

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT **CLASS II PC REPORT**

	OF		
Product Name:	Frey		
Brand Name:	Bitatek		
Model No.:	Frey M1-0000, Frey M1-0010		
Model Difference: FCC ID:	N/A SPYIM0002		
Report No.:	ER/2017/70091		
Issue Date:	Aug. 04, 2017		
FCC Rule Part:	§15.247, Cat: DTS		
Prepared for:	Bitatek Co.,Ltd. 6F.,No.115,Wugong 3rd Rd., Wugu Dist., New Taipei City 248, Taiwan		
Prepared by:	SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803		
TAF Desting Laboratory 0913	Note: This report shall not be reproduced except in full, with- out the written approval of SGS Taiwan Ltd. This document may be altered or revised by SGS Taiwan Ltd. personnel only, and shall be noted in the revision section of the document.		



VERIFICATION OF COMPLIANCE

Applicant:	Bitatek Co.,Ltd. 6F.,No.115,Wugong 3rd Rd., Wugu Dist., New Taipei City 248, Taiwan
Product Name:	Frey
Brand Name:	Bitatek
Model No.:	Frey M1-0000, Frey M1-0010
Model Difference:	N/A
FCC ID:	SPYIM0002
File Number:	ER/2017/70091
Date of test:	Jul. 18, 2017 ~ Jul. 28, 2017
Date of EUT Received:	Jul. 18, 2017

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

The test results of this report relate only to the tested sample identified in this report.

Test By:	Curry Chen	Date:	Aug. 04, 2016
– Prepared By: –	Curry Chen / Engineer	Date:	Aug. 04, 2016
Approved By:	Yuri Tsai / Clerk Jim Chang / Asst. Manager	Date:	Aug. 04, 2016



Revision History

Report Number	Revision	Description	Issue Date
ER/2017/70091	Rev.00	Initial creation of document	Aug. 04, 2016

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GENERAL INFORMATION 1

1.1 Product description

General Information of Host:

Product Name of Host:	Rugged Handheld Computer		
Brand Name:	unitech		
Model No. of Host:	PA730		
Model Difference:	N/A		
Hardware Version:	N/A		
Software Version:	N/A		
Model No. of BT/WLAN Module:	Frey M1-0000, Frey I	M1-0010	
Scope:	The test report covers the radiated emissions requirements of the standards referenced in the report to allow system level ap- proval of the module in this specific host.		
Class II Permissive change:	Frey INSTALLED IN Rugged Handheld Computer		
USB Cable:	Model No.: 3C10-000	000790, Supplier: Bitatek	
	3.7Vdc from Recharg or 5V from AC/DC Ac	jeable Li-polymer Battery dapter	
Power Supply:	Battery: nication 2. Model	No.: BTBAT2, Supplier: Leung's Commu- on & Electric Products (Guangzhou) LTD. No.: BTBAT1, Supplier: Leung's Commu- on & Electric Products (Guangzhou) LTD.	
		No.: S018BDU0900200, er: Ten Pao Industrial Co., Ltd.	



WLAN 2.4GHz:

Wi-Fi	Frequency Range	Channels	Modulation Technology	
11b/g	2412-2462	11	DSSS OFDM	
11n (2.4GHz)	HT20 2412-2462	11	OFDM	
11n (2.4GHz)	HT40 2422-2452	11	OFDM	
Antenna Desig	ination:	IFA Antenna, Gain: 2dBi		
Modulation type		CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM		
Transition Rate:		802.11 b: 1/2/5.5/11 Mbps 802.11 g: 6/9/12/18/24/36/48/54 Mbps 802.11 HT20: 6.5 – 72.5Mbps 802.11 HT40: 13.5 – 150Mbps		

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1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.247 FCC KDB 558074 D01 DTS Meas. Guidance FCC KDB 662911 D01 Multiple Transmitter Output ANSI C63.10:2013

Note:

- 1. All test items have been performed and record as per the above standards.
- 2. The EUT was placed 1.5m height for frequency above 1GHz in accordance with ANSI C63. 10 :2013

1.3 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803 (TAF code 0513)

FCC Registration Numbers are: 509634

Canada Registration Number: 4620A-4

1.4 Special Accessories

There is no special accessory used while test was conducted.

Equipment Modifications 1.5

There was no modification incorporated into the EUT.

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SYSTEM TEST CONFIGURATION 2

EUT Configuration 2.1

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plan. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz,. The CISPR Quasi-Peak and Average detector mode is employed. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plan. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

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2.5 Configuration of Tested System

Fig. 2-1 Configuration of Tested System



Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	WLAN Test Software	N/A	N/A	N/A	N/A	N/A



SUMMARY OF TEST RESULTS 3

FCC / IC Rules	Description Of Test	Result
§15.247(d)	Spurious Emission	Compliant
§15.203	Antenna Requirement	Compliant

DESCRIPTION OF TEST MODES 4

4.1 Operated in 2400 ~ 2483.5MHz Band

11 channels are provided for 802.11b, 802.11g and 802.11n HT20,

CHANNEL FREQUENCY		FREQUENCY
2412 MHz	7	2442 MHz
2417 MHz	8	2447 MHz
2422 MHz	9	2452 MHz
2427 MHz	10	2457 MHz
2432 MHz	11	2462 MHz
2437 MHz		
	2412 MHz 2417 MHz 2422 MHz 2427 MHz 2432 MHz	2412 MHz72417 MHz82422 MHz92427 MHz102432 MHz11

7 channels are provided for 802.11n HT40,

	CHANNEL	FREQUENCY	CHANNEL	FREQUENCY		
	3	2422 MHz	7	2442 MHz		
	4	2427 MHz	8	2447 MHz		
	5	2432 MHz	9	2452 MHz		
l	6	2437 MHz				



RADIATED EMISSION TEST:

RADIATED EMISSION TEST (ABOVE 1 GHz)						
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT	
802.11b	1 to 11	6	DSSS	1	Main	
	RADIATED BAND EDGE EMISSION TEST					
MODE	MODE	MODE	MODE	MODE	MODE	
802.11b	1 to 11	1, 6, 11	DSSS	1	Main	
802.11g	1 to 11	1, 6, 11	OFDM	6	Main	
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	MCS0	Main	
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	MCS0	Main	

Note:

The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for 802.11a/b/g/n WLAN Transmitter for channel Low, Mid and High, the worst case H position was tested as resulted in pre-scanned measurement.

ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST								
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT			
802.11b	1 to 11	1, 6, 11	DSSS	1	Main			
802.11g	1 to 11	1, 6, 11	OFDM	6	Main			
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	MCS0	Main			
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	MCS0	Main			



5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty			
AC Power Line Conducted Emission	+/- 2.586 dB			
Peak Output Power	+/- 1.55dB (for Spectrum) +/- 1.42 dB (for Power Meter)			
6dB Bandwidth	+/- 123.36 Hz			
100 KHz Bandwidth Of Frequency Band Edges	+/- 1.55 dB			
Peak Power Density	+/- 1.55 dB			
99% Power Bandwidth	+/- 123.36 Hz			
Temperature	+/- 0.8 °C			
Humidity	+/- 4.7 %			
DC / AC Power Source	DC= +/- 1%, AC=+/- 0.2%			

Radiated Spurious Emission:

	9kHz-30MHz: +/-2.87dB
	30MHz - 180MHz: +/- 3.37dB
Measurement uncertainty	180MHz -417MHz: +/- 3.19dB
(Polarization : Vertical)	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

	9kHz-30MHz: +/-2.87dB
Magguramantungartaintu	30MHz - 167MHz: +/- 4.22dB
Measurement uncertainty (Polarization : Horizontal)	167MHz -500MHz: +/- 3.44dB
	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

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



RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT 6

Standard Applicable: 6.1

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands must also comply with the §15.209 limit as below.

And according to §15.33(a) (1), for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

- 1. The lower limit shall apply at the transition frequencies.
- Emission level (dBµV/m) = 20 log Emission level (dBµV/m)

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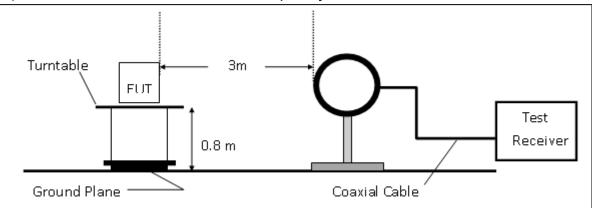
6.2 **Measurement Equipment Used:**

SGS 966 Chamber No.C									
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due				
EMI Test Re- ceiver	R&S	ESCI7	100760	05/11/2017	05/10/2018				
Spectrum Ana- lyzer	Agilent	E4446A	MY51100003	04/25/2017	04/24/2018				
Loop Antenna	ETS.LINDGREN	6502	148045	09/20/2016	09/19/2017				
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/19/2016	12/18/2017				
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/01/2016	07/31/2017				
Pre-Amplifier	Agilent	8447D	2944A07676	01/05/2017	01/04/2018				
Pre-Amplifier	EMC Instruments Corp.	EMC0126530	980038	01/05/2017	01/04/2018				
Turn Table	HD	DT420	N/A	N.C.R	N.C.R				
Antenna Tower	ChamPro	AM-BS-4500-B	060776-ABS	N.C.R	N.C.R				
Controller	ChamPro	EM1000	60776	N.C.R	N.C.R				
Low Loss Cable	Huber Suhner	966_RX	9	01/05/2017	01/04/2018				
3m Site NSA	SGS	966 chamber	N/A	07/01/2017	06/30/2018				
Low Loss Cable	Huber Suhner	966 TX	1	01/05/2017	01/04/2018				
Horn Antenna	Schwarzbeck	BBHA9170	184	12/12/2016	12/11/2017				
Pre-Amplifier	EMC Instruments Corp.	EMC184045	980135	01/05/2017	01/04/2018				

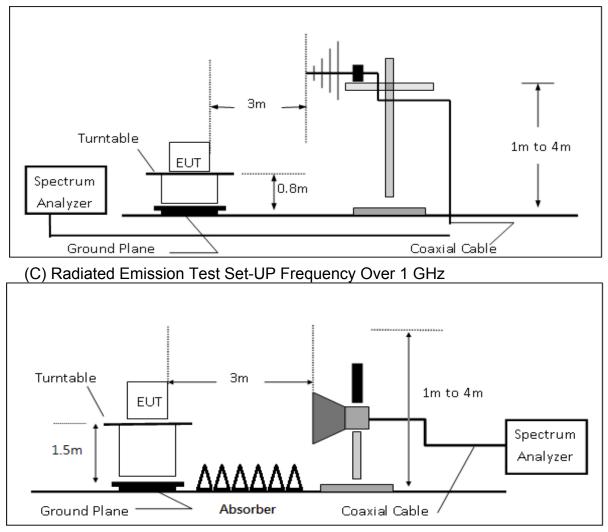


6.3 Test SET-UP:

(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



(B) Radiated Emission Test Set-Up, Frequency form 30MHz to 1000MHz



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6.4 Measurement Procedure:

- 1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 2. The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 1.5m for frequency> 1GHz above ground plane.
- 3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 5. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.
- 6. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
- 7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
- 8. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
- 9. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- 10. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 11. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. On spectrum, change spectrum mode in linear display mode, and reduce VBW = 10Hz if average reading is measured.
- 12. Repeat above procedures until all default test channel measured were complete.

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6.5 Field Strength Calculation:

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

FS = RA + AF + CL - AG

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

Actual FS(dB μ V/m) = SPA. Reading level(dB μ V) + Factor(dB)

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre Amplifier Gain(dB)

Note :

"F" : denotes Fundamental Frequency.; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

Test Results of Radiated Spurious Emissions form 9 kHz to 30 MHz 6.6

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

6.7 **Measurement Result:**

Note: Refer to next page tabular data sheets.



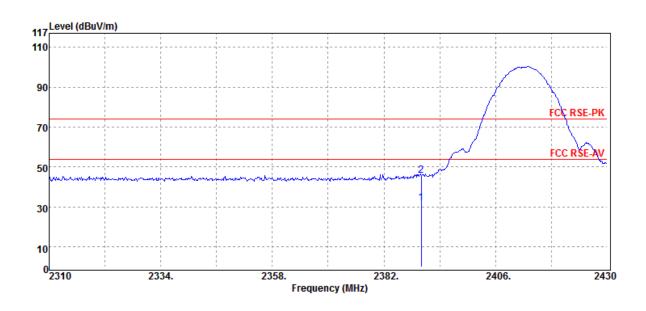
Radiated Band Edge Measurement Result: 802.11 b mode

Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11b :2412 MHz :Bandedge CH LOW :H Plane

Test Date Temp./Humi. Engineer :Mike Measurement Antenna Pol.

:2017-07-20 :22 deg_C / 61 RH :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Е	Average	33.87	-1.74	32.13	54.00	-21.87
2390.00	E	Peak	47.34	-1.74	45.60	74.00	-28.40

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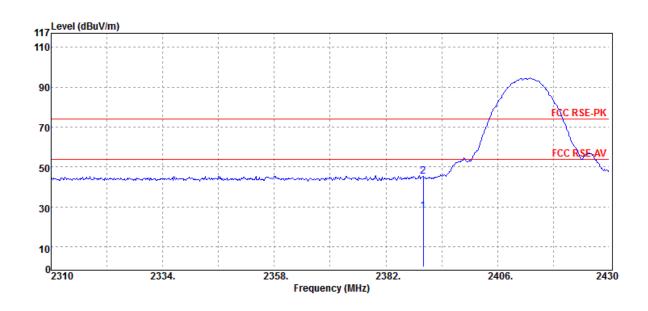


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Operation Band :802.11b Fundamental Frequency :2412 MHz **Operation Mode** :Bandedge CH LOW EUT Pol. :H Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2017-07-20 :22 deg_C / 61 RH :Mike :HORIZONTAL



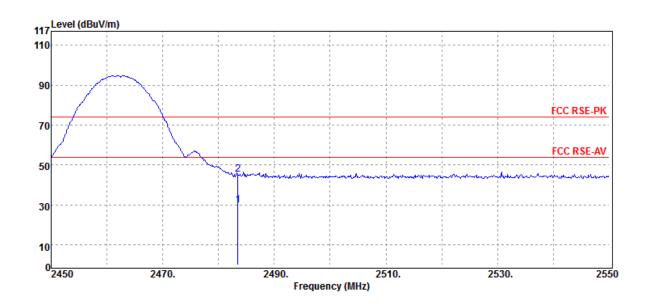
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Е	Average	29.78	-1.74	28.04	54.00	-25.96
2390.00	Е	Peak	47.16	-1.74	45.42	74.00	-28.58

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Operation Band :802.11b Fundamental Frequency :2462 MHz **Operation Mode** :Bandedge CH HIGH EUT Pol. :H Plane

Test Date :2017-07-20 Temp./Humi. :22 deg_C / 61 RH Engineer :Mike :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Е	Average	31.56	-1.62	29.94	54.00	-24.06
2483.50	Е	Peak	46.88	-1.62	45.26	74.00	-28.74

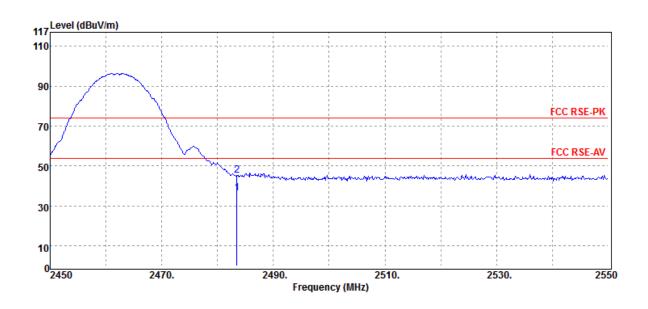
Report No.: ER/2017/70091 Page: 21 of 58



Operation Band :802.11b Fundamental Frequency :2462 MHz **Operation Mode** :Bandedge CH HIGH EUT Pol. :H Plane

Test Date Temp./Humi. Engineer :Mike Measurement Antenna Pol.

:2017-07-20 :22 deg_C / 61 RH :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Е	Average	37.96	-1.62	36.34	54.00	-17.66
2483.50	Е	Peak	47.06	-1.62	45.44	74.00	-28.56



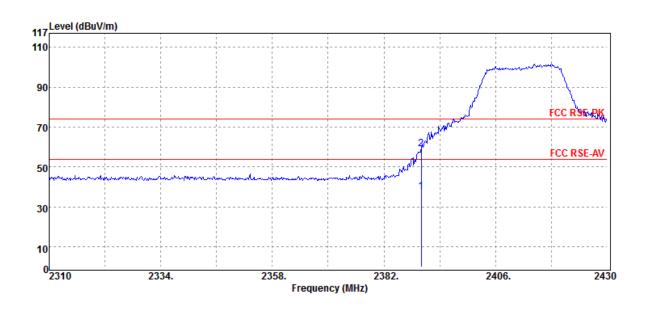
Radiated Band Edge Measurement Result: 802.11 g mode

Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11g :2412 MHz :Bandedge CH LOW :H Plane

Test Date Temp./Humi. Engineer :Mike Measurement Antenna Pol.

:2017-07-20 :22 deg_C / 61 RH :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Е	Average	39.26	-1.74	37.52	54.00	-16.48
2390.00	E	Peak	60.93	-1.74	59.19	74.00	-14.81

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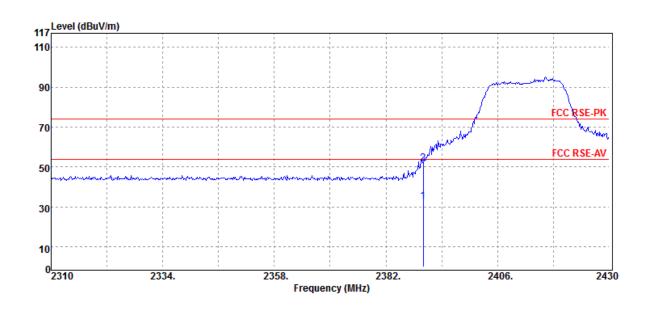


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Operation Band :802.11g Fundamental Frequency :2412 MHz **Operation Mode** :Bandedge CH LOW EUT Pol. :H Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2017-07-20 :22 deg_C / 61 RH :Mike :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Е	Average	34.69	-1.74	32.95	54.00	-21.05
2390.00	Е	Peak	53.56	-1.74	51.82	74.00	-22.18

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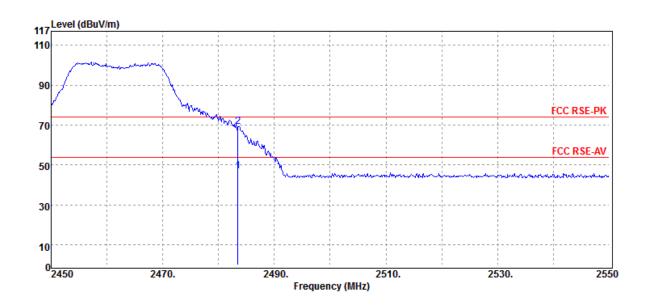
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Operation Band :802.11g Fundamental Frequency :2462 MHz **Operation Mode** :Bandedge CH HIGH EUT Pol. :H Plane

Test Date :2017-07-20 Temp./Humi. :22 deg_C / 61 RH Engineer :Mike :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Е	Average	48.77	-1.62	47.15	54.00	-6.85
2483.50	Е	Peak	70.97	-1.62	69.35	74.00	-4.65

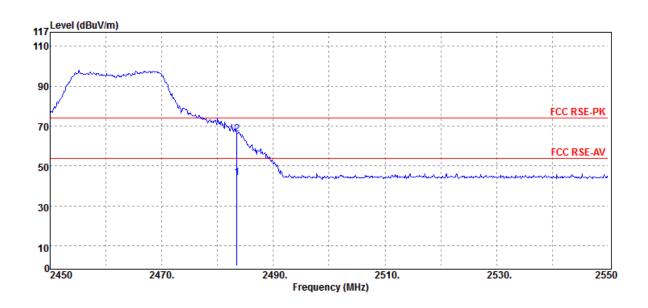
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Operation Band :802.11g Fundamental Frequency :2462 MHz **Operation Mode** :Bandedge CH HIGH EUT Pol. :H Plane

Test Date Temp./Humi. Engineer :Mike Measurement Antenna Pol.

:2017-07-20 :22 deg_C / 61 RH :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Е	Average	45.89	-1.62	44.27	54.00	-9.73
2483.50	Е	Peak	67.48	-1.62	65.86	74.00	-8.14



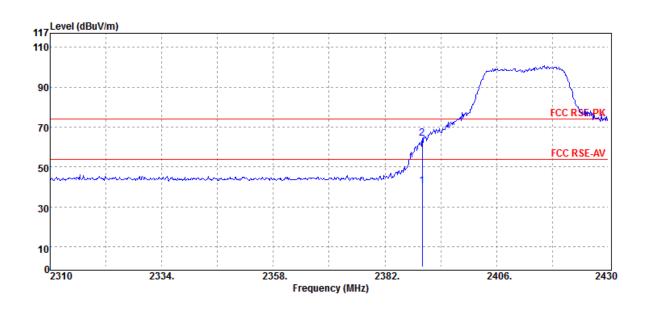
Radiated Band Edge Measurement Result (802.11n HT20)

Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n20 :2412 MHz :Bandedge CH LOW :H Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2017-07-20 :22 deg_C / 61 RH :Mike :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Е	Average	42.15	-1.74	40.41	54.00	-13.59
2390.00	Е	Peak	66.04	-1.74	64.30	74.00	-9.70

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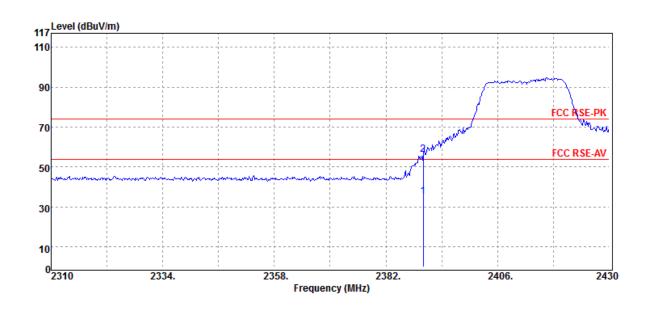


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Operation Band :802.11n20 Fundamental Frequency :2412 MHz **Operation Mode** :Bandedge CH LOW EUT Pol. :H Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2017-07-20 :22 deg_C / 61 RH :Mike :HORIZONTAL



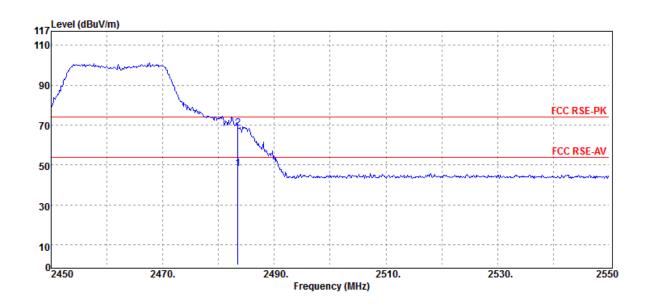
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Е	Average	36.88	-1.74	35.14	54.00	-18.86
2390.00	Е	Peak	58.03	-1.74	56.29	74.00	-17.71

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Operation Band :802.11n20 Fundamental Frequency :2462 MHz **Operation Mode** :Bandedge CH HIGH EUT Pol. :H Plane

Test Date :2017-07-20 Temp./Humi. :22 deg_C / 61 RH Engineer :Mike :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Е	Average	49.67	-1.62	48.05	54.00	-5.95
2483.50	Е	Peak	70.02	-1.62	68.40	74.00	-5.60

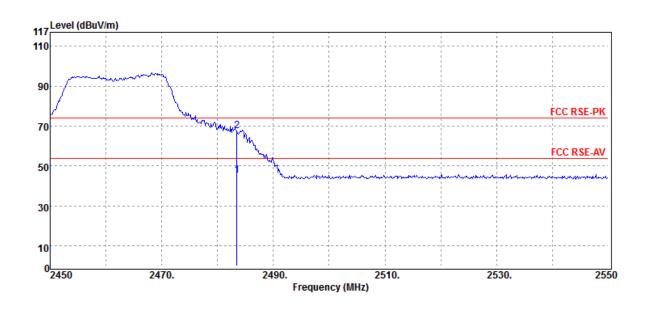
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Operation Band :802.11n20 Fundamental Frequency :2462 MHz **Operation Mode** :Bandedge CH HIGH EUT Pol. :H Plane

Test Date Temp./Humi. Engineer :Mike Measurement Antenna Pol.

:2017-07-20 :22 deg_C / 61 RH :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Е	Average	46.82	-1.62	45.20	54.00	-8.80
2483.50	Е	Peak	69.32	-1.62	67.70	74.00	-6.30

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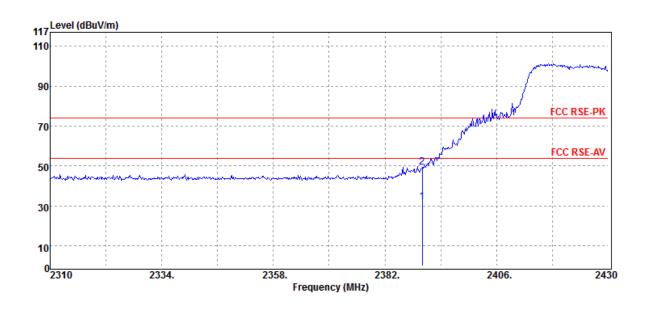
Radiated Band Edge Measurement Result (802.11n HT40)

Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11n40 :2422 MHz :Bandedge CH LOW :H Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2017-07-20 :21 deg_C / 62 RH :Mike :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Е	Average	33.89	-1.74	32.15	54.00	-21.85
2390.00	Е	Peak	50.96	-1.74	49.22	74.00	-24.78

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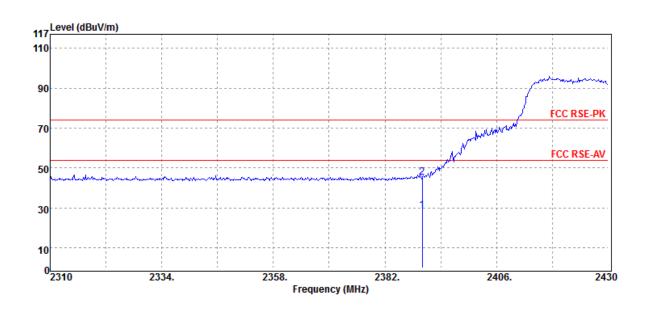


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Operation Band :802.11n40 Fundamental Frequency :2422 MHz **Operation Mode** :Bandedge CH LOW EUT Pol. :H Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2017-07-20 :21 deg_C / 62 RH :Mike :HORIZONTAL



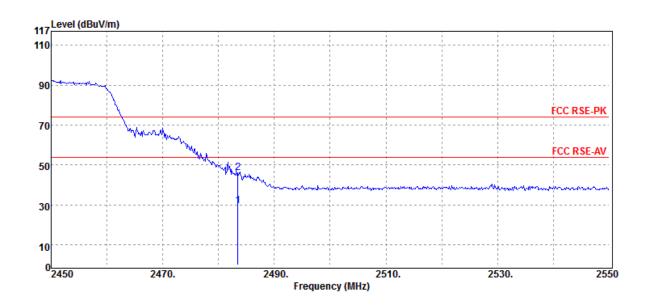
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Е	Average	30.36	-1.74	28.62	54.00	-25.38
2390.00	Е	Peak	47.06	-1.74	45.32	74.00	-28.68

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Operation Band :802.11n40 Fundamental Frequency :2422 MHz **Operation Mode** :Bandedge CH HIGH EUT Pol. :H Plane

Test Date :2017-07-20 Temp./Humi. :21 deg_C / 62 RH Engineer :Mike :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Е	Average	31.21	-1.62	29.59	54.00	-24.41
2483.50	Е	Peak	47.72	-1.62	46.10	74.00	-27.90

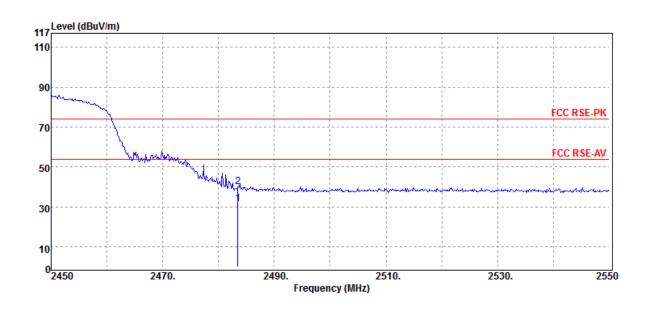
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Operation Band :802.11n40 Fundamental Frequency :2422 MHz **Operation Mode** :Bandedge CH HIGH EUT Pol. :H Plane

Test Date Temp./Humi. Engineer :Mike Measurement Antenna Pol.

:2017-07-20 :21 deg_C / 62 RH :HORIZONTAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Е	Average	33.08	-1.62	31.46	54.00	-22.54
2483.50	Е	Peak	41.50	-1.62	39.88	74.00	-34.12



Above 1GHz Data:

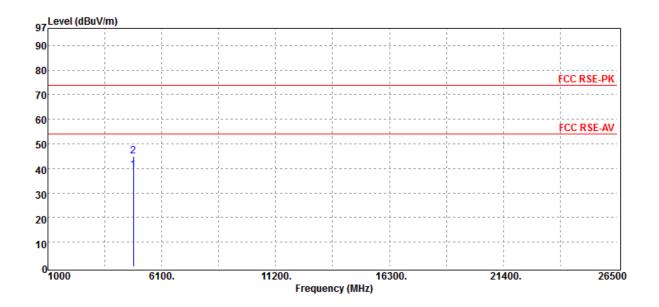
Radiated Spurious Emission Measurement Result (802.11 b)

Operation Band Fundamental Frequency **Operation Mode** EUT Pol.

:802.11b :2412 MHz :Tx CH LOW :H Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2017-07-21 :21 deg_C / 62 RH :Mike :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Н	Average	34.50	4.93	39.43	54.00	-14.57
4824.00	Н	Peak	40.00	4.93	44.93	74.00	-29.07

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Operation Band Fundamental Frequency Operation Mode EUT Pol.		:802.11b :2412 MHz :Tx CH LOW :H Plane		Test Date Temp./Hu Engineer Measurer		:21 deg :Mike	:2017-07-21 :21 deg_C / 62 RH :Mike :HORIZONTAL	
97 Level (dE	BuV/m)							
<mark>90</mark>								
80						FCC RSE-PK		
70			· · · · · · · · · · · · · · · · · · ·					
60				·		FCC RSE-AV		
50	2			 				
40			· · · · · · · · · · · · · · · · · · ·					
30			· · · · · · · · · · · · · · · · · · ·					
20				 		 		
10								
0 <mark>6100.</mark>		11200. 16300. Frequency (MHz)		21400.	2650	26500		
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe	
		Mode	Reading Level		FS	@3m	Margin	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
4824.00	Н	Average	35.91	4.93	40.84	54.00	-13.16	
4824.00	Н	Peak	39.92	4.93	44.85	74.00	-29.15	



Operation Band Fundamental Frequency Operation Mode EUT Pol.		:802.11b :2437 MHz :Tx CH MID :H Plane		Test Date Temp./Hu Engineer Measurer		:21 deg :Mike	:2017-07-21 :21 deg_C / 62 RH :Mike :VERTICAL	
97	3uV/m)							
90								
80								
70			1 1 L			FCC RSE-PK		
60			·····			FOC DOT AV		
50			· · · · · · · · · · · · · · · · · · ·			FCC RSE-AV		
40	2							
30								
20								
10								
0 <mark></mark>	610	0	11200.	16300.	21400.	2650	0	
1000	010		Frequency (MH		21400.	2030	0	
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe	
		Mode	Reading Level		FS	@3m	Margin	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
4874.00	Н	Average	35.88	5.13	41.01	54.00	-12.99	
4874.00	Н	Peak	39.01	5.13	44.14	74.00	-29.86	



Operation Bar Fundamental Operation Mo EUT Pol.	Frequency	:802.11b :2437 MHz :Tx CH MID :H Plane		Test Date Temp./Hu Engineer Measurer	ımi.	:Mike	07-21 9_C / 62 RH 2ONTAL
97	uV/m)						
90							
80							
70	·					FCC RSE-PK	
60	· · · · · · · · · · · · · · · · · · ·						
50	······································					FCC RSE-AV	
40							
30							
20						 	
10							
0 <mark></mark> 1000	610	0.	11200. Frequency (MH	16300. z)	21400.	2650	0
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Н	Average	38.29	5.13	43.42	54.00	-10.58
4874.00	Н	Peak	40.90	5.13	46.03	74.00	-27.97



Operation Ba Fundamenta Operation Ma EUT Pol.	I Frequency	:802.11b :2462 MHz :Tx CH HIG :H Plane	Н	Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:Mike	g_C / 62 RH
97 Level (d	lBuV/m)						7
90							
80						FCC RSE-PK	
70							
60						FCC RSE-AV	
50	2						
40				 1 1			
30		 	·····	 1 1			
20							
10				 ! !		 	
0 <mark></mark> 1000	610	0.	11200. Frequency (MH	16300. z)	21400.	265	 00
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Н	Average	34.11	5.25	39.36	54.00	-14.64
4924.00	Н	Peak	38.40	5.25	43.65	74.00	-30.35



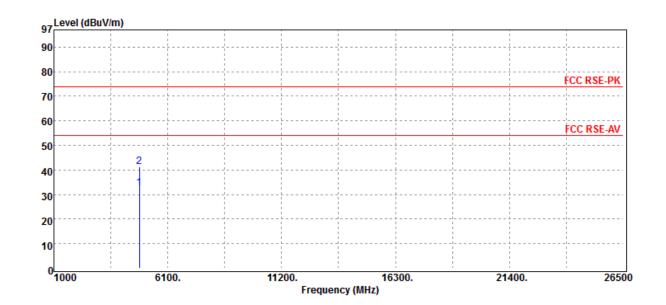
Operation Ba Fundamental Operation Mo EUT Pol.	Frequency	:802.11b :2462 MHz :Tx CH HIG :H Plane	Н	Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:21 de :Mike	:2017-07-21 :21 deg_C / 62 RH :Mike :HORIZONTAL	
97 Level (dE	BuV/m)	i	i i		ii		1	
90								
<mark>80</mark>				1 		FCC RSE-PK		
70								
<mark>60</mark>	· · · · · · · · · · · · · · · · · · ·					FCC RSE-AV		
5 0	2							
40				· · · · · · · · · · · · · · · · · · ·				
30								
20								
10								
0 <mark></mark> 1000	1000 6100.		11200. 16300. Frequency (MHz)		21400.	265	 00	
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe	
		Mode	Reading Level		FS	@3m	Margin	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
4924.00	Н	Average	34.33	5.25	39.58	54.00	-14.42	
4924.00	Н	Peak	39.40	5.25	44.65	74.00	-29.35	



Radiated Spurious Emission Measurement Result (802.11 g)

Operation Band	:802.11g
Fundamental Frequency	:2412 MHz
Operation Mode	:Tx CH LOW
EUT Pol.	:H Plane

Test Date :2017-07-21 Temp./Humi. :21 deg_C / 62 RH Engineer :Mike :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Н	Average	27.60	4.93	32.53	54.00	-21.47
4824.00	Н	Peak	36.22	4.93	41.15	74.00	-32.85



Operation Bar Fundamental Operation Mo EUT Pol.	Frequency	:802.11g :2412 MHz :Tx CH LOV :H Plane	V	Test Date Temp./Hu Engineer Measurer		:Mike	17-21 _C / 62 RH CONTAL
97	BuV/m)						
90							
80							
70						FCC RSE-PK	
60			· · · · · · · · · · · · · · · · · · ·	·		FOC DOT AV	
50						FCC RSE-AV	
40	2		· · · · · · · · · · · · · · · · · · ·	·			
30							
20							
10							
0 <mark></mark>		0	44200	16300.	24.400	2000	0
1000	610	0.	11200. Frequency (MH		21400.	2650	U
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Н	Average	27.64	4.93	32.57	54.00	-21.43
4824.00	Н	Peak	36.02	4.93	40.95	74.00	-33.05



Operation Bar Fundamental Operation Mo EUT Pol.	Frequency	:802.11g :2437 MHz :Tx CH MID :H Plane)	Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:Mike	g_C / 62 RH
97 Level (dE	3uV/m)						
90							
80				1 1 1 1 1 1		500 005 04	
70	· · · · · · · · · · · · · · · · · · ·			 		FCC RSE-PK	
60							
50	· · · · · · · · · · · · · · · · · · ·					FCC RSE-AV	
40	2	 		1 1 1 1		 	
30		 		1 1 1 1			
20						 	
10		 				 	
0		-					
⁰ 1000	610	0.	11200. Frequency (MH	16300. z)	21400.	2650	00
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Н	Average	24.13	5.13	29.26	54.00	-24.74
4874.00	Н	Peak	34.23	5.13	39.36	74.00	-34.64



Operation Bar Fundamental Operation Mo EUT Pol.	Frequency	:802.11g :2437 MHz :Tx CH MID :H Plane	,	Test Date Temp./Hu Engineer Measurer		:Mike	_C / 62 RH
97	BuV/m)						
90				·			
80						FCC RSE-PK	
70		 					
60						FCC RSE-AV	
50							
40	2						
30							
20							
10				·			
0 <mark></mark>	610	0.	11200. Frequency (MH	16300. z)	21400.	26500)
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Н	Average	24.69	5.13	29.82	54.00	-24.18
4874.00	Н	Peak	33.64	5.13	38.77	74.00	-35.23



Operation Bar Fundamental Operation Mo EUT Pol.	Frequency	:802.11g :2462 MHz :Tx CH HIG :H Plane	Н	Test Date Temp./Humi. Engineer Measurement Antenna Pol.			7-21 _C / 62 RH CAL
97	BuV/m)						
90							
80					· · · · · · · · · · · · · · · · · · ·	FCC RSE-PK	
70							
<mark>60</mark>						FCC RSE-AV	
50							
40	2						
30						 	
20							
10							
0 <mark>0</mark>	610	0.	11200.	16300.	21400.	2650	0
			Frequency (MH)	Z)			
Глод	Noto	Detector	Cracetrum	Fastar	Actual	Limit	Safe
Freq.	Note	Detector	Spectrum	Factor	Actual	-	
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Н	Average	24.29	5.25	29.54	54.00	-24.46
4924.00	Н	Peak	34.06	5.25	39.31	74.00	-34.69



Operation Ba Fundamental Operation Mc EUT Pol.	lamental Frequency :2462 MHz ation Mode :Tx CH HIGF		н	Test Date Temp./Humi. Engineer Measurement Antenna Pol.			:2017-07-21 :21 deg_C / 62 RH :Mike :HORIZONTAL	
201101.				Measurer	ment Antenna P	0.	LONIAL	
Lovel (dl	Pu\//m)							
97 Level (dl	Suvinij]	
80								
						FCC RSE-PK		
70								
60						FCC RSE-AV	•	
50	2							
40								
30								
20								
10								
0 <mark></mark> 1000	610	0.	11200.	16300.	21400.	265	00	
			Frequency (MI	łz)				
Frog	Note	Detector	Spectrum	Factor	Actual	Limit	Safe	
Freq.	Note	Mode	•	Facior	FS			
N 41 I.—			Reading Level			@3m	Margin	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
4004.00		A	04.47	E 05	20.42	F4 00	04 50	
4924.00	н	Average	24.17	5.25	29.42	54.00	-24.58	
4924.00	Н	Peak	34.43	5.25	39.68	74.00	-34.32	

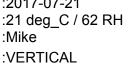


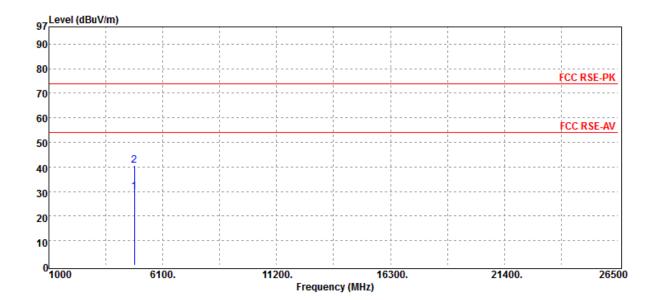
Radiated Spurious Emission Measurement Result (802.11 n HT20)

LOW

Operation Band	:802.11n20
Fundamental Frequency	:2412 MHz
Operation Mode	:Tx CH LOV
EUT Pol.	:H Plane

Test Date :2017-07-21 Temp./Humi. Engineer :Mike Measurement Antenna Pol.





Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Н	Average	24.80	4.93	29.73	54.00	-24.27
4824.00	Н	Peak	35.78	4.93	40.71	74.00	-33.29



Operation Bar Fundamental Operation Mo EUT Pol.	Frequency	:802.11n20 :2412 MHz :Tx CH LOV :H Plane	V	Test Date Temp./Humi. Engineer Measurement Antenna Pol.			07-21 g_C / 62 RH ZONTAL
97	BuV/m)						_
90							
80							
70	·					FCC RSE-PK	
60	· · · · · · · · · · · · · · · · · · ·	 		1 1 1 1			
50	· · · · · · · · · · · · · · · · · · ·			1 1 1 1		FCC RSE-AV	
40	2						
30							
20							
10							
0 <mark></mark> 1000	610	0.	11200. Frequency (MH	16300. z)	21400.	2650	วีอ
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Н	Average	24.85	4.93	29.78	54.00	-24.22
4824.00	Н	Peak	35.27	4.93	40.20	74.00	-33.80



Operation Bar Fundamental Operation Mo EUT Pol.	Frequency	:802.11n20 :2437 MHz :Tx CH MID :H Plane		Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:Mike	g_C / 62 RH
97	3uV/m)						
90 90							
80							
70						FCC RSE-PK	
60						FCC RSE-AV	
50							
40	2						
30				 1 1			
20							
10							
0 <mark>0</mark>	610	0.	11200.	16300.	21400.	2650	00
			Frequency (MH	z)			
F	Nista	Datastan	Our e strevers	F 4	A	1 : :4	0-6-
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Н	Average	24.32	5.13	29.45	54.00	-24.55
4874.00	Н	Peak	36.30	5.13	41.43	74.00	-32.57



Operation Bar Fundamental Operation Mo EUT Pol.	Frequency	:802.11n20 :2437 MHz :Tx CH MID :H Plane		Test Date Temp./Humi. Engineer Measurement Antenna Pol.			7-21 _C / 62 RH ONTAL
97 Level (dB	uV/m)				· · ·		
<mark>90</mark>							
80						FCC RSE-PK	
70	· J						
60	·					FCC RSE-AV	
50	·		· · · · · · · · · · · · · · · · · · ·				
40	2			·			
30							
20				 			
10							
0	610	0.	11200.	16300.	21400.	2650	0
			Frequency (MH)				-
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Н	Average	24.61	5.13	29.74	54.00	-24.26
4874.00	Н	Peak	35.07	5.13	40.20	74.00	-33.80



Operation Ba Fundamental Operation Mo EUT Pol.	Frequency	:802.11n20 :2462 MHz :Tx CH HIG :H Plane	Η	Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:Mike	J_C / 62 RH
97 Level (dl	BuV/m)						1
90 <mark></mark>				 			
80						FCC RSE-PK	
70							
60						FCC RSE-AV	
50				 			
40	2						
30							
20							
10							
0	610	0.	11200.	16300.	21400.	2650	0
			Frequency (MH	z)			
Frag	Note	Detector	Speatrum	Factor	Actual	Limit	Safe
Freq.	NOLE	Mode	Spectrum Reading Level	Facior	FS	@3m	
N 41 1-			•	dD		-	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	н	Average	24.37	5.25	29.62	54.00	-24.38
4924.00	Н	Peak	35.48	5.25 5.25	40.73	54.00 74.00	-24.38
4924.00	11	rean	55.40	0.20	40.75	74.00	-33.21



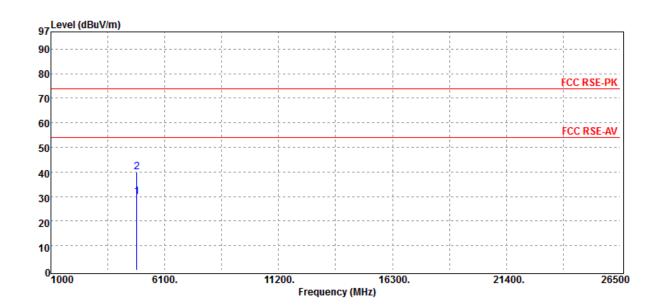
Operation Ba Fundamental Operation Mo EUT Pol.	Frequency	:802.11n20 :2462 MHz :Tx CH HIG :H Plane	Η	Test Date Temp./Humi. Engineer Measurement Antenna Pol.			07-21 _C / 62 RH CONTAL
97 Level (dl	BuV/m)						
90							
80				 		FCC RSE-PK	
70		 		 			
60				1 1 1 1		FCC RSE-AV	
50				 			
40	2			1 1 1 1 1			
30		 		 			
20		 				 	
10						 	
0	610	0.	11200.	16300.	21400.	2650	0
			Frequency (MH	z)			
Frag	Nete	Detector	Casetrum	Fastar	Actual	Limit	Safe
Freq.	Note	Detector	Spectrum	Factor	Actual	-	
N 41 I.—		Mode	Reading Level	JD	FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4004.00		A	04.00	5.05	00.05	54.00	04.45
4924.00	н	Average	24.60	5.25	29.85	54.00	-24.15
4924.00	Н	Peak	35.51	5.25	40.76	74.00	-33.24



Radiated Spurious Emission Measurement Result (802.11 n HT40)

Operation Band	:802.11n40
Fundamental Frequency	:2422 MHz
Operation Mode	:Tx CH LOW
EUT Pol.	:H Plane

Test Date :2017-07-21 Temp./Humi. :21 deg_C / 62 RH Engineer :Mike :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4844.00	Н	Average	24.79	4.97	29.76	54.00	-24.24
4844.00	Н	Peak	35.13	4.97	40.10	74.00	-33.90



Operation Bar Fundamental Operation Mo EUT Pol.	Frequency	:802.11n40 :2422 MHz :Tx CH LOV :H Plane	V	Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:Mike	07-21 g_C / 62 RH ZONTAL
97	BuV/m)						_
90							
80							
70	·					FCC RSE-PK	
60	· · · · · · · · · · · · · · · · · · ·	 		1 1 1 1			
50	· · · · · · · · · · · · · · · · · · ·			1 1 1 1		FCC RSE-AV	
40	2						
30							
20							
10				 		, , , , , ,	
0 <mark></mark> 1000	610	0.	11200. Frequency (MH	16300. z)	21400.	2650	วีอ
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4844.00	Н	Average	24.82	4.97	29.79	54.00	-24.21
4844.00	Н	Peak	35.49	4.97	40.46	74.00	-33.54



Operation Bar Fundamental Operation Mo EUT Pol.	Frequency	:802.11n40 :2437 MHz :Tx CH MID :H Plane		Test Date Temp./Hu Engineer Measurer		:Mike	9_C / 62 RH
97	BuV/m)						
90							
80				1 1 1 1 1 1			
70			· · · · · · · · · · · · · · · · · · ·	 		FCC RSE-PK	
60							
50	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·			FCC RSE-AV	
40	2						
30			· · · · · · · · · · · · · · · · · · ·				
20				 		 	
10				 		 	
0 <mark></mark>		0	44200	16300.	24.400	2050	
1000	610	0.	11200. Frequency (MH		21400.	2650	10
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Н	Average	24.39	5.13	29.52	54.00	-24.48
4874.00	Н	Peak	34.41	5.13	39.54	74.00	-34.46



Operation Ba Fundamental Operation Mo EUT Pol.	Frequency	:802.11n40 :2437 MHz :Tx CH MID :H Plane		Test Date Temp./Hu Engineer Measurer		:Mike	07-21 J_C / 62 RH CONTAL
97	BuV/m)						
90							
80			· · · · · · · · · · · · · · · · · · ·	1 1 1 1 1 1			
70						FCC RSE-PK	
60			· · · · · · · · · · · · · · · · · · ·				
50			· · · · · · · · · · · · · · · · · · ·			FCC RSE-AV	
40	2		· · · · · · · · · · · · · · · · · · ·			¹	
30							
20			· · · · · · · · · · · · · · · · · · ·			 	
10			· · · · · · · · · · · · · · · · · · ·	 			
0		0	11200.	16300.	24,000	2000	<u>_</u>
01000	610	0.	Frequency (MH		21400.	2650	U
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
		Mode	Reading Level		FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Н	Average	24.46	5.13	29.59	54.00	-24.41
4874.00	Н	Peak	34.36	5.13	39.49	74.00	-34.51



Operation Ba Fundamental Operation Mo EUT Pol.	Frequency	:802.11n40 :2452 MHz :Tx CH HIG :H Plane	Η	Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:Mike	J_C / 62 RH
97 Level (dE	BuV/m)						1
<mark>90</mark>				·			
<mark>80</mark>						FCC RSE-PK	
70				 			
<mark>60</mark>						FCC RSE-AV	
50							
40	2						
30							
20							
10							
0 <mark>0</mark>	610	0.	11200.	16300.	21400.	2650	0
			Frequency (MH	z)			
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
rieq.	NOLE	Mode	Reading Level	T actor	FS	@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
	1/11/L/O		ασμν	GD	αυμν/π		
4904.00	н	Average	24.35	5.24	29.59	54.00	-24.41
4904.00	н	Peak	35.69	5.24	40.93	74.00	-33.07



Operation Ba Fundamental Operation Mo EUT Pol.	Frequency	:802.11n40 :2452 MHz :Tx CH HIG :H Plane	Н	Test Date Temp./Humi. Engineer Measurement Antenna Pol.		:Mike	_C / 62 RH
97	BuV/m)					·	
<mark>90</mark>							
80						FCC RSE-PK	
70							
<mark>60</mark>			· · · · · · · · · · · · · · · · · · ·			FCC RSE-AV	
50							
40	2						
30	1						
20							
10							
0 <mark>0</mark>	610	0.	11200.	16300.	21400.	2650	D
			Frequency (MH)	L)			
From	Note	Detector	Speatrum	Factor	Actual	Limit	Safe
Freq.	NOLE	Mode	Spectrum Reading Lovel	Facioi	FS		
N 41 1-			Reading Level	٩D		@3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4004.00			24.44	E 04	20.69	F4 00	04.00
4904.00	Н	Average	24.44	5.24	29.68	54.00	-24.32
4904.00	Н	Peak	36.14	5.24	41.38	74.00	-32.62



ANTENNA REQUIREMENT 7

7.1 Standard Applicable:

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device.

If the transmitting antenna is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

According to RSS-GEN 8.3

The applicant for equipment certification, as per RSP-100, must provide a list of all antenna types that may be used with the licence-exempt transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. Licence-exempt transmitters that have received equipment certification may operate with different types of antennas. However, it is not permissible to exceed the maximum equivalent

isotropically radiated power (e.i.r.p.) limits specified in the applicable standard (RSS) for the licence-exempt apparatus.

Testing shall be performed using the highest gain antenna of each combination of licence-exempt transmitter and antenna type, with the transmitter output power set at the maximum level.9 When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna manufacturer.

7.2 Antenna Connected Construction:

An embedded-in antenna design is used.

The antenna connector is designed with unique type RF connector and no consideration of replacement. Please see EUT photo and antenna spec. for details.

The antenna gain is less than 6dBi. Therefore, it is not necessary to reduce maximum output power limit.

~ End of Report ~