

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

	OF	
Brand Name:	Sony	
FCC ID:	PY7-55364J	
Report No.:	ER/2016/C0046	
Issue Date:	Mar. 01, 2017	
FCC Rule Part:	§15.247, Cat: DTS	
Prepared for:	Sony Mobile Communications Inc. 4-12-3, Higashi-Shinagawa, Shinagawa-ku, Tokyo, 140-0002 Japan	
Prepared by:	SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803	
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VERIFICATION OF COMPLIANCE

Applicant:	Sony Mobile Communications Inc. 4-12-3, Higashi-Shinagawa, Shinagawa-ku, Tokyo, 140-0002 Japan
Brand Name:	Sony
FCC ID:	PY7-55364J
File Number:	ER/2016/C0046
Date of Test:	Dec. 09, 2016 ~ Jan. 09, 2017
Date of EUT Received:	Dec. 09, 2016

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:	louis Ches	Date:	Mar. 01, 2017	
Prepared By:	Louis Chen / Engineer Karen Huang	Date:	Mar. 01, 2017	_
Approved By:	Karen Huang / Clerk	Date:	Mar. 01, 2017	

Jim Chang / Asst. Manager

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Revision History

Report Number	Revision	Description	Issue Date
ER/2016/C0046	Rev.00	Initial creation of document	Jan. 09, 2017
ER/2016/C0046	Rev.01	Provide measurement plot of radiation, please refer to Appendix I.	Jan. 23, 2017
ER/2016/C0046	Rev.02	Update general information & add MPE evaluation.	Feb. 06, 2017
ER/2016/C0046	Rev.03	Add ferrite core & update conduction setup photo.	Mar. 01, 2017

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.



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GENERAL INFORMATION 1

1.1 Product description

General:				
Brand Name:	Sony			
Hardware Version:	А			
Software Version:	0.20			
Data Cable (USB):	Model No.	: UCB20, Supplier: Sony, Length:100 cm		
BT Headset:	Model No.	: MW600, Supplier: Sony		
HDMI Cable:	Model No.: DLC-HEU10A, Supplier: Sony			
Ferrite Core:	Type No.:	ZCAT-2035-0930A-BK, Supplier: TDK		
	11.1Vdc			
Power Supply:	Battery: Model No.: N/A, Supplier: N/A			
	Adapter: Model No.:UCH30C, Supplier: Sony			

WLAN 2.4GHz:

Wi-Fi	Frequency Range	Channels	Rated Power (Peak)	Modulation Technology
11b/g	2412-2462	11	b: 19.47dBm g: 22.99dBm	DSSS, OFDM
11n	HT20 2412-2462	11	23.92dBm	OFDM
Antenna D	esignation:	Internal Ar	tenna, Gain: 0.8dBi	
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 n_20MHz: 6.5 - 65Mbps				

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1.2 Product Feature of Equipment Under Test

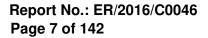
The equipment under Test (Hereafter Called: EUT) supports below functions.

Product Feature			
Bluetooth Version V4.2 dual mode			
Wi-Fi- Specification	802.11a/b/g/n/ac		
NFC Specification	NFC		

Note: The above EUT information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

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1.3 Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.247

FCC KDB 558074 D01 DTS Meas. Guidance

ANSI C63.10:2013

Note:

All test items have been performed and record as per the above standards.

1.4 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-5.

1.5 Special Accessories

There are no special accessories used while test was conducted.

1.6 Equipment Modifications

There was no modification incorporated into the EUT.

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SYSTEM TEST CONFIGURATION 2

2.1 EUT Configuration

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 plane. 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 according to §15.207. 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 plane. 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.

Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor. Following shows an offset computation example with cable loss 0.7dB and 10dB attenuator.

Offset:

= RF cable loss (dB)+ attenuation factor(dB) dB =10.7dB

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2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission Configuration

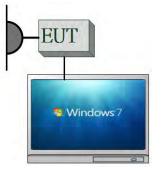


Fig. 2-2 Conducted (Antenna Port) Configuration

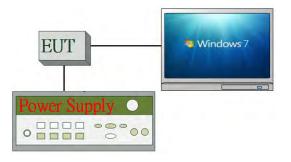


Fig. 2-3 AC Power Line Conducted Emission Configuration

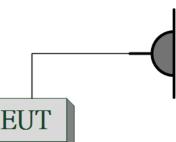


Table 2-1 Equipment Used in Tested System

1		i	i		i	
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
2.	Notebook	Lenovo	R400	7440AV6	N/A	Un-shield
3.	DC Power Supply	Agilent	E3640A	KR93300208	N/A	N/A

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SUMMARY OF TEST RESULTS 3

FCC Rules	Description Of Test	Result
§15.207(a)	AC Power Line Conducted Emission	Compliant
§15.247(b) (3)	Peak Output Power	Compliant
§15.247(a)(2)	6dB Emission Bandwidth	Compliant
§15.247(d)	Conducted Band Edge and Spurious Emission	Compliant
§15.247(d)	Radiated Band Edge and Spurious Emission	Compliant
§15.247(e)	Power Spectral Density	Compliant
§15.203 §15.247(b)	Antenna Requirement	Compliant

4 **DESCRIPTION OF TEST MODES**

4.1 Operated in 2400 ~ 2483.5MHz Band

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

	,	<u> </u>	
CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

4.2 The Worst Test Modes and Channel Details

- 1. The EUT has been tested under operating condition.
- 2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
- 3. Investigation has been done on all the possible configurations for searching the worst case.

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RADIATED EMISSION TEST:

	RADIATED EMISSION TEST (BELOW 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT	
802.11g	1 to 11	1,6,11	OFDM	6	MAIN	
	RADIATED	EMISSION TES	ST (ABOVE 1 GH	z)		
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	MCS 0	MAIN	

Note:

The field strength of radiation emission was measured as 802.11b/g/n WLAN Transmitter for channel Low, Mid and High, the worst case was reported.

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				

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MEASUREMENT UNCERTAINTY 5

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
Peak Output Power	+/- 0.84 dB
6dB Bandwidth	+/- 51.33 Hz
100 KHz Bandwidth Of Frequency Band Edges	+/- 0.84 dB
Peak Power Density	+/- 1.3 dB
Temperature	+/- 0.65 °C
Humidity	+/- 4.6 %
DC / AC Power Source	DC= +/- 0.13%, 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
	30MHz - 167MHz: +/- 4.22dB
Measurement uncertainty	167MHz -500MHz: +/- 3.44dB
(Polarization : Horizontal)	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.

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CONDUCTED EMISSION TEST 6

6.1 Standard Applicable

Frequency range within 150kHz to 30MHz shall not exceed the Limit table as below.

	Limits				
Frequency range	dB(uV)				
MHz	Quasi-peak	Average			
0.15 to 0.50	66 to 56	56 to 46			
0.50 to 5	56	46			
5 to 30	60	50			
Note					

1. The lower limit shall apply at the transition frequencies

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

6.2 Measurement Equipment Used

Conducted Emission Test Site										
EQUIPMENT MFR		MODEL SERIAL		LAST	CAL DUE.					
TYPE		NUMBER	NUMBER	CAL.						
EMI Test Receiver	R&S	ESCI7	100760	05/10/2016	05/09/2017					
LISN	SCHWARZBECK	NSLK 8127	8127-649	05/16/2016	05/15/2017					
LISN	MESS TEC	FCC-LISN-50/250 -25-2-01	4034	05/16/2016	05/15/2017					
Coaxial Cables	N/A	WK CE Cable	N/A	11/26/2016	11/25/2017					

6.3 EUT Setup

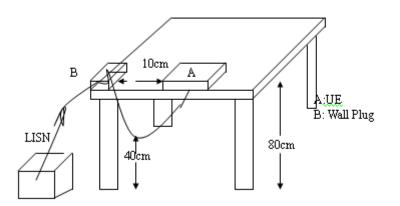
- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI 63.10:2013.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
- 3. The LISN was connected with 120Vac/60Hz power source.

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6.4 Test SET-UP (Block Diagram of Configuration)



6.5 Measurement Procedure

- 1. The EUT was placed on a table which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. Repeat above procedures until all phases of power being supplied by given UE are completed

6.6 Measurement Result

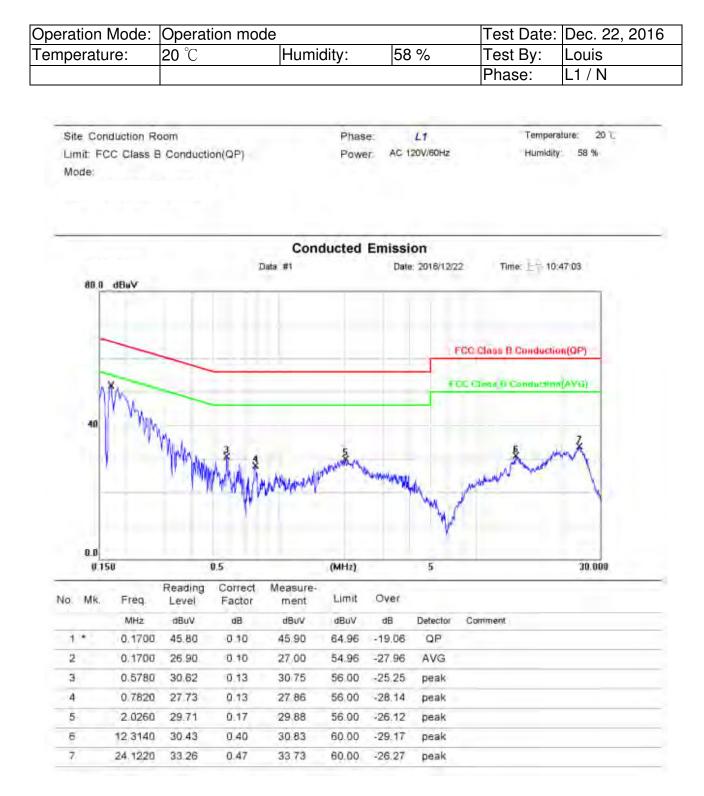
Note: Refer to next page for measurement data and plots. Note2: The * reveals the worst-case results that closet to the limit

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AC POWER LINE CONDUCTED EMISSION TEST DATA

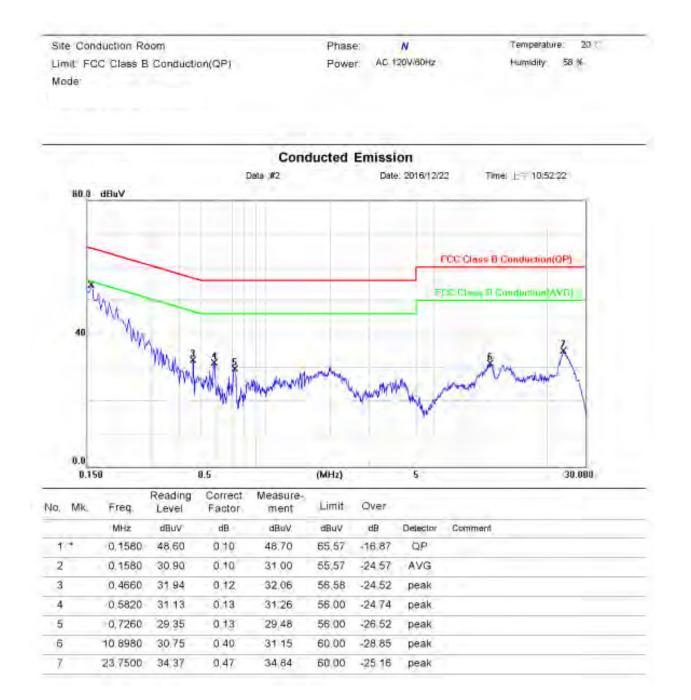


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DUTY CYCLE OF TEST SIGNAL 7

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

Formula:

Duty Cycle = Ton / (Ton+Toff)

Measurement Procedure:

- 1. Set span = Zero
- 2. RBW = 8MHz
- 3. VBW = 8MHz,
- 4. Detector = Peak

Duty Cycle:

	Duty Cycle (%)	Duty Factor (dB)
802.11b	99.54	0.02
802.11g	99.50	0.02
802.11n_20	99.14	0.04

b = 99.54%, *g* = 99.5%, *n_ht_20* = 99.14%

Duty Cycle Factor: $10 * \log(1/0.9954) = 0.02$ Duty Cycle Factor: $10 * \log(1/0.995) = 0.02$ Duty Cycle Factor: $10 * \log(1/0.9914) = 0.04$

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7.1 DUTY CYCLE TEST SIGNAL Measurement Result

802.11 b



802.11 g

AL IN SAG DE		SENSE JUL		NTIOP NTILL	03:08:28 PM Dec 22, 2016	Frequency
and the set of the set of the	PNO: Fast	Trig: Free Run #Atten: 30 dB	Avg	ype: Log-Pwr	TYPE WARMAN	
Ref Offset 10.7 dB	The second second			Δ	Mkr3 6.304 ms 0.29 dB	Auto Tune
1		and the second state		diam constants	344	
Xa					يتحقق والم	Center Fred 2,437000000 GH
						Start Fred 2.437000000 GHz
						Stop Fred 2.437000000 GHz
er 2.437000000 GHz 3W 8 MHz	#VBW	8.0 MHz		Sweep 1	Span 0 Hz 0.00 ms (1001 pts)	CF Step 8.000000 MHz
DDE TRC SCL X			FLAICTION	FUNCTION WEITH	FUNCTION VALUE	Auto Man
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	6.273 ms (Δ) 2.386 ms 6.304 ms (Δ) 2.386 ms	2.70 dB 18.12 dBm 0.29 dB 18.12 dBm				Freq Offset 0 Hi
						Scale Type
					-	Log Lin
		and the second s				

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802.11 n_20 MHz

	Free Run	ng Type: Log-Pwr	TRACE 12343	Frequency
IFGain:Low #Atte			DET PINN MOUT	
		۵	Mkr3 2.930 ms -0.15 dB	Auto Tun
Mgaladon ang Ang Innaha	ing and the state of the state	uinor and an an	304 programpinght with pro-right	Center Fre 2.437000000 GF
				Start Fr 2.437000000 G
				Stop Fr 2.437000000 G
#VBW 8.0 M	1Hz	Sweep 5	Span 0 Hz .000 ms (1001 pts)	CF St 8.000000 M Auto M
1.086 ms 18.0 2.930 ms (Δ) -0	2 dBm 0.16 dB	FUNCTION WIDTH	FUNCTION VALUE	Freq Offs 0
				Scale Ty
	#VBW 8.0 M 2.905 ms (Δ) 1.086 ms (Δ) 2.930 ms (Δ)	#VBW 8.0 MHz 2.906 ms (Δ) 1.22 dB 1.086 ms 18.02 dBm 2.930 ms (Δ) -0.16 dB	#VBW 8.0 MHz Sweep 5 #VBW 8.0 MHz Sweep 5 2.905 ms (Δ) 1.22 dB 1.085 ms 18.02 dBm 2.930 ms (Δ) 0.15 dB 1.085 ms 18.02 dBm	Span 0 Hz Span 0 Hz #VBW 8.0 MHz Sweep 5.000 ms (1001 pts) Y FUNCTION FUNCTION WIDTH 2.905 ms (Δ) 1.22 dB 1.986 ms 1.8.02 dBm 2.905 ms (Δ) 0.15 dB

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PEAK OUTPUT POWER MEASUREMENT 8

8.1 Standard Applicable

For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt.

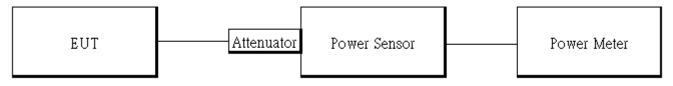
If the transmitting antenna of directional gain greater than 6dBi are used the peak output power form the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6dBi.

In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

8.2 Measurement Equipment Used

SGS Conducted Room									
EQUIPMENT	MFR	MFR MODEL SERIAL		LAST	CAL DUE.				
ТҮРЕ		NUMBER	NUMBER	CAL.					
Power Meter	Anritsu	ML2495A	1005007	12/15/2016	12/14/2017				
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017				
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017				
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017				
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017				
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017				
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017				
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017				
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2016	05/16/2017				

8.3 Test Set-up



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8.4 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.

Power Meter:

It is used as the auxiliary test equipment to conduct the output power measurement.

4. Record the max. Reading as observed from Spectrum or Power Meter.

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8.5 Measurement Result

802.11	b Main							
СН	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit		RESULT	
1	2412	1	18.57	71.94	1 Watt =	30.00	dBm	PASS
6	2437	1	19.10	81.28	1 Watt =	30.00	dBm	PASS
11	2462	1	19.47	88.51	1 Watt =	30.00	dBm	PASS
802.11	b Main				-			
СН	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit			RESULT
1	2412	1	15.67	36.90	1 Watt =	30.00	dBm	PASS
6	2437	1	16.22	41.88	1 Watt =	30.00	dBm	PASS
11	2462	1	16.5	44.67	1 Watt =	30.00	dBm	PASS
СН	g Main Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit		RESULT	
1	2412	6	23.61	229.61	1 Watt =	30.00	dBm	PASS
6	2437	6	23.82	240.99	1 Watt =	30.00	dBm	PASS
11	2462	6	23.99	250.61	1 Watt =	30.00	dBm	PASS
802.11	g Main							
СН	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit		RESULT	
1	2412	6	15.57	36.06	1 Watt =	30.00	dBm	PASS
		1				00.00	10	
6	2437	6	15.99	39.72	1 Watt =	30.00	dBm	PASS

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802.11	n_HT20M Main				_			
сн	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit		RESULT	
1	2412	MCS0	23.61	229.61	1 Watt =	30.00	dBm	PASS
6	2437	MCS0	23.88	244.34	1 Watt =	30.00	dBm	PASS
11	2462	MCS0	23.92	246.60	1 Watt =	30.00	dBm	PASS
802.11	n_HT20M Main							
сн	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (mW)	Limit			RESULT
1	2412	MCS0	15.23	33.34	1 Watt =	30.00	dBm	PASS
6	2437	MCS0	15.71	37.24	1 Watt =	30.00	dBm	PASS
11	2462	MCS0	14.35	27.23	1 Watt =	30.00	dBm	PASS

* Note: The duty cycle factor is compensated to obtain the maximum value of measurement in average.

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9 **6DB BANDWIDTH MEASUREMENT**

9.1 Standard Applicable

The minimum 6 dB bandwidth shall be at least 500 kHz.

9.2 Measurement Equipment Used

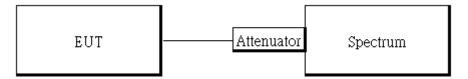
SGS Conducted Room						
Name of Equipment	Manufacturer	Model	Serial Number	Calibra- tion Date	Calibra- tion Due	
Power Meter	Anritsu	ML2495A	1005007	12/15/2016	12/14/2017	
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017	
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017	
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017	
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017	
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017	
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017	
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017	
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2016	05/16/2017	

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9.3 Test Set-up



9.4 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. For 6dB Bandwidth:

Set the spectrum analyzer as RBW = 100 kHz, VBW = 3*RBW, Span = 30M/50MHz, Detector=peak, Sweep=auto.

- 5. Mark the peak frequency and –6dB (upper and lower) frequency.
- 6. For 99% Bandwidth:

Set the spectrum analyzer as RBW=1%, VBW = 3*RBW, Span = 30M/50MHz, Detector=Sample, Sweep=auto.

- 7. Turn on the 99% bandwidth function, max reading.
- 8. Repeat above procedures until all frequency of interest measured was complete.

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9.5 Measurement Result

6dB Bandwidth

802.11b Main

Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result	
2412	9079	> 500	PASS	
2437	9057	> 500	PASS	
2462	9053	> 500	PASS	

802.11g Main

Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result	
2412	16340	> 500	PASS	
2437	16110	> 500	PASS	
2462	16330	> 500	PASS	

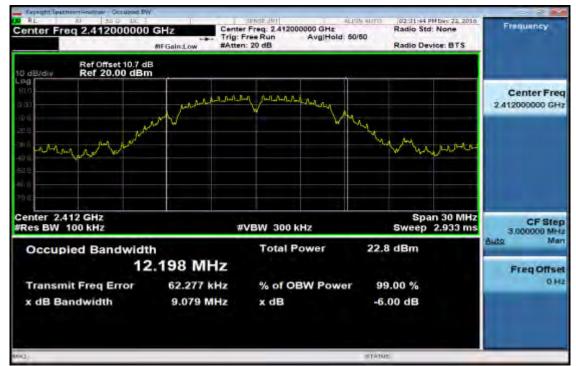
802.11 n HT20 Main

Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
2412	17320	> 500	PASS
2437	17290	> 500	PASS
2462	17050	> 500	PASS

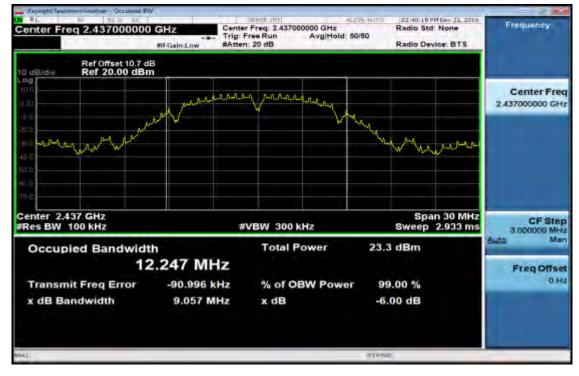
*Refer to next page for plots



802.11b (Main) 6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid



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6dB Band Width Test Data CH-High



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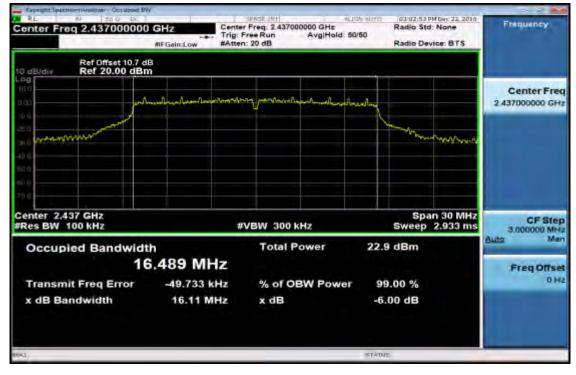
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802.11g (Main) 6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid



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6dB Band Width Test Data CH-High

Center Freq 2.462000000	GHz Cen	server der ter Freq. 2.462000000 GHz Free Run AvgiHold ten: 20 dB	Ra 1: 50/50	dio Std: None	Frequency
Ref Offset 10.7 d 10 dE/div Ref 20.00 dBr					
100 0 a)	marken from to so to so	man parta and makes			Center Freq 2.462000000 GHz
-21.0 -21.0 -0.0				monter	
510					
Center 2.462 GHz #Res BW 100 kHz		#VBW 300 kHz	S	Span 30 MHz weep 2.933 ms	CF Step 3.000000 MHz
Occupied Bandwidt	h 6.460 MHz	Total Power	22.6 di	Bm	Auto Man Freq Offset
Transmit Freq Error x dB Bandwidth	-13.299 kHz 16.33 MHz	% of OBW Pow x dB	er 99.00 -6.00		0 Hz
(CRIM			STATUS		

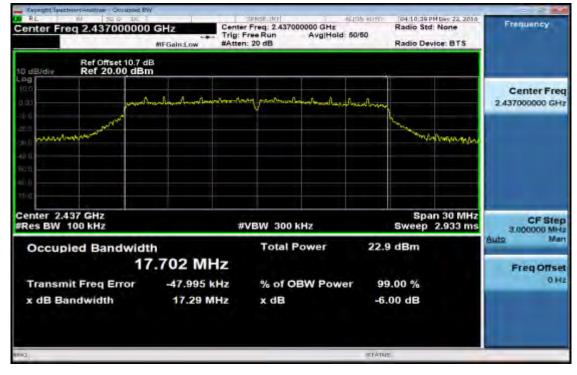
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802.11n 20M (Main) 6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid

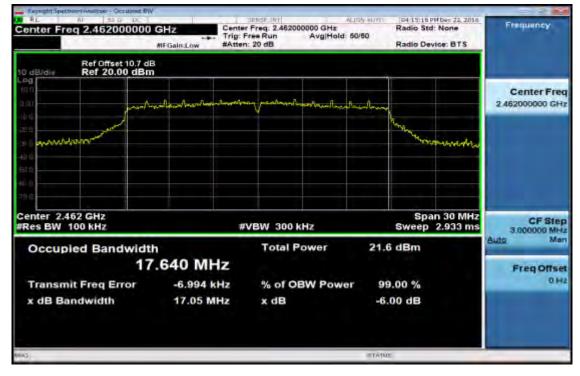


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6dB Band Width Test Data CH-High



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10 CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT

10.1 Standard Applicable

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.

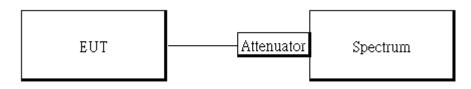
In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a) must also comply with the radiated emission limits specified in §15.209(a).

If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

SGS Conducted Room						
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.	
TYPE		NUMBER	NUMBER	CAL.		
Power Meter	Anritsu	ML2495A	1005007	12/15/2016	12/14/2017	
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017	
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017	
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017	
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017	
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017	
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017	
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017	
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2016	05/16/2017	

10.2 Measurement Equipment Used

10.3 Test SET-UP



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10.4 Measurement Procedure

Conducted Band Edge:

- 1. To connect Antenna Port of EUT to Spectrum.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. Set start to edge frequency, and stop frequency of spectrum analyzer so as to encompass the spectrum to be examined.
- 5. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Detector = Peak, Sweep = auto
- 6. Mark the highest reading of the emission as the reference level measurement.
- Set DL as the limit = reading on marker 1 20dBm
- 8. Marker on frequency, 2.3999GHz and 2.4836GHz, and examine shall 100 kHz immediately outside the authorized (2400~2483.5) be attenuated by 20dB at least relative to the maximum emission of power.
- 9. Repeat above procedures until all default test channel (low, middle, and high) was complete.

Conducted Spurious Emission:

- To connect Antenna Port of EUT to Spectrum
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Set RBW = 100 kHz & VBW= 300 kHz, Detector = Peak, Sweep = Auto.
- 4. Allow trace to fully stabilize.
- 5. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
- 6. Repeat above procedures until all default test channel measured were complete.

10.5 Measurement Result

- 1. Refer to next page spectrum analyzer data chart and tabular data sheets.
- 2. For restricted Band Edge Limit, please refer to section 12.5 of this report for measurement result.

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802.11b **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High



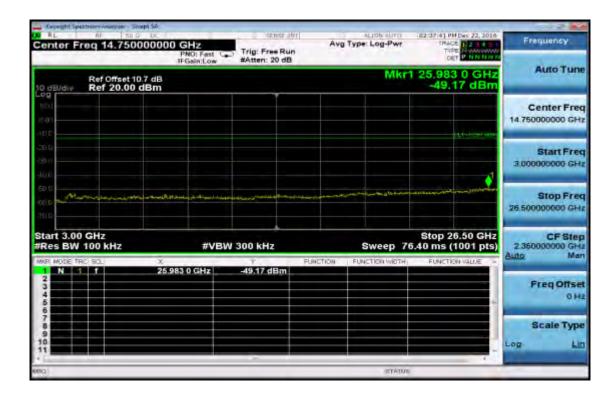
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802.11b **Spurious Emission Test Data CH-Low**

	1 0 DC	SPRSP UMP	ALIGN ADIAN	02:37:21 PM Dec 22, 2010	Frequency
enter Freq 1.515	000000 GHz PNO: Fast IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg Type: Log-Pwr	TYPE PLANAGE	Frequency
Ref Offset	10.7 dB	#AURAL 20 0D	Mk	r1 2.411 9 GHz 7.03 dBm	Auto Tune
01 (01					Center Free 1.515000000 GH
90 90 90					Start Free 30,000000 MH
	فلمرجعه والمعاوية المحمد والمستعدين			hi mai mai anna anna anna anna	Stop Free 3.000000000 GH
art 0.030 GHz Res BW 100 kHz R MODE TRC SCL	#VE	W 300 kHz	Sweep 9	Stop 3.000 GHz 667 ms (1001 pts) FUNCTION VALUE	CF Step 297.000000 MH Auto Mar
1 N 1 T 2 3 4 5	2.411 9 GHz	7.03 dBm			Freq Offse 0 H
					Scale Type
3			STATUS		-



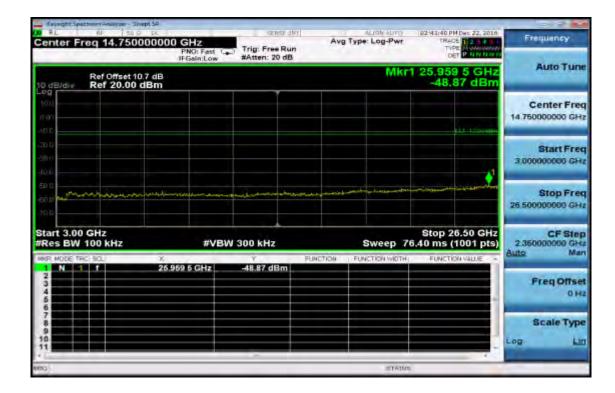
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Spurious Emission Test Data CH-Mid

RL RF Sugar				02-43:19 PM Dwc 22, 2010	- 1 20 E
enter Freg 1.51500000	PNO: Fast (Trig: Free Run	Avg Type: Log-Pwr	TRACE 1 2 3 4 3 TYPE TYPE OF THE TYPE	Frequency
Ref Offset 10.7 dB	Position	THE LY OF	Mk	r1 2.435 7 GHz 7.63 dBm	Auto Tuni
001 1 011				1	Center Fre 1.515000000 GH
					Start Fre 30,00000 MH
o u O D B D	and and the state of the state		an an ann an tarainn an an an Albar		Stop Fre 3.000000000 GH
tart 0.030 GHz Res BW 100 kHz	#VBW 3			Stop 3.000 GHz .667 ms (1001 pts)	CF Ste 297,000000 MH Auto Ma
2 3 4 5	2.435 7 GHz	7.63 dBm	ICTION I FUNCTION WIDTH	FUNCTION VALUE	Freq Offse 0 H
6 7 8 9 0					Scale Type
0			STATUS		



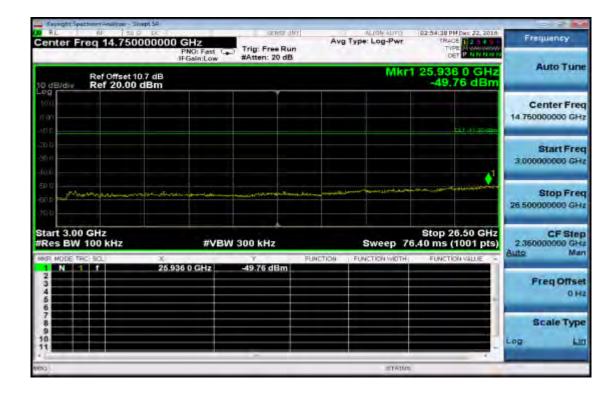
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Spurious Emission Test Data CH-High

Repergift Spectreter Analyzer - Strept SA RL RJ SU G DC		SERSE JUT	OTUS VOLAN	02-54:18 PM Dwc 22, 2016	
enter Freg 1.51500000	PNO: Fast	Trig: Free Run #Atten: 20 dB	Avg Type: Log-Pwr	TRACE 2 2 4 1 1 TYPE IN WARKING	Frequency
Ref Offset 10.7 dB			Mk	r1 2.459 5 GHz 8.10 dBm	Auto Tuni
001 001 001					Center Fre 1.515000000 GH
26.0 2010					Start Fre 30.000000 MH
50 D 60 D 70 D					Stop Fre 3.000000000 GH
Start 0.030 GHz #Res BW 100 kHz	#VBW	300 kHz		Stop 3.000 GHz .667 ms (1001 pts)	CF Ster 297.000000 MH Auto Ma
MRR MODE TRC SCL 37	2.459 5 GHz	8.10 dBm	NCTION FUNCTION WIDTH	FUNCTION VALUE +	Freq Offse 0 H
9 9 10					Scale Type
• []			STATUS		-



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802.11g **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High

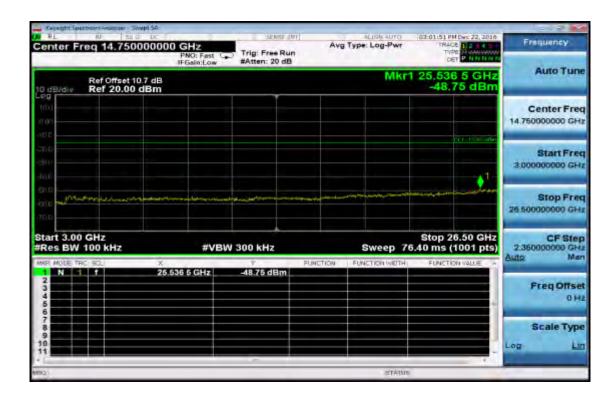


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802.11g **Spurious Emission Test Data CH-Low**

RL RI Startester Analyzer - Strapt SA RL RI Startester DC	A	SPRSP 197	ALIGN AUTO	03-01:29 PM Dec 22, 2016	
enter Freq 1.5150000	PNO: Fast	Trig: Free Run #Atten: 20 dB	Avg Type: Log-Pwr	TRACE 1234 DET P N N N N N	
Ref Offset 10.7 dE			Mk	r1 2.420 9 GHz 4.15 dBm	Auto Tune
00 00				1	Center Free 1.515000000 GH
C				rj r - trakodke	Start Free 30,000000 MHz
	n an	مىغەت لېلىمىيە	and the second second	Lumport and and a	Stop Free 3,00000000 GH
rt 0.030 GHz es BW 100 kHz		300 kHz	the state of the s	Stop 3.000 GHz .667 ms (1001 pts)	CF Step 297.000000 MHJ Auto Mar
NODE THE SEL O	2.420 9 GHz	4.15 dBm	NETRON : FUNCTION WIDTH	FUNCTION VALUE	Freq Offse 0 H
					Scale Type
		1 m	STATUS	-	1000



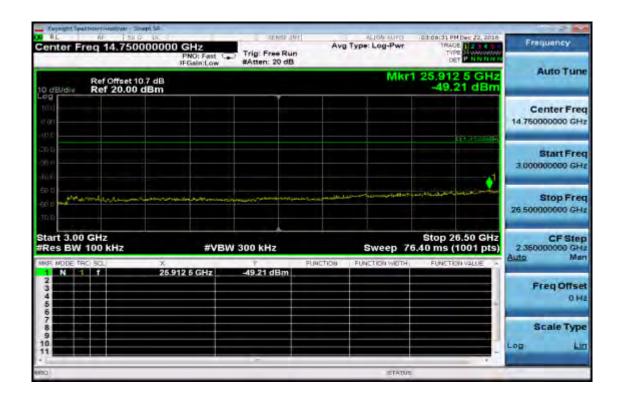
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Spurious Emission Test Data CH-Mid

Keynight Spectromy Analyzer - Skept SA		the second second	and the second	CONTRACTOR CONTRACTOR	
Center Freq 1.51500000	PNO: East (g: Free Run tten: 20 dB	Avg Type: Log-Pwr	COLDENT PHONE 22, 2016 TRACE 1 2 1 4 1 1 TYPE NUMBER OF PARTICIPATION	Frequency
Ref Offset 10.7 dB			Mk	r1 2.429 8 GHz 4,92 dBm	Auto Tune
1001 1001				1	Center Free 1.515000000 GH
0.0				CALL COMPA	-
5011					Start Free 30,000000 MH
50 U 60 D 70 D	NC (Lands) - June - Share - S			Lanna	Stop Free 3.000000000 GH
Start 0.030 GHz #Res BW 100 kHz	#VBW 300	kHz	Sweep 9	Stop 3.000 GHz 667 ms (1001 pts)	CF Step 297.000000 MH Auto Ma
MRR MODE TRC SOL O	2.429 8 GHz	92 dBm	ICTION FUNCTION WIDTH	FUNCTION VALUE	CHER 1941
3 4 5				-	Freq Offse 0 H
7 8 9					Scale Type
10				-	Log Lu
60			STATUS		



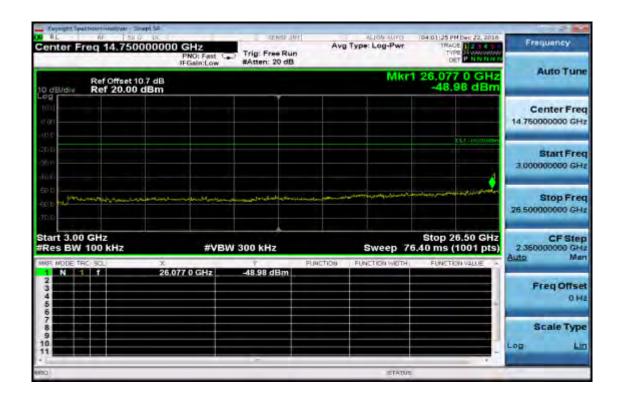
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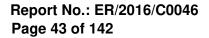
Spurious Emission Test Data CH-High

Keynight Spectrom Analyzer - Strept SA				S. 20
Center Freq 1.515000000			04:01:07 PM Dec 22, 2016 TRACE 1 2 14 15 TYPE PARAMETER DET PARAMETER	Frequency
Ref Offset 10.7 dB	TOBRILOW WORKS av		r1 2.459 5 GHz 3.91 dBm	Auto Tune
.eg 1011 1011			* 1	Center Free 1.515000000 GH
100 100 100			DM-15 (Brider)	Start Free 30,000000 MH
50 0 60 D 70 D	380			Stop Free 3.000000000 GH
Start 0.030 GHz #Res BW 100 kHz	#VBW 300 kHz		Stop 3.000 GHz .667 ms (1001 pts)	CF Step 297,000000 MH Auto Mar
	459 5 GHz 3.91 dB	PLAICTION FUNCTION WOTH	FUNCTION VALUE	Freq Offse 0 H
0 7 8 9 9 10 11				Scale Type
• #93		STATU	-	



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802.11n HT20 **Band Edges Test Data CH-Low**



Band Edges Test Data CH-High

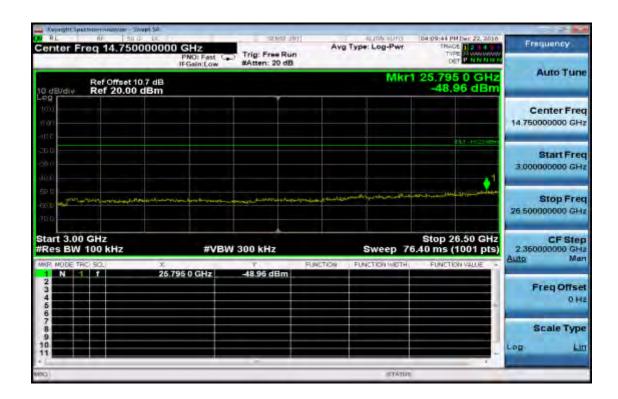


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802.11n HT20 **Spurious Emission Test Data CH-Low**

RL N	ae - Skept SA sa o - DC	SENSE JUT	ALIGN BUTG	04:09:22 PM Dec 22, 2016	
enter Freq 1.5			Avg Type: Log-Pwr	TRACE 1 2 3 4 3 TYPE PLOYER	Frequency
	set 10.7 dB	Antion, 20 0D	M	r1 2.411 9 GHz 3.77 dBm	Auto Tun
001 (001 (001				1	Center Fre 1.515000000 GH
90 0 90 0 10 0					Start Fre 30,000000 MH
50 U 30 ¹ D 10 D		است المحمد الم		Vigingingerangia.com	Stop Fre 3.000000000 GH
tart 0.030 GHz Res BW 100 kH;	z #VB	W 300 kHz	Sweep 9	Stop 3.000 GHz .667 ms (1001 pts)	CF Ste 297.000000 Mit Auto Mit
1 N 1 T 2 3 4 5	2.411 9 GHz	3.77 dBm		- PORCHONINADE	Freq Offs 01
6 7 8 9 10					Scale Typ
0			STATU		-



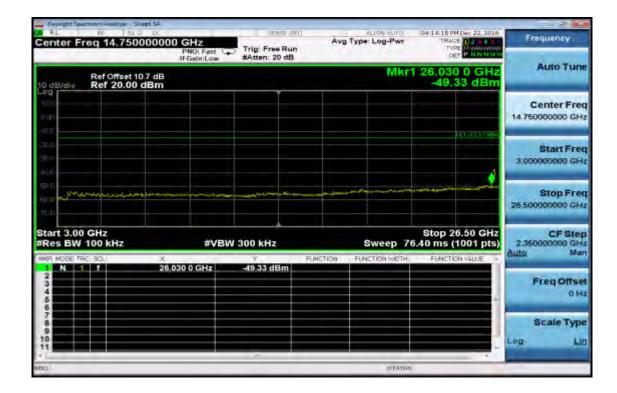
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Spurious Emission Test Data CH-Mid

Repairing the Spectration Angulater - Shapet SA	2 20	THE WOLLS IN THE 28	04:13:56 PM Dec 22, 2016	100 AT 100
Center Freq 1.515000000		Avg Type: Log-Pw		Frequency
Ref Offset 10.7 dB		N	lkr1 2.429 8 GHz 4.83 dBm	Auto Tuni
1001 1001			1	Center Free 1.515000000 GH
0.00 0.00 0.00 0.00			5.115-17.90%	Start Free 30.000000 MH
60 0 60 0 .70 0	an aith a' ann an an Albang ta Rhang ta		I Luman and a second	Stop Free 3.000000000 GH
Start 0.030 GHz #Res BW 100 kHz	#VBW 300 kHz	Sweep	Stop 3.000 GHz 9.667 ms (1001 pts)	CF Step 297.000000 MH Auto Mar
1 N 1 F 2 2 3 4 5	429 8 GHz 4.83 dE			Freq Offse 0 H
6 7 8 9 9 10 11				Scale Type
Mag		stá	ous -	



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Spurious Emission Test Data CH-High

RL I III 1500000 Center Freq 1.51500000	PND: Fast (Street Jun Frig: Free Run Atten: 20 dB	Avg Type: Log-Pwr	04-21:50 PM Dec 22, 2010 TRACE 12 3 4 3 TYPE N WWWWWW DET P N N 10 10 10	Frequency
Ref Offset 10.7 dE	3		Mk	r1 2.456 5 GHz 3.37 dBm	Auto Tuni
1001 1001				* ¹	Center Fre 1.515000000 GH
400				(L) - Indisadha	Start Fre 30,000000 MH
έο 0 60 D 70 D	and the second secon	4	A CONTRACTOR OF STREET	(Stop Fre 3.000000000 GH
Start 0.030 GHz #Res BW 100 kHz	#VBW 3		Sweep 9	Stop 3.000 GHz .667 ms (1001 pts)	CF Ste 297.000000 MH Auto Ma
1 N 1 f 2 3 4 5	2.456 5 GHz	3.37 dBm			Freq Offse 0 H
6 7 8 9 10 11					Scale Type
			STATU	e.	

Rugerght Spectreen Analyzer - Skept SA RL RF SE G DC		SENSE JWT	ALION AUTO	04:22:08 PM Dec 22, 2010	-
enter Freq 14.7500000	PNO: Fast G		Avg Type: Log-Pwr	TYPE IN NUMBER	Frequency
Ref Offset 10.7 dB			Mkr	1 25,818 5 GHz -48,85 dBm	Auto Tur
01 01 10					Center Fn 14.750000000 G
				ru -inizalni	Start Fr 3.000000000 G
D D D	ليحود للمعالم المحالي مريك المراجع	ar hadd and a growth and a	and and a start of the start of	alayadgi melalik dan kapagalanga	Stop Fr 26 50000000 G
art 3.00 GHz Res BW 100 kHz	#VBV	V 300 kHz		Stop 26.50 GHz 6.40 ms (1001 pts)	CF St 2.35000000 G Auto M
DE TRO SOL X	5.818 5 GHz	î F. ⊸18.85 d⊟m	NCTION ; FUNCTION WOTH;	FUNCTION VALUE	Freq Offse 0 H
					Scale Typ
3			ETÁTUS		



11 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

11.1 Standard Applicable

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.
- 2. Emission level $(dB\mu V/m) = 20 \log Emission level (dB\mu V/m)$

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11.2 Measurement Equipment Used:

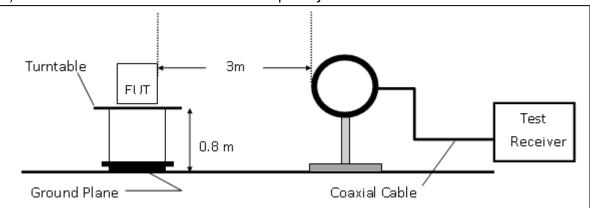
SGS SAC-III					
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
ТҮРЕ		NUMBER	NUMBER	CAL.	
EMI Test Receiver	R&S	ESCI7	100760	05/10/2016	05/09/2017
Spectrum Analyzer	Agilent	E4446A	MY51100003	01/29/2016	01/28/2017
Loop Antenna	ETS-Lindgren	6502	148045	09/20/2016	09/19/2017
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/19/2016	12/18/2017
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/01/2016	07/31/2017
Pre-Amplifier	Agilent	8447D	2944A07676	01/02/2016	01/01/2017
Pre-Amplifier	EMC Instruments Corp.	EMC0126530	980038	01/02/2016	01/01/2017
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	01/02/2016	01/01/2017
3m Site NSA	SGS	966 chamber	N/A	07/01/2016	06/30/2017
Low Loss Cable	Huber Suhner	966 TX	1	01/02/2016	01/01/2017
Horn Antenna	Schwarzbeck	BBHA9170	184	12/12/2016	12/11/2017
Pre-Amplifier	EMC Instruments Corp.	EMC184045	980135	01/02/2016	01/01/2017

Note: N.C.R refers to Not Calibrated Required.

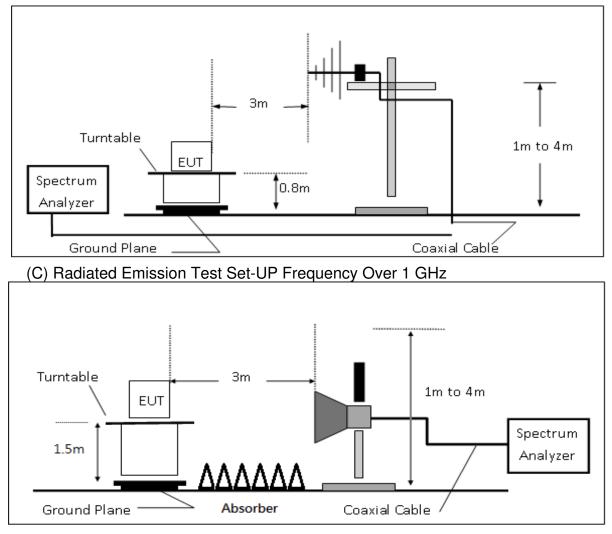


11.3 Test SET-UP





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



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11.4 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 \geq 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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11.5 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	5	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(dB μ V/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.

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

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.

11.7 Measurement Result

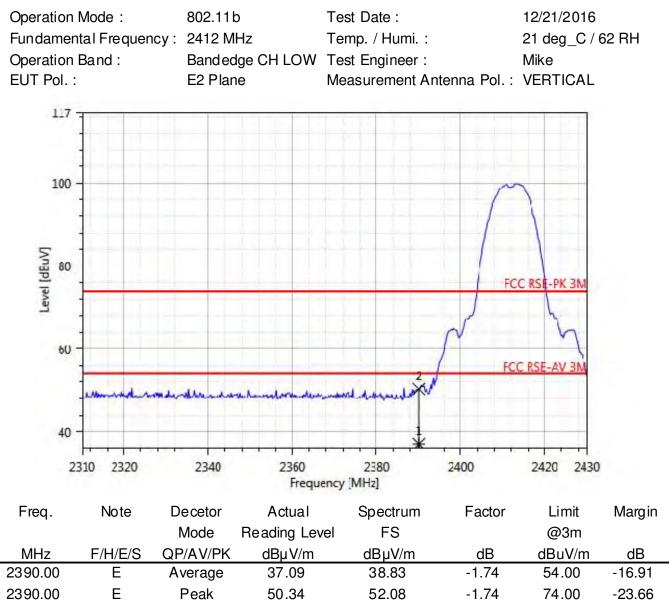
Note: Refer to next page spectrum analyzer data chart and tabular data sheets. Note: For measurement plot of radiation revealing the compliance of 15.247, please refer to Appendix I.

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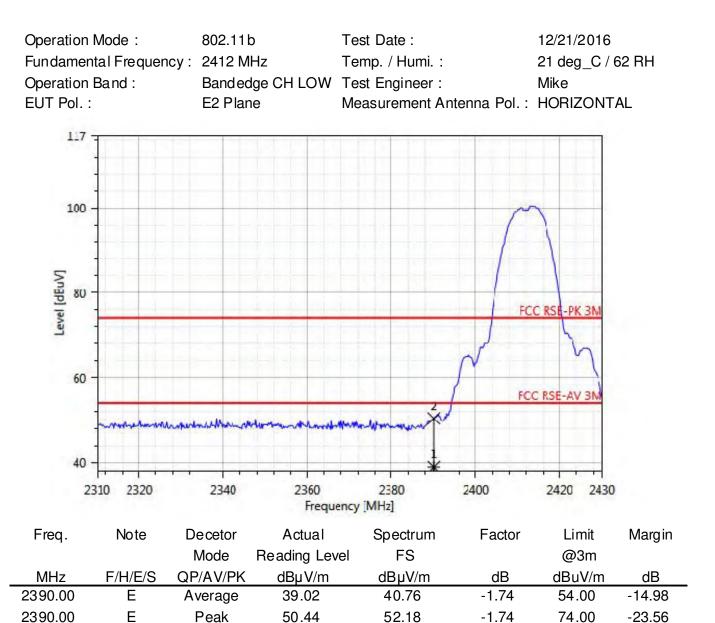


Radiated Band Edge Measurement Result (802.11b)

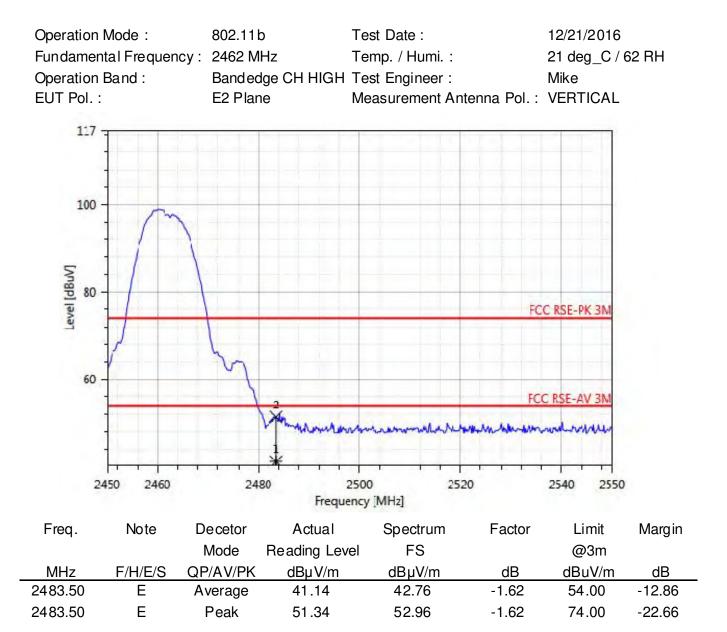


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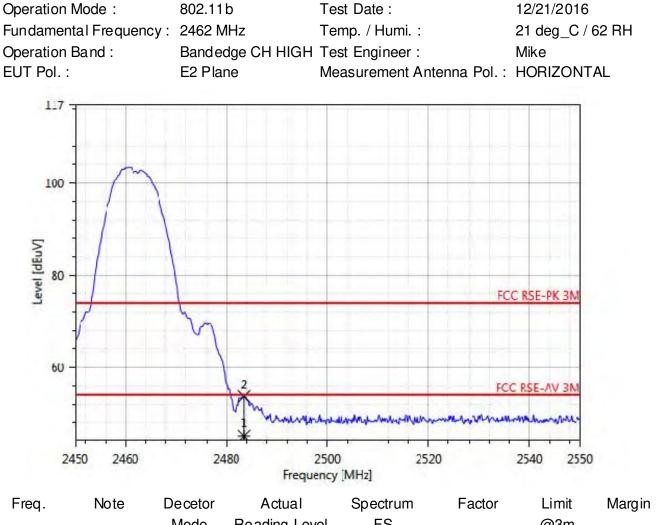








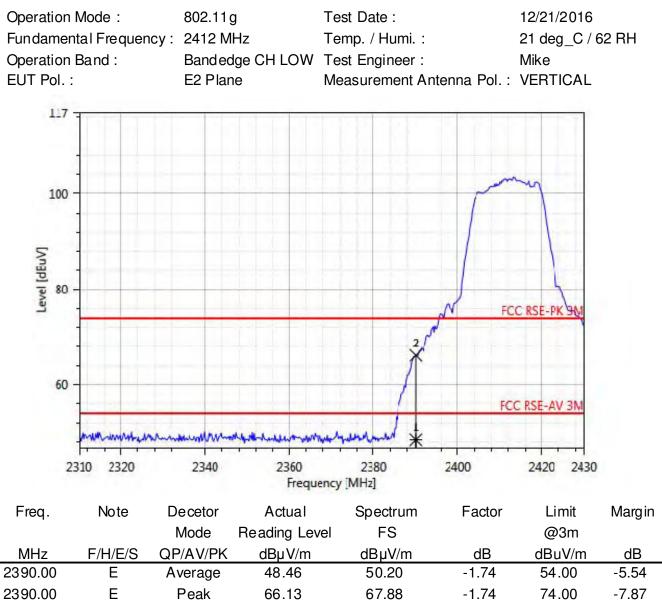




		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
2483.50	Е	Average	45.13	46.75	-1.62	54.00	-8.87
2483.50	E	Peak	53.65	55.27	-1.62	74.00	-20.35



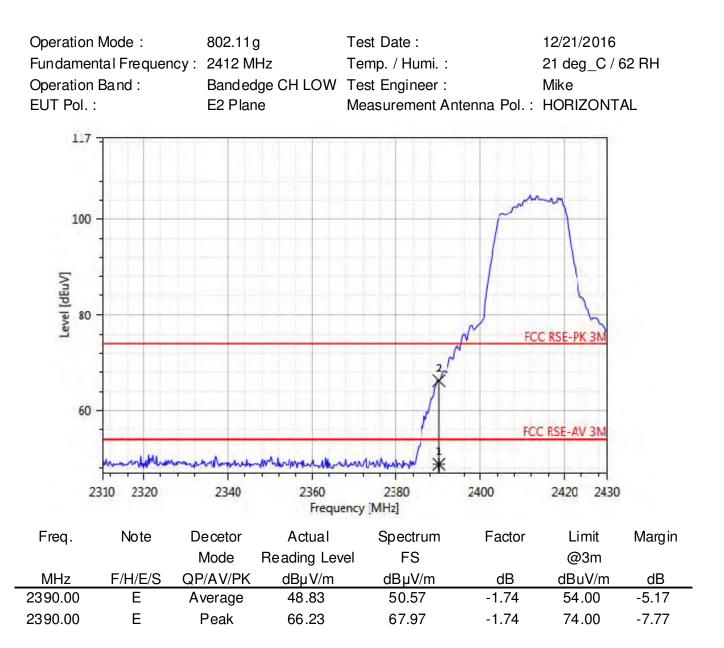
Radiated Band Edge Measurement Result (802.11g)



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2483.50

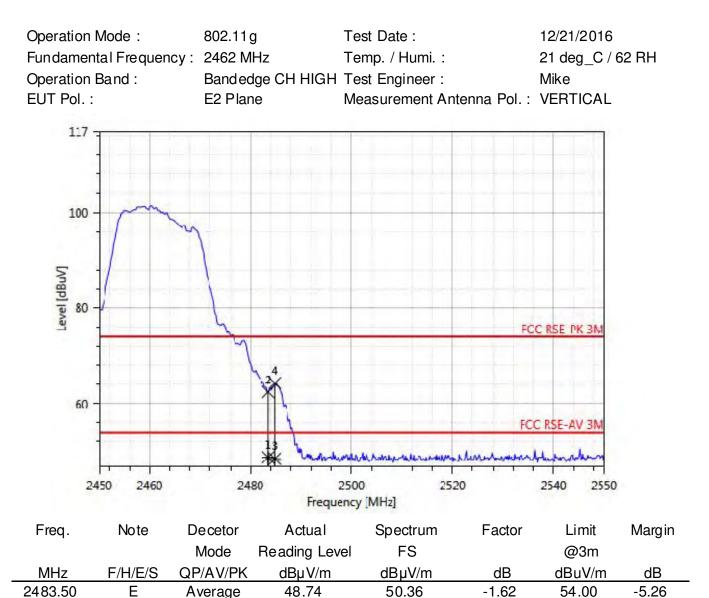
2484.80

2484.80

Е

Е

Е



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

62.43

48.43

64.31

Peak

Average

Peak

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64.04

50.05

65.93

-1.62

-1.62

-1.62

-11.57

-5.57

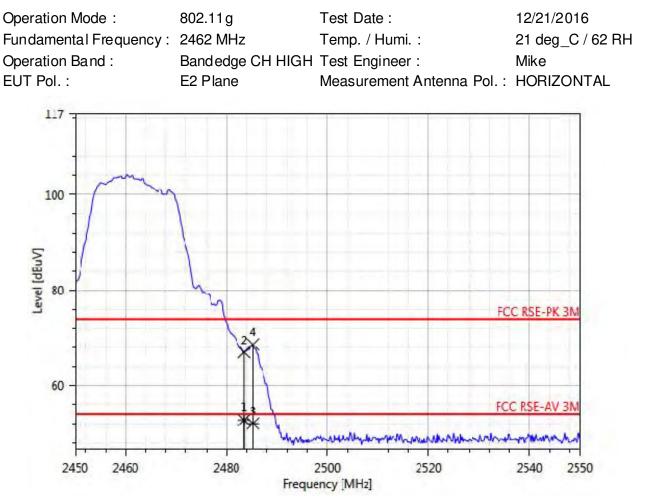
-9.69

74.00

54.00

74.00





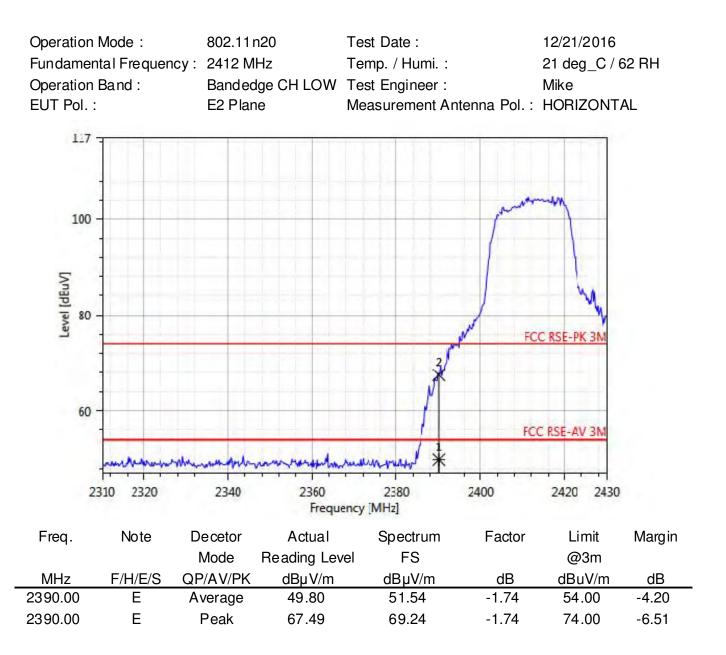
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
2483.50	Е	Average	52.74	54.36	-1.62	54.00	-1.26
2483.50	Е	Peak	66.98	68.59	-1.62	74.00	-7.02
2485.20	Е	Average	52.04	53.66	-1.62	54.00	-1.96
2485.20	Е	Peak	68.62	70.23	-1.62	74.00	-5.38



Radiated Band Edge Measurement Result (802.11_HT20)

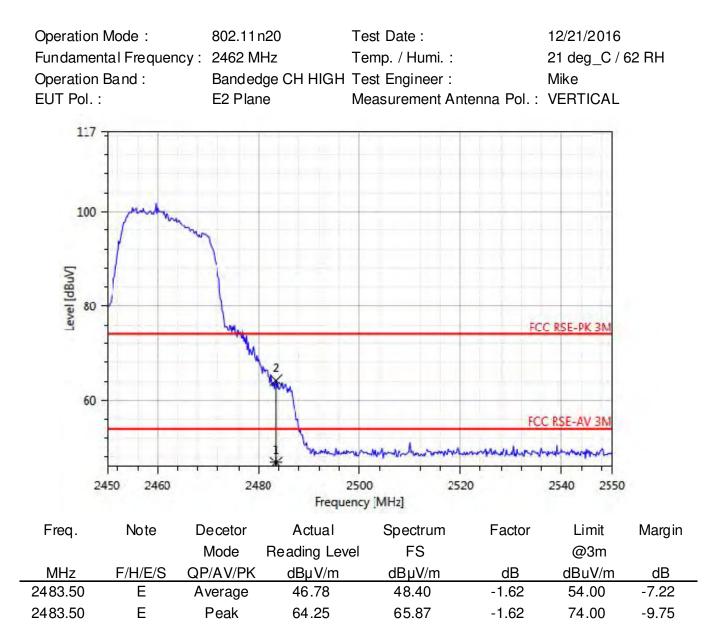
Operation Fundamer Operation EUT Pol. :	ntal Frequency Band :		Hz lge CH LOW	Test Date : Temp. / Humi. : Test Engineer : Measurement Ar	ntenna Pol ·	12/21/2016 21 deg_C / 6 Mike VEBTICAL	2 RH
				include a chiefter a		VEITIO, LE	
117							
100					forest	hang	
Level [dEuV] 8					Mark EC	C RSE-PK 3M	
60				31		C RSE-AV 3M	
	www.mm	emphane	monshilling	Munumment *			
2	310 2320	2340	2360 Frequ	2380 ency [MHz]	2400	2420 2430	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Lev			@3m	
MHz		<u>P/AV/PK</u>	dBµV/m	dBµV/m	dB	dBuV/m	dB
2390.00		Average	49.30	51.04	-1.74	54.00	-4.70
2390.00	E	Peak	67.00	68.75	-1.74	74.00	-7.00



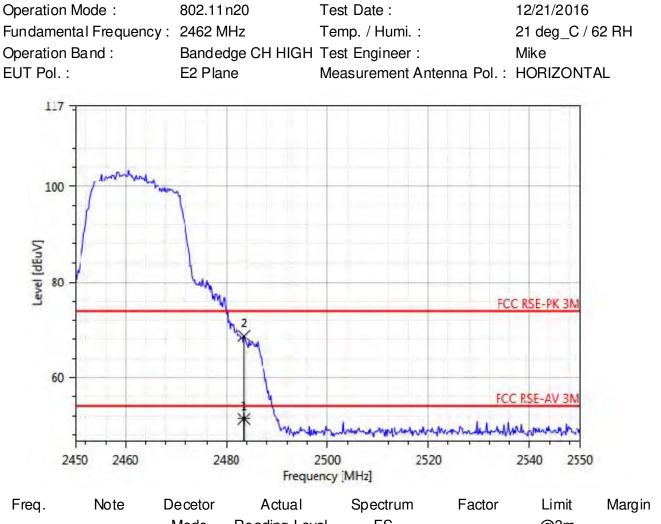


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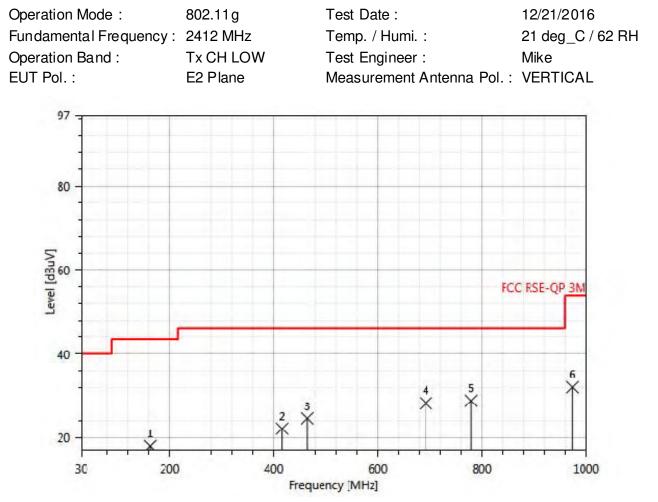




		Mode	Reading Level	FS		@3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB	_
2483.50	E	Average	51.27	52.89	-1.62	54.00	-2.73	-
2483.50	Е	Peak	68.69	70.31	-1.62	74.00	-5.31	



Below 1GHz Worst-Case Data: Radiated Spurious Emission Measurement Result (802.11 g)



Freq.	Note	Decetor Mode	Actual Reading Level	Spectrum FS	Factor	Limit @3m	Margin
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
162.89	S	Peak	18.02	25.50	-7.48	43.50	-25.48
416.06	S	Peak	22.17	25.43	-3.27	46.00	-23.83
464.56	S	Peak	24.62	27.19	-2.57	46.00	-21.38
692.51	S	Peak	28.22	26.75	1.47	46.00	-17.78
778.84	S	Peak	28.83	26.35	2.48	46.00	-17.17
973.81	S	Peak	32.04	25.89	6.16	54.00	-21.96

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Operation Mode : 802.11g Test Date : 12/21/2016 Fundamental Frequency: 2412 MHz Temp. / Humi. : 21 deg C / 62 RH **Operation Band :** Tx CH LOW Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol.: HORIZONTAL 97 80 Level [dBuV] FCC RSE-QP 3M 40 6 5 ж 3 20 400 600 800 30 200 1000 Frequency [MHz] Actual Spectrum Frea Note Eactor Limit Margin Decetor

⊢req.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Level	FS		@3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB	_
151.25	S	Peak	19.05	26.75	-7.70	43.50	-24.45	
405.39	S	Peak	21.66	25.36	-3.70	46.00	-24.34	
485.90	S	Peak	24.26	26.59	-2.33	46.00	-21.74	
594.54	S	Peak	27.56	27.48	0.08	46.00	-18.44	
745.86	S	Peak	29.34	27.04	2.30	46.00	-16.66	
966.05	S	Peak	31.84	25.88	5.97	54.00	-22.16	

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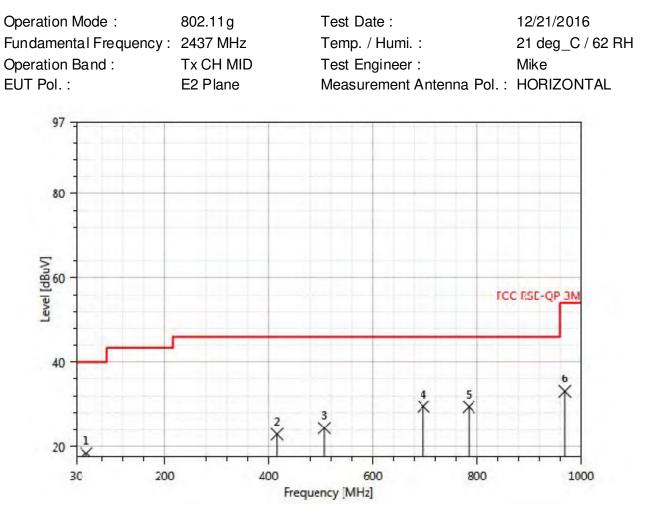


Operation Mode : 802.11g Test Date : 12/21/2016 Fundamental Frequency: 2437 MHz Temp. / Humi. : 21 deg C / 62 RH **Operation Band :** Tx CH MID Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol.: VERTICAL 97 80 Level [dBuV] FCC RSE-QP_3N 40 6 5 3 2 20 200 400 600 800 30 1000 Frequency [MHz] Nata A atual Spootrum 1 : ---- :+ aatar Marain

⊢req.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Level	FS		@3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB	_
47.46	S	Peak	18.83	26.68	-7.85	40.00	-21.17	
415.09	S	Peak	21.55	24.76	-3.21	46.00	-24.45	
476.20	S	Peak	24.86	27.31	-2.45	46.00	-21.14	
694.45	S	Peak	27.48	26.12	1.35	46.00	-18.52	
779.81	S	Peak	28.94	26.37	2.58	46.00	-17.06	
985.45	S	Peak	32.12	26.07	6.05	54.00	-21.88	

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.





Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
49.40	S	Peak	18.39	26.13	-7.74	40.00	-21.61
416.06	S	Peak	22.88	26.15	-3.27	46.00	-23.12
507.24	S	Peak	24.36	26.69	-2.33	46.00	-21.64
697.36	S	Peak	29.44	28.08	1.36	46.00	-16.56
784.66	S	Peak	29.34	26.68	2.66	46.00	-16.66
968.96	S	Peak	33.10	26.89	6.21	54.00	-20.90



Operation Mode : 802.11g Test Date : 12/21/2016 Fundamental Frequency: 2462 MHz Temp. / Humi. : 21 deg C / 62 RH **Operation Band : Tx CH HIGH** Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol.: VERTICAL 97 80 Level [dBuV] FCC RSE-QP 3M 40 6 3 2 20 200 400 600 800 30 1000 Frequency [MHz] Actual Spectrum Frea Note Decetor Eactor Limit Margin

⊢req.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Level	FS		@3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB	_
63.95	S	Peak	18.59	27.52	-8.93	40.00	-21.41	
415.09	S	Peak	22.46	25.67	-3.21	46.00	-23.54	
513.06	S	Peak	24.18	26.08	-1.90	46.00	-21.82	
650.80	S	Peak	27.76	27.28	0.48	46.00	-18.24	
799.21	S	Peak	29.17	26.03	3.14	46.00	-16.83	
970.90	S	Peak	32.54	26.25	6.28	54.00	-21.46	

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode : 802.11g Test Date : 12/21/2016 Fundamental Frequency: 2462 MHz Temp. / Humi. : 21 deg C / 62 RH **Operation Band : Tx CH HIGH** Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol.: HORIZONTAL 97 80 Level [dBuV] FCC RSE-QP_3N 40 6 5 2 3 20 200 400 600 800 30 1000 Frequency [MHz] Decetor Actual Spectrum Factor I imit Margin Frea Note

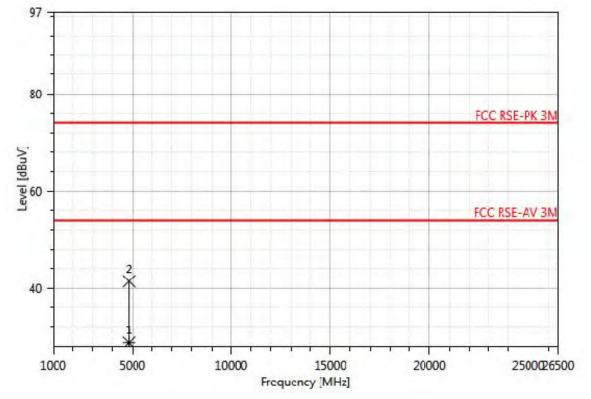
rieq.	NOLE	Deceloi	Actual	Specifulli	Facili		Margin	
		Mode	Reading Level	FS		@3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB	_
54.25	S	Peak	18.67	26.49	-7.82	40.00	-21.33	
405.39	S	Peak	22.42	26.12	-3.70	46.00	-23.58	
512.09	S	Peak	24.00	25.97	-1.98	46.00	-22.00	
699.30	S	Peak	28.30	26.86	1.44	46.00	-17.70	
784.66	S	Peak	29.60	26.94	2.66	46.00	-16.40	
964.11	S	Peak	31.37	25.35	6.02	54.00	-22.63	

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Above 1GHz Data: Radiated Spurious Emission Measurement Result (802.11 b)

Operation Mode :	802.11b	Test Date :	12/21/2016
Fundamental Frequency :	2412 MHz	Temp. / Humi. :	21 deg_C / 62 RH
Operation Band :	Tx CH LOW	Test Engineer :	Mike
EUT Pol. :	E2 Plane	Measurement Antenna Pol. :	VERTICAL

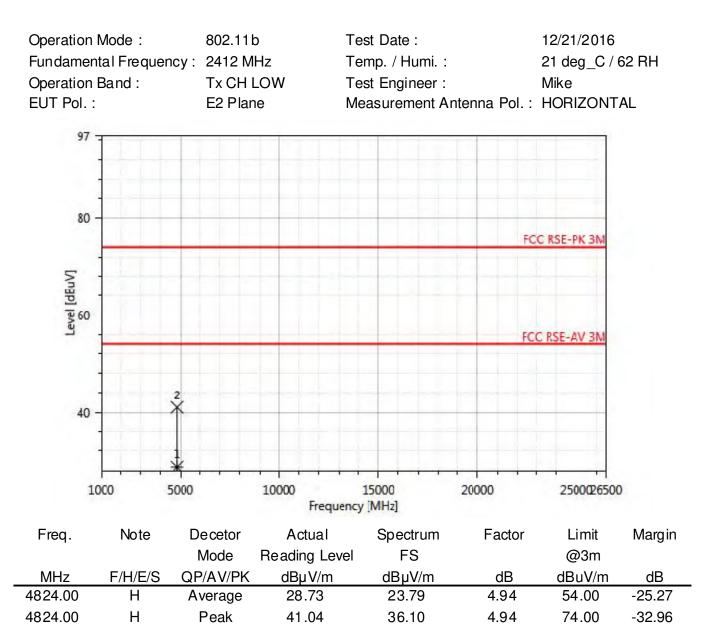


Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
4824.00	Н	Average	28.75	23.81	4.94	54.00	-25.25
4824.00	Н	Peak	41.42	36.48	4.94	74.00	-32.58

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Operation Mode : 802.11b Test Date : 12/21/2016 Fundamental Frequency: 2437 MHz Temp. / Humi. : 21 deg C / 62 RH **Operation Band :** Tx CH MID **Test Engineer :** Mike Measurement Antenna Pol.: VERTICAL EUT Pol. : E2 Plane 97 80 FCC RSE-PK 3N Level [dBuV] FCC RSE-AV 3N 2 40 10000 15000 20000 2500@6500 1000 5000 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin Mode Reading Level FS @3m F/H/E/S QP/AV/PK dBuV/m dBµV/m dBµV/m dB MHz dB 4874.00 Η 28.98 23.85 5.13 -25.02 Average 54.00 4874.00 Н 36.52 5.13 74.00 -32.34 Peak 41.66

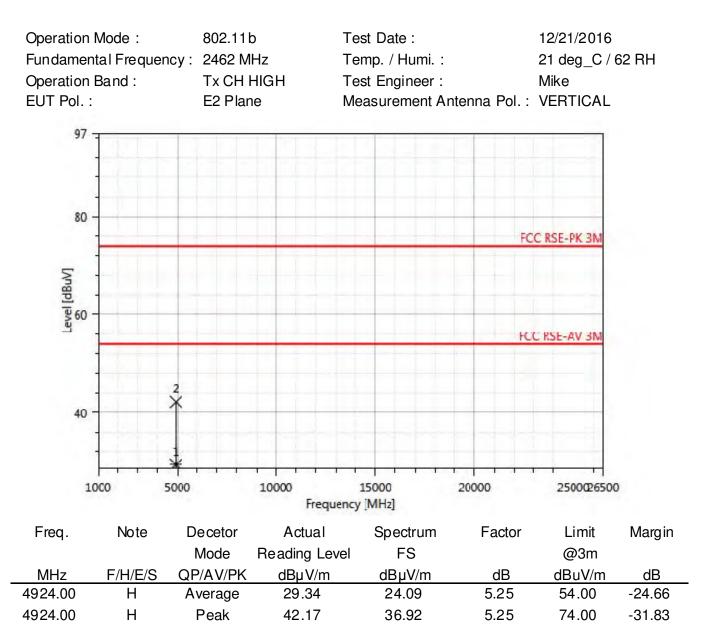
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode : 802.11b Test Date : 12/21/2016 Fundamental Frequency: 2437 MHz Temp. / Humi. : 21 deg C / 62 RH **Operation Band :** Tx CH MID **Test Engineer :** Mike Measurement Antenna Pol. : HORIZONTAL EUT Pol. : E2 Plane 97 80 FCC RSE-PK 3N Level [dBuV] FCC RSE-AV 3N 2 40 10000 15000 20000 2500@6500 1000 5000 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin Mode Reading Level FS @3m F/H/E/S QP/AV/PK dBuV/m dBµV/m dBµV/m dB dB MHz 4874.00 Η 28.99 23.86 5.13 -25.01 Average 54.00 4874.00 Н 36.22 5.13 74.00 -32.65 Peak 41.35

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.







Operation Mode : 802.11b Test Date : 12/21/2016 Fundamental Frequency: 2462 MHz Temp. / Humi. : 21 deg C / 62 RH **Operation Band : Tx CH HIGH Test Engineer :** Mike Measurement Antenna Pol. : HORIZONTAL EUT Pol. : E2 Plane 97 80 FCC RSE-PK 3N Level [dBuV] FCC RSE-AV 3N 2 40 10000 15000 20000 2500@6500 1000 5000 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin Mode Reading Level FS @3m F/H/E/S QP/AV/PK dBuV/m MHz dBµV/m dBµV/m dB dB 4924.00 Η 29.32 24.07 5.25 -24.68 Average 54.00 4924.00 Н 41.40 36.15 5.25 74.00 -32.60 Peak

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

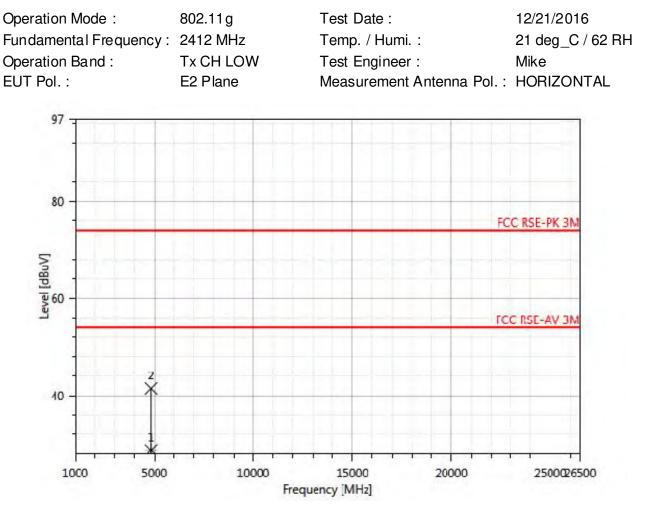


Radiated Spurious Emission Measurement Result (802.11 g)

Operation Mo Fundamenta Operation Ba EUT Pol. :	I Frequency :	802.11g 2412 MHz Tx CH LOW E2 Plane	-	Test Date : Temp. / Humi. : Test Engineer : Measurement Ar		12/21/2016 21 deg_C / 6/ Mike VERTICAL	2 RH
97 -							
80 -					FCC	RSE-PK 3M	
Level [dBuV]					FCC	RSE-AV 3M	
40 -	×						
1000	5000	1000		15000 ncy [MHz]	20000	2500@6500	
Freq.	Note D	ecetor A	Actual	Spectrum	Factor	Limit	Margin

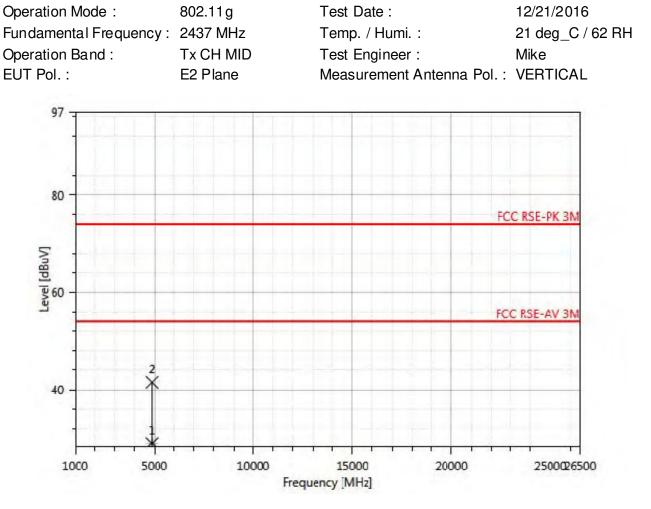
NOLE	Decetor	Actual	Spectrum	Facili		Maryin
	Mode	Reading Level	FS		@3m	
F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
Н	Average	28.73	23.79	4.94	54.00	-25.27
Н	Peak	41.18	36.23	4.94	74.00	-32.82
	F/H/E/S H	Mode F/H/E/S QP/AV/PK H Average	ModeReading LevelF/H/E/SQP/AV/PKdBµV/mHAverage28.73	ModeReading LevelFSF/H/E/SQP/AV/PKdBµV/mdBµV/mHAverage28.7323.79	ModeReading LevelFSF/H/E/SQP/AV/PKdBµV/mdBµV/mHAverage28.7323.79	Mode Reading Level FS @3m F/H/E/S QP/AV/PK dBμV/m dBμV/m dB dBuV/m H Average 28.73 23.79 4.94 54.00





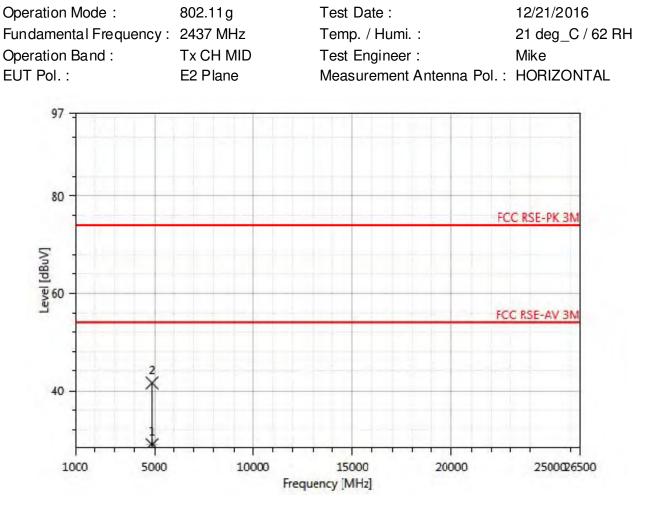
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
4824.00	Н	Average	28.72	23.78	4.94	54.00	-25.28
4824.00	Н	Peak	41.47	36.53	4.94	74.00	-32.53





Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
4874.00	Н	Average	29.03	23.90	5.13	54.00	-24.97
4874.00	Н	Peak	41.54	36.41	5.13	74.00	-32.46





Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
4874.00	Н	Average	29.04	23.91	5.13	54.00	-24.96
4874.00	Н	Peak	41.64	36.50	5.13	74.00	-32.36



Operation Mode : 802.11g Test Date : 12/21/2016 Fundamental Frequency: 2462 MHz Temp. / Humi. : 21 deg C / 62 RH **Operation Band : Tx CH HIGH** Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol.: VERTICAL 97 80 FCC RSE-PK 3N Level [dBuV] FCC RSE-AV 3M 2 40 10000 15000 20000 1000 5000 2500@6500 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin Mode Reading Level FS @3m

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QP/AV/PK

Average

Peak

dBµV/m

29.43

42.47

F/H/E/S

Η

Н

MHz

4924.00

4924.00

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dBµV/m

24.18

37.21

dBuV/m

54.00

74.00

dB

-24.57

-31.53

dB

5.25

5.25



Operation Mode : 802.11g Test Date : 12/21/2016 Fundamental Frequency: 2462 MHz Temp. / Humi. : 21 deg C / 62 RH **Operation Band : Tx CH HIGH** Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol.: HORIZONTAL 97 80 FCC RSE-PK 3N Level [dBuV] FCC RSE-AV 3M 2 40 10000 15000 20000 1000 5000 2500@6500 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin Mode Reading Level FS @3m

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QP/AV/PK

Average

Peak

dBµV/m

29.42

42.42

F/H/E/S

Η

Н

MHz

4924.00

4924.00

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dBµV/m

24.17

37.17

dBuV/m

54.00

74.00

dB

-24.58

-31.58

dB

5.25

5.25



Radiated Spurious Emission Measurement Result (802.11_HT20)

Operation Fundamen Operation EUT Pol. :	tal Frequer Band :	802.11 ncy : 2412 M Tx CH E2 Plar	Hz LOW	Test Date : Temp. / Humi. : Test Engineer : Measurement A	ntenna Pol. :	12/21/2016 21 deg_C / 6 Mike VERTICAL	2 RH
97 -		1.1.1.1					
80 -							
					FC	C RSE-PK 3M	
[/ng							
Level [dBuV]							
2					FCC	C RSE-AV 3M	
		2					
40 -		¥					
		¥					
10	000	5000	10000 Freque	15000 ncy [MHz]	20000	2500@6500	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Leve			@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
4824.00	н	Average	28.70	23.76	4.94	54.00	-25.30

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Peak

41.35

Н

4824.00

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36.41

4.94

74.00

-32.65



Operation Mode : 802.11n20 Test Date : 12/21/2016 Fundamental Frequency: 2412 MHz Temp. / Humi. : 21 deg C / 62 RH **Operation Band :** Tx CH LOW Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol.: HORIZONTAL 97 80 FCC RSE-PK 3N Level [dBuV] FCC RSE-AV 3M 2 10 10000 15000 20000 1000 5000 2500@6500 Frequency [MHz] Frea. Note Decetor Actual Spectrum Factor Limit Margin

	1.010	2000101	rotadi	opoolaam	1 40101		margin	
		Mode	Reading Level	FS		@3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB	_
4824.00	Н	Average	28.73	23.79	4.94	54.00	-25.27	-
4824.00	Н	Peak	41.07	36.13	4.94	74.00	-32.93	

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Operation Mode : 802.11n20 Test Date : 12/21/2016 Fundamental Frequency: 2437 MHz Temp. / Humi. : 21 deg C / 62 RH **Operation Band :** Tx CH MID Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol.: VERTICAL 97 80 FCC RSE-PK 3M Level [dBuV] FCC RSE-AV 3M 40 10000 15000 20000 1000 5000 2500@6500 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin

		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
4874.00	Н	Average	28.96	23.83	5.13	54.00	-25.04
4874.00	Н	Peak	41.77	36.63	5.13	74.00	-32.23

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Operation Mode : 802.11n20 Test Date : 12/21/2016 Fundamental Frequency: 2437 MHz Temp. / Humi. : 21 deg C / 62 RH **Operation Band :** Tx CH MID Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol.: HORIZONTAL 97 80 FCC RSE-PK 3M Level [dBuV] FCC RSE-AV 3M 2 40 10000 20000 1000 5000 15000 2500@6500 Frequency [MHz] Frea. Note Decetor Actual Spectrum Factor Limit Margin

		Mode	Reading Level	FS		@3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB	_
4874.00	Н	Average	28.94	23.81	5.13	54.00	-25.06	-
4874.00	Н	Peak	41.47	36.33	5.13	74.00	-32.53	

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode : 802.11n20 Test Date : 12/21/2016 Fundamental Frequency: 2462 MHz Temp. / Humi. : 21 deg C / 62 RH **Operation Band : Tx CH HIGH** Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol.: VERTICAL 97 80 FCC RSE-PK 3N Level [dBuV] FCC RSE-AV 3N 40 10000 20000 1000 5000 15000 2500@6500 Frequency [MHz] Freq. Note Decetor Actual Spectrum Factor Limit Margin Mode Reading Level FS @3m

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

QP/AV/PK

Peak

Peak

dBµV/m

42.11

29.30

F/H/E/S

Η

Н

MHz

4924.00

4924.00

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dBµV/m

36.86

24.05

dBuV/m

74.00

74.00

dB

-31.89

-44.70

dB

5.25

5.25



Operation Mode : 802.11n20 Test Date : 12/21/2016 Fundamental Frequency: 2462 MHz Temp. / Humi. : 21 deg C / 62 RH **Operation Band : Tx CH HIGH** Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol.: HORIZONTAL 97 80 FCC RSE-PK 3M Level [dBuV] 8 FCC RSE-AV 3N 40 10000 20000 1000 5000 15000 2500@6500 Frequency [MHz] Frea. Note Decetor Actual Spectrum Factor Limit Margin

•				•			5
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
4924.00	Н	Peak	42.00	36.74	5.25	74.00	-32.00
4924.00	Н	Peak	29.32	24.07	5.25	74.00	-44.68

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12 PEAK POWER SPECTRAL DENSITY

12.1 Standard Applicable

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

12.2 Measurement Equipment Used

	SGS Conducted Room										
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.						
ТҮРЕ		NUMBER	NUMBER	CAL.							
Power Meter	Anritsu	ML2495A	1005007	12/15/2016	12/14/2017						
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017						
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017						
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017						
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017						
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017						
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017						
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017						
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2016	05/16/2017						

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12.3 Test Set-up



12.4 Measurement Procedure

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Set the span to 1.5 times the DTS channel bandwidth.
- 4. Set the RBW = 3 kHz & VBW = 10 kHz.
- 5. For defining Restricted Band Edge Limit: Set the RBW = 100kHz & VBW = 300 kHz.
- 6. Detector = peak.
- 7. Sweep time = auto couple.
- 8. Trace mode = max hold.
- 9. Allow trace to fully stabilize.
- 10. Use the peak marker function to determine the maximum amplitude level.

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12.5 Measurement Result

POWER DENSITY 802.11b MODE				POWEF	DENSITY	802.11g MC	DDE
Frequency (MHz)	RF Power Density (dBm)	Maximum Limit (dBm)	Result	Frequency (MHz)	RF Power Density (dBm)	Maximum Limit (dBm)	Result
2412	-5.47	8.00	PASS	2412	-8.32	8.00	PASS
2437	-4.52	8.00	PASS	2437	-7.74	8.00	PASS
2462	-3.82	8.00	PASS	2462	-7.97	8.00	PASS

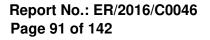
Frequency (MHz)	RF Power	Maximum	
	Density	Limit	Result
	(dBm)	(dBm)	
2412	-7.84	8.00	PASS
2437	-7.42	8.00	PASS
2462	-8.71	8.00	PASS

Bandedge Limit 802.11b MODE			Bandedge Limit 802.11g MODE			
Frequency (MHz)	RF Power	Bandedge		Frequency (MHz)	RF Power	Bandedge
	Density	Limit			Density	Limit
	(dBm)	(dBm)			(dBm)	(dBm)
2412	7.16	-12.84		2412	3.97	-16.03
2462	8.01	-11.99		2462	4.12	-15.88

Bandedge Limit 802.11 n20 MODE

Frequency (MHz)	RF Power	Bandedge			
	Density	Limit			
	(dBm)	(dBm)			
2412	4.00	-16.00			
2462	3.22	-16.78			

*Refer to next page for plots





802.11b Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



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Power Spectral Density Test Plot (CH-High)



802.11g





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Power Spectral Density Test Plot (CH-Mid)



Power Spectral Density Test Plot (CH-High)

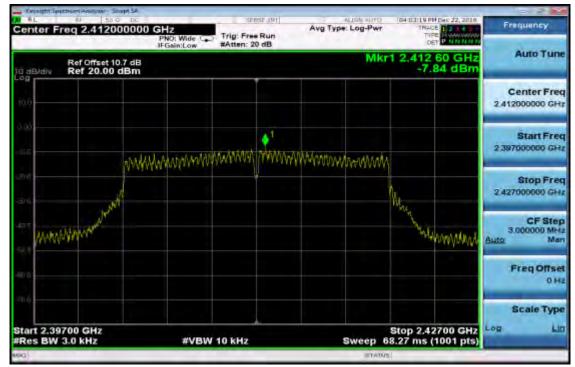


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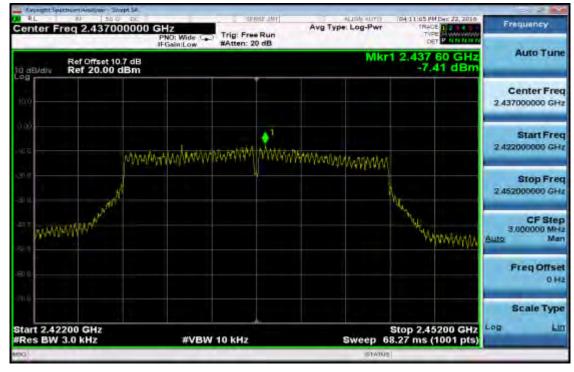
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802.11n HT20 Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



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Power Spectral Density Test Plot (CH-High)



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802.11b PSD for Band edge Limit (CH-Low)



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802.11g PSD for Bandedge Limit(CH-Low)



802.11g PSD for Bandedge Limit(CH-High)



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802.11n HT20 PSD for Bandedge Limit(CH-Low)



802.11n_HT20 PSD for Bandedge Limit(CH-High)



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13 ANTENNA REQUIREMENT

13.1 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.

13.2 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.

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APPENDIX I MEASUREMENT PLOT OF RADIATED SPURIOUS EMISSION

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No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.

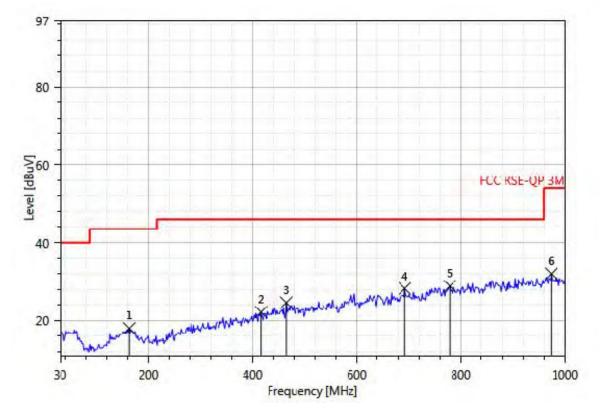


Radiated Spurious Emission Measurement photos Result

Note: The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Below 1GHz Data:

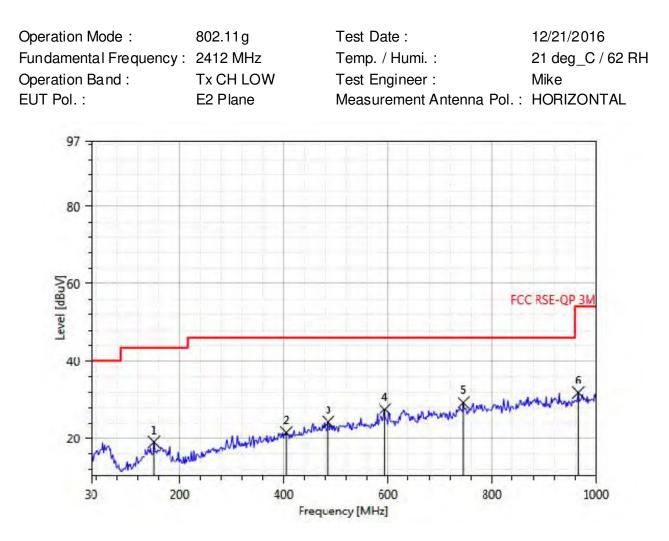
Operation Mode :	802.11g	Test Date :	12/21/2016
Fundamental Frequency :	2412 MHz	Temp. / Humi. :	21 deg_C / 62 RH
Operation Band :	Tx CH LOW	Test Engineer :	Mike
EUT Pol. :	E2 Plane	Measurement Antenna Pol. :	VERTICAL



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Operation Mode : Test Date : 802.11g 12/21/2016 Fundamental Frequency: 2437 MHz Temp. / Humi. : 21 deg_C / 62 RH Operation Band : Tx CH MID Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol.: VERTICAL 97 80 Level [dBuV] FCC RSE-QP 3M 40 20 Mand 600 1000 30 200 400 800 Frequency [MHz]

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Operation Mode : Test Date : 802.11g 12/21/2016 Fundamental Frequency: 2437 MHz Temp. / Humi. : 21 deg_C / 62 RH Operation Band : Tx CH MID Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol.: HORIZONTAL 97 80 Level [dBuV] FCC RSE-QP 3M 40 6 4 Junt

400

600

Frequency [MHz]

800

1000

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Operation Mode : Test Date : 802.11g 12/21/2016 Fundamental Frequency: 2462 MHz Temp. / Humi. : 21 deg_C / 62 RH Operation Band : **Tx CH HIGH** Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol.: VERTICAL 97 80 Level [dBuV] FCC RSE-QP 3M 40 Atomer New Summer 2 Kunn Manner 20 600 200 400 800 1000 30 Frequency [MHz]

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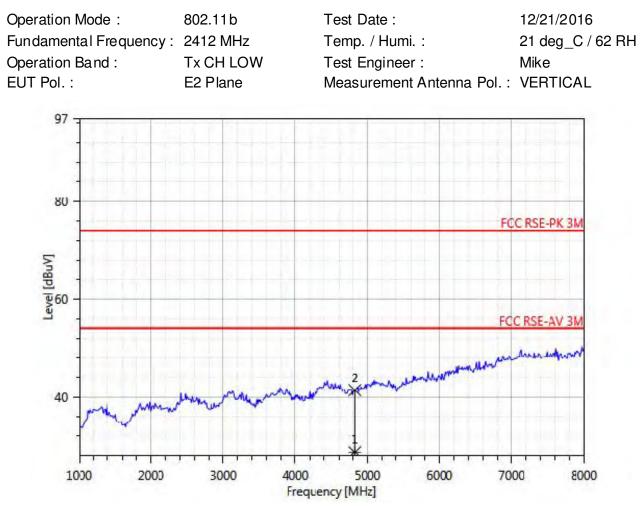
Operation Mode : Test Date : 802.11g 12/21/2016 Fundamental Frequency: 2462 MHz Temp. / Humi. : 21 deg_C / 62 RH Operation Band : **Tx CH HIGH** Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol.: HORIZONTAL 97 80 Level [dBuV] FCC RSE-QP 3M 40 X 20 1000 200 400 600 800 30 Frequency [MHz]

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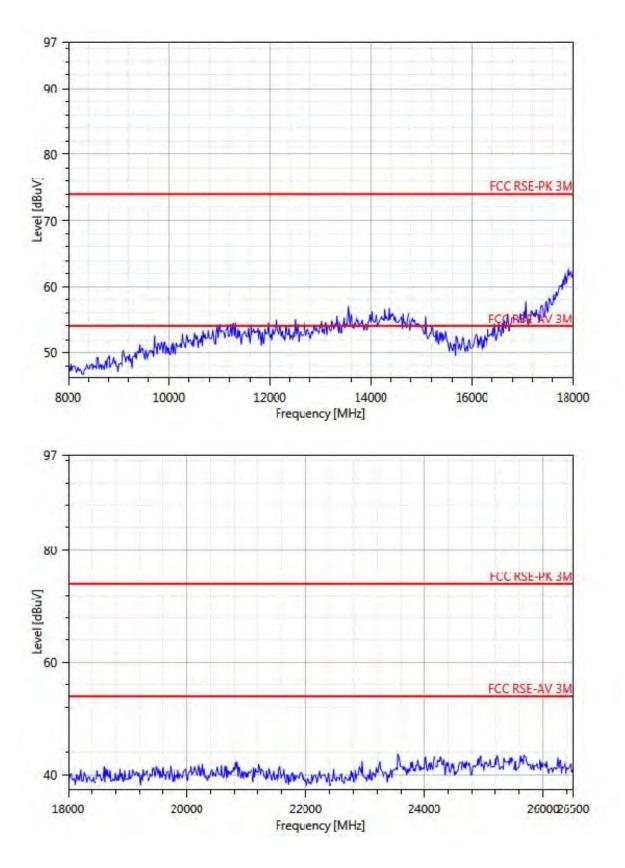


Above 1GHz Data:



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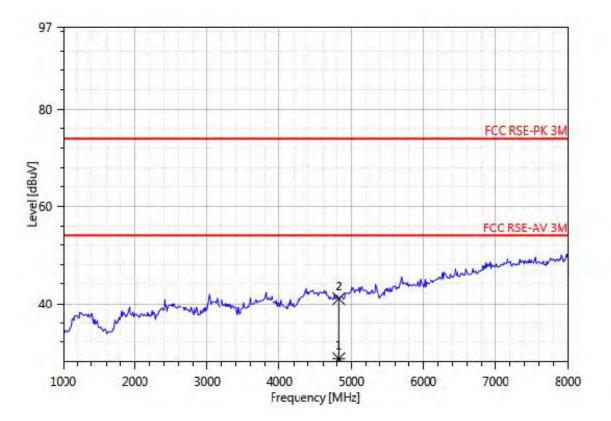


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Operation Mode : 802.11b Fundamental Frequency: 2412 MHz **Operation Band :** Tx CH LOW EUT Pol. : E2 Plane

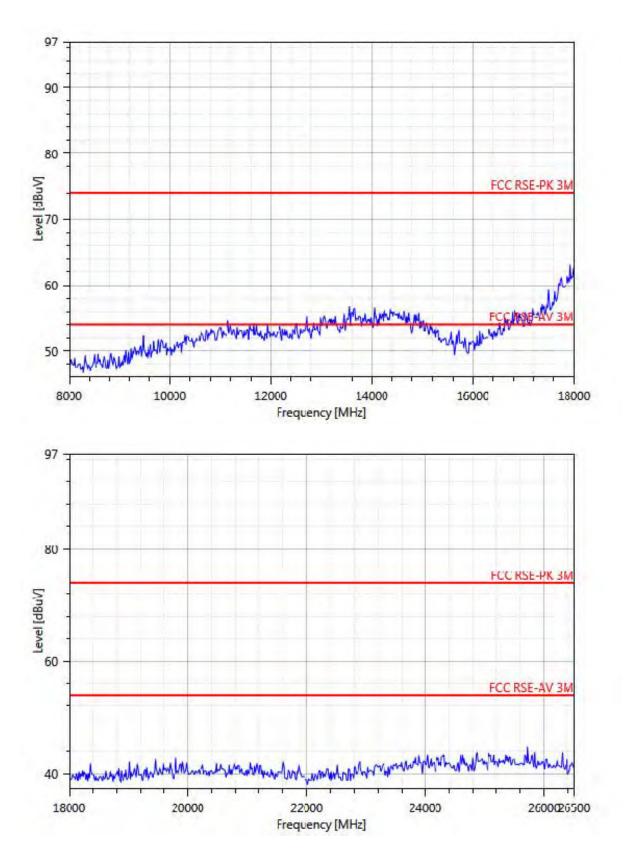
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: HORIZONTAL



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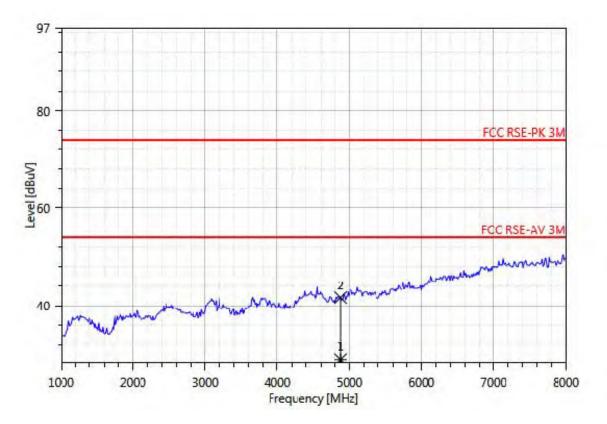


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Operation Mode : 802.11b Fundamental Frequency: 2437 MHz **Operation Band :** Tx CH MID EUT Pol. : E2 Plane

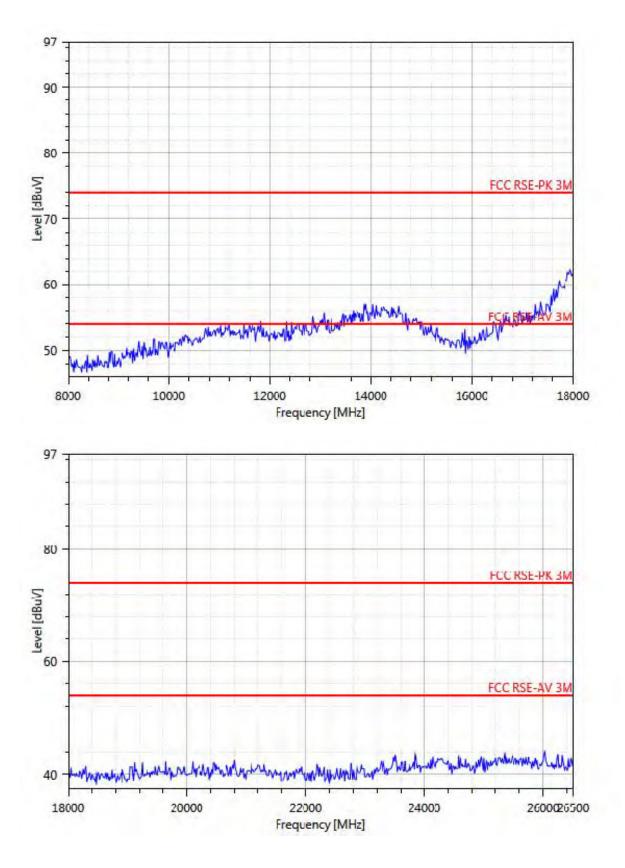
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: VERTICAL



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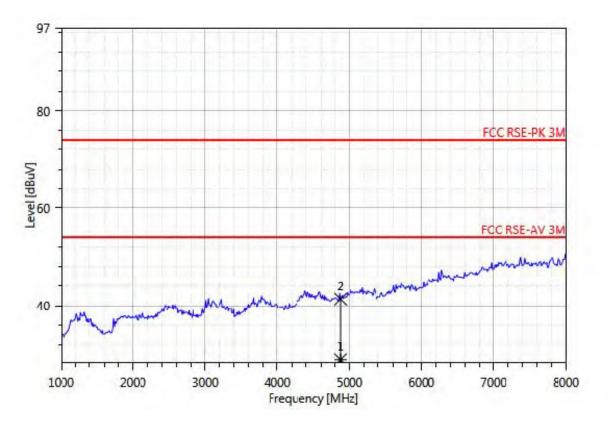


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Operation Mode : 802.11b Fundamental Frequency: 2437 MHz **Operation Band :** Tx CH MID EUT Pol. : E2 Plane

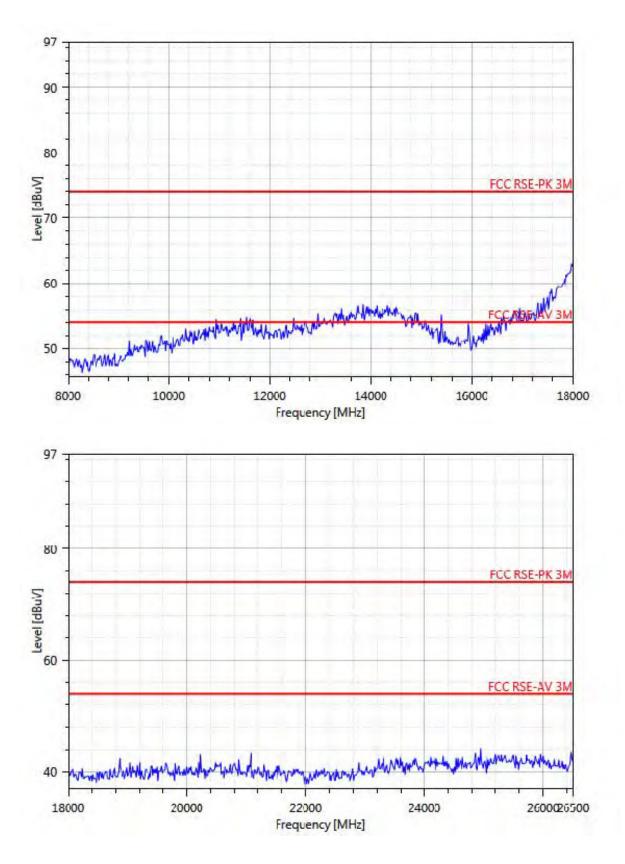
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: HORIZONTAL



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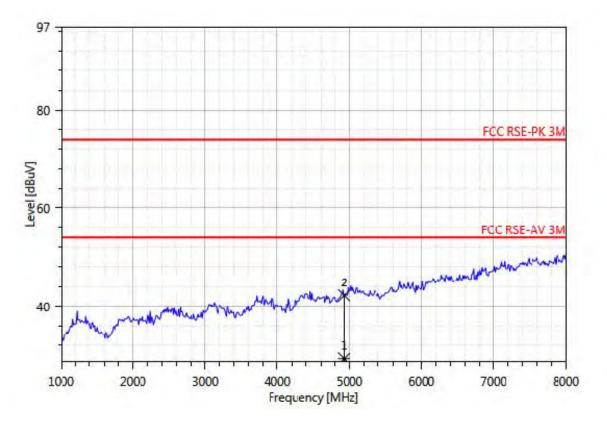


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Operation Mode : 802.11b Fundamental Frequency: 2462 MHz **Operation Band : Tx CH HIGH** EUT Pol. : E2 Plane

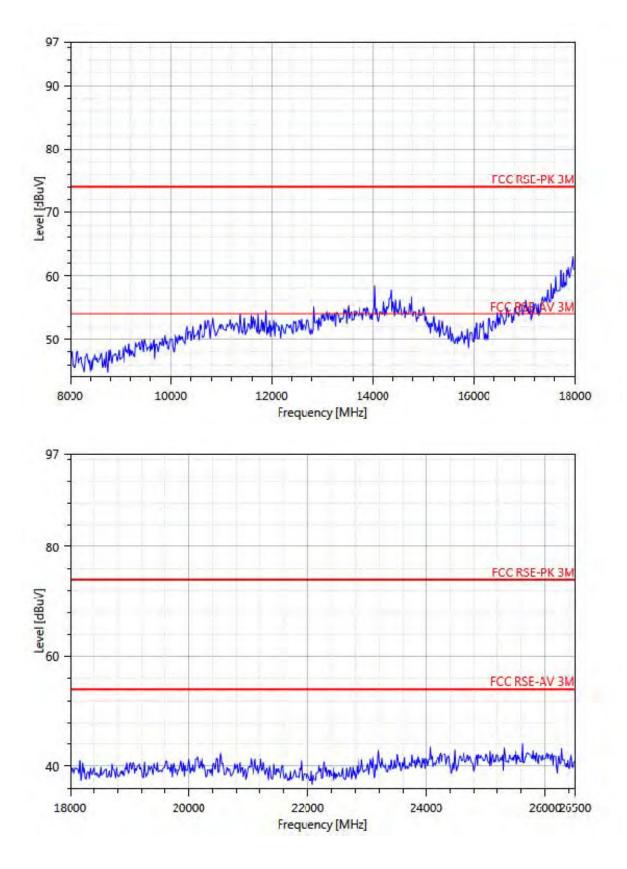
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: VERTICAL



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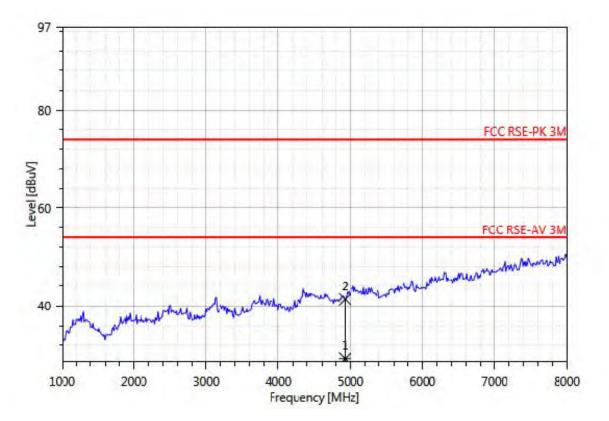


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Operation Mode : 802.11b Fundamental Frequency: 2462 MHz **Operation Band : Tx CH HIGH** EUT Pol. : E2 Plane

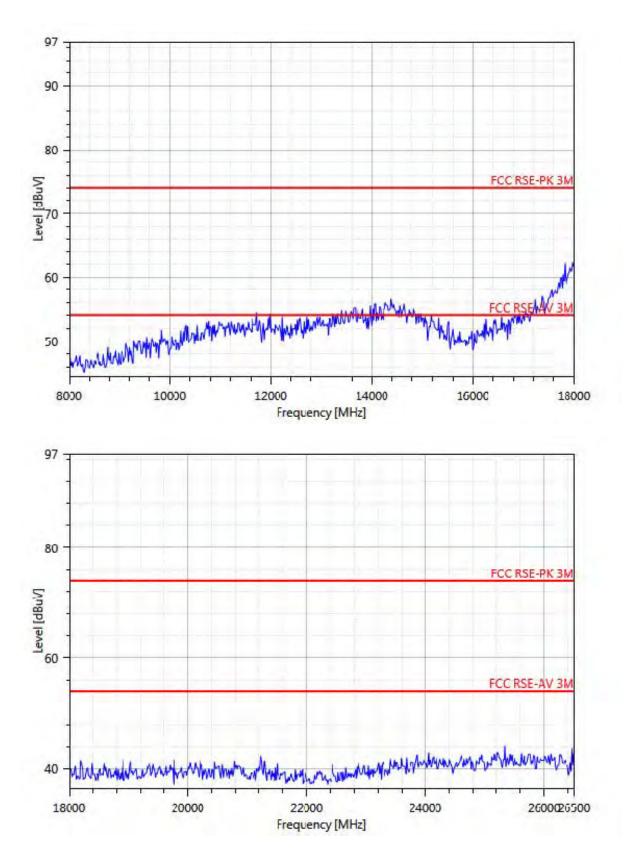
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: HORIZONTAL



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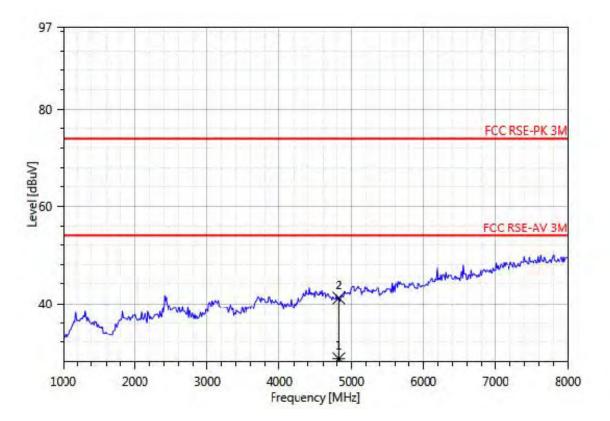


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Operation Mode : 802.11g Fundamental Frequency: 2412 MHz **Operation Band :** Tx CH LOW EUT Pol. : E2 Plane

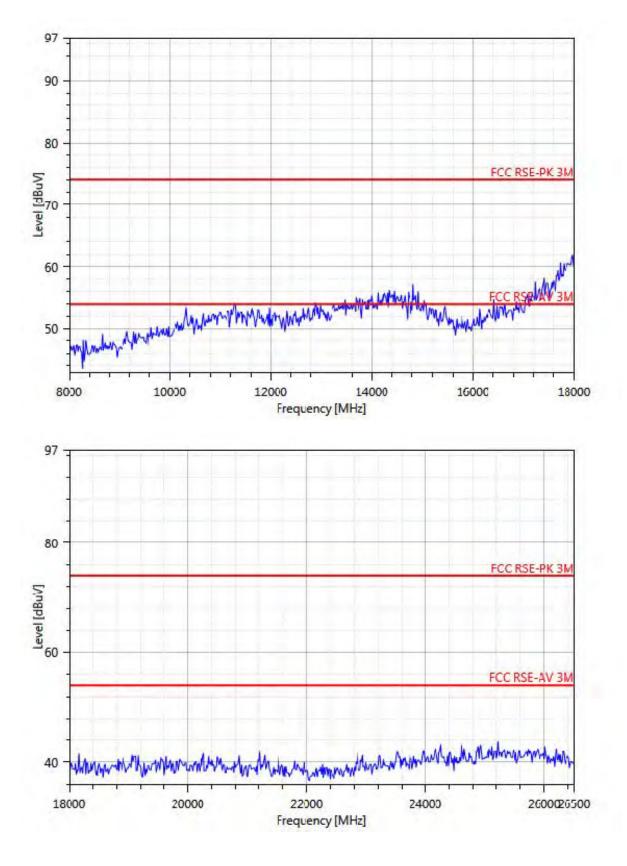
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: VERTICAL



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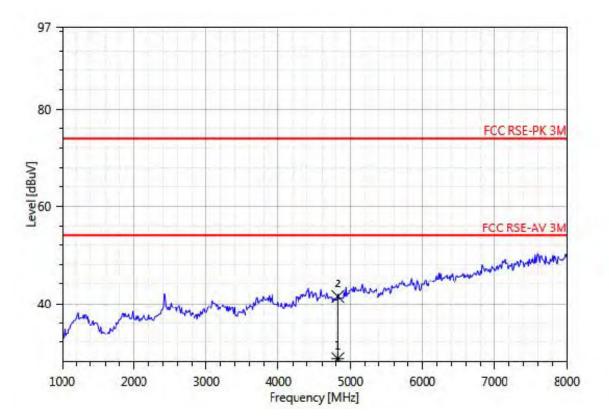


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Operation Mode : 802.11g Fundamental Frequency: 2412 MHz **Operation Band :** Tx CH LOW EUT Pol. : E2 Plane

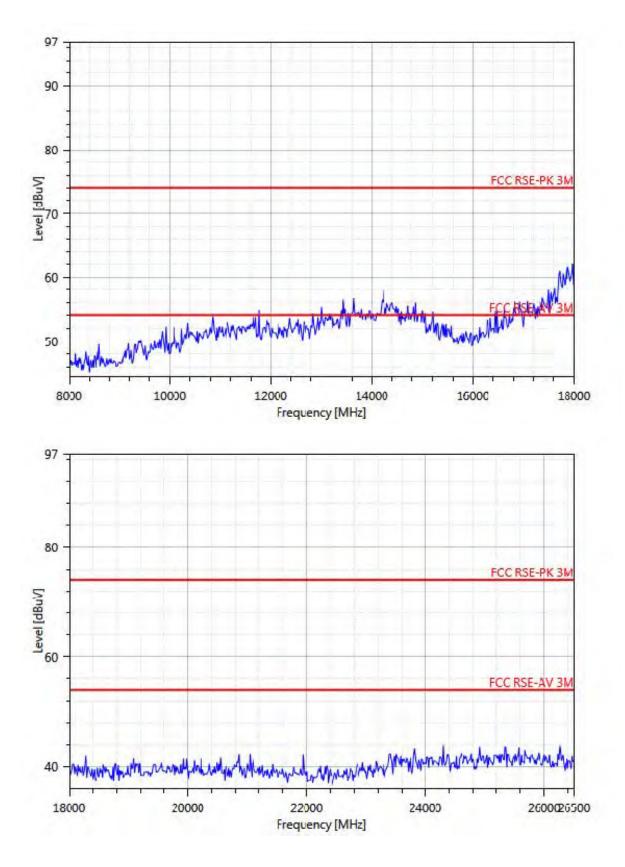
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: HORIZONTAL



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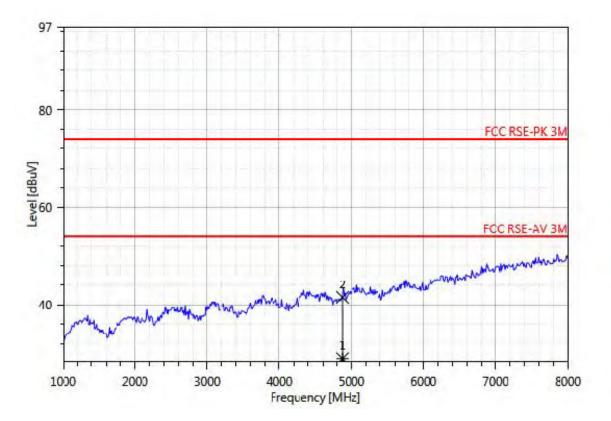


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Operation Mode : 802.11g Fundamental Frequency: 2437 MHz **Operation Band :** Tx CH MID EUT Pol. : E2 Plane

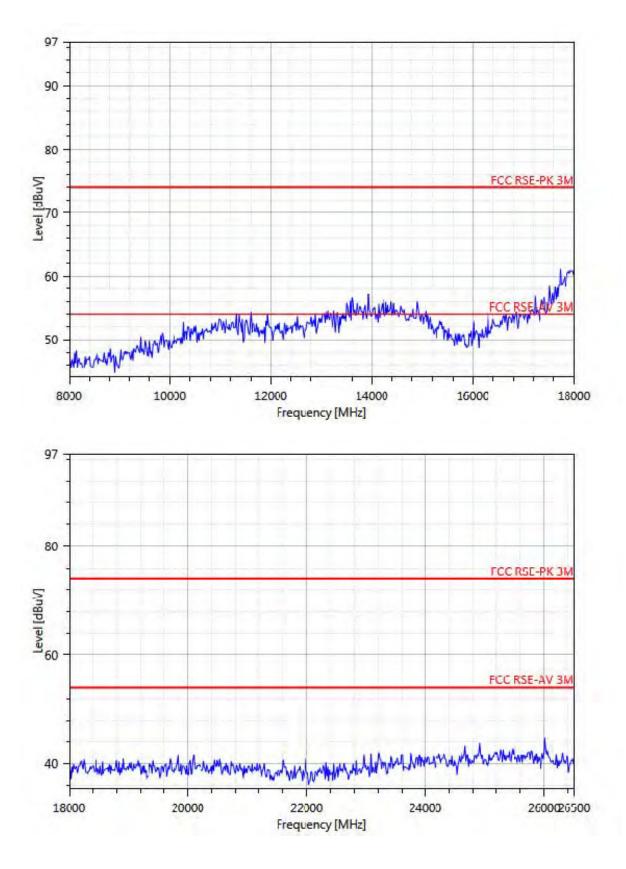
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: VERTICAL



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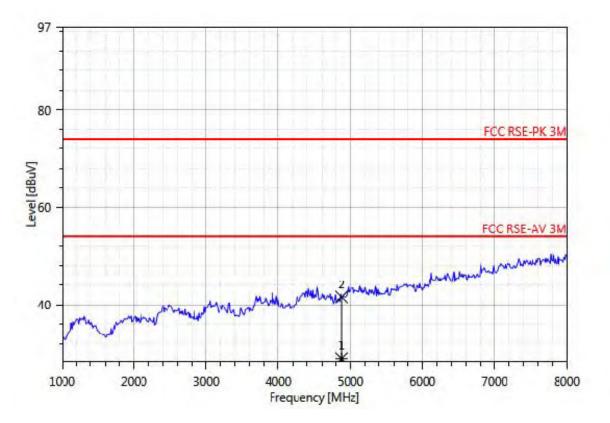


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Operation Mode : 802.11g Fundamental Frequency: 2437 MHz **Operation Band :** Tx CH MID EUT Pol. : E2 Plane

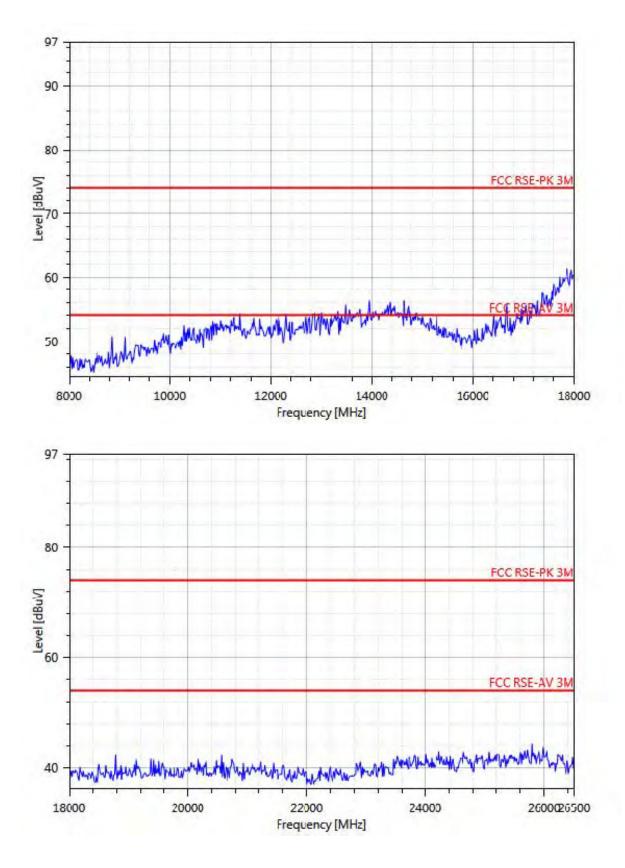
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: HORIZONTAL



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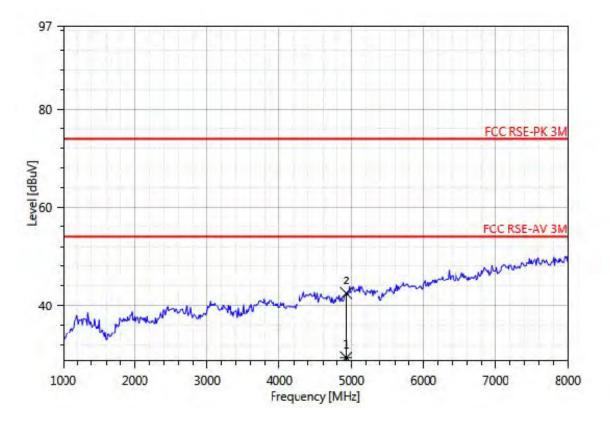


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Operation Mode : 802.11g Fundamental Frequency: 2462 MHz **Operation Band : Tx CH HIGH** EUT Pol. : E2 Plane

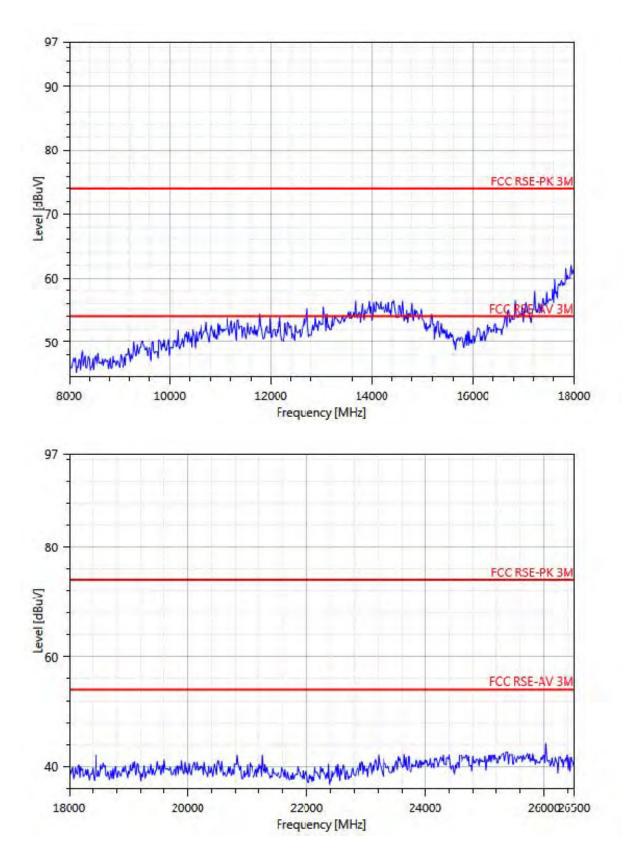
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: VERTICAL



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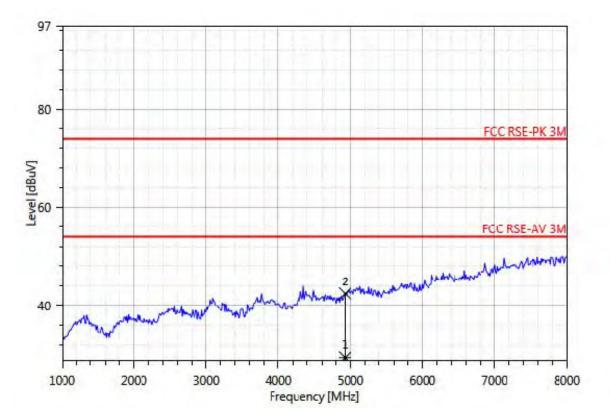


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Operation Mode : 802.11g Fundamental Frequency: 2462 MHz **Operation Band : Tx CH HIGH** EUT Pol. : E2 Plane

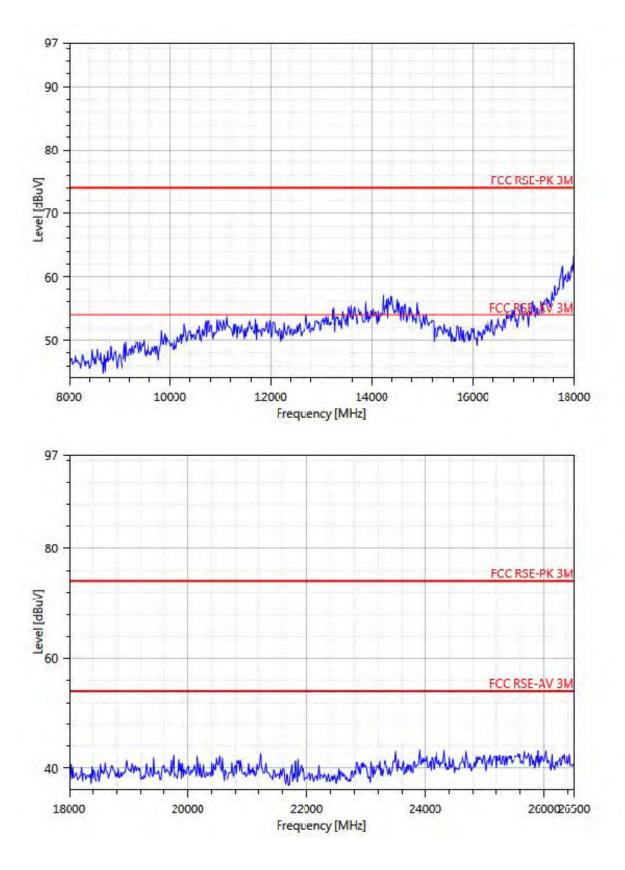
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: HORIZONTAL



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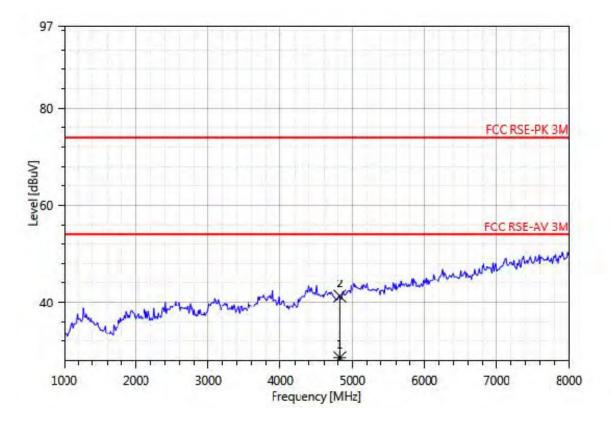


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Operation Mode : 802.11 n20 Fundamental Frequency: 2412 MHz **Operation Band :** Tx CH LOW EUT Pol. : E2 Plane

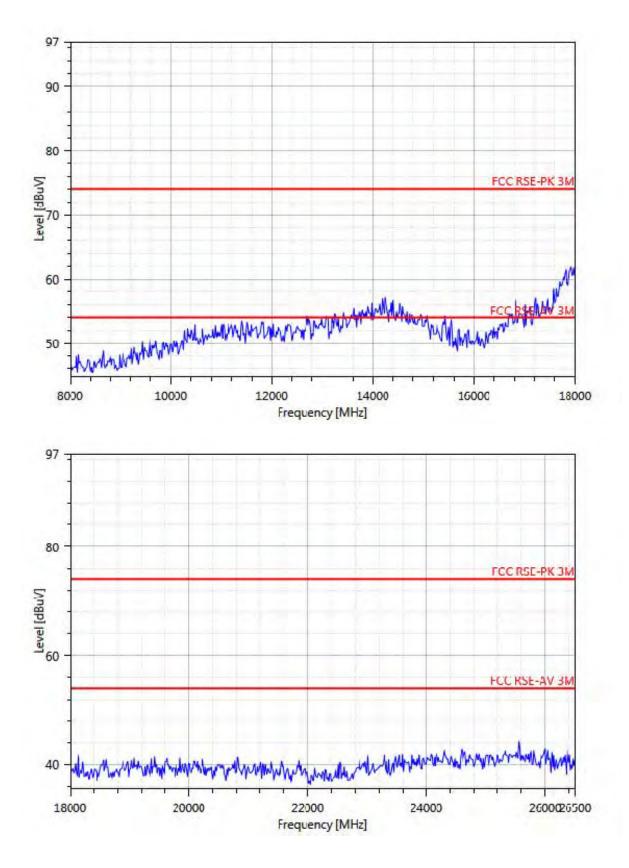
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: VERTICAL



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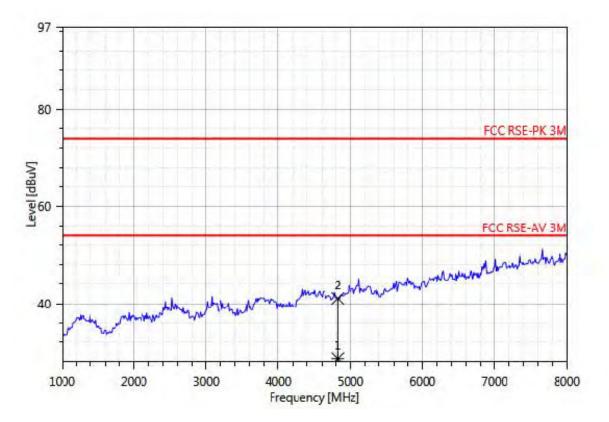


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Operation Mode : 802.11 n20 Fundamental Frequency: 2412 MHz **Operation Band :** Tx CH LOW EUT Pol. : E2 Plane

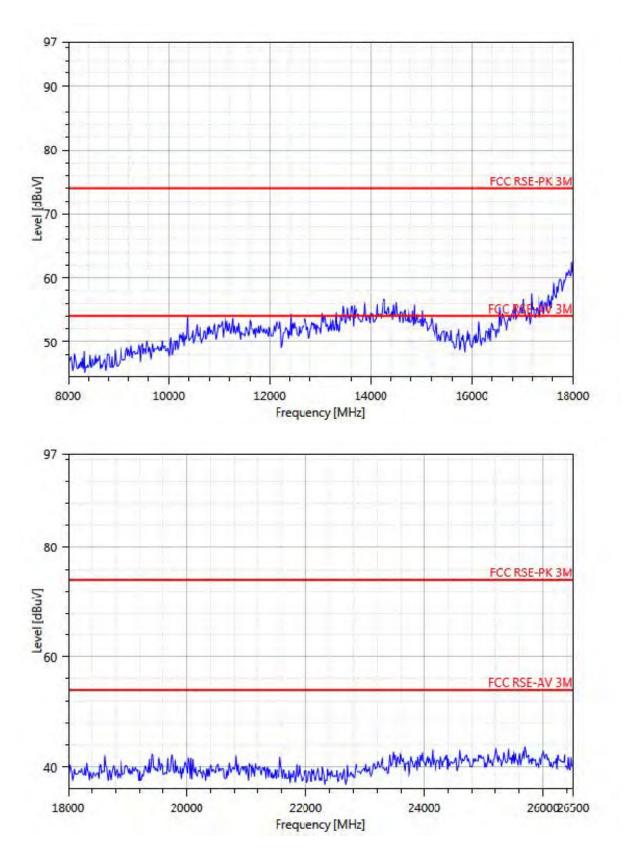
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: HORIZONTAL



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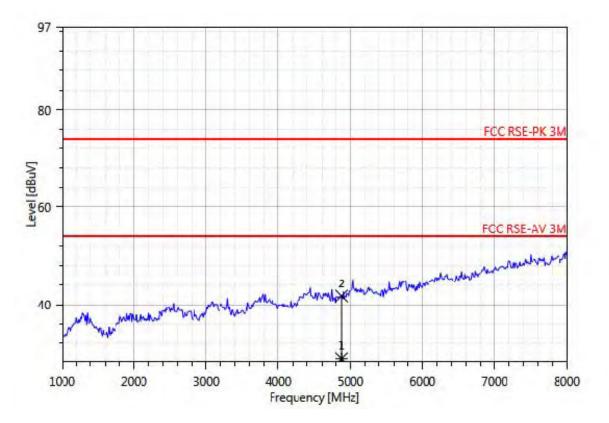


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Operation Mode : 802.11n20 Fundamental Frequency: 2437 MHz **Operation Band :** Tx CH MID EUT Pol. : E2 Plane

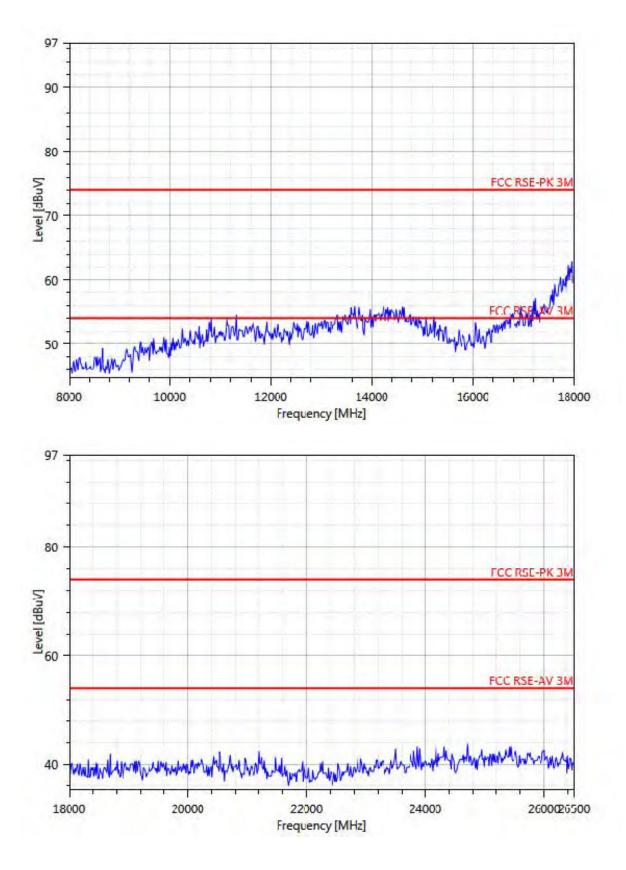
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: VERTICAL



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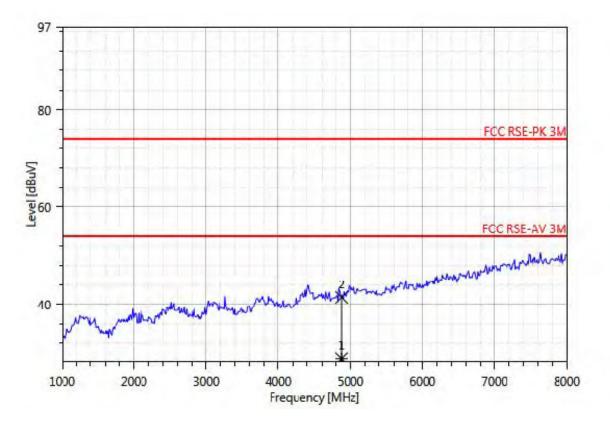


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Operation Mode : 802.11n20 Fundamental Frequency: 2437 MHz **Operation Band :** Tx CH MID EUT Pol. : E2 Plane

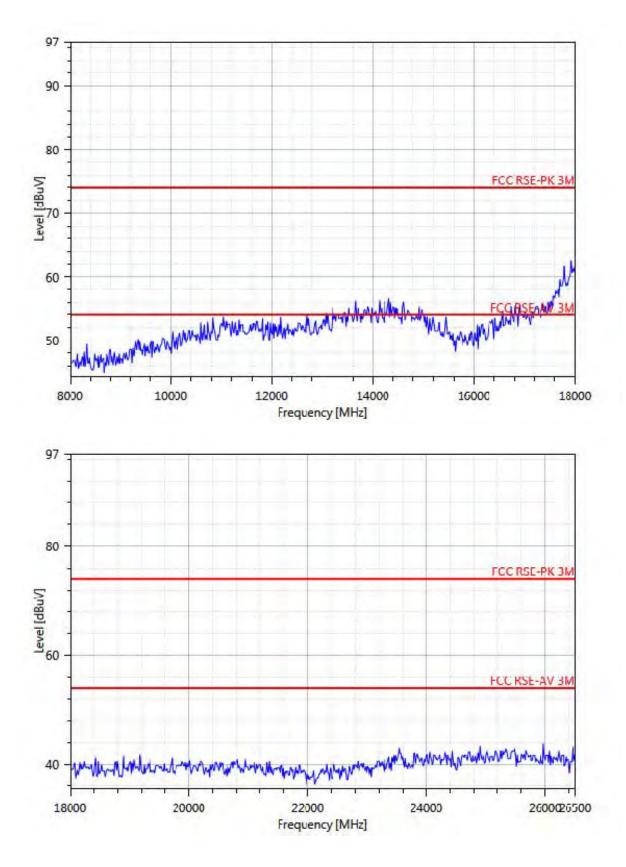
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: HORIZONTAL



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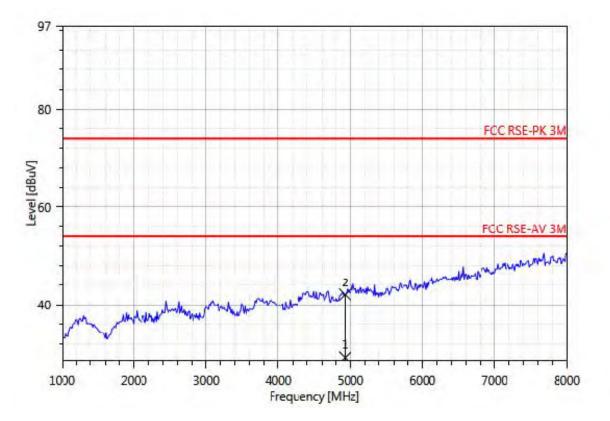


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Operation Mode : 802.11n20 Fundamental Frequency: 2462 MHz **Operation Band : Tx CH HIGH** EUT Pol. : E2 Plane

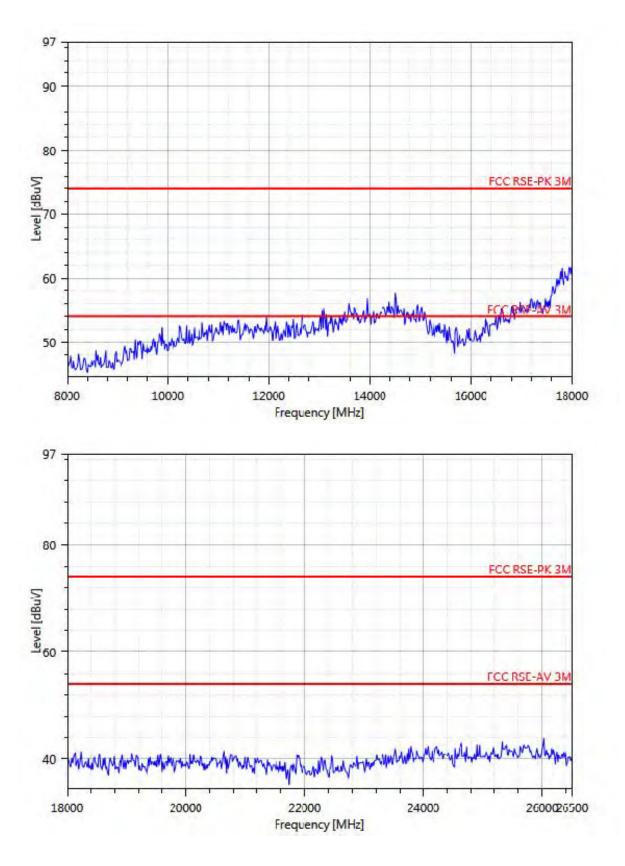
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: VERTICAL



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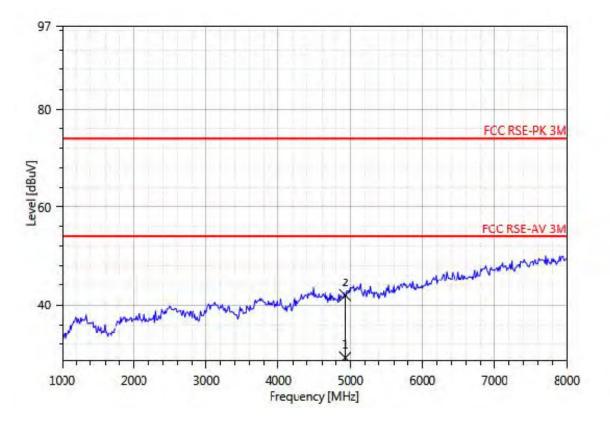
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Operation Mode : 802.11n20 Fundamental Frequency: 2462 MHz **Operation Band : Tx CH HIGH** EUT Pol. : E2 Plane

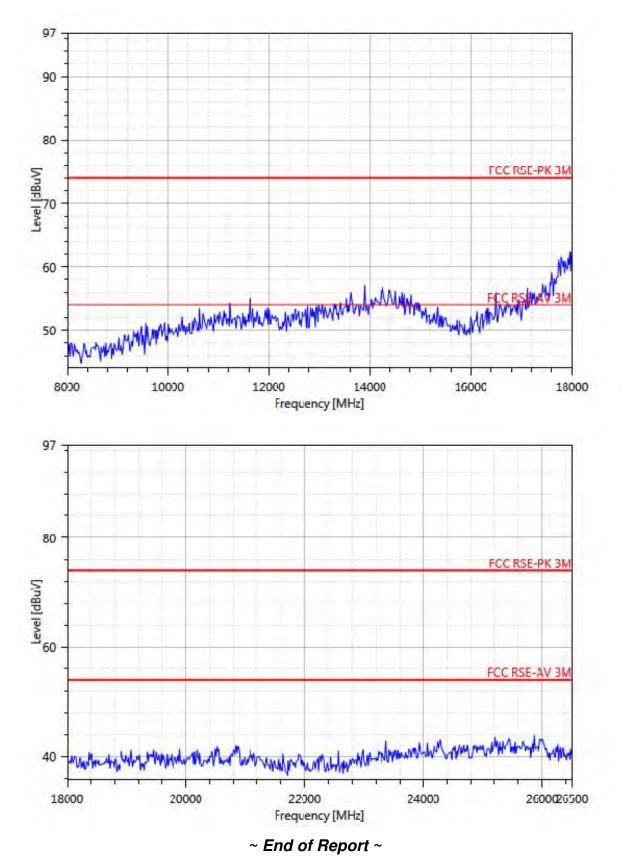
Test Date : 12/21/2016 Temp. / Humi. : 21 deg C / 62 RH Test Engineer : Mike Measurement Antenna Pol.: HORIZONTAL



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