz;Peak           11509.680         61.4         V         74.0         -12.6         PK         347         2.	5510.300	49.7	Н	68.3	-18.6	AVG	186	1.7	RB 1 MHz;VB 10 Hz;Peak
5577.850         64.3         H         68.3         -4.0         PK         344         1.1         RB 1 MHz;VB 3 MHz;Peak           5990.530         54.4         H         68.3         -13.9         AVG         199         1.6         RB 1 MHz;VB 3 MHz;Peak           5990.650         66.4         H         68.3         -1.9         PK         199         1.6         RB 1 MHz;VB 3 MHz;Peak           6000.240         52.7         H         68.3         -15.6         AVG         197         1.6         RB 1 MHz;VB 10 Hz;Peak           6000.810         64.8         H         68.3         -3.5         PK         197         1.6         RB 1 MHz;VB 3 MHz;Peak           10200.000         53.0         V         68.3         -15.3         AVG         356         2.2         RB 1 MHz;VB 10 Hz;Peak           10199.850         57.8         V         68.3         -10.5         PK         356         2.2         RB 1 MHz;VB 3 MHz;Peak           11509.680         61.4         V         54.0         -4.6         AVG         347         2.1         RB 1 MHz;VB 3 MHz;Peak           Note:         Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm fr         the de	5510.630	62.0	Н	68.3	-6.3	PK	186	1.7	RB 1 MHz;VB 3 MHz;Peak
5990.530       54.4       H       68.3       -13.9       AVG       199       1.6       RB 1 MHz;VB 10 Hz;Peak         5990.650       66.4       H       68.3       -1.9       PK       199       1.6       RB 1 MHz;VB 3 MHz;Peak         6000.240       52.7       H       68.3       -15.6       AVG       197       1.6       RB 1 MHz;VB 10 Hz;Peak         6000.810       64.8       H       68.3       -3.5       PK       197       1.6       RB 1 MHz;VB 3 MHz;Peak         10200.000       53.0       V       68.3       -15.3       AVG       356       2.2       RB 1 MHz;VB 10 Hz;Peak         10199.850       57.8       V       68.3       -10.5       PK       356       2.2       RB 1 MHz;VB 3 MHz;Peak         11509.530       49.4       V       54.0       -4.6       AVG       347       2.1       RB 1 MHz;VB 3 MHz;Peak         11509.680       61.4       V       74.0       -12.6       PK       347       2.1       RB 1 MHz;VB 3 MHz;Peak         Note:       Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm fr       the device indicated there were no significant emissions in this frequency range         Note:       For emis	5577.830	52.5	Н	68.3	-15.8	AVG	344	1.1	RB 1 MHz;VB 10 Hz;Peak
5990.650         66.4         H         68.3         -1.9         PK         199         1.6         RB 1 MHz;VB 3 MHz;Peak           6000.240         52.7         H         68.3         -15.6         AVG         197         1.6         RB 1 MHz;VB 3 MHz;Peak           6000.810         64.8         H         68.3         -3.5         PK         197         1.6         RB 1 MHz;VB 3 MHz;Peak           10200.000         53.0         V         68.3         -15.3         AVG         356         2.2         RB 1 MHz;VB 10 Hz;Peak           10200.000         53.0         V         68.3         -10.5         PK         356         2.2         RB 1 MHz;VB 3 MHz;Peak           10199.850         57.8         V         68.3         -10.5         PK         356         2.2         RB 1 MHz;VB 3 MHz;Peak           11509.530         49.4         V         54.0         -4.6         AVG         347         2.1         RB 1 MHz;VB 3 MHz;Peak           11509.680         61.4         V         74.0         -12.6         PK         347         2.1         RB 1 MHz;VB 3 MHz;Peak           Note:         Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm fr         the	5577.850	64.3	Н	68.3	-4.0	PK	344	1.1	RB 1 MHz;VB 3 MHz;Peak
6000.24052.7H68.3-15.6AVG1971.6RB 1 MHz;VB 10 Hz;Peak6000.81064.8H68.3-3.5PK1971.6RB 1 MHz;VB 3 MHz;Peak10200.00053.0V68.3-15.3AVG3562.2RB 1 MHz;VB 10 Hz;Peak10199.85057.8V68.3-10.5PK3562.2RB 1 MHz;VB 3 MHz;Peak11509.53049.4V54.0-4.6AVG3472.1RB 1 MHz;VB 10 Hz;Peak11509.68061.4V74.0-12.6PK3472.1RB 1 MHz;VB 3 MHz;PeakNote:Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm fr the device indicated there were no significant emissions in this frequency rangeNote:For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method	5990.530	54.4		68.3	-13.9	AVG	199	1.6	RB 1 MHz;VB 10 Hz;Peak
6000.81064.8H68.3-3.5PK1971.6RB 1 MHz;VB 3 MHz;Peak10200.00053.0V68.3-15.3AVG3562.2RB 1 MHz;VB 10 Hz;Peak10199.85057.8V68.3-10.5PK3562.2RB 1 MHz;VB 3 MHz;Peak11509.53049.4V54.0-4.6AVG3472.1RB 1 MHz;VB 10 Hz;Peak11509.68061.4V74.0-12.6PK3472.1RB 1 MHz;VB 3 MHz;PeakNote:Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm fr the device indicated there were no significant emissions in this frequency rangeNote 1:For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method	5990.650	66.4	Н	68.3	-1.9	PK	199	1.6	RB 1 MHz;VB 3 MHz;Peak
10200.000       53.0       V       68.3       -15.3       AVG       356       2.2       RB 1 MHz;VB 10 Hz;Peak         10199.850       57.8       V       68.3       -10.5       PK       356       2.2       RB 1 MHz;VB 3 MHz;Peak         11509.530       49.4       V       54.0       -4.6       AVG       347       2.1       RB 1 MHz;VB 10 Hz;Peak         11509.680       61.4       V       74.0       -12.6       PK       347       2.1       RB 1 MHz;VB 3 MHz;Peak         Note:         Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm fr         Note:         Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm fr         Note:         Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm fr         Note:         Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm fr         Note:         For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.         For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measu	6000.240	52.7	Н	68.3	-15.6	AVG	197	1.6	RB 1 MHz;VB 10 Hz;Peak
10199.850       57.8       V       68.3       -10.5       PK       356       2.2       RB 1 MHz;VB 3 MHz;Peak         11509.530       49.4       V       54.0       -4.6       AVG       347       2.1       RB 1 MHz;VB 10 Hz;Peak         11509.680       61.4       V       74.0       -12.6       PK       347       2.1       RB 1 MHz;VB 3 MHz;Peak         Note:         Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm fr         the device indicated there were no significant emissions in this frequency range         Note:         For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.         For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method	6000.810	64.8	Н	68.3	-3.5	PK	197	1.6	RB 1 MHz;VB 3 MHz;Peak
11509.530       49.4       V       54.0       -4.6       AVG       347       2.1       RB 1 MHz;VB 10 Hz;Peak         11509.680       61.4       V       74.0       -12.6       PK       347       2.1       RB 1 MHz;VB 3 MHz;Peak         Note:         Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm fr         the device indicated there were no significant emissions in this frequency range         Note 1:         For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.         For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method					-15.3				RB 1 MHz;VB 10 Hz;Peak
11509.680       61.4       V       74.0       -12.6       PK       347       2.1       RB 1 MHz;VB 3 MHz;Peak         Note:         Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm fr         the device indicated there were no significant emissions in this frequency range         Note 1:         For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.         Jote 1:         For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method									RB 1 MHz;VB 3 MHz;Peak
Note:       Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm fr         the device indicated there were no significant emissions in this frequency range         Note 1:       For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.         Hote 2:       For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method									
Note:       the device indicated there were no significant emissions in this frequency range         Note 1:       For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.         Note 2:       For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method	11509.680	61.4	V	74.0	-12.6	PK	347	2.1	RB 1 MHz;VB 3 MHz;Peak
Note:       the device indicated there were no significant emissions in this frequency range         Note 1:       For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.         Note 2:       For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method		-							
Interpretation       Interpretation <thinterpretation< th="">       Interpretation       Interp</thinterpretation<>	Note:								ard and its antennas 20-50cm
For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method									
	Note 1:								
required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).	Note 2:							68.3dBuV/m	n). The measurement method
		required is a	peak meas	urement (RB=	=1MHz, VB≥	≥3MHz, peak o	detector).		



		SUCCESS						EM	C Test Data
Client:	Pace Americ	as, Inc.						Job Number:	JD100297
								Log Number:	
Model:	Wi-Fi Module	e 5 GHz					Project Manager: Irene Radamacher		
Contact:	Mark Rieger						Project Coordinator: -		
	FCC Part 15						Појсог	Class:	
Standard.	FUC Fail 15	.407						01855.	IN/A
[ Te	Center Chanr Date of Test: st Engineer: est Location:	3/11/2016 0 Rafael Varel	as		Cor	onfig. Used: fig Change: UT Voltage:	None		
Channel:	155		Mode:	11ac80					
	3Tx		Data Rate:	VHT9					
Frequency	Level	Pol	15.209	) / 15E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5606.440	67.0	V	68.3	-1.3	PK	50	1.0	RB 1 MHz;V	/B 3 MHz;Peak
6416.480	57.0	Н	68.3	-11.3	PK	350	1.0	RB 1 MHz;V	/B 3 MHz;Peak
11563.800	44.2	V	54.0	-9.8	Avg	299	1.9	,	MHz;VB 3 kHz;Peak VA
11581.000	54.9	V	74.0	-19.1	PK	299	1.9		/B 3 MHz;Peak
5133.810	33.7	V	54.0	-20.3	Avg	261	1.0	Note 3,RB 1	MHz;VB 3 kHz;Peak VA
5133.190	50.9	V	74.0	-23.1	PK	261	1.0	RB 1 MHz;V	/B 3 MHz;Peak
4999.940	45.3	V	54.0	-8.7	Avg	245	1.9	Note 3,RB 1	MHz;VB 3 kHz;Peak VA
4999.830	50.0	V	74.0	-24.0	PK	245	1.9	RB 1 MHz;V	/B 3 MHz;Peak
5988.180	62.0	Н	68.3	-6.3	PK	174	1.4	RB 1 MHz;V	/B 3 MHz;Peak
1624.980	44.3	V	54.0	-9.7	Avg	155	2.0		MHz;VB 3 kHz;Peak VA
1625.020	47.3	V	74.0	-26.7	PK	155	2.0	RB 1 MHz;V	/B 3 MHz;Peak
1125.010	45.5	Н	54.0	-8.5	Avg	129	1.0		MHz;VB 3 kHz;Peak VA
1124.980	47.8	Н	74.0	-26.2	PK	129	1.0		/B 3 MHz;Peak
9999.980	56.9	V	68.3	-11.4	PK	9	2.1	RB 1 MHz;V	/B 3 MHz;Peak
	the device in For emissior	dicated there	e were no sig d bands, the	nificant emi limit of 15.2	ssions in this 209 was used	frequency ra which requir	ange res average :	and peak me	tennas 20-50cm from asurements. urement method
Note 2:	required is a	peak measu	urement (RB=	=1MHz, VB≥		detector). P	er KDB 7890	,	compliance can be



	WE ENGINEER	SUCCESS							C Test Dat
Client:	Pace America	as, Inc.						Job Number:	
Model [.]	Wi-Fi Module	5 GHz						Log Number:	
modol.	Wi i i Modulo	0 0112					Proj	ect Manager:	Irene Radamacher
Contact:	Mark Rieger						Project	Coordinator:	-
Standard:	FCC Part 15.	407						Class:	N/A
l Te	adiated Spuri Date of Test: 1 est Engineer: F est Location: F	1/8/2016 0 Rafael Var	:00 elas	40000 MHz	C Cor	<b>Iode: Wors</b> onfig. Used: ofig Change: UT Voltage:	1 None		
un #/la•	.ow Channel								
hannel:	149		Mode:	а					
x Chain:	-		Data Rate:	6 Mb/s					
requency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
1489.410	52.1	V	54.0	-1.9	AVG	335	2.5		B 10 Hz;Peak
1489.270	65.4	V	74.0	-8.6	PK	335	2.5	RB 1 MHz;V	B 3 MHz;Peak
587.280	65.4	Н	68.3	-2.9	PK	350	1.2		MHz; VB: 3 MHz
982.820	62.4	Н	68.3	-5.9	PK	177	1.3	1	MHz; VB: 3 MHz
508.030	62.6	Н	68.3	-5.7	PK	5	1.0		MHz; VB: 3 MHz
999.980	46.2	Н	54.0	-7.8	AVG	272	1.4		B 10 Hz;Peak
000.100	51.4	<u> </u>	74.0	-22.6	PK	272	1.4		B 3 MHz;Peak
266.600 999.880	60.1 57.0	<u>Н</u> V	68.3 68.3	-8.2 -11.3	PK PK	248	1.7 2.3		B 3 MHz;Peak
7236.810		 H	68.3	-11.3	PK	19 314	2.3		B 3 MHz;Peak B 3 MHz;Peak
1230.010	02.4	11	00.3	-5.9	ΓN	514	1.4	ND T WITZ, V	D J WI IZ, FEAK
Note:					urement anter issions in this			ard and its an	tennas 20-50cm fron
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ද 60.0			- 11/1			<b>1</b>			++++
Amplitude (dBuV/m) 20.05 40.0			ШІ						
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inde					I	171 N		₩ <b>₩</b> ₩	ا دا .
善 40.0	-			denotes.	فيقدرون بالملقان	AY Make		الغن ا	<b>₩</b> ₩
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30.0									
30.0	1000					· ! .		0000	18000

		SUCCESS						ЕМ	C Test Data
Client:	Pace Americ	cas, Inc.						Job Number:	JD100297
							T-	Log Number:	T100356
Model:	Wi-Fi Module	e 5 GHz					Proje	ect Manager:	Irene Radamacher
Contact:	Mark Rieger						_	Coordinator:	-
	FCC Part 15						,	Class:	N/A
Run #4b: H	ligh Channel								
Channel:	165		Mode:	а					
Tx Chain:	3Tx		Data Rate:	6 Mb/s					
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
11650.070		V	54.0	-0.2	AVG	342	2.1		′B 10 Hz;Peak
11649.300		V	74.0	-8.1	PK	342	2.1		/B 3 MHz;Peak
10200.120		V	68.3	-10.9	PK	350	2.1		/B 3 MHz;Peak
5992.190	63.7	Н	68.3	-4.6	PK	258	1.3		MHz; VB: 3 MHz
5333.740	60.5	Н	68.3	-7.8	PK	243	2.0		MHz; VB: 3 MHz
5586.750	61.8	Н	68.3	-6.5	PK	339	1.0		MHz; VB: 3 MHz
6068.650	66.1	Н	68.3	-2.2	PK	358	1.2		'B 3 MHz;Peak
5000.010	46.8	Н	54.0	-7.2	AVG	343	2.3		/B 10 Hz;Peak
4999.940	52.2	H	74.0	-21.8	PK	343	2.3		/B 3 MHz;Peak
17472.510	67.3	Н	68.3	-1.0	PK	308	2.1	RB 1 MHz;V	'B 3 MHz;Peak
	)	idicated ther		gnificant emi	equency (MH	frequency ra		ard and its an	tennas 20-50cm from

# EMC Test Data

Client:	Pace Americas, Inc.	Job Number:	JD100297
Model	Wi-Fi Module 5 GHz	T-Log Number:	T100356
woder.	WI-FI Module 5 GHZ	Project Manager:	Irene Radamacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC Part 15.407	Class:	N/A

# RSS-247 and FCC 15.407 (UNII) Radiated Spurious Emissions

### Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

## General Test Configuration

TS

SUCCESS

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. For radiated emissions testing the measurement antenna was located 3 meters from the EUT, unless otherwise noted.

### Ambient Conditions:

Temperature:	21.4 °C
Rel. Humidity:	35 %

### Summary of Results

Summary	OI NESUI	15					
Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
Scans on "c	enter" chann	el in all four (	OFDM mode	s to determin	e the worst case mode.		
	n20	40 - 5200MHz	23.0	23.0	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	50.9 dBµV/m @ 20798.2 MHz (-3.1 dB)
1 UNII-1	n40	38 - 5190MHz	23.0	23.0	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	53.1 dBµV/m @ 5432.8 MHz (-0.9 dB)
	ac80	42 - 5210MHz	20.5	20.5	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	52.7 dBµV/m @ 5049.5 MHz (-1.3 dB)
Measureme	nts on low a	nd high chanr	nels in worst-	-case OFDM	mode.		
2	n20	36 - 5180MHz	23.0	23.0	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	53.7 dBµV/m @ 5027.7 MHz (-0.3 dB)
	n40	46 - 5230MHz	23.0	23	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	52.4 dBµV/m @ 15686.9 MHz (-1.6 dB)
Scans on "c	enter" chann	el for all OFC	OM modes to	determine th	ne worst case mode.		
	n20	157 - 5785MHz	23.0	23	Radiated Emissions 1 - 40 GHz	FCC 15.209 / 15 E	52.7 dBµV/m @ 11569.3 MHz (-1.3 dB)
3 UNII-3	n40	151 - 5755MHz	23.0	23	Radiated Emissions 1 - 40 GHz	FCC 15.209 / 15 E	48.5 dBµV/m @ 11532.5 MHz (-5.5 dB)
	ac80	155 - 5775MHz	23.0	23	Radiated Emissions 1 - 40 GHz	FCC 15.209 / 15 E	63.9 dBµV/m @ 5578.5 MHz (-4.4 dB)
Measureme	nts on low a	nd high chanr	nels in worst	-case OFDM			
4	n20	149 - 5745MHz	23.0	23	Radiated Emissions 1 - 40 GHz	FCC 15.209 / 15 E	67.1 dBµV/m @ 5579.2 MHz (-1.2 dB)
UNII-3	n20	165 - 5825MHz	23.0	23	Radiated Emissions 1 - 40 GHz	FCC 15.209 / 15 E	62.4 dBµV/m @ 17472.3 MHz (-5.9 dB)

	NTS	EMO	C Test Data
Client:	Pace Americas, Inc.	Job Number:	JD100297
Madal	Wi-Fi Module 5 GHz	T-Log Number:	T100356
woder.		Project Manager:	Irene Radamacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC Part 15.407	Class:	N/A

# Modifications Made During Testing

No modifications were made to the EUT during testing

### Deviations From The Standard

No deviations were made from the requirements of the standard.

### Procedure Comments:

Measurements performed in accordance with FCC KDB 789033

Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time Unless otherwise stated/noted, emission has duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold 50 traces. (method VB of KDB 789033)

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)	
n20	VHT8	92.6%	No	1.935	0.34	0.67	517	1k
n40	VHT9	95.2%	No	0.952	0.21	0.43	1050	3k
ac80	VHT9	75.5%	Yes	2.023	1.2	2.4	494	1k

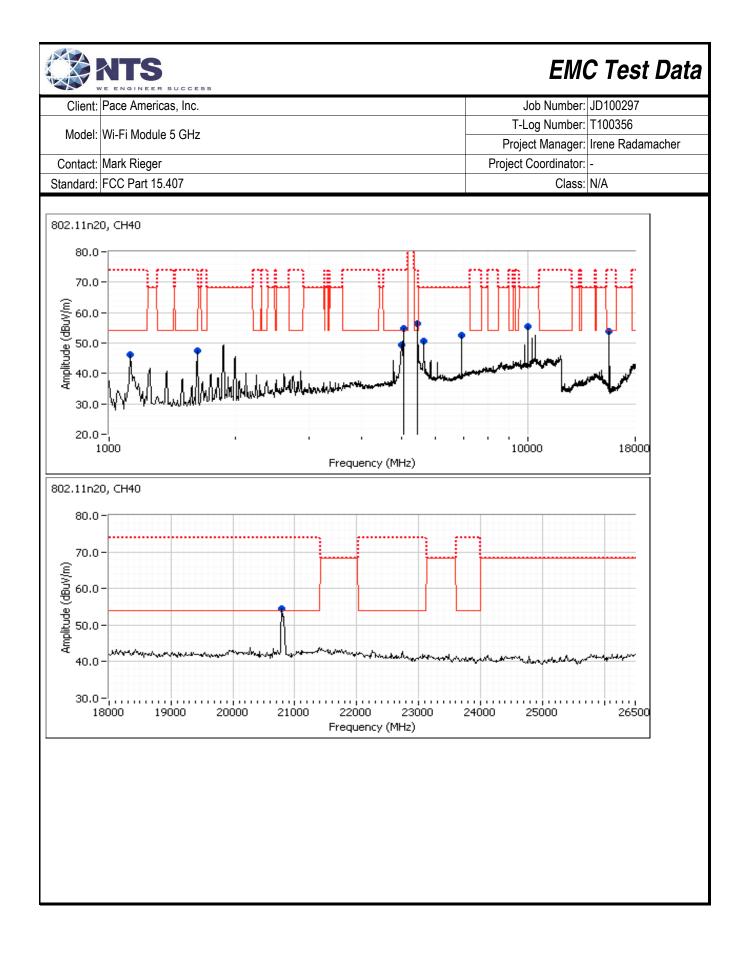
### Sample Notes

Sample S/N: F56154520246 Driver: 7.14.89.21.571.206 Antenna: 3x3 Beamforming

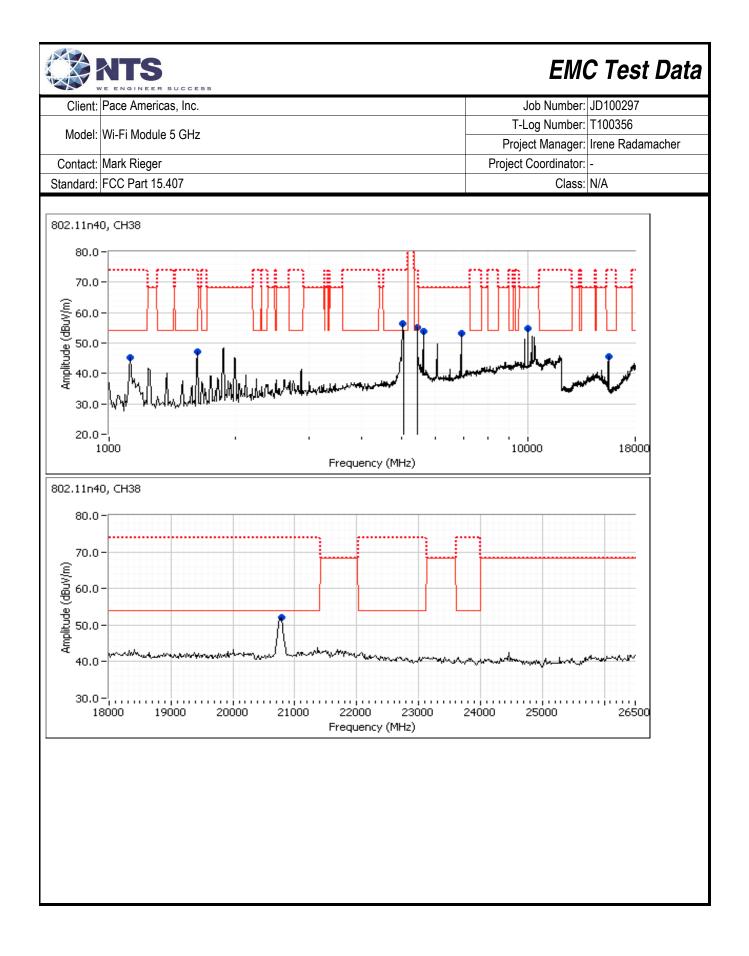
### Measurement Specific Notes:

	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method
Note 1:	required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be
	demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 2:	Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto
NOLE Z.	sweep, trace average 100 traces (method AD of KDB 789033)
Note 3:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz,
Note 5.	peak detector, linear averaging, auto sweep,max hold 50*1/DC traces (method VB of KDB 789033)
Nata A.	Emission has a duty cycle < 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto
Note 4:	sweep, trace average 100*1/DC traces, measurement corrected by Pwr correction factor (method AD of KDB 789033)
Nata Fr	Emission has non constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW> 1/T, peak detector,
Note 5:	linear average mode, sweep time auto, max hold. Max hold for 50*(1/DC) traces

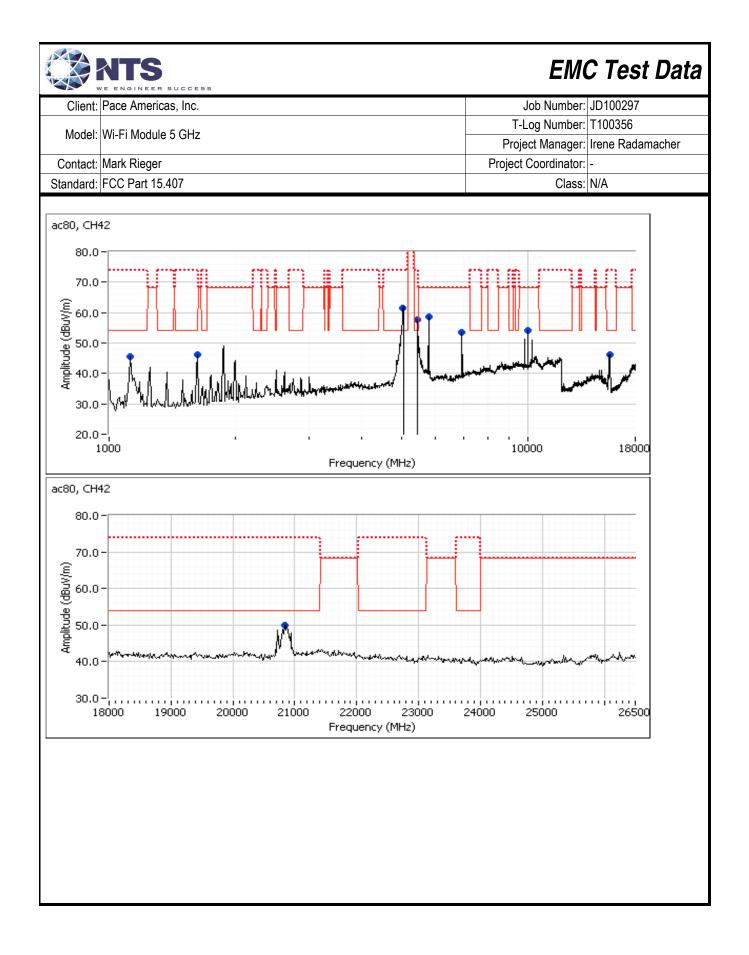
Client:	Pace Americ	as, Inc.						Job Number:	JD100297
							T-	Log Number:	T100356
Model:	Wi-Fi Module	e 5 GHz					Proi	ect Manager:	Irene Radamacher
Contact.	Mark Rieger							Coordinator:	
	FCC Part 15						110,000	Class:	
Stanuaru.	1001 att 15	.407						01833.	IN/A
un #1, Rad	diated Spuri	ous Emissi	ons, 1,000 -	40,000 MHz	. Operation i	n the 5150-5	250 MHz B	and	
	Date of Test:				C	onfig. Used:	1		
	st Engineer:					ifig Change:			
Te	est Location:	FT Chambe	er #7		E	UT Voltage:	120V/60Hz		
		I							
iun #1b: C	enter Chanr	nei							
hannel:	40		Mode:	11n20					
x Chain:	40 3x3		Data Rate:	VHT8					
x onam.	0.00		Data Nate.	VIIIO					
Frequency	Level	Pol	15.209	9 / 15E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
20798.240	50.9	V	54.0	-3.1	Avg	36	1.9	Note 5,RB 1	MHz;VB 1 kHz;Peak
20796.070	65.5	V	74.0	-8.5	PK	36	1.9		/B 3 MHz;Peak
5632.120	60.7	Н	68.3	-7.6	PK	260	1.7		/B 3 MHz;Peak
1125.070	43.9	V	54.0	-10.1	Avg	252	1.9	Note 5,RB 1	MHz;VB 1 kHz;Peak
1125.180	47.3	V	74.0	-26.7	PK	252	1.9	RB 1 MHz;V	/B 3 MHz;Peak
1624.990	47.1	V	54.0	-6.9	Avg	212	2.0	Note 5,RB 1	MHz;VB 1 kHz;Peak
1625.180	49.2	V	74.0	-24.8	PK	211	2.0		/B 3 MHz;Peak
6933.310	55.6	V	68.3	-12.7	PK	183	1.1		/B 3 MHz;Peak
9999.880	58.7	V	68.3	-9.6	PK	18	2.1		/B 3 MHz;Peak
5045.110	49.4	Н	54.0	-4.6	Avg	175	1.5		; RB 1 MHz; VB: 1 kH
5045.270	65.6	H	74.0	-8.4	PK	175	1.5		MHz; VB: 3 MHz
4983.380	46.2	<u>H</u>	54.0	-7.8	Avg	190	2.1		; RB 1 MHz; VB: 1 kH
4983.440	56.9	H	74.0	-17.1	PK	190	2.1		MHz; VB: 3 MHz
5442.020	48.9	<u>H</u>	54.0	-5.1	Avg	338	1.1		; RB 1 MHz; VB: 1 kF
5441.310 5600.510	60.2 46.5	H V	74.0 54.0	-13.8 -7.5	PK	338 326	1.1 1.8		MHz; VB: 3 MHz MHz;VB 1 kHz;Peak
5592.910	40.5 60.8	V	74.0	-13.2	Avg PK	326	1.8	,	/B 3 MHz;Peak
5592.910	00.0	V	74.0	-13.2	FK	320	1.0	nd i ivii iz, v	D J WII IZ,Feak
	Scans made	hetween 26	5 - 40 GHz	with the me	asurement ant	enna moved	around the	card and its	antennas 20-50cm fro
					issions in this				
ote 1:				/	209 was used	1 1	•	and peak me	asurements.
U.U. 11									urement method
					≥3MHz, peak			,	
lote 2:	reduired is a	Deal meas							



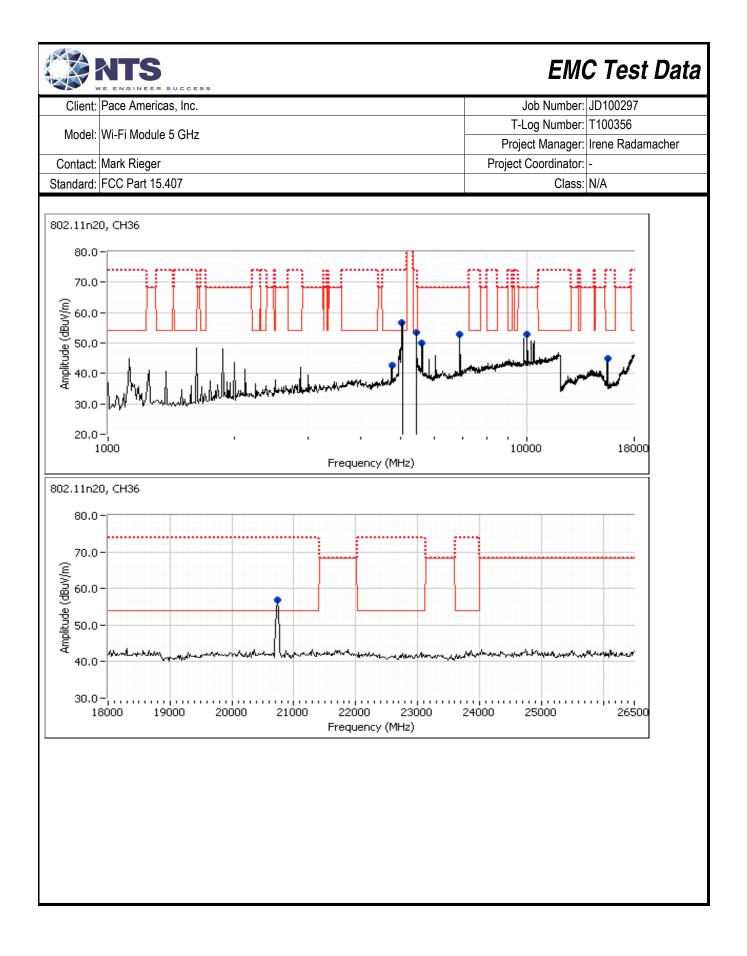
Client:	Pace Americ	as, Inc.						Job Number:	JD100297
							T-	Log Number:	T100356
Model:	Wi-Fi Module	e 5 GHz						-	Irene Radamacher
Contact	Mark Rieger						-	Coordinator:	
	FCC Part 15	407					riojeci	Class:	
								Ulass.	IN/A
	Center Chann	el							
Channel:	38		Mode:	11n40					
x Chain:	3x3		Data Rate:	VHT9					
Frequency	Level	Pol	15.209	) / 15E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Commenta	
5432.800	53.1	H	54.0	-0.9	Avg	183	1.5	Note 5 RB 1	MHz;VB 3 kHz;Peak
5433.650	63.3	H	74.0	-10.7	PK	183	1.5		MHz; VB: 3 MHz
5622.430	57.0	H	68.3	-11.3	PK	356	2.1	,	/B 3 MHz;Peak
1125.040	46.0	V	54.0	-8.0	Avg	231	2.0		MHz;VB 3 kHz;Peak
1125.060	47.9	V	74.0	-26.1	PK	231	2.0		/B 3 MHz;Peak
1625.070	46.7	V	54.0	-7.3	Avg	214	1.9		MHz;VB 3 kHz;Peak
1625.010	48.5	V	74.0	-25.5	PK	214	1.9	RB 1 MHz;\	/B 3 MHz;Peak
6920.010	56.9	Н	68.3	-11.4	PK	170	1.5	RB 1 MHz;\	/B 3 MHz;Peak
9999.950	56.7	V	68.3	-11.6	PK	22	1.0	RB 1 MHz;\	/B 3 MHz;Peak
5025.170	49.7	Н	54.0	-4.3	Avg	206	1.3	Note 5,RB 1	MHz;VB 3 kHz;Peak
5026.210	60.2	Н	74.0	-13.8	PK	206	1.3	POS; RB 1	MHz; VB: 3 MHz
20754.830	50.8	V	54.0	-3.2	Avg	326	1.1	Note 5,RB 1	MHz;VB 3 kHz;Peak
20760.700	62.7	V	74.0	-11.3	PK	326	1.1		/B 3 MHz;Peak
15568.110	45.6	Н	54.0	-8.4	Avg	18	1.8		MHz;VB 3 kHz;Peak
15580.780	56.3	Н	74.0	-17.7	PK	18	1.8	RB 1 MHz;\	/B 3 MHz;Peak
	0	h . t 0							
Note:			re were no sig					card and its	antennas 20-50cm fro
Note 1:			ed bands, the				<u> </u>	and neak me	asurements
									urement method
Note 2:			urement (RB=					,	
				,					



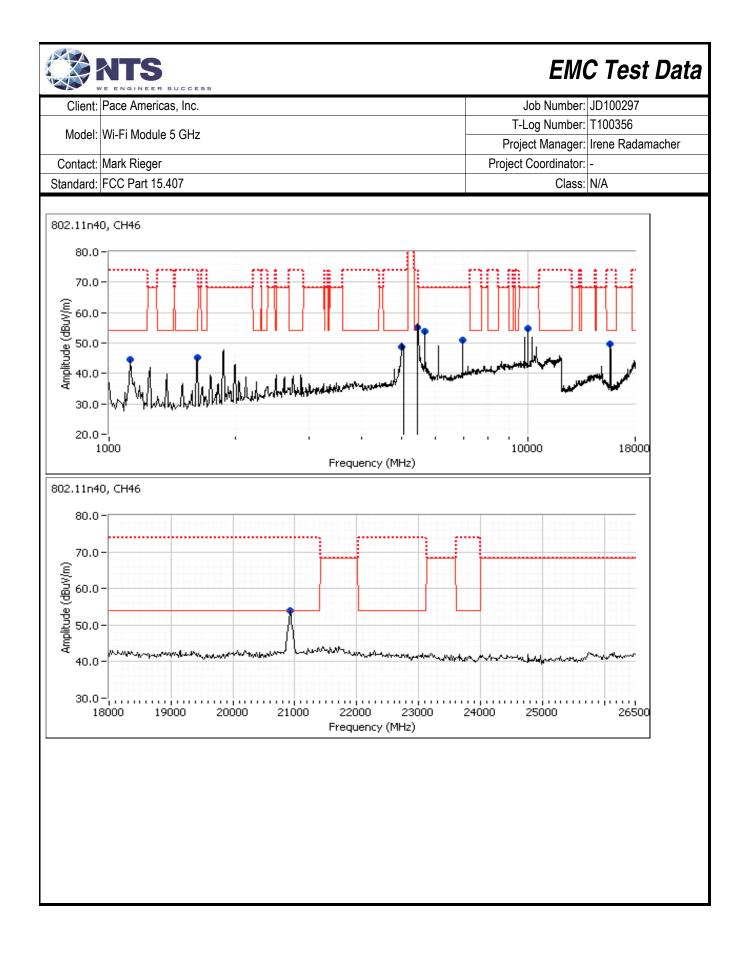
		as, Inc.						Job Number:	ID100297
Model:		,						Log Number:	
	Wi-Fi Module	e 5 GHz						-	rene Radamacher
Contrat	Mark Diagon							2	
	Mark Rieger	107					Project	Coordinator: -	
Standard:	FCC Part 15.	407						Class: I	N/A
Run #1d: C	enter Chann	el							
hannel:	42		Mode:	ac80					
x Chain:	3x3		Data Rate:	VHT9					
requency	Level	Pol	15.209	) / 15E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5049.480	52.7	Н	54.0	-1.3	Avg	298	1.2		/avg:100; RB 1 MHz;
5049.320	66.5	Н	74.0	-7.5	PK	298	1.2	,	Hz; VB: 3 MHz
9999.860	57.7	V	68.3	-10.6	PK	22	2.1	,	3 3 MHz;Peak
1125.110	45.8	V	54.0	-8.2	Avg	22	2.5		/avg:100; RB 1 MHz;
1124.940	47.3	V	74.0	-26.7	PK	22	2.5		3 3 MHz;Peak
5789.000	60.1	V	68.3	-8.2	PK	108	1.2		3 3 MHz;Peak
6946.710	55.4	H	68.3	-12.9	PK	158	1.6		3 3 MHz;Peak
1625.060	47.9	V	54.0	-6.1	Avg	211	2.0		/avg:100; RB 1 MHz;
1625.020 5432.300	48.4 49.4	V H	74.0 54.0	-25.6 -4.6	PK	211 194	2.0 1.1		3 MHz;Peak
5432.300 5430.690	49.4 64.8	<u>н</u> Н	74.0	-4.0	Avg PK	194	1.1		/avg:100; RB 1 MHz; Hz; VB: 3 MHz
20853.220	49.0	V	54.0	-9.2	Avg	31	1.1		MHz;VB 1 kHz;Peak \
20838.350	60.4	V	74.0	-13.6	PK	31	1.9		3 MHz;Peak
15656.160	48.6	V	54.0	-5.4	Avg	311	1.5		MHz;VB 1 kHz;Peak
5668.960	59.5	V	74.0	-14.5	PK	311	1.8	,	3 3 MHz;Peak
0000.000	00.0	v	74.0	-14.0		511	1.0		
								card and its a	ntennas 20-50cm fron
			re were no sig				<u> </u>	and peak mea	ouromonto
									rement method
			urement (RB=				00.300007/1	n). The measu	
	required is a	peak meas		- I IVII IZ, V D=	-Sivil IZ, peak				



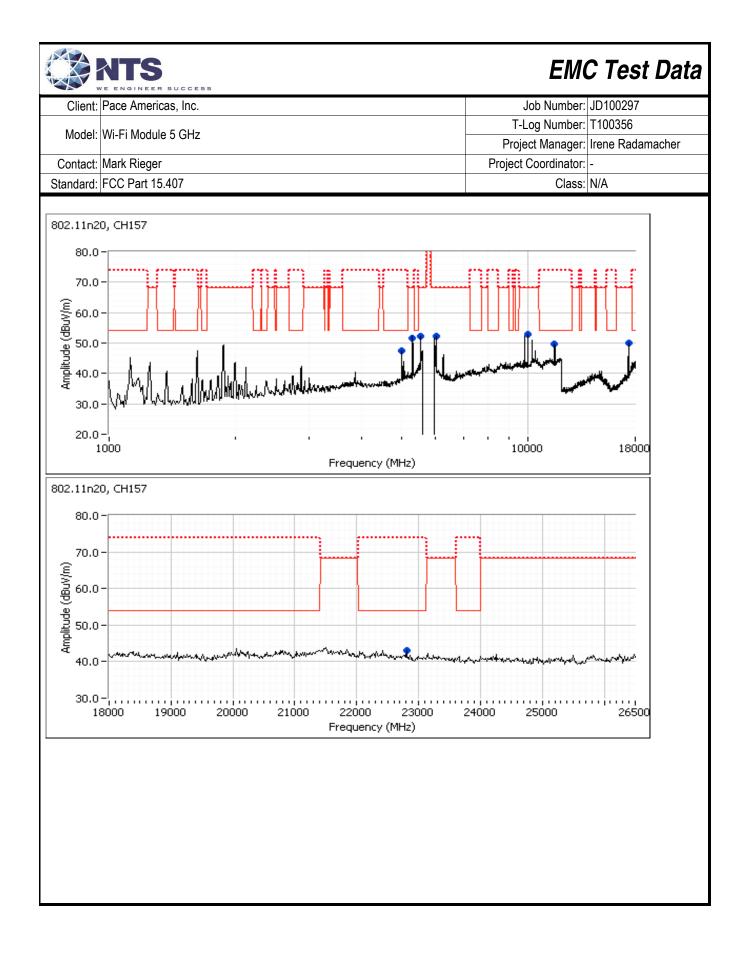
Client:	Pace America	as, Inc.						Job Number:	JD100297
		5.011					T-	Log Number:	T100356
Model:	Wi-Fi Module	5 GHZ				·	Proj	ect Manager:	Irene Radamacher
Contact:	Mark Rieger						-	Coordinator:	
	FCC Part 15.	407						Class:	
	diated Spurio		sions 1 000 -	40000 MHz	Operating N	lode: Wors	a casa fror		
l Te Te	Date of Test: 2 est Engineer: F est Location: F	2/2 & 2/5/1 Rafael Var	6 elas		Con	onfig. Used: ifig Change: UT Voltage:	1 None		
Channel:	36		Mode:	11n20					
Tx Chain:	3x3		Data Rate:	VHT8					
Frequency	Level	Pol	15.209/	15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5027.730	53.7	H	54.0	-0.3	Avg	0	2.1	Note 5,RB 1	MHz;VB 1 kHz;Peak
5024.890	64.6	Н	74.0	-9.4	PK	0	2.1		MHz; VB: 3 MHz
9999.770	56.2	V	68.3	-12.1	PK	24	2.2	-	/B 3 MHz;Peak
6906.800	56.0	Н	68.3	-12.3	PK	176	1.5	RB 1 MHz;V	/B 3 MHz;Peak
5614.230	57.1	Н	68.3	-11.2	PK	269	1.7	RB 1 MHz;V	/B 3 MHz;Peak
4747.280	40.6	Н	54.0	-13.4	Avg	317	1.4	Note 5,RB 1	MHz;VB 1 kHz;Peak
4746.810	51.6	Н	74.0	-22.4	PK	317	1.4	RB 1 MHz;V	/B 3 MHz;Peak
5428.510	49.8	Н	54.0	-4.2	Avg	360	1.0	Note 5,RB 1	MHz;VB 1 kHz;Peak
5427.320	60.5	Н	74.0	-13.5	PK	360	1.0		MHz; VB: 3 MHz
15540.350	46.4	V	54.0	-7.6	Avg	321	1.7		MHz;VB 1 kHz;Peak
15538.820	63.5	V	74.0	-10.5	PK	321	1.7		/B 3 MHz;Peak
20726.710	51.3	V	54.0	-2.7	Avg	329	1.9		MHz;VB 1 kHz;Peak
20726.220	64.7	V	74.0	-9.3	PK	329	1.9	RB 1 MHz;∖	/B 3 MHz;Peak
Note:	Scans made the device inc	between 2 licated the	6.5 - 40 GHz v re were no sig	vith the mea	asurement ant issions in this	enna moved frequency ra	around the	card and its a	antennas 20-50cm fro



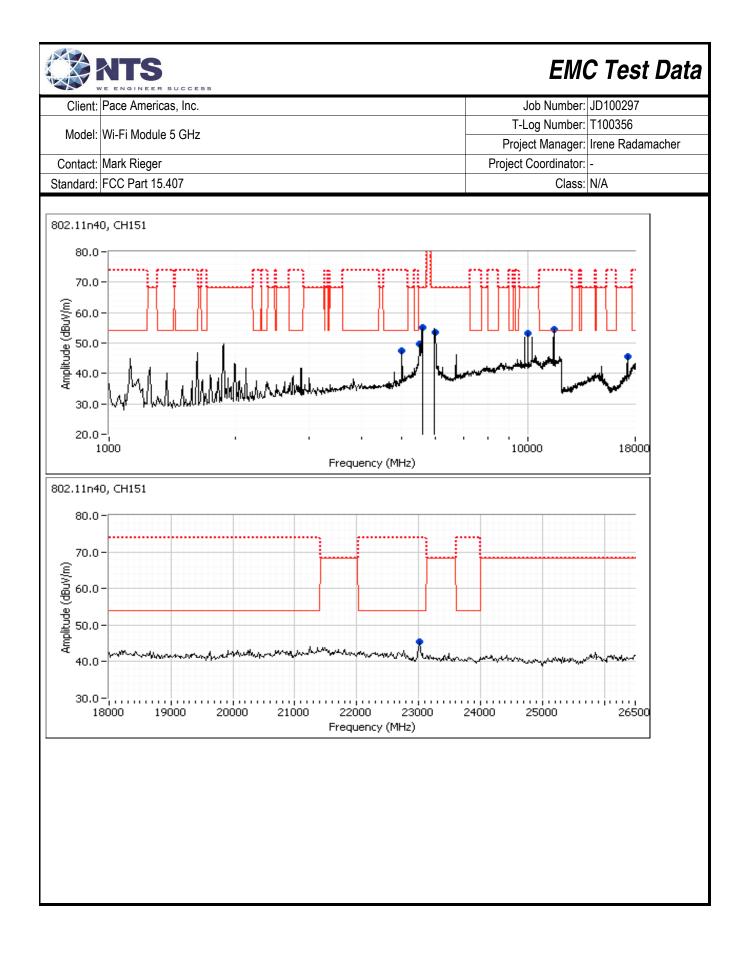
Client:	Pace America	as. Inc.						Job Number:	JD100297
								Log Number:	
Model:	Wi-Fi Module	5 GHz						-	Irene Radamacher
Contact	Mark Rieger							Coordinator:	
	FCC Part 15.	407					Појес	Class:	
	igh Channel	107						01033.	INA .
hannel:	46		Mode:	11n40					
Chain:	3x3		Data Rate:	VHT9					
requency	Level	Pol	15.209 /	15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5686.930	52.4	V	54.0	-1.6	Avg	310	1.8	Note 5,RB 1	MHz;VB 3 kHz;Peak
698.510	65.6	V	74.0	-8.4	PK	310	1.8	RB 1 MHz;V	'B 3 MHz;Peak
125.110	45.3	V	54.0	-8.7	Avg	228	2.0		MHz;VB 3 kHz;Peak
125.040	47.5	V	74.0	-26.5	PK	228	2.0		'B 3 MHz;Peak
625.050	45.3	V	54.0	-8.7	Avg	220	1.6		MHz;VB 3 kHz;Peak
524.930	47.5	V	74.0	-26.5	PK	220	1.6		B 3 MHz;Peak
65.770	57.6	V	68.3	-10.7	PK	114	1.0		B 3 MHz;Peak
999.930	58.7	V	68.3	-9.6	PK	19	2.2		B 3 MHz;Peak
973.400	55.6	<u>H</u>	68.3	-12.7	PK	17	1.0		B 3 MHz;Peak
999.880 000.700	44.1 54.7	H H	54.0 74.0	-9.9 -19.3	Avg PK	184 184	1.7 1.7		MHz;VB 3 kHz;Peak
423.650	44.9	<u>н</u> Н	54.0	-19.5	Avg	178	1.7		MHz; VB: 3 MHz MHz;VB 3 kHz;Peal
424.890	44.9 56.7	H	74.0	-17.3	PK	178	1.5		MHz; VB: 3 MHz
926.810	50.0	V	54.0	-4.0	Avg	22	1.9		MHz;VB 3 kHz;Peał
)942.920	64.0	V	74.0	-10.0	PK	22	1.9		B 3 MHz;Peak
Note:					asurement ant			card and its a	antennas 20-50cm fro



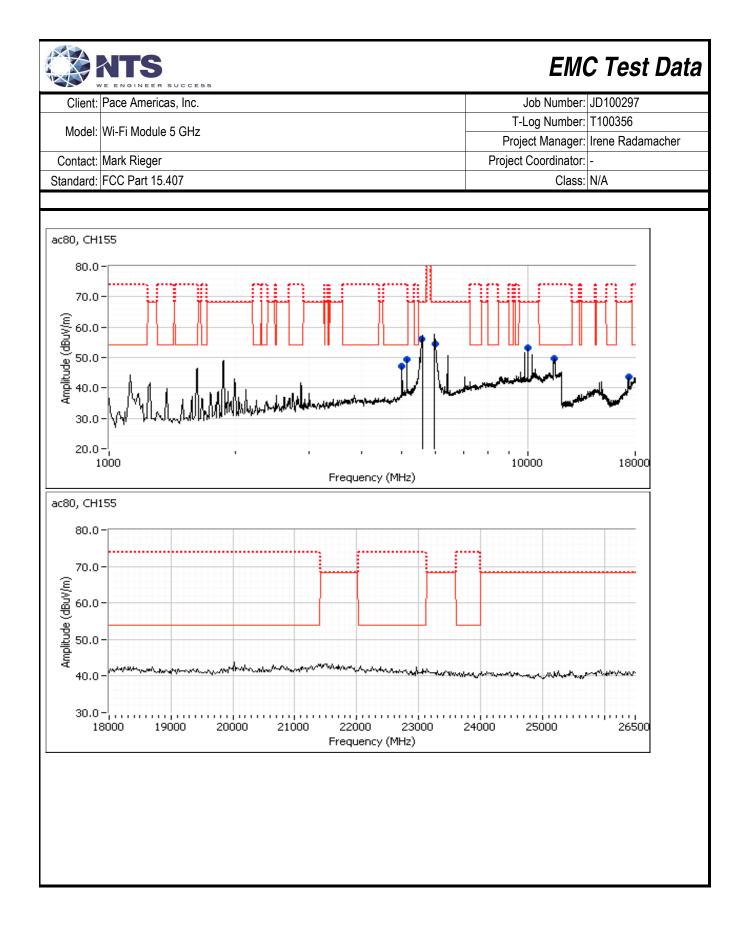
Client: F	112							EMC Test Data
	Pace Americ	as, Inc.						Job Number: JD100297
		,					T-	Log Number: T100356
Model: V	Wi-Fi Module	e 5 GHz						ect Manager: Irene Radamacher
Contact	Mark Diagon							
	Mark Rieger	107					Project	Coordinator: -
Standard: H	FCC Part 15	.407						Class: N/A
Da Tes	iated Spurio ate of Test: at Engineer: st Location:	2/3/2016 0:0 Rafael Vare	)0 las	40,000 MHz	Cor	n the 5725-5 onfig. Used: ifig Change: UT Voltage:	1 None	
Run #3a: Ce					L	or voltage.	1200700112	
Channel:	157		Mode:	11n20				
Tx Chain:	3x3		Data Rate:	VHT8				
	<u> </u>	<u> </u>	45.000			<u>.</u>		
requency	Level	Pol		) / 15E	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1569.300	52.7	V	54.0	-1.3	Avg	334	1.0	Note 5,RB 1 MHz;VB 1 kHz;Peak
1564.080	63.3	V	74.0	-10.7	PK	334	1.0	RB 1 MHz;VB 3 MHz;Peak
9999.990	57.7	V	68.3	-10.6	PK	7	2.1	RB 1 MHz;VB 3 MHz;Peak
4999.980	45.2	<u>H</u>	54.0	-8.8	Avg	328	2.2	Note 5,RB 1 MHz;VB 1 kHz;Peak
5000.020	50.7	H	74.0	-23.3	PK	328	2.2	RB 1 MHz;VB 3 MHz;Peak
5543.530	61.0	<u>Н</u> Н	68.3 68.3	-7.3 -9.3	PK PK	344 190	1.0	POS; RB 1 MHz; VB: 3 MHz
5296.410 2802.500	59.0 43.1	<u>п</u> V	54.0	-9.3	Peak	190	<u>1.3</u> 1.0	POS; RB 1 MHz; VB: 3 MHz
7353.130	60.9	 H	68.3	-7.4	PEak	246	1.0	RB 1 MHz;VB 3 MHz;Peak
NIOTO'					asurement and issions in this			card and its antennas 20-50cm from
								and peak measurements.
F								n). The measurement method
					≥3MHz, peak			,



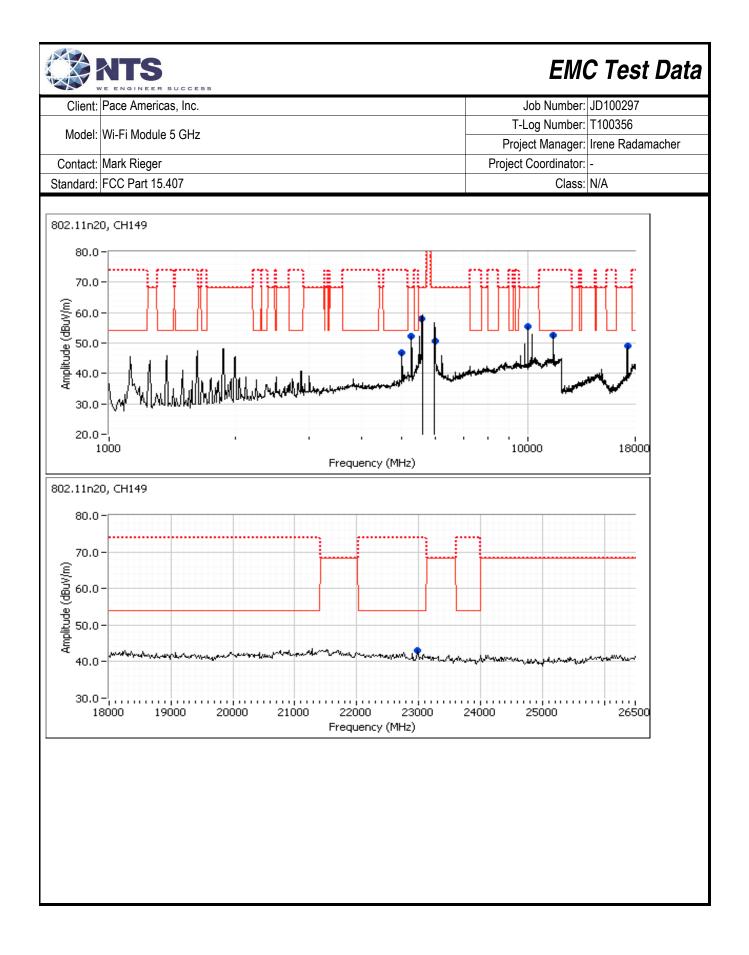
	NIJ VE ENGINEER	SUCCESS						EMC Test Data
Client:	Pace Americ	as, Inc.						Job Number: JD100297
Model:	Wi-Fi Module	a 5 GHz						Log Number: T100356
							-	ect Manager: Irene Radamacher
Contact:	Mark Rieger						Project	Coordinator: -
Standard:	FCC Part 15	.407						Class: N/A
un #3b: C	Center Chanr	nel						
hannalı	151		Mode:	11n40				
hannel: x Chain:	3x3		Data Rate:	VHT9				
x Ghain.	383		Dala Rale.	VH19				
requency	Level	Pol	15.209	/ 15E	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1532.530	48.5	V	54.0	-5.5	Avg	330	1.0	Note 5,RB 1 MHz;VB 3 kHz;Peak
1531.270	62.4	V	74.0	-11.6	PK	330	1.0	RB 1 MHz;VB 3 MHz;Peak
5000.050	46.6	V	54.0	-7.4	Avg	256	1.8	Note 5,RB 1 MHz;VB 3 kHz;Peak
5000.000	50.7	V	74.0	-23.3	PK	256	1.8	RB 1 MHz;VB 3 MHz;Peak
9999.790	57.0	V	68.3	-11.3	PK	8	2.2	RB 1 MHz;VB 3 MHz;Peak
529.440	58.3	Н	68.3	-10.0	PK	360	1.0	POS; RB 1 MHz; VB: 3 MHz
601.110	60.6	Н	68.3	-7.7	PK	350	1.0	POS; RB 1 MHz; VB: 3 MHz
985.690	57.8	Н	68.3	-10.5	PK	198	1.1	POS; RB 1 MHz; VB: 3 MHz
3007.860	40.5	V	54.0	-13.5	Avg	32	1.8	Note 5,RB 1 MHz;VB 3 kHz;Peak
3020.670	53.7	V	74.0	-20.3	PK	32	1.8	RB 1 MHz;VB 3 MHz;Peak
7263.870	59.4	Н	68.3	-8.9	PK	218	1.6	RB 1 MHz;VB 3 MHz;Peak
	Coono modo	hotwoon 26		with the mee	ouromont ont	onno movod	around the	card and its antennas 20-50cm from
Note:								card and its antennas 20-50cm no
ote 1:					ssions in this			and peak measurements.
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lote 2:					≥3MHz, peak (		00.000000//1	I. The measurement method
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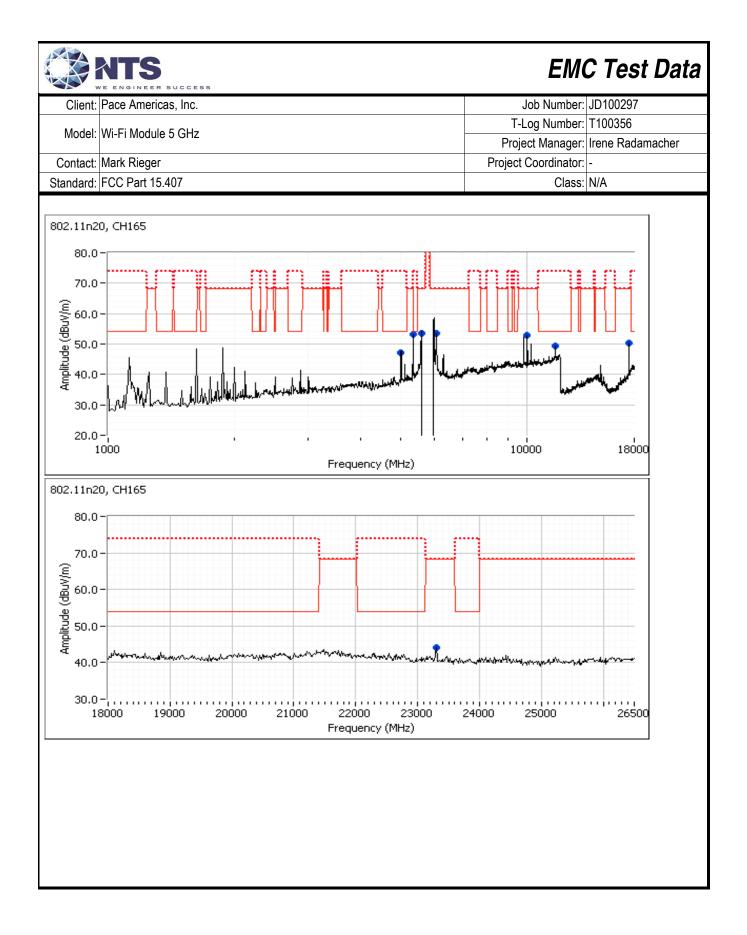
Client:         Pace Americas, Inc.         Job Number:         Job Number:         Job Number:         Job Number:         Job Number:         TLog Number:         T100356           Model:         Wi-Fi Module 5 GHz         Project Coordinator.         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -	t Data
Model:         Wi-Fi Module 5 GHz         Project Manager:         Irene Rad           Contact:         Mark Rieger         Project Coordinator:         -           Standard:         FCC Part 15.407         Class:         N/A           Run #3c:         Center Channel         Channel:         155         Mode:         ac80           Channel:         155         Mode:         ac80         Comments         Mediate         VHT9           Frequency         Level         Pol         15.209 / 15E         Detector         Azimuth         Height         Comments           MHz         dBµU/m         v/h         Limit         Margin         PK/QP/Avg         degrees         meters           5578.450         63.9         H         68.3         -10.9         PK         6         2.1         RB 1 MHz;VB 3 MHz;VB 1           5133.250         51.7         H         74.0         -22.3         PK         206         1.2         Note3,RB 1 MHz;VB 3 MHz;VB 1           5000.010         48.7         V         54.0         -5.3         Avg         253         1.7         Note3,RB 1 MHz;VB 3 MHz;VB 1           11546.320         42.2         V         54.0         -1.1.8         Avg         3	,
Project Manager:       Irene Rad         Contact:       Mark Rieger       Project Coordinator:       -         Standard:       FCC Part 15.407       Class:       N/A         Run #3c:       Center Channel       Class:       N/A         Standard:       155       Mode:       ac80         x Chain:       3x3       Data Rate:       VHT9         Frequency       Level       Pol       15.209 / 15E       Detector       Azimuth       Height       Comments         MHz       dBµV/m       v/h       Limit       Margin       Pk/QP/Avg       degrees       meters       5578.450       63.9       H       68.3       -10.9       PK       6       2.1       RB 1 MHz; VB 3:       5133.350       48.8       H       54.0       -5.2       Avg       206       1.2       Note3, RB 1 MHz; VB 3 MHz; F         5000.010       48.7       V       54.0       -5.3       Avg       253       1.7       Note3, RB 1 MHz; VB 3 MHz; F         5000.203       51.1       V       74.0       -22.9       PK       253       1.7       RB 1 MHz; VB 3 MHz; F         5989.190       60.9       H       68.3       -7.4       PK       340       1.0	
Standard:         FCC Part 15.407         Class:         N/A           Run #3c:         Center Channel         Class:         N/A           Standard:         155         Mode:         ac80           x Chain:         3x3         Data Rate:         VHT9           Frequency         Level         Pol         15.209 / 15E         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           5578.450         63.9         H         68.3         -4.4         PK         354         1.0         POS; RB 1 MHz; VB 3 MHz; I           10000.050         57.4         V         68.3         -10.9         PK         6         2.1         RB 1 MHz; VB 3 MHz; I         Si33.350         48.8         H         54.0         -5.2         Avg         206         1.2         Note3, RB 1 MHz; VB 3 MHz; I         Si33.250         51.7         H         74.0         -22.3         PK         206         1.2         RB 1 MHz; VB 3 MHz; I         Si33.250         31.7         Note3, RB 1 MHz; VB 3 MHz; I         Si33.350         48.8         H         54.0         -5.3         Avg         253	amacher
Standard:         FCC Part 15.407         Class:         N/A           Run #3c:         Center Channel         Class:         N/A           Channel:         155         Mode:         ac80           Data Rate:         VHT9         VHT9           Frequency         Level         Pol         15.209 / 15E         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           5578.450         63.9         H         68.3         -4.4         PK         354         1.0         POS; RB 1 MHz; VB 3 MHz; I           10000.050         57.4         V         68.3         -10.9         PK         6         2.1         RB 1 MHz; VB 3 MHz; I         5133.350         48.8         H         54.0         -5.2         Avg         206         1.2         Note3, RB 1 MHz; VB 3 MHz; I         5000.010         48.7         V         54.0         -5.3         Avg         253         1.7         Note3, RB 1 MHz; VB 3 MHz; I         5000.230         51.1         V         74.0         -22.9         PK         253         1.7         RB 1 MHz; VB 3 MHz; I         11546.320         42.2	
Run #3c:         Center Channel           Channel:         155         Mode:         ac80           fx         Chain:         3x3         Data Rate:         VHT9           Frequency         Level         Pol         15.209 / 15E         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           5578.450         63.9         H         68.3         -4.4         PK         354         1.0         POS; RB 1 MHz; VB 3 MHz; F           5133.350         48.8         H         54.0         -5.2         Avg         206         1.2         Note3,RB 1 MHz; VB 3 MHz; F           5000.010         48.7         V         54.0         -5.3         Avg         253         1.7         Note3,RB 1 MHz; VB 3 MHz; F           5000.230         51.1         V         74.0         -22.9         PK         253         1.7         RB 1 MHz; VB 3 MHz; F           11545.760         52.6         V         74.0         -21.4         PK         332         2.3         RB 1 MHz; VB 3 MHz; F           17371.460         59.3         H         68.3         -7.4<	
Tx Chain:         3x3         Data Rate:         VHT9           Frequency         Level         Pol         15.209 / 15E         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           5578.450         63.9         H         68.3         -4.4         PK         354         1.0         POS; RB 1 MHz; VB 3           10000.050         57.4         V         68.3         -10.9         PK         6         2.1         RB 1 MHz; VB 3 MHz; F           5133.350         48.8         H         54.0         -5.2         Avg         206         1.2         Note3, RB 1 MHz; VB 3 MHz; F           5000.010         48.7         V         54.0         -5.3         Avg         253         1.7         Note3, RB 1 MHz; VB 3 MHz; F           5000.230         51.1         V         74.0         -22.9         PK         253         1.7         RB 1 MHz; VB 3 MHz; F           11545.760         52.6         V         74.0         -21.4         PK         332         2.3         RB 1 MHz; VB 3 MHz; F           5989.190         60.9         H         68.3 </th <th></th>	
Tx Chain:         3x3         Data Rate:         VHT9           Frequency         Level         Pol         15.209 / 15E         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           5578.450         63.9         H         68.3         -4.4         PK         354         1.0         POS; RB 1 MHz; VB 3           10000.050         57.4         V         68.3         -10.9         PK         6         2.1         RB 1 MHz; VB 3 MHz; F           5133.350         48.8         H         54.0         -5.2         Avg         206         1.2         Note3, RB 1 MHz; VB 3 MHz; F           5000.010         48.7         V         54.0         -5.3         Avg         253         1.7         Note3, RB 1 MHz; VB 3 MHz; F           5000.230         51.1         V         74.0         -22.9         PK         253         1.7         RB 1 MHz; VB 3 MHz; F           11545.760         52.6         V         74.0         -21.4         PK         332         2.3         RB 1 MHz; VB 3 MHz; F           5989.190         60.9         H         68.3 <td></td>	
Frequency         Level         Pol         15.209 / 15E         Detector         Azimuth         Height         Comments           MHz         dBμV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           5578.450         63.9         H         68.3         -4.4         PK         354         1.0         POS; RB 1 MHz; VB 3         MHz; VB 3           10000.050         57.4         V         68.3         -10.9         PK         6         2.1         RB 1 MHz; VB 3         MHz; VB 1           5133.350         48.8         H         54.0         -5.2         Avg         206         1.2         Note3, RB 1 MHz; VB 3         MHz; VB 1           5133.250         51.7         H         74.0         -22.3         PK         206         1.2         RB 1 MHz; VB 3 MHz; VB 1           5000.230         51.1         V         74.0         -22.9         PK         253         1.7         RB 1 MHz; VB 3 MHz; VB 1           11546.320         42.2         V         54.0         -11.8         Avg         332         2.3         Rb 1 MHz; VB 3 MHz; F           5989.190         60.9         H         68.3         -7.4         PK	
MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           5578.450         63.9         H         68.3         -4.4         PK         354         1.0         POS; RB 1 MHz; VB 3           10000.050         57.4         V         68.3         -10.9         PK         6         2.1         RB 1 MHz; VB 3 MHz; F           5133.350         48.8         H         54.0         -5.2         Avg         206         1.2         Note3, RB 1 MHz; VB 3 MHz; F           5000.010         48.7         V         54.0         -5.3         Avg         253         1.7         Note3, RB 1 MHz; VB 3 MHz; F           5000.230         51.1         V         74.0         -22.9         PK         253         1.7         RB 1 MHz; VB 3 MHz; F           5000.230         51.1         V         74.0         -22.9         PK         253         1.7         RB 1 MHz; VB 3 MHz; F           11546.320         42.2         V         54.0         -11.8         Avg         332         2.3         RB 1 MHz; VB 3 MHz; F           5989.190         60.9         H         68.3         -7.4         PK         340         1.0         POS; R	
MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           5578.450         63.9         H         68.3         -4.4         PK         354         1.0         POS; RB 1 MHz; VB 3           10000.050         57.4         V         68.3         -10.9         PK         6         2.1         RB 1 MHz; VB 3 MHz; F           5133.350         48.8         H         54.0         -5.2         Avg         206         1.2         Note3, RB 1 MHz; VB 3 MHz; F           5000.010         48.7         V         54.0         -5.3         Avg         253         1.7         Note3, RB 1 MHz; VB 3 MHz; F           5000.230         51.1         V         74.0         -22.9         PK         253         1.7         RB 1 MHz; VB 3 MHz; F           5000.230         51.1         V         74.0         -22.9         PK         253         1.7         RB 1 MHz; VB 3 MHz; F           11546.320         42.2         V         54.0         -11.8         Avg         332         2.3         RB 1 MHz; VB 3 MHz; F           5989.190         60.9         H         68.3         -7.4         PK         340         1.0         POS; R	
5578.450         63.9         H         68.3         -4.4         PK         354         1.0         POS; RB 1 MHz; VB 3           10000.050         57.4         V         68.3         -10.9         PK         6         2.1         RB 1 MHz; VB 3 MHz; F           5133.350         48.8         H         54.0         -5.2         Avg         206         1.2         Note3, RB 1 MHz; VB 3 MHz; F           5133.250         51.7         H         74.0         -22.3         PK         206         1.2         RB 1 MHz; VB 3 MHz; F           5000.010         48.7         V         54.0         -5.3         Avg         253         1.7         Note3, RB 1 MHz; VB 3 MHz; F           5000.230         51.1         V         74.0         -22.9         PK         253         1.7         RB 1 MHz; VB 3 MHz; F           11546.320         42.2         V         54.0         -11.8         Avg         332         2.3         Note3, RB 1 MHz; VB 3 MHz; F           5989.190         60.9         H         68.3         -7.4         PK         332         2.3         RB 1 MHz; VB 3 MHz; F           17371.460         59.3         H         68.3         -9.0         PK         358	
10000.050         57.4         V         68.3         -10.9         PK         6         2.1         RB 1 MHz;VB 3 MHz;F           5133.350         48.8         H         54.0         -5.2         Avg         206         1.2         Note3,RB 1 MHz;VB 3 MHz;F           5133.250         51.7         H         74.0         -22.3         PK         206         1.2         RB 1 MHz;VB 3 MHz;F           5000.010         48.7         V         54.0         -5.3         Avg         253         1.7         Note3,RB 1 MHz;VB 3 MHz;F           5000.230         51.1         V         74.0         -22.9         PK         253         1.7         RB 1 MHz;VB 3 MHz;F           11546.320         42.2         V         54.0         -11.8         Avg         332         2.3         Note3,RB 1 MHz;VB 3 MHz;F           11545.760         52.6         V         74.0         -21.4         PK         332         2.3         RB 1 MHz;VB 3 MHz;F           5989.190         60.9         H         68.3         -7.4         PK         340         1.0         POS; RB 1 MHz;VB 3 MHz;F           17371.460         59.3         H         68.3         -9.0         PK         358         1.9 <td>8 MHz</td>	8 MHz
5133.250         51.7         H         74.0         -22.3         PK         206         1.2         RB 1 MHz;VB 3 MHz;F           5000.010         48.7         V         54.0         -5.3         Avg         253         1.7         Note3,RB 1 MHz;VB 1           5000.230         51.1         V         74.0         -22.9         PK         253         1.7         RB 1 MHz;VB 3 MHz;F           11546.320         42.2         V         54.0         -11.8         Avg         332         2.3         Note3,RB 1 MHz;VB 1           11545.760         52.6         V         74.0         -21.4         PK         332         2.3         RB 1 MHz;VB 3 MHz;F           5989.190         60.9         H         68.3         -7.4         PK         340         1.0         POS; RB 1 MHz;VB 3           17371.460         59.3         H         68.3         -9.0         PK         358         1.9         RB 1 MHz;VB 3 MHz;F           Note:         Scans made between 26.5 - 40 GHz with the measurement antenna moved around the card and its antennas 2           Note:         For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurement moved around the card and its antennas 2           Note 1:         For emissions out	
5000.010         48.7         V         54.0         -5.3         Avg         253         1.7         Note3,RB 1 MHz;VB 1           5000.230         51.1         V         74.0         -22.9         PK         253         1.7         RB 1 MHz;VB 3 MHz;F           11546.320         42.2         V         54.0         -11.8         Avg         332         2.3         Note3,RB 1 MHz;VB 3 MHz;F           11545.760         52.6         V         74.0         -21.4         PK         332         2.3         RB 1 MHz;VB 3 MHz;F           5989.190         60.9         H         68.3         -7.4         PK         340         1.0         POS; RB 1 MHz;VB 3 MHz;F           17371.460         59.3         H         68.3         -9.0         PK         358         1.9         RB 1 MHz;VB 3 MHz;F           Note:         Scans made between 26.5 - 40 GHz with the measurement antenna moved around the card and its antennas 2           Note:         For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurement moved around the card and its antennas 2           Note 1:         For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement moved around the card and peak measurement moved around the card and peak measurement moved around the card and peak measurement m	kHz;Peak V/
5000.23051.1V74.0-22.9PK2531.7RB 1 MHz;VB 3 MHz;F11546.32042.2V54.0-11.8Avg3322.3Note3,RB 1 MHz;VB 111545.76052.6V74.0-21.4PK3322.3RB 1 MHz;VB 3 MHz;F5989.19060.9H68.3-7.4PK3401.0POS; RB 1 MHz;VB 3 MHz;F17371.46059.3H68.3-9.0PK3581.9RB 1 MHz;VB 3 MHz;FNote:Scans made between 26.5 - 40 GHz with the measurement antenna moved around the card and its antennas 2the device indicated there were no significant emissions in this frequency rangeNote :For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurement moved around the card and peak measurement moved around the card peak measurement moved around the card peak measurement moved around peak measur	Peak
11546.320       42.2       V       54.0       -11.8       Avg       332       2.3       Note3,RB 1 MHz;VB 1         11545.760       52.6       V       74.0       -21.4       PK       332       2.3       RB 1 MHz;VB 3 MHz;F         5989.190       60.9       H       68.3       -7.4       PK       340       1.0       POS; RB 1 MHz; VB 3         17371.460       59.3       H       68.3       -9.0       PK       358       1.9       RB 1 MHz; VB 3 MHz; F         Note:         Scans made between 26.5 - 40 GHz with the measurement antenna moved around the card and its antennas 2         Note:         Scans made between 26.5 - 40 GHz with the measurement antenna moved around the card and its antennas 2         Note:         Scans made between 26.5 - 40 GHz with the measurement antenna moved around the card and its antennas 2         Note:         For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurement         Note:         For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement moved around the card and peak measurement moved around the card and peak measurement moved around peak measurement moved around peak measurement moved around peak measurement moved aro	kHz;Peak V/
11545.760       52.6       V       74.0       -21.4       PK       332       2.3       RB 1 MHz;VB 3 MHz;F         5989.190       60.9       H       68.3       -7.4       PK       340       1.0       POS; RB 1 MHz; VB 3         17371.460       59.3       H       68.3       -9.0       PK       358       1.9       RB 1 MHz; VB 3 MHz; F         Note:         Scans made between 26.5 - 40 GHz with the measurement antenna moved around the card and its antennas 2         the device indicated there were no significant emissions in this frequency range         Note:         For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurement         Interstricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement measurement measurement	Peak
5989.190       60.9       H       68.3       -7.4       PK       340       1.0       POS; RB 1 MHz; VB: 3         17371.460       59.3       H       68.3       -9.0       PK       358       1.9       RB 1 MHz; VB 3 MHz; F         Note:         Scans made between 26.5 - 40 GHz with the measurement antenna moved around the card and its antennas 2         the device indicated there were no significant emissions in this frequency range         lote 1:         For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurement         lote 2:	
17371.460       59.3       H       68.3       -9.0       PK       358       1.9       RB 1 MHz;VB 3 MHz;F         Note:         Scans made between 26.5 - 40 GHz with the measurement antenna moved around the card and its antennas 2 the device indicated there were no significant emissions in this frequency range         Jote 1:         For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurement measurement is -27dBm/MHz eirp (68.3dBuV/m). The measurement me	
Note:       Scans made between 26.5 - 40 GHz with the measurement antenna moved around the card and its antennas 2 the device indicated there were no significant emissions in this frequency range         Note:       For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurement         Note:       For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement measurement	
Note:       the device indicated there were no significant emissions in this frequency range         Note 1:       For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurement         Note 2:       For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement measurement	'eak
Note 1:       For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurement         Note 2:       For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement measurement	0-50cm from
For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement m	
required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).	lethod



Client:	Pace Americ	cas, Inc.						Job Number:	JD100297
							T-	Log Number:	T100356
Model:	Wi-Fi Modul	e 5 GHz						-	Irene Radamacher
Contact:	Mark Rieger							Coordinator:	
	FCC Part 15						1 10,000	Class:	
			sione 1 000	40000 MH-	z. Operating N	lada: Wara	o occo fror		IN/74
	Date of Test:			40000 MH2	•	onfig. Used:		li nuli #3	
Te	st Engineer:	Rafael Var	elas			fig Change:			
Te	est Location:	FT Chamb	er #7		E	UT Voltage:	120V/60Hz		
Run #4a: L	ow Channel								
Channel:	149		Mode:	11n20					
Tx Chain:	3x3		Data Rate:	VHT8					
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5579.170	67.1	Н	68.3	-1.2	PK	353	1.0		'B 3 MHz;Peak
17242.200	66.5	V	68.3	-1.8	PK	300	1.7		'B 3 MHz;Peak
11489.430	51.2	V	54.0	-2.8	Avg	331	1.0	-	MHz;VB 1 kHz;Peal
11484.230	64.2	V	74.0	-9.8	PK	331	1.0		B 3 MHz;Peak
5000.020	46.3	V	54.0	-7.7	Avg	253	1.6		MHz;VB 1 kHz;Peal
5000.150	51.0	V	74.0	-23.0	PK	253	1.6		B 3 MHz;Peak
5258.900	59.4	H V	68.3	-8.9	PK	199	1.4		B 3 MHz;Peak
9999.900 22986.670	59.1 42.9	V	68.3 54.0	-9.2 -11.1	PK PK	0 12	2.2 1.9	RB I MHZ;V	'B 3 MHz;Peak
5984.490	42.9 62.3	 H	68.3	-6.0	PK	201	2.2		B 3 MHz;Peak
5904.490	02.3	11	00.5	-0.0	FN	201	2.2		D J WII IZ,FEak
	Scans made	between 2	6.5 - 40 GHz	with the mea	asurement ant	enna moved	around the	card and its	antennas 20-50cm fro
Note:					issions in this				
				,		- 1 7 -	0-		



Client:         Pace Americas, Inc.         Job Number:         T-Log Number:         T100356         Project Manager.         Ifene Radamacher           Contact:         Mark Rieger         Project Coordinator.         -         Standard:         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -		VE ENGINEER	SUCCESS						1.1. KL	10400007
Model:         Wi-Hi Module 5 GHz         Project Manager:         Irene Radamacher           Contact:         Mark Rieger         Project Coordinator:         -           Standard:         FCC Part 15.407         Class:         N/A           Run #4b: High Channel           Channel:         165         Mode:         11n20           Tx Chain:         3x3         Data Rate:         VHT8           Frequency         Level         Pol         15.209 / 15.247         Detector         Azimuth         Height         Comments           MHz         dBµV/m         w/h         Limit         Margin         PK/QP/Avg         degrees         meters           17472.330         62.4         H         68.3         -5.9         PK         296         1.2         RB 1 MHz;VB 3 MHz;Peak           11656.420         57.7         V         74.0         -16.3         PK         327         1.1         Rb 1 MHz;VB 3 MHz;Peak           11656.420         57.3         H         68.3         -11.0         PK         297         1.2         Rb 1 MHz;VB 3 MHz;Peak           5404.520         56.0         H         68.3         -12.3         PK         192         1.2         RB 1 MHz;VB 3 M	Client:	Pace Americ	as, Inc.							
Contact:         Mark Rieger         Project Coordinator:         -           Standard:         FCC Part 15.407         Class:         N/A           Run #4b: High Channel           Channel:         165         Mode:         11n20           Tx Chain:         3x3         Data Rate:         VHT8           Frequency         Level         Pol         15.209 / 15.247         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           17472.330         62.4         H         68.3         -5.9         PK         296         1.2         RB 1 MHz;VB 3 MHz;Peak           11657.990         46.8         V         54.0         -7.2         Avg         327         1.1         Note 5,RB 1 MHz;VB 3 MHz;Peak           11656.420         57.7         V         74.0         -16.3         PK         327         1.1         RB 1 MHz;VB 3 MHz;Peak           11656.420         57.3         H         68.3         -11.0         PK         192         1.2         RB 1 MHz;VB 3 MHz;Peak           5404.520         56.0         H         68.3         -12.3<	Model:	Wi-Fi Module	e 5 GHz						-	
Standard:         FCC Part 15.407         Class:         N/A           Run #4b: High Channel         Channel:         165         Mode:         11n20           Channel:         165         Data Rate:         VHT8           Frequency         Level         Pol         15.209 / 15.247         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           17472.330         62.4         H         68.3         -5.9         PK         296         1.2         RB 1 MHz;VB 3 MHz;Peak           11657.990         46.8         V         54.0         -7.2         Avg         327         1.1         Note 5,RB 1 MHz;VB 3 MHz;Peak           11656.420         57.7         V         74.0         -16.3         PK         327         1.1         RB 1 MHz;VB 3 MHz;Peak           4999.790         51.1         H         54.0         -7.9         Avg         297         1.2         Note 5,RB 1 MHz;VB 1 kHz;Peak           5341.880         57.3         H         68.3         -11.0         PK         192         1.2         RB 1 MHz;VB 3 MHz;Peak           5604.520									-	
Run #4b: High Channel           Channel:         165         Mode:         11n20           Tx Chain:         3x3         Data Rate:         VHT8           Frequency         Level         Pol         15.209 / 15.247         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Level         Pol         15.209 / 15.247         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin 206         1.2         RB 1 MHz;VB 3 MHz;Peak           11657.990         46.8         V         7         1.1         Note 5,RB 1 MHz;VB 3 MHz;Peak           11657.990         46.1         H         297         1.2         RB 1 MHz;VB 3 MHz;Peak           4999.790         51.1         H         7         2		-						Project	Coordinator:	-
Channel:         165         Mode:         11n20           Tx Chain:         3x3         Data Rate:         VHT8           Frequency         Level         Pol         15.209 / 15.247         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           17472.330         62.4         H         68.3         -5.9         PK         296         1.2         RB 1 MHz;VB 3 MHz;Peak           11657.990         46.8         V         54.0         -7.2         Avg         327         1.1         Note 5,RB 1 MHz;VB 3 MHz;Peak           11656.420         57.7         V         74.0         -16.3         PK         327         1.1         RB 1 MHz;VB 3 MHz;Peak           4999.910         46.1         H         54.0         -7.9         Avg         297         1.2         Note 5,RB 1 MHz;VB 1 kHz;Peak           4999.790         51.1         H         74.0         -22.9         PK         297         1.2         RB 1 MHz;VB 3 MHz;Peak           5604.520         56.0         H         68.3         -11.0         PK         192         1.2         RB 1 M	Standard:	FCC Part 15	.407						Class:	N/A
Tx Chain:         3x3         Data Rate:         VHT8           Frequency         Level         Pol         15.209 / 15.247         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           17472.330         62.4         H         68.3         -5.9         PK         296         1.2         RB 1 MHz;VB 3 MHz;Peak           11657.990         46.8         V         54.0         -7.2         Avg         327         1.1         Note 5,RB 1 MHz;VB 3 MHz;Peak           11656.420         57.7         V         74.0         -16.3         PK         327         1.1         RB 1 MHz;VB 3 MHz;Peak           4999.910         46.1         H         54.0         -7.9         Avg         297         1.2         Note 5,RB 1 MHz;VB 1 kHz;Peak           4999.790         51.1         H         74.0         -22.9         PK         297         1.2         RB 1 MHz;VB 3 MHz;Peak           5604.520         56.0         H         68.3         -11.0         PK         192         1.2         RB 1 MHz;VB 3 MHz;Peak           6066.070         61.6         H	Run #4b: H	ligh Channel								
Tx Chain:         3x3         Data Rate:         VHT8           Frequency         Level         Pol         15.209 / 15.247         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           17472.330         62.4         H         68.3         -5.9         PK         296         1.2         RB 1 MHz;VB 3 MHz;Peak           11657.990         46.8         V         54.0         -7.2         Avg         327         1.1         Note 5,RB 1 MHz;VB 3 MHz;Peak           11656.420         57.7         V         74.0         -16.3         PK         327         1.1         RB 1 MHz;VB 3 MHz;Peak           4999.910         46.1         H         54.0         -7.9         Avg         297         1.2         Note 5,RB 1 MHz;VB 1 kHz;Peak           4999.790         51.1         H         74.0         -22.9         PK         297         1.2         RB 1 MHz;VB 3 MHz;Peak           5604.520         56.0         H         68.3         -11.0         PK         192         1.2         RB 1 MHz;VB 3 MHz;Peak           6066.070         61.6         H	'hannel'	165		Mode:	11n20					
Frequency         Level         Pol         15.209 / 15.247         Detector         Azimuth         Height         Comments           MHz         dBµV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           17472.330         62.4         H         68.3         -5.9         PK         296         1.2         RB 1 MHz;VB 3 MHz;Peak           11657.990         46.8         V         54.0         -7.2         Avg         327         1.1         Note 5,RB 1 MHz;VB 3 MHz;Peak           11656.420         57.7         V         74.0         -16.3         PK         327         1.1         RB 1 MHz;VB 3 MHz;Peak           4999.910         46.1         H         54.0         -7.9         Avg         297         1.2         Note 5,RB 1 MHz;VB 3 MHz;Peak           4999.790         51.1         H         74.0         -22.9         PK         297         1.2         RB 1 MHz;VB 3 MHz;Peak           5341.880         57.3         H         68.3         -11.0         PK         192         1.2         RB 1 MHz;VB 3 MHz;Peak           6066.070         61.6         H         68.3         -6.7         PK         188         1.0         RB 1										
MHz         dBμV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           17472.330         62.4         H         68.3         -5.9         PK         296         1.2         RB 1 MHz;VB 3 MHz;Peak           11657.990         46.8         V         54.0         -7.2         Avg         327         1.1         Note 5,RB 1 MHz;VB 3 MHz;Peak           11656.420         57.7         V         74.0         -16.3         PK         327         1.1         RB 1 MHz;VB 3 MHz;Peak           4999.910         46.1         H         54.0         -7.9         Avg         297         1.2         Note 5,RB 1 MHz;VB 1 kHz;Peak           4999.790         51.1         H         74.0         -22.9         PK         297         1.2         RB 1 MHz;VB 3 MHz;Peak           5341.880         57.3         H         68.3         -11.0         PK         192         1.2         RB 1 MHz;VB 3 MHz;Peak           5604.520         56.0         H         68.3         -6.7         PK         185         1.2         RB 1 MHz;VB 3 MHz;Peak           6066.070         61.6         H         68.3         -24.1         PK         24         2.2	X Onam.	0.0		Data Nate.	VIIIO					
MHz         dBμV/m         v/h         Limit         Margin         Pk/QP/Avg         degrees         meters           17472.330         62.4         H         68.3         -5.9         PK         296         1.2         RB 1 MHz;VB 3 MHz;Peak           11657.990         46.8         V         54.0         -7.2         Avg         327         1.1         Note 5,RB 1 MHz;VB 3 MHz;Peak           11656.420         57.7         V         74.0         -16.3         PK         327         1.1         RB 1 MHz;VB 3 MHz;Peak           4999.910         46.1         H         54.0         -7.9         Avg         297         1.2         Note 5,RB 1 MHz;VB 1 kHz;Peak           4999.790         51.1         H         74.0         -22.9         PK         297         1.2         RB 1 MHz;VB 3 MHz;Peak           5341.880         57.3         H         68.3         -11.0         PK         192         1.2         RB 1 MHz;VB 3 MHz;Peak           5604.520         56.0         H         68.3         -12.3         PK         185         1.2         RB 1 MHz;VB 3 MHz;Peak           6066.070         61.6         H         68.3         -14.4         PK         24         2.2	Frequencv	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
17472.330       62.4       H       68.3       -5.9       PK       296       1.2       RB 1 MHz;VB 3 MHz;Peak         11657.990       46.8       V       54.0       -7.2       Avg       327       1.1       Note 5,RB 1 MHz;VB 3 MHz;Peak         11656.420       57.7       V       74.0       -16.3       PK       327       1.1       RB 1 MHz;VB 3 MHz;Peak         4999.910       46.1       H       54.0       -7.9       Avg       297       1.2       Note 5,RB 1 MHz;VB 3 MHz;Peak         4999.790       51.1       H       74.0       -22.9       PK       297       1.2       RB 1 MHz;VB 3 MHz;Peak         5341.880       57.3       H       68.3       -11.0       PK       192       1.2       RB 1 MHz;VB 3 MHz;Peak         5604.520       56.0       H       68.3       -12.3       PK       185       1.2       RB 1 MHz;VB 3 MHz;Peak         6066.070       61.6       H       68.3       -6.7       PK       188       1.0       RB 1 MHz;VB 3 MHz;Peak         23298.330       44.2       V       68.3       -24.1       PK       24       2.2       RB 1 MHz;VB 3 MHz;Peak         Note:       Scans made between 26.5 - 40 GHz										
11656.420         57.7         V         74.0         -16.3         PK         327         1.1         RB 1 MHz;VB 3 MHz;Peak           4999.910         46.1         H         54.0         -7.9         Avg         297         1.2         Note 5,RB 1 MHz;VB 3 MHz;Peak           4999.790         51.1         H         74.0         -22.9         PK         297         1.2         RB 1 MHz;VB 3 MHz;Peak           5341.880         57.3         H         68.3         -11.0         PK         192         1.2         RB 1 MHz;VB 3 MHz;Peak           5604.520         56.0         H         68.3         -12.3         PK         185         1.2         RB 1 MHz;VB 3 MHz;Peak           6066.070         61.6         H         68.3         -6.7         PK         188         1.0         RB 1 MHz;VB 3 MHz;Peak           9999.730         56.9         V         68.3         -11.4         PK         24         2.2         RB 1 MHz;VB 3 MHz;Peak           23298.330         44.2         V         68.3         -24.1         PK         8         1.9         RB 1 MHz;VB 3 MHz;Peak	17472.330		Н	68.3	-5.9	PK	296	1.2	RB 1 MHz;V	B 3 MHz;Peak
4999.910         46.1         H         54.0         -7.9         Avg         297         1.2         Note 5,RB 1 MHz;VB 1 kHz;Peak           4999.790         51.1         H         74.0         -22.9         PK         297         1.2         RB 1 MHz;VB 3 MHz;Peak           5341.880         57.3         H         68.3         -11.0         PK         192         1.2         RB 1 MHz;VB 3 MHz;Peak           5604.520         56.0         H         68.3         -12.3         PK         185         1.2         RB 1 MHz;VB 3 MHz;Peak           6066.070         61.6         H         68.3         -6.7         PK         188         1.0         RB 1 MHz;VB 3 MHz;Peak           9999.730         56.9         V         68.3         -11.4         PK         24         2.2         RB 1 MHz;VB 3 MHz;Peak           23298.330         44.2         V         68.3         -24.1         PK         8         1.9         RB 1 MHz;VB 3 MHz;Peak	11657.990	46.8	V	54.0	-7.2	Avg	327	1.1	Note 5,RB 1	MHz;VB 1 kHz;Peak
4999.790         51.1         H         74.0         -22.9         PK         297         1.2         RB 1 MHz;VB 3 MHz;Peak           5341.880         57.3         H         68.3         -11.0         PK         192         1.2         RB 1 MHz;VB 3 MHz;Peak           5604.520         56.0         H         68.3         -12.3         PK         185         1.2         RB 1 MHz;VB 3 MHz;Peak           6066.070         61.6         H         68.3         -6.7         PK         188         1.0         RB 1 MHz;VB 3 MHz;Peak           9999.730         56.9         V         68.3         -11.4         PK         24         2.2         RB 1 MHz;VB 3 MHz;Peak           23298.330         44.2         V         68.3         -24.1         PK         8         1.9         RB 1 MHz;VB 3 MHz;Peak	11656.420	57.7		74.0	-16.3	PK	327	1.1	RB 1 MHz;V	B 3 MHz;Peak
5341.880         57.3         H         68.3         -11.0         PK         192         1.2         RB 1 MHz;VB 3 MHz;Peak           5604.520         56.0         H         68.3         -12.3         PK         185         1.2         RB 1 MHz;VB 3 MHz;Peak           6066.070         61.6         H         68.3         -6.7         PK         188         1.0         RB 1 MHz;VB 3 MHz;Peak           9999.730         56.9         V         68.3         -11.4         PK         24         2.2         RB 1 MHz;VB 3 MHz;Peak           23298.330         44.2         V         68.3         -24.1         PK         8         1.9         RB 1 MHz;VB 3 MHz;Peak           Note:										
5604.520         56.0         H         68.3         -12.3         PK         185         1.2         RB 1 MHz;VB 3 MHz;Peak           6066.070         61.6         H         68.3         -6.7         PK         188         1.0         RB 1 MHz;VB 3 MHz;Peak           9999.730         56.9         V         68.3         -11.4         PK         24         2.2         RB 1 MHz;VB 3 MHz;Peak           23298.330         44.2         V         68.3         -24.1         PK         8         1.9         RB 1 MHz;VB 3 MHz;Peak           Note:										
6066.070         61.6         H         68.3         -6.7         PK         188         1.0         RB 1 MHz;VB 3 MHz;Peak           9999.730         56.9         V         68.3         -11.4         PK         24         2.2         RB 1 MHz;VB 3 MHz;Peak           23298.330         44.2         V         68.3         -24.1         PK         8         1.9         RB 1 MHz;VB 3 MHz;Peak           Note:										
9999.730         56.9         V         68.3         -11.4         PK         24         2.2         RB 1 MHz;VB 3 MHz;Peak           23298.330         44.2         V         68.3         -24.1         PK         8         1.9         RB 1 MHz;VB 3 MHz;Peak           Note:           Scans made between 26.5 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the card anten										
23298.330     44.2     V     68.3     -24.1     PK     8     1.9     RB 1 MHz;VB 3 MHz;Peak       Note: Scans made between 26.5 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the card antennas 20-50cm from the ca										
Scans made between 26.5 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from										-
NOTO	23298.330	44.2	V	68.3	-24.1	PK	8	1.9	RB 1 MHZ;V	B 3 MHZ;Peak
	Note:									



# EMC Test Data

Client:	Pace Americas, Inc.	Job Number:	JD100297
Madal	Wi-Fi Module 5 GHz	T-Log Number:	T100356
WOUEI.		Project Manager:	Irene Radamacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC Part 15.407	Class:	N/A

# RSS-247 and FCC 15.407 (UNII) Radiated Spurious Emissions

### Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

### General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. For radiated emissions testing the measurement antenna was located 3 meters from the EUT, unless otherwise noted.

Ambient Conditions:	Temperature:	15-17 °C
	Rel. Humidity:	35-40 %

### Summary of Results

Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
1	а	36 - 5180MHz	23.0	23.0	Radiated Emissions, 30 - 1,000 MHz	FCC Part 15.209 / 15.247( c)	35.4 dBµV/m @ 874.99 MHz (-10.6 dB)
2	n20	149 - 5745MHz	23.0	23.0	Radiated Emissions, 30 - 1,000 MHz	FCC Part 15.209 / 15.247( c)	33.7 dBµV/m @ 30.27 MHz (-6.3 dB)

If no difference between modes and channels, then no additional modes or channels need be tested

### Modifications Made During Testing

No modifications were made to the EUT during testing

### **Deviations From The Standard**

No deviations were made from the requirements of the standard.

### Sample Notes

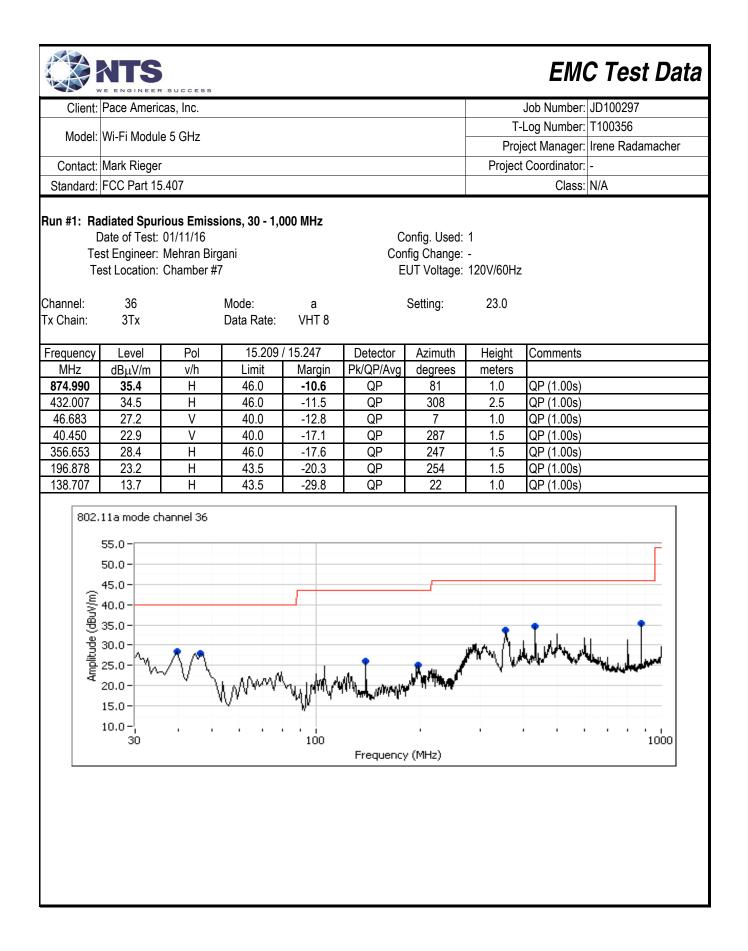
Sample S/N: F56154520246 Driver: 7.14.89.21.571.206

### Procedure Comments:

Measurements performed in accordance with KDB 789033

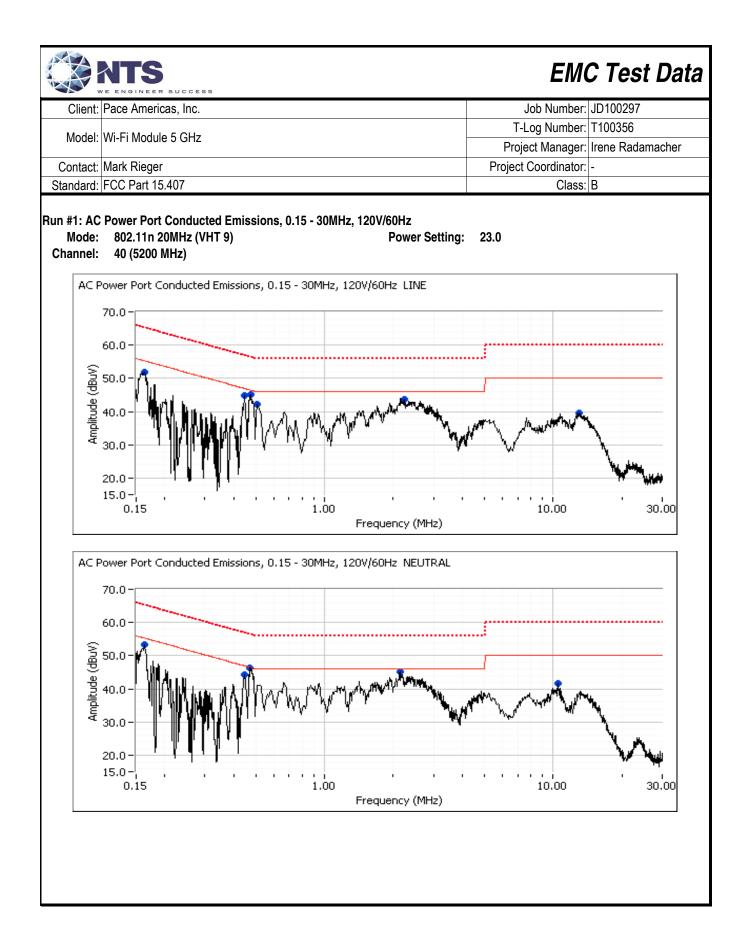
### Measurement Specific Notes:

Note 1:	Emission in non-restricted band, but limit of 15.209 used.
Note 2:	Emission in non-restricted band, the limit was set 30dB below the level of the fundamental and measured in 100kHz.



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Model: W	lark Rieger	9 5 GHz			Job Number:			
Contact: M	lark Rieger			1 1-	Log Number:	T100356		
	-	407	Model: Wi-Fi Module 5 GHz					
Standard: F	CC Part 15	407	Contact: Mark Rieger					
		.407		Class:	В			
		<b>Conduct</b> (NTS Silicon Valley, Fremon	ed Emissions t Facility, Semi-Ane		er)			
Fest Specif	fic Detail	S						
	•	The objective of this test session is to pe specification listed above.	erform final qualificat	ion testing of t	he EUT with r	espect to the		
	te of Test:		Config. Use					
		Mehran Birgani	Config Chang		_			
lest	Location:	Chamber #7	EUT Voltag	e: 120V/ 60Hz	2			
Ambient Conditions:		Temperature: Rel. Humidity:	17-19 °C 35-40 %					
Summary o	of Result	6						
Run	#	Test Performed	Limit	Result	Margin			
1		CE, AC Power,120V/60Hz	FCC 15.207	PASS	39.4 dBµV (	@ 0.474 MHz (-7.0 dB		
		During Testing made to the EUT during testing						



		RSUCCESS					EM	C Test Data
Client:	Pace Ameri	cas, Inc.					Job Number:	JD100297
							T-Log Number:	T100356
Model:	Wi-Fi Modu	e 5 GHz		Project Manager:	Irene Radamacher			
Contact:	: Mark Rieger						Project Coordinator:	
	FCC Part 15.407						Class:	
lun #1: AC Mode: Channel:		20MHz (VHT	Emissions, 9)	0.15 - 30MH	•	lz wer Setting:	23.0	
Prelimina	ry peak rea	dings captu			ak readings	s vs. average	limit)	
requency	Level	AC		15.207	Detector	Comments		
MHz	dBµV	Line	Limit	Margin	QP/Ave			
0.472	46.4	Neutral	46.5	-0.1	Peak			
2.124	45.1	Neutral	46.0	-0.9	Peak			
0.474	45.1	Line	46.4	-1.3	Peak			
0.162	53.3	Neutral	55.3	-2.0	Peak			
0.447	44.7	Line	46.9	-2.2	Peak			
2.227	43.8	Line	46.0	-2.2	Peak			
0.447	44.4	Neutral	47.0	-2.6	Peak			
0.163	51.8	Line	55.3	-3.5	Peak			
0.513	42.2	Line	46.0	-3.8	Peak			
10.451	41.6	Neutral	50.0	-8.4 -10.4	Peak			
12.953	39.6	Line	50.0	-10.4	Peak			
Final qua	si-neak and	l average rea	adinas					
requency	Level	AC		15.207	Detector	Comments		
MHz	dBµV	Line	Limit	Margin	QP/Ave			
0.474	39.4	Line	46.4	-7.0	AVG	AVG (0.10s)		
0.472	38.6	Neutral	46.5	-7.9	AVG	AVG (0.10s)		
0.162	45.9	Neutral	55.4	-9.5	AVG	AVG (0.10s)		
2.124	36.2	Neutral	46.0	-9.8	AVG	AVG (0.10s)		
0.472	46.3	Neutral	56.5	-10.2	QP	QP (1.00s)		
0.513	35.5	Line	46.0	-10.5	AVG	AVG (0.10s)		
0.163	44.7	Line	55.3	-10.6	AVG	AVG (0.10s)		
0.474	45.0	Line	56.4	-11.4	QP	QP (1.00s)		
0.447	35.3	Neutral	46.9	-11.6	AVG	AVG (0.10s)		
2.227	34.3	Line	46.0	-11.7	AVG	AVG (0.10s)		
0.447	35.0	Line	46.9	-11.9	AVG	AVG (0.10s)		
0.447	43.4	Neutral	56.9	-13.5	QP	QP (1.00s)		
0.447	43.2	Line	56.9	-13.7	QP	QP (1.00s)		
0.513	42.1	Line	56.0	-13.9	QP	QP (1.00s)		
2.124	41.9	Neutral	56.0	-14.1	QP	QP (1.00s)		
0.162	50.6	Neutral	65.4	-14.8	QP	QP (1.00s)		
0.163	49.9 40.2	Line	65.3 56.0	-15.4	QP QP	QP (1.00s) QP (1.00s)		
2.227		Line	EC 0	-15.8		$1(1) (1 00_{-})$		



# End of Report

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