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ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO **FCC PART 15 SUBPART C REQUIREMENT**

OF

Brand Name: Sony

FCC ID: PY7-47130J

ER/2016/C0035 **Report No.:**

Issue Date: Mar. 01, 2017

FCC Rule Part: §15.247, Cat: DTS

Sony Mobile Communications Inc.

Prepared for: 4-12-3, Higashi-Shinagawa, Shinagawa-ku,

Tokyo, 140-0002 Japan

SGS Taiwan Ltd.

Electronics & Communication Laboratory

Prepared by: No.134, Wu Kung Road, New Taipei Industrial

Park, Wuku District, New Taipei City, Taiwan

24803





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VERIFICATION OF COMPLIANCE

Sony Mobile Communications Inc.

4-12-3, Higashi-Shinagawa, Shinagawa-ku, Tokyo, 140-0002 Applicant:

Japan

Brand Name: Sony

FCC ID: PY7-47130J

File Number: ER/2016/C0035

Date of Test: Dec. 12, 2016 ~ Dec. 29, 2016

Date of EUT Received: Dec. 12, 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 Chen	Date:	Mar. 01, 2017
Prepared By:	Louis Chen/Engineer Utoletta Tang	Date:	Mar. 01, 2017
Approved By:	Violetta Tang / Clerk Jim Ch ang	Date:	Mar. 01, 2017

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Jim Chang / Asst. Manager

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Revision History

Report Number	Revision	Description	Issue Date
ER/2016/C0035	Rev.00	Initial creation of document	Jan. 09, 2017
ER/2016/C0035	Rev.01	Provide measurement plot of radiation, please refer to Appendix I.	Jan. 23, 2017
ER/2016/C0035	Rev.02	Update general information & add MPE evaluation.	Feb. 06, 2017
ER/2016/C0035	Rev.03	Add ferrite core & update conduction setup photo.	Mar. 01, 2017

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GENERAL INFORMATION

1.1 Product description

General:

Brand Name:	Sony		
Hardware Version:	А		
Software Version:	0.20		
Data Cable (USB):	Model No.: UCB20, Supplier: Sony, Length: 100cm		
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: 19.80dBm g: 24.33dBm	DSSS, OFDM		
11n	HT20 2412-2462	11	24.29dBm	OFDM		
Antenna Designation:		Internal Antenna, Gain: 0.8dBi				
Modulation type:		CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM				
Transition Rate:		802.11 g: 6	/2/5.5/11 Mbps /9/12/18/24/36/48/54 Mbps 0MHz: 6.5 – 65Mbps			

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1.2 Product Feature of Equipment Under Test

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

Product Feature			
GSM Operating Band(s)	GSM 850/1900MHz		
GPRS / EGPRS Multi Slot Class	GPRS Class 12 / Class 12		
WCDMA Operating Band(s)	FDD Band II / IV / V		
WCDMA Rel. Version	Rel.9		
LTE Operating Band(s)	FCC Band 2 / 4 / 5 / 7 / 12 / 17 / 26 / 41		
LTE Rel. Version	Rel.10		
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

2.1 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

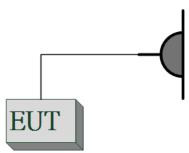


Table 2-1 Equipment Used in Tested System

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

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

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

		9	_: : : = :
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	•	•

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RADIATED EMISSION TEST

HADIA I ED EIVII 33	ION ILSI.						
	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 TEST (ABOVE 1 GHz)							
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

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

6.1 Standard Applicable

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

1 7 3					
Frequency range	Limits 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			

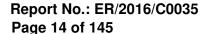
6.3 EUT Setup

- 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.

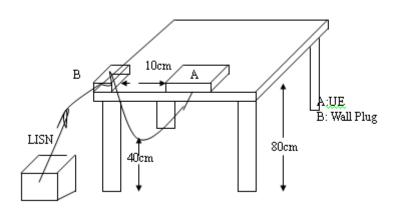
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6.4 Test SET-UP (Block Diagram of Configuration)



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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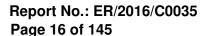
AC POWER LINE CONDUCTED EMISSION TEST DATA

Test Date: Dec. 27, 2016 Operation Mode: Operation mode

Temperature: 20

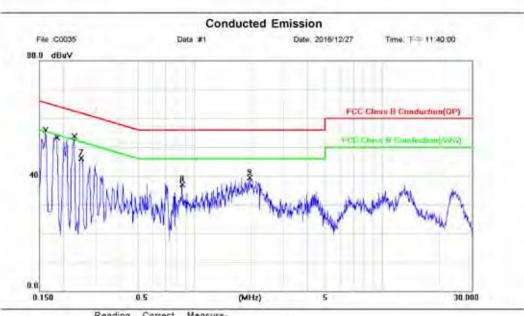
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Site Conduction Room Temperature: 20 1 Phase: N Power: AC 120V/60Hz Limit FCC Class B Conduction(QP) Humidity: Mode: Operation



No.	Mk.	Freq	Level	Factor	ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	ďВ	Detector	Comment.
1		0.1620	56.40	0.07	56.47	65.36	-8.89	QP	
2		0.1620	37.80	0.07	37.87	55.36	-17.49	AVG	
3		0.1860	51.00	0.08	51.08	64.21	-13/13	QP	
4		0.1860	32.40	0.08	32,48	54.21	-21.73	AVG	
5		0.2300	47.50	0.08	47.58	82.45	-14.87	QP	
6		0.2300	29.60	0.08	29.68	52.45	-22.77	AVG	
7		0.2500	45.92	0.09	46.01	61.76	-15.75	peak	
8		0.8660	36.83	0.12	36.95	56.00	-19.05	peak	
9		1.9700	39,21	0.15	39.36	56.00	-16.64	peak	
_									

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DUTY CYCLE OF TEST SIGNAL

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	99.20	0.03
802.11n_20	99.00	0.04

b = 99.54%, g = 99.2%, n ht 20 = 99%

Duty Cycle Factor: $10 * \log(1/0.9954) = 0.02$ Duty Cycle Factor: 10 * log(1/0.992) = 0.03Duty Cycle Factor: $10 * \log(1/0.99) = 0.04$

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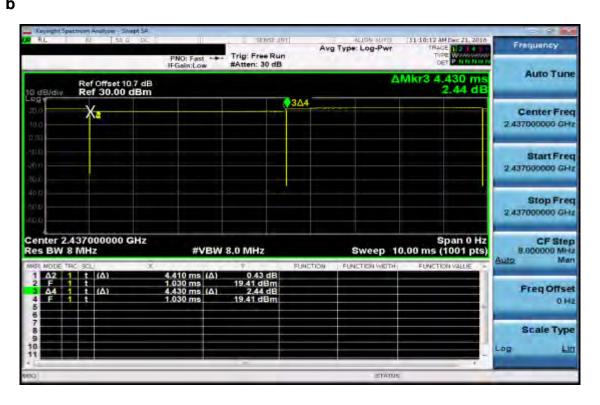
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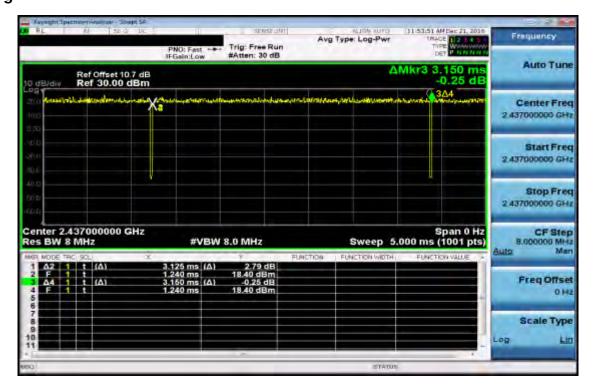
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7.1 DUTY CYCLE TEST SIGNAL Measurement Result 802.11 b



802.11 q



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802.11 n 20 MHz



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PEAK OUTPUT POWER MEASUREMENT

8.1 Standard Applicable

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

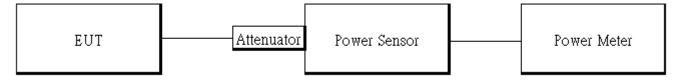
If the transmitting antenna of directional gain greater than 6dBi are used the peak output power form the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6dBi.

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	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			

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. Guid-
- 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

302.11	b Main							
СН	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit		RESULT	
1	2412	1	19.00	79.43	1 W att =	30.00	dBm	PASS
6	2437	1	19.61	91.41	1 W att =	30.00	dBm	PASS
11	2462	1	19.80	95.50	1 W att =	30.00	dBm	PASS
302.11	b Main						•	
	Frequency	Data	Avg. Output Power	Avg. Output Power	Limit		RESULT	
СН	(MHz)	Rate	(dBm)	(mW)				RESOLI
CH 1	• •	Rate 1			1 W att =	30.00	dBm	PASS
	(MHz)		(dBm)	(mW)			dBm dBm	

	2402	l I	10.07	40.04	i vv all =	30.00	ubili	FASS	
802.11	802.11g Main								
СН	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit		RESULT		
1	2412	6	23.72	235.50	1 W att =	30.00	dBm	PASS	
6	2437	6	24.28	267.92	1 W att =	30.00	dBm	PASS	
11	2462	6	24.33	271.02	1 W att =	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	15.96	39.45	1 W att =	30.00	dBm	PASS	
6	2437	6	16.61	45.81	1 W att =	30.00	dBm	PASS	
11	2462	6	16.38	43.45	1 W att =	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	23.69	233.88	1 W att =	30.00	dBm	PASS
6	2437	MCS0	24.29	268.53	1 W att =	30.00	dBm	PASS
11	2462	MCS0	24.16	260.62	1 W att =	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	15.66	36.81	1 W att =	30.00	dBm	PASS
6	2437	MCS0	16.32	42.85	1 W att =	30.00	dBm	PASS
11	2462	MCS0	14.93	31.12	1 W att =	30.00	dBm	PASS

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

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6DB BANDWIDTH MEASUREMENT

9.1 Standard Applicable

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

9.2 Measurement Equipment Used

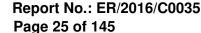
	SGS Conducted Room								
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.				
TYPE		NUMBER	NUMBER	CAL.					
Power Meter	Anritsu	ML2495A	1005007	12/15/2016	12/14/2017				
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017				
EXA Spectrum	A	Noona	N./50.400700	00/00/00/0	00/05/00/17				
Analyzer	Agilent	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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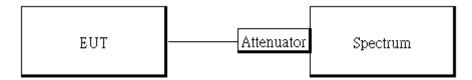
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9.3 Test Set-up



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	9082	> 500	PASS
2437	9062	> 500	PASS
2462	8596	> 500	PASS

802.11g Main

30ga							
Frequency (MHz)	6dB Ban dwidth (kHz)	Limit (kHz)	Result				
2412	16340	> 500	PASS				
2437	16100	> 500	PASS				
2462	16320	> 500	PASS				

802.11 n HT20 Main

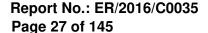
Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result	
2412	17310	> 500	PASS	
2437	16700	> 500	PASS	
2462	17050	> 500	PASS	

^{*}Refer to next page for plots

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



6dB Band Width Test Data CH-Mid



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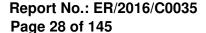
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6dB Band Width Test Data CH-High



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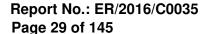
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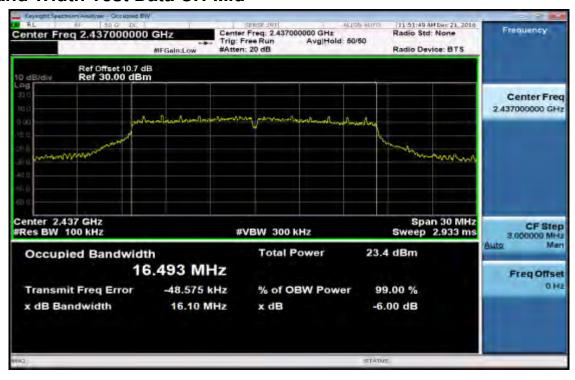
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802.11g (Main) 6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid



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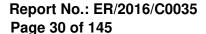
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6dB Band Width Test Data CH-High



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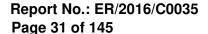
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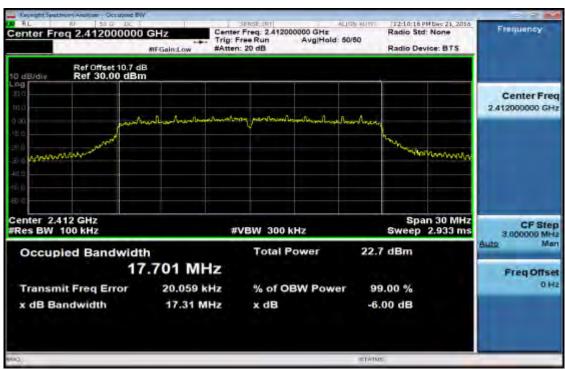
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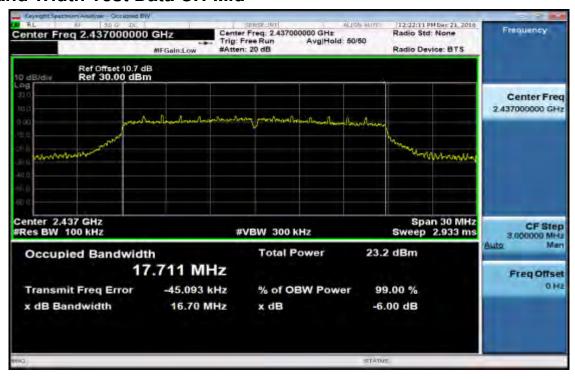




802.11n 20M (Main) 6dB Band Width Test Data CH-Low



6dB Band Width Test Data CH-Mid



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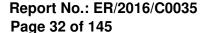
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6dB Band Width Test Data CH-High



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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.

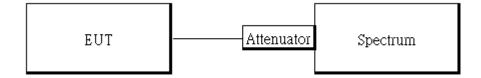
In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a) must also comply with the radiated emission limits specified in §15.209(a).

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.

10.2 Measurement Equipment Used

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			

10.3 Test SET-UP



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10.4 Measurement Procedure

Conducted Band Edge:

- 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.
- 7. 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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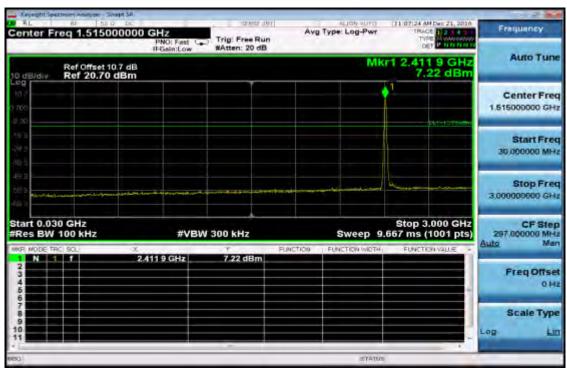
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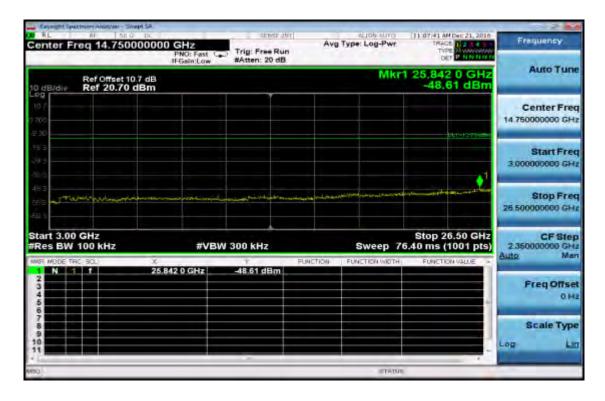
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802.11b

Spurious Emission Test Data CH-Low





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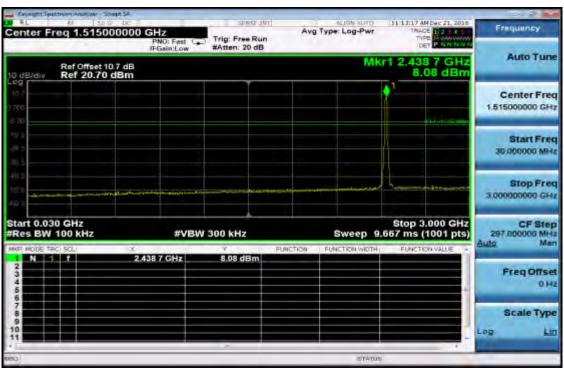
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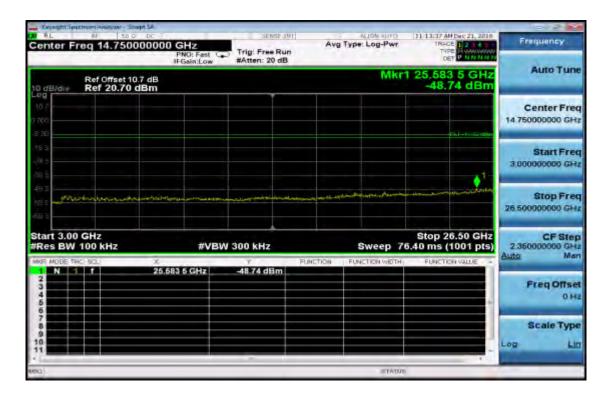
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Spurious Emission Test Data CH-Mid





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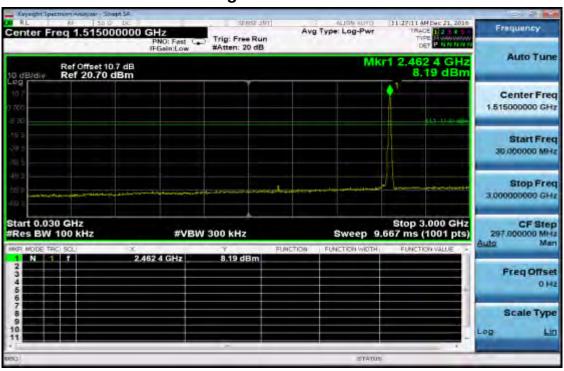
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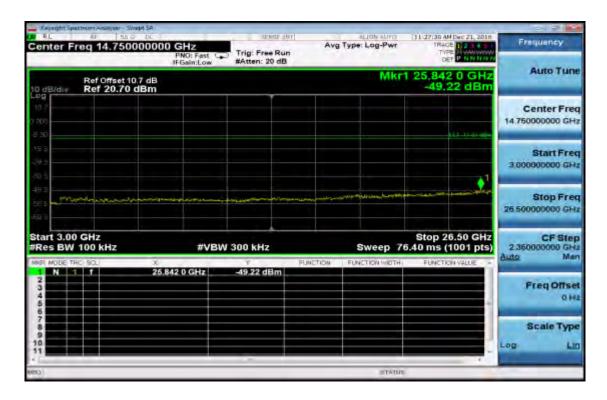
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Spurious Emission Test Data CH-High





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



Band Edges Test Data CH-High



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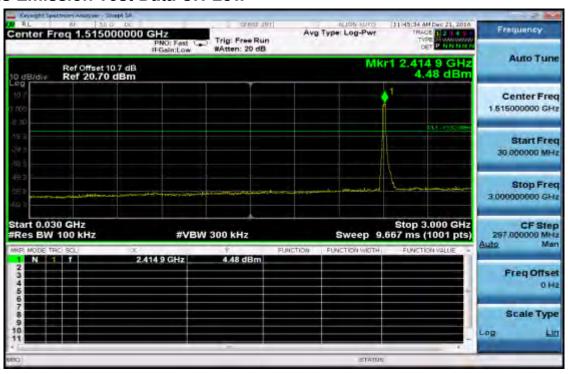
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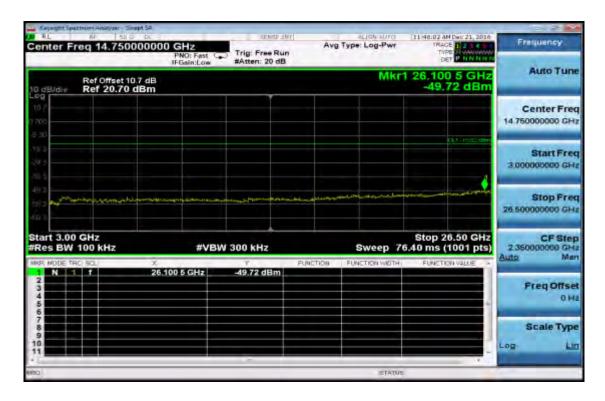
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802.11g **Spurious Emission Test Data CH-Low**





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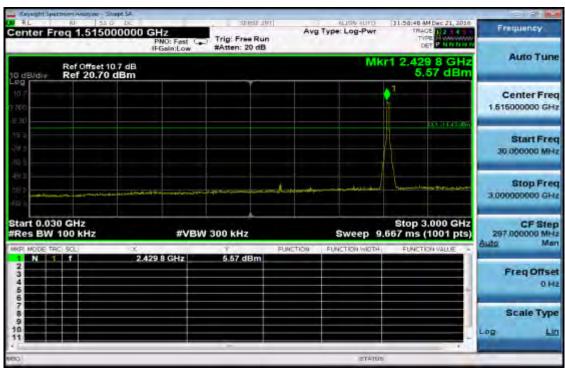
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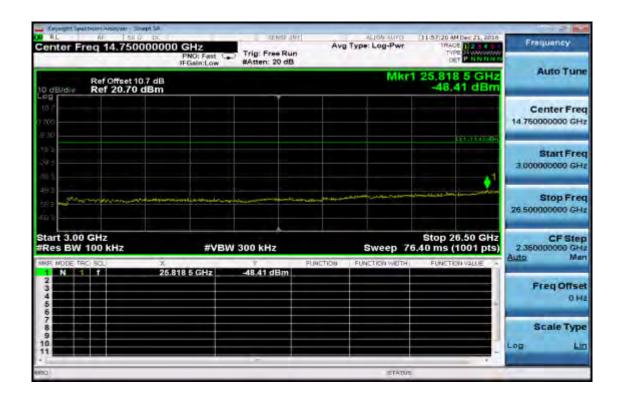
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Spurious Emission Test Data CH-Mid





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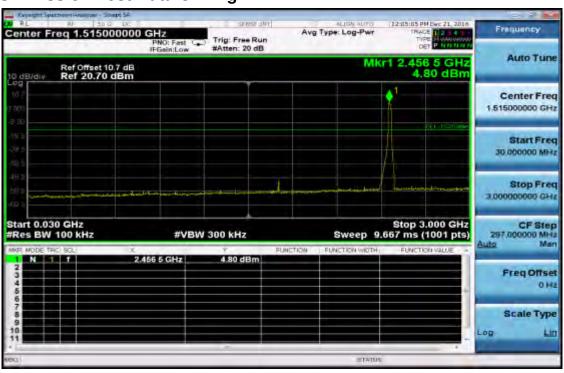
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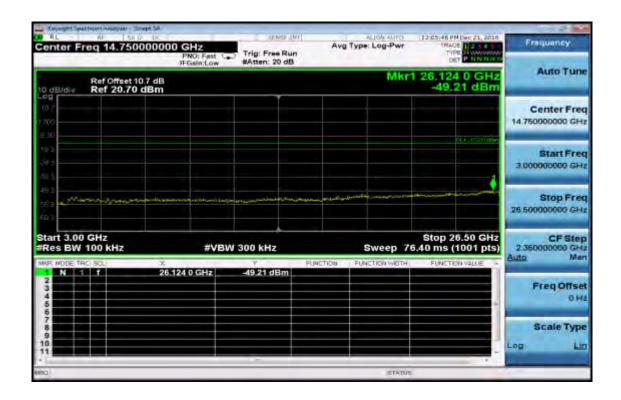
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Spurious Emission Test Data CH-High





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



Band Edges Test Data CH-High



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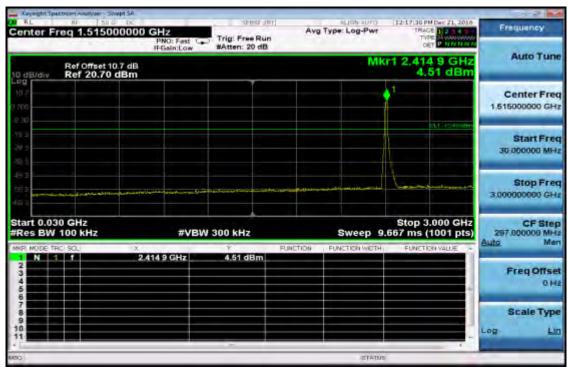
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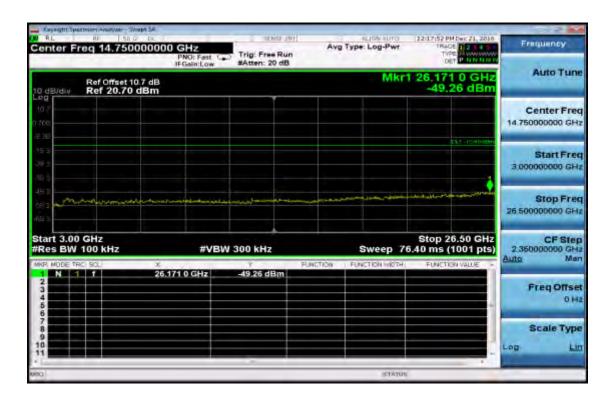
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802.11n HT20

Spurious Emission Test Data CH-Low





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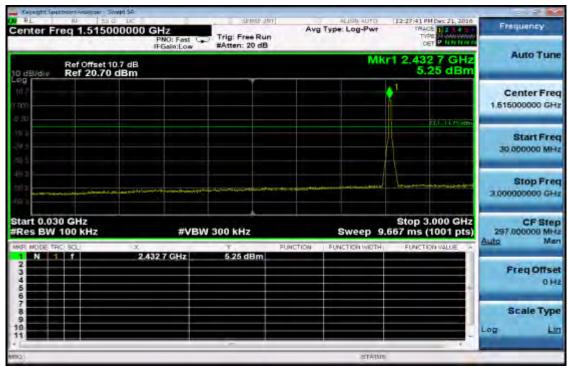
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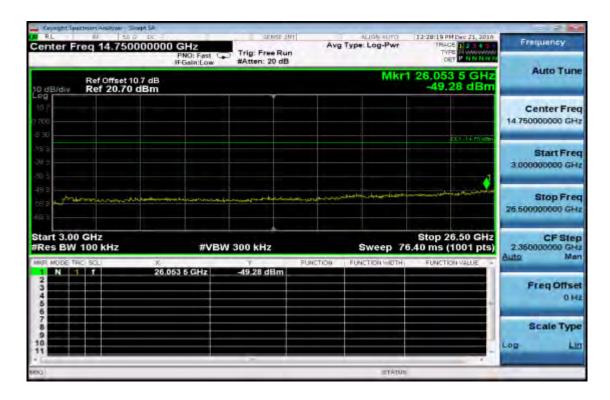
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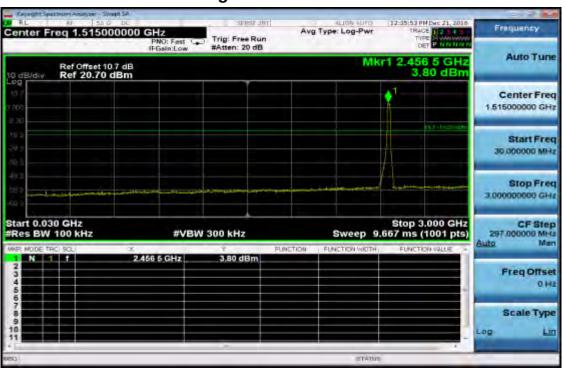
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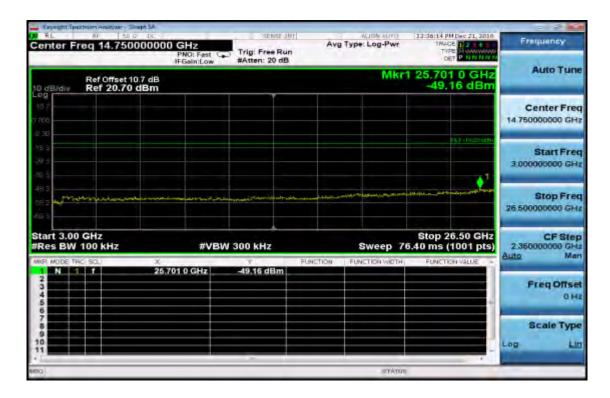
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11 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

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-II			
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		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.

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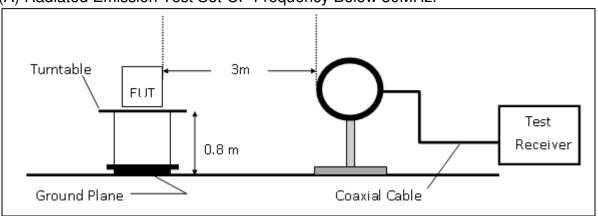
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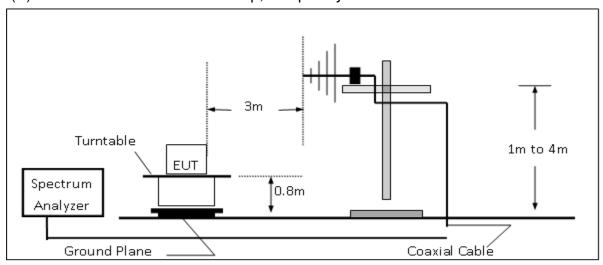


11.3 Test SET-UP

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



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



(C) Radiated Emission Test Set-UP Frequency Over 1 GHz Turntable 3m 1m to 4m **EUT** Spectrum 1.5m Analyzer Ground Plane Absorber Coaxial Cable

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11.4 Measurement Procedure

- 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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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	S .	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

Actual FS($dB\mu V/m$) = SPA. Reading level($dB\mu V$) + 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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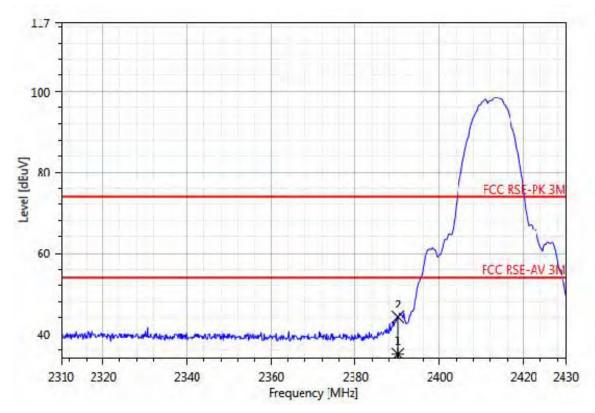
Radiated Band Edge Measurement Result (802.11b)

Operation Mode: 802.11b Test Date: 12/12/2016

Fundamental Frequency: 2412 MHz 21 deg C/62 RH Temp. / Humi.:

Operation Band: Bandedge 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
2390.00	Е	Average	35.06	36.80	-1.74	54.00	-18.94
2390.00	E	Peak	44.18	45.92	-1.74	74.00	-29.82

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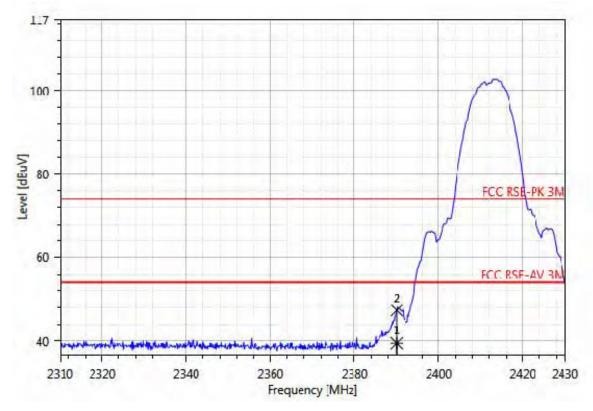
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Operation Mode: 802.11b Test Date: 12/12/2016

Fundamental Frequency: 2412 MHz Temp. / Humi.: 21 deg_C / 62 RH

Operation Band: Bandedge CH LOW Test Engineer: Mike

Measurement Antenna Pol.: HORIZONTAL EUT Pol.: E2 Plane



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
2390.00	Е	Average	39.46	41.20	-1.74	54.00	-14.54
2390.00	Е	Peak	47.35	49.09	-1.74	74.00	-26.65

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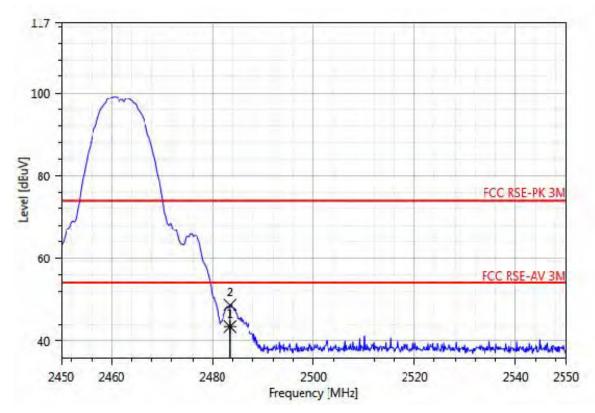
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Operation Mode: 802.11b Test Date: 12/12/2016

Fundamental Frequency: 2462 MHz Temp. / Humi.: 21 deg_C / 62 RH

Operation Band: Bandedge CH HIGH Test Engineer:

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
2483.50	Е	Average	43.46	45.08	-1.62	54.00	-10.54
2483.50	E	Peak	48.68	50.30	-1.62	74.00	-25.32

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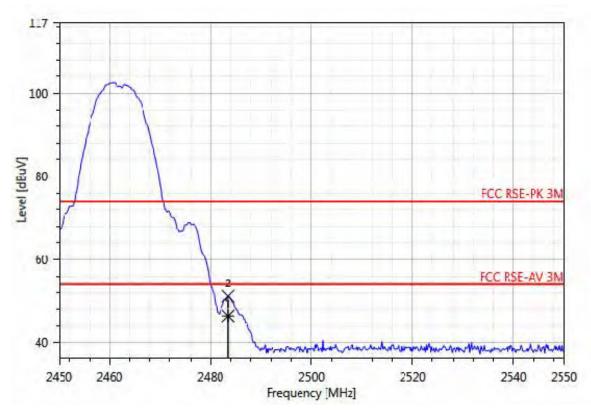
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Operation Mode: 802.11b Test Date: 12/12/2016

Fundamental Frequency: 2462 MHz Temp. / Humi.: 21 deg_C / 62 RH

Operation Band: Bandedge CH HIGH Test Engineer: Mike

EUT Pol.: E2 Plane Measurement Antenna Pol.: HORIZONTAL



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	46.33	47.95	-1.62	54.00	-7.67
2483.50	Е	Peak	51.20	52.82	-1.62	74.00	-22.80

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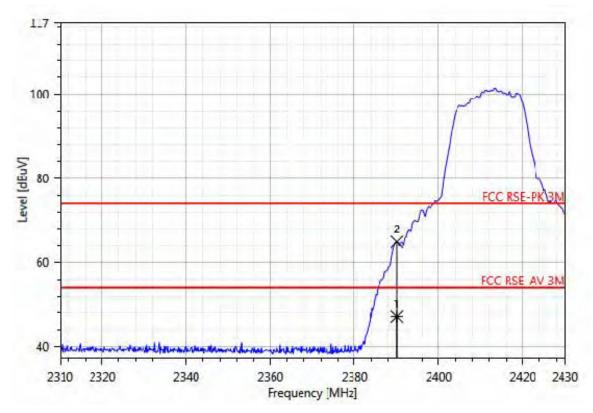
Radiated Band Edge Measurement Result (802.11g)

Operation Mode: 802.11g Test Date: 12/12/2016

Fundamental Frequency: 2412 MHz 21 deg C/62 RH Temp. / Humi.:

Operation Band: Bandedge 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
2390.00	Е	Average	47.12	48.86	-1.74	54.00	-6.88
2390.00	Е	Peak	64.95	66.69	-1.74	74.00	-9.05

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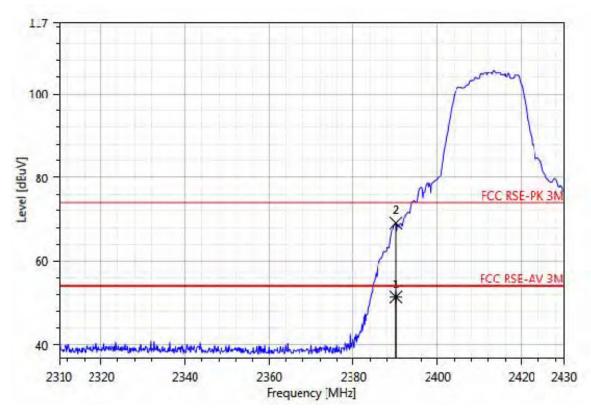
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Operation Mode: 802.11g Test Date: 12/12/2016

Fundamental Frequency: 2412 MHz Temp. / Humi.: 21 deg_C / 62 RH

Operation Band: Bandedge CH LOW Test Engineer: Mike

EUT Pol.: E2 Plane Measurement Antenna Pol.: HORIZONTAL



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
2390.00	Е	Average	51.45	53.19	-1.74	54.00	-2.55
2390.00	E	Peak	69.17	70.92	-1.74	74.00	-4.83

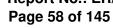
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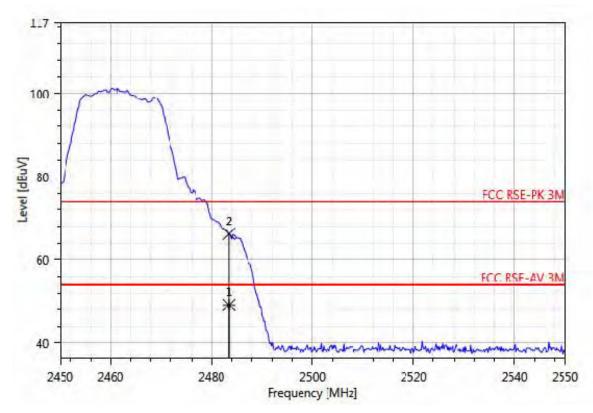


Operation Mode: 802.11g Test Date: 12/12/2016

Fundamental Frequency: 2462 MHz Temp. / Humi.: 21 deg_C / 62 RH

Operation Band: Bandedge CH HIGH Test Engineer:

EUT Pol.: E2 Plane Measurement Antenna Pol.: VERTICAL



Freq.	Note	Decetor	Actual	Spectrum 5 cm	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	49.17	50.79	-1.62	54.00	-4.83
2483.50	E	Peak	66.28	67.90	-1.62	74.00	-7.72

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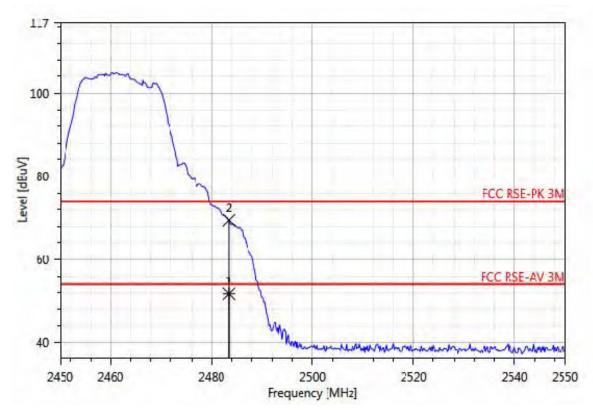
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Operation Mode: 802.11g Test Date: 12/12/2016

Fundamental Frequency: 2462 MHz Temp. / Humi.: 21 deg_C / 62 RH

Operation Band: Bandedge CH HIGH Test Engineer: Mike

EUT Pol.: E2 Plane Measurement Antenna Pol.: HORIZONTAL



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	51.74	53.36	-1.62	54.00	-2.26
2483.50	Е	Peak	69.48	71.10	-1.62	74.00	-4.52

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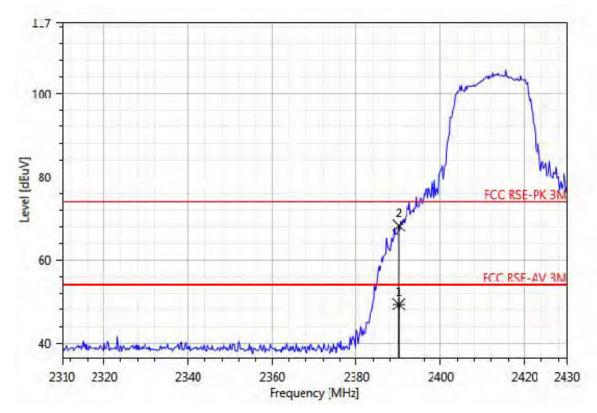
Radiated Band Edge Measurement Result (802.11 HT20)

Operation Mode: 802.11n20 Test Date: 12/12/2016

Fundamental Frequency: 2412 MHz 21 deg C/62 RH Temp. / Humi.:

Operation Band: Bandedge CH LOW Test Engineer: Mike

EUT Pol.: E2 Plane Measurement Antenna Pol.: VERTICAL



Freq.	Note	Decetor	Actual	Spectrum 5 2 2	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBμV/m	dBµV/m	dB	dBuV/m	dB
2390.00	Е	Average	49.40	51.14	-1.74	54.00	-4.60
2390.00	E	Peak	68.35	70.09	-1.74	74.00	-5.65

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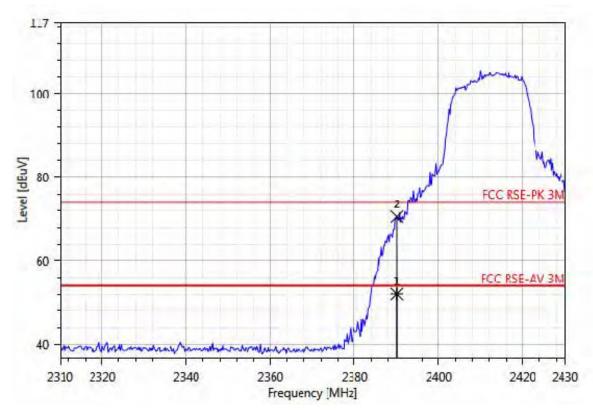
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Operation Mode: 802.11n20 Test Date: 12/12/2016

Fundamental Frequency: 2412 MHz Temp. / Humi.: 21 deg_C / 62 RH

Operation Band: Bandedge CH LOW Test Engineer: Mike

EUT Pol.: E2 Plane Measurement Antenna Pol.: HORIZONTAL



Freq.	Note	Decetor	Actual	Spe ctrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBμV/m	dBµV/m	dB	dBuV/m	dB
2390.00	Е	Average	52.06	53.80	-1.74	54.00	-1.94
2390.00	Е	Peak	70.59	72.33	-1.74	74.00	-3.41

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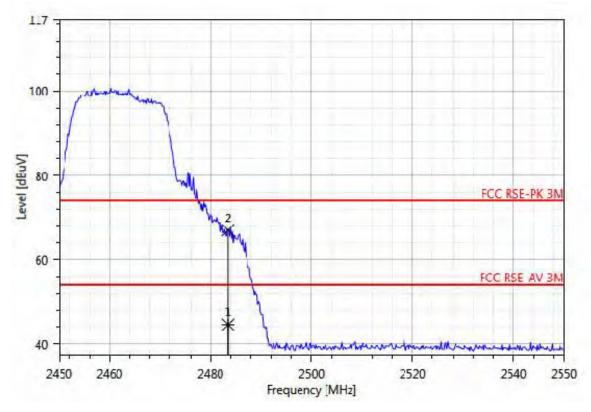
Page 62 of 145

Operation Mode: 802.11n20 Test Date: 12/12/2016

Fundamental Frequency: 2462 MHz Temp. / Humi.: 21 deg_C / 62 RH

Operation Band: Bandedge CH HIGH Test Engineer:

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	
2483.50	Е	Average	44.58	46.20	-1.62	54.00	-9.42	_
2483.50	Ε	Peak	67.02	68.64	-1.62	74.00	-6.98	

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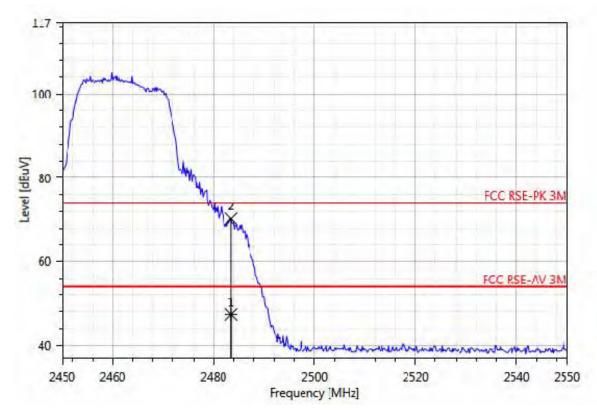
Page 63 of 145

Operation Mode: 802.11n20 Test Date: 12/12/2016

Fundamental Frequency: 2462 MHz Temp. / Humi.: 21 deg_C / 62 RH

Operation Band: Bandedge CH HIGH Test Engineer: Mike

EUT Pol.: E2 Plane Measurement Antenna Pol.: HORIZONTAL



Freq.	Note	Decetor	Actual	Spectrum 5 cm	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	47.31	48.93	-1.62	54.00	-6.69
2483.50	E	Peak	70.26	71.87	-1.62	74.00	-3.74

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Below 1GHz Worst-Case Data:

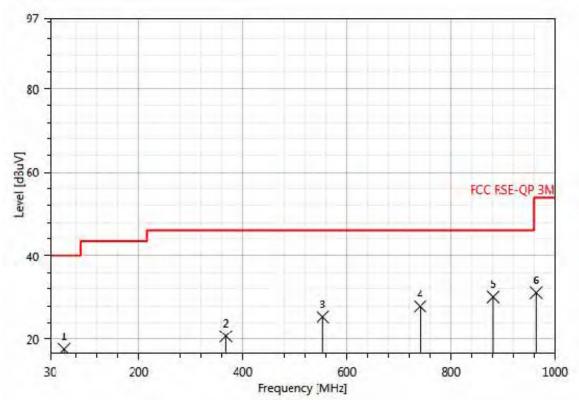
Radiated Spurious Emission Measurement Result (802.11 g)

Operation Mode: 802.11g Test Date: 12/28/2016

Fundamental Frequency: 2412 MHz Temp. / Humi.: 21 deg_C / 62 RH

Operation Band: Tx CH LOW Test Engineer:

EUT Pol.: E2 Plane Measurement Antenna Pol.: VERTICAL



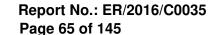
Freq.	Note	Decetor Mode	Actual Reading Level	Spectrum FS	Factor	Limit @3m	Margin
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
57.16	S	Peak	17.66	25.63	-7.97	40.00	-22.34
367.56	S	Peak	20.73	25.45	-4.73	46.00	-25.27
553.80	S	Peak	25.33	26.71	-1.38	46.00	-20.67
741.01	S	Peak	27.89	25.73	2.16	46.00	-18.11
880.69	S	Peak	30.17	25.59	4.58	46.00	-15.83
964.11	S	Peak	31.15	25.13	6.02	54.00	-22.85

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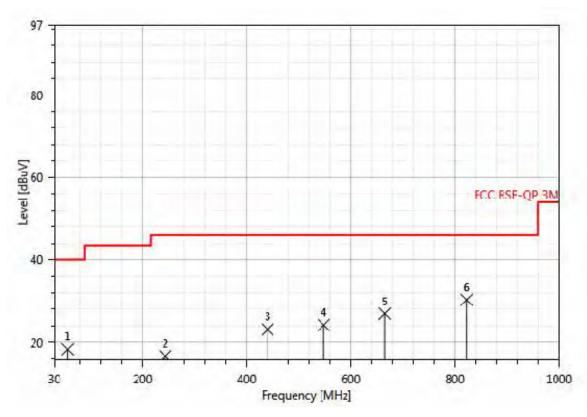


Operation Mode: 802.11g Test Date: 12/28/2016

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



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
56.19	S	Peak	18.34	26.26	-7.92	40.00	-21.66
243.40	S	Peak	16.63	24.66	-8.03	46.00	-29.37
440.31	S	Peak	23.11	26.41	-3.30	46.00	-22.89
547.98	S	Peak	24.20	26.03	-1.83	46.00	-21.80
665.35	S	Peak	26.95	26.73	0.22	46.00	-19.05
822.49	S	Peak	30.32	26.93	3.39	46.00	-15.68

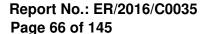
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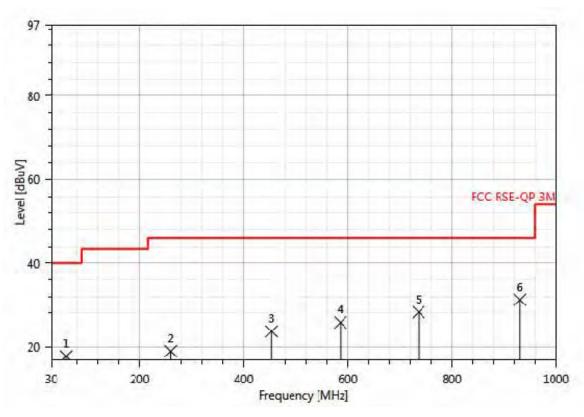


Operation Mode: 802.11g Test Date: 12/28/2016

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



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
59.10	S	Peak	17.72	25.75	-8.03	40.00	-22.28
259.89	S	Peak	18.94	26.22	-7.28	46.00	-27.06
453.89	S	Peak	23.67	26.38	-2.71	46.00	-22.33
585.81	S	Peak	25.81	25.77	0.04	46.00	-20.19
736.16	S	Peak	28.25	26.31	1.94	46.00	-17.75
930.16	S	Peak	31.23	25.97	5.27	46.00	-14.77

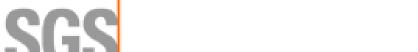
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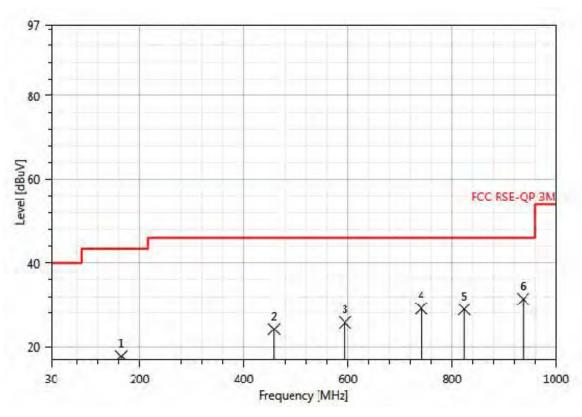
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Operation Mode: 802.11g Test Date: 12/28/2016

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



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
164.83	S	Peak	17.69	25.08	-7.39	43.50	-25.81
458.74	S	Peak	24.17	26.85	-2.68	46.00	-21.83
594.54	S	Peak	25.82	25.74	0.08	46.00	-20.18
741.01	S	Peak	29.13	26.97	2.16	46.00	-16.87
823.46	S	Peak	28.92	25.55	3.37	46.00	-17.08
936.95	S	Peak	31.36	26.11	5.25	46.00	-14.64

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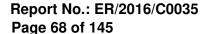
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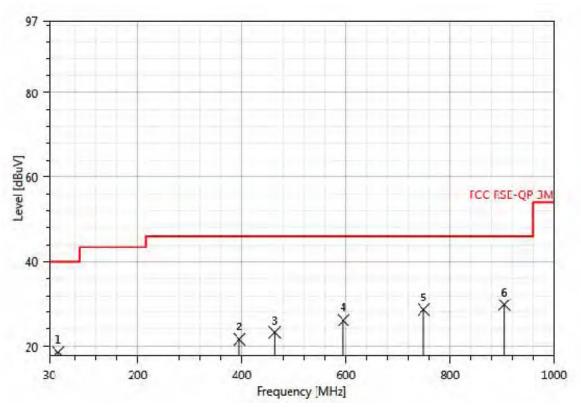


Operation Mode: 802.11g Test Date: 12/28/2016

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



	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	
_	47.46	S	Peak	18.56	26.41	-7.85	40.00	-21.44	_
	395.69	S	Peak	21.60	25.76	-4.15	46.00	-24.40	
	463.59	S	Peak	23.20	25.76	-2.55	46.00	-22.80	
	595.51	S	Peak	26.17	26.12	0.04	46.00	-19.83	
	749.74	S	Peak	28.61	25.89	2.72	46.00	-17.39	
	904.94	S	Peak	29.77	24.87	4.90	46.00	-16.23	

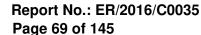
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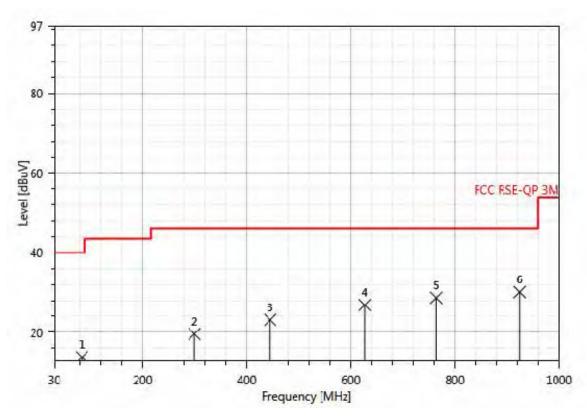


Operation Mode: 802.11g Test Date: 12/28/2016

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



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	
83.35	S	Peak	13.74	26.50	-12.77	40.00	-26.26	
299.66	S	Peak	19.56	25.49	-5.93	46.00	-26.44	
445.16	S	Peak	23.16	26.25	-3.09	46.00	-22.84	
626.55	S	Peak	26.87	26.53	0.35	46.00	-19.13	
764.29	S	Peak	28.67	25.70	2.97	46.00	-17.33	
924.34	S	Peak	30.10	24.96	5.15	46.00	-15.90	

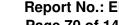
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Above 1GHz Data:

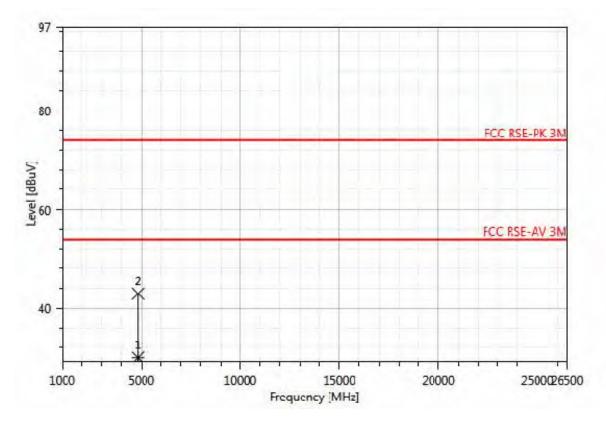
Radiated Spurious Emission Measurement Result (802.11 b)

Operation Mode: 802.11b Test Date: 12/28/2016

Fundamental Frequency: 2412 MHz Temp. / Humi.: 21 deg_C / 62 RH

Operation Band: Tx CH LOW Test Engineer:

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	30.03	25.09	4.94	54.00	-23.97	-
	4824.00	Н	Peak	42.99	38.05	4.94	74.00	-31.01	

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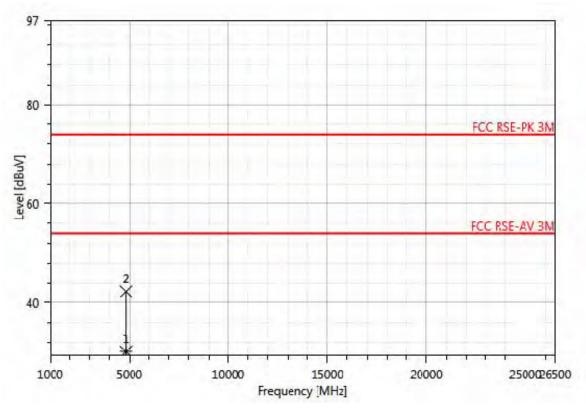
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Test Date: Operation Mode: 802.11b 12/28/2016

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



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	30.12	25.18	4.94	54.00	-23.88
4824.00	Н	Peak	42.29	37.35	4.94	74.00	-31.71

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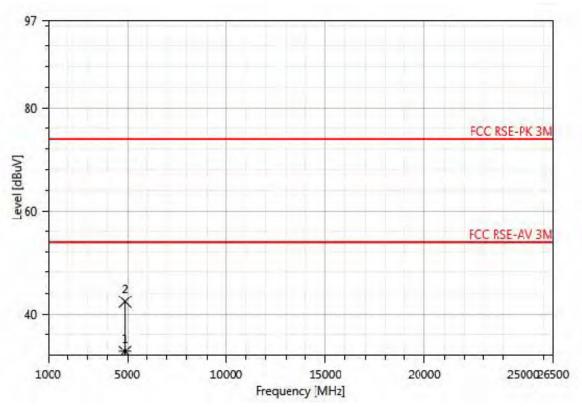
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Test Date: Operation Mode: 802.11b 12/28/2016

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



Freq.	Note	Decetor	Actual	Spe ctrum	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	32.69	27.56	5.13	54.00	-21.31
4874.00	Н	Peak	42.38	37.25	5.13	74.00	-31.62

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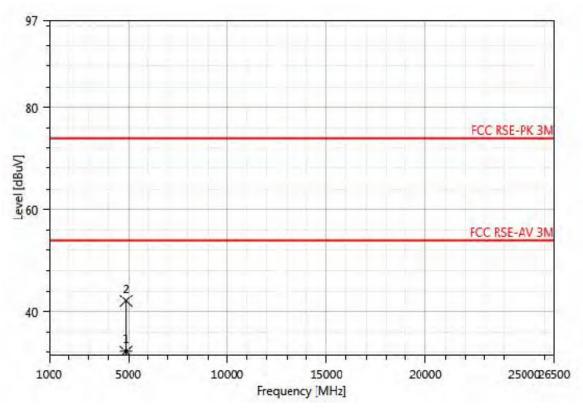
Report No.: ER/2016/C0035 Page 73 of 145

Test Date: Operation Mode: 802.11b 12/28/2016

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



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	32.17	27.04	5.13	54.00	-21.83
4874.00	Н	Peak	42.09	36.96	5.13	74.00	-31.91

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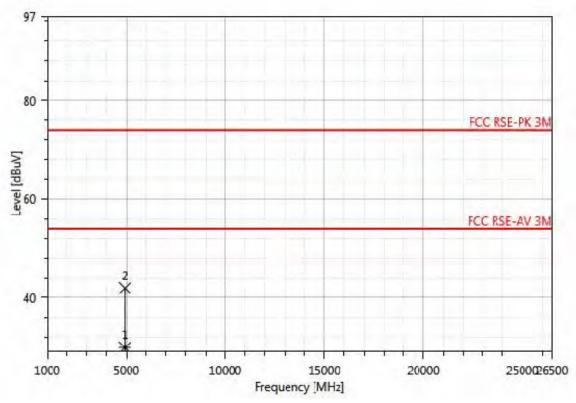
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Test Date: Operation Mode: 802.11b 12/28/2016

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



Freq.	Note	Decetor	Actual	Spe ctrum	Factor	Limit	Margin	
		Mode	Reading Level	FS		@3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB	
4924.00	Н	Average	29.90	24.65	5.25	54.00	-24.10	
4924.00	Н	Peak	41.99	36.74	5.25	74.00	-32.01	

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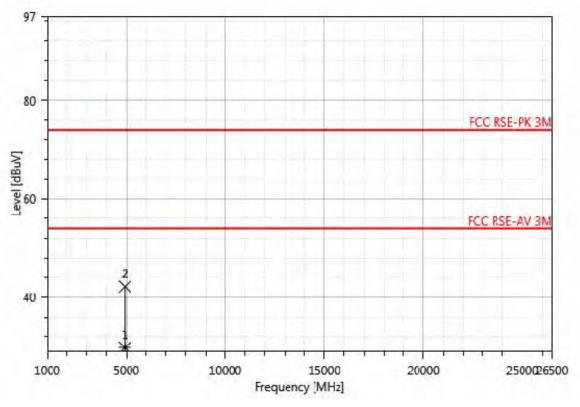
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Test Date: Operation Mode: 802.11b 12/28/2016

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



Freq.	Note	Decetor	Actual	Spectrum 5 2 2	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
4924.00	Н	Average	29.80	24.55	5.25	54.00	-24.20
4924.00	Н	Peak	42.22	36.96	5.25	74.00	-31.78

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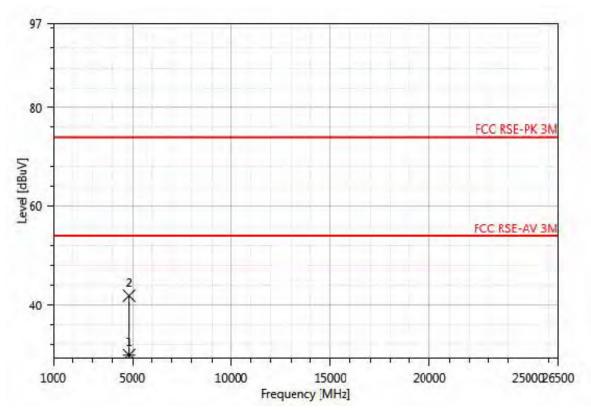
Radiated Spurious Emission Measurement Result (802.11 g)

Operation Mode: 802.11g Test Date: 12/28/2016

Fundamental Frequency: 2412 MHz Temp. / Humi.: 21 deg_C / 62 RH

Operation Band: Tx CH LOW Test Engineer: Mike

Measurement Antenna Pol.: VERTICAL EUT Pol.: E2 Plane



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	29.93	24.99	4.94	54.00	-24.07	_
4824.00	Н	Peak	41.91	36.97	4.94	74.00	-32.09	

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

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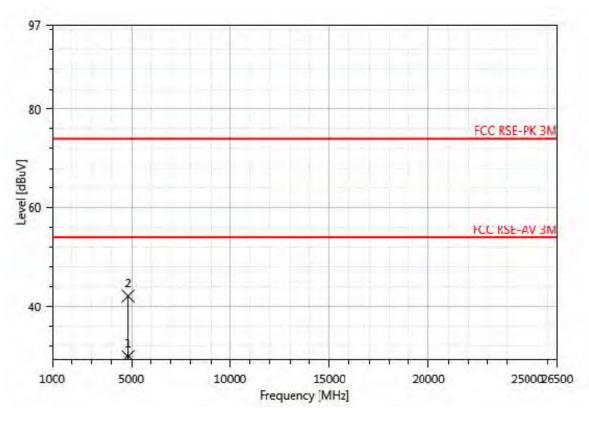
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Operation Mode: 802.11g Test Date: 12/28/2016

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



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	29.95	25.01	4.94	54.00	-24.05
4824.00	Н	Peak	42.17	37.22	4.94	74.00	-31.83

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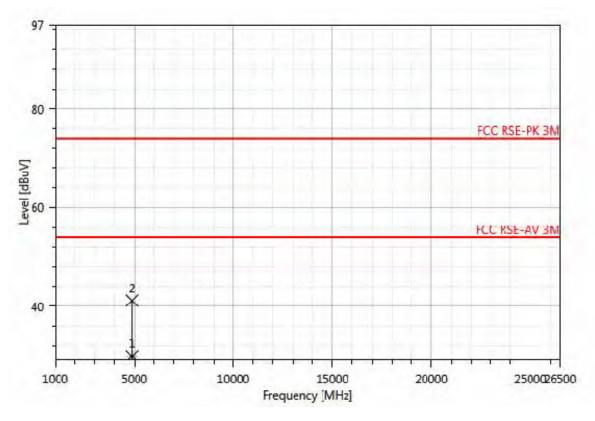
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Operation Mode: 802.11g Test Date: 12/28/2016

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



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	29.90	24.77	5.13	54.00	-24.10
4874.00	Н	Peak	41.19	36.06	5.13	74.00	-32.81

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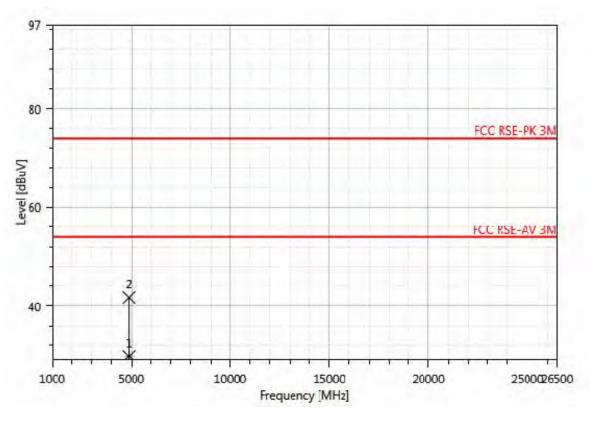
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Operation Mode: 802.11g Test Date: 12/28/2016

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



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	29.81	24.68	5.13	54.00	-24.19
4874.00	Н	Peak	41.75	36.62	5.13	74.00	-32.25

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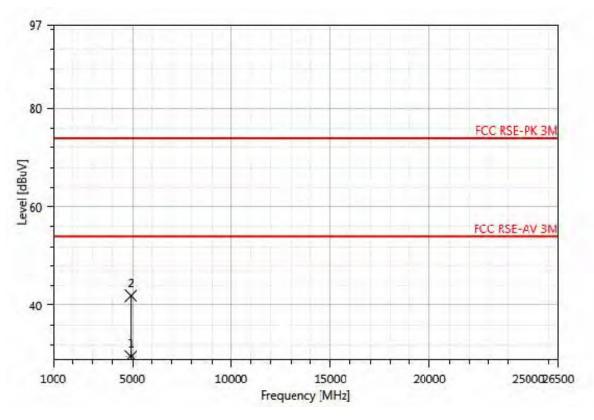
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Operation Mode: 802.11g Test Date: 12/28/2016

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



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
4924.00	Н	Average	29.67	24.42	5.25	54.00	-24.33
4924.00	Н	Peak	41.99	36.74	5.25	74.00	-32.01

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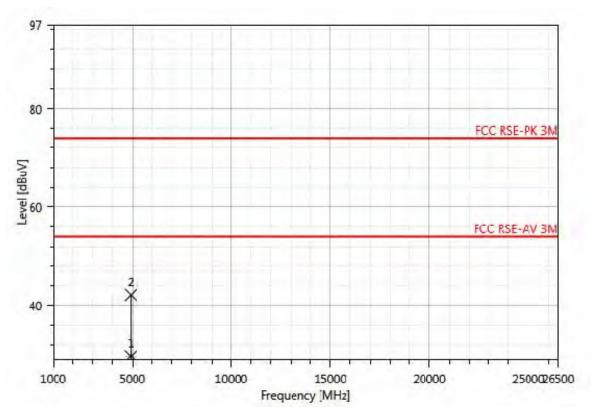
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Operation Mode: 802.11g Test Date: 12/28/2016

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



Freq.	Note	Decetor	Actual	Spectrum 5 ctrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
4924.00	Н	Average	29.71	24.46	5.25	54.00	-24.29
4924.00	Н	Peak	42.18	36.93	5.25	74.00	-31.82

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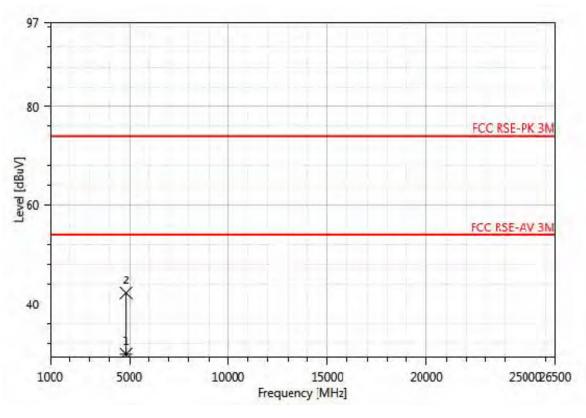
Radiated Spurious Emission Measurement Result (802.11_HT20)

Operation Mode: 802.11n20 Test Date: 12/28/2016

Fundamental Frequency: 2412 MHz Temp. / Humi.: 21 deg_C / 62 RH

Operation Band: Tx CH LOW Test Engineer: Mike

Measurement Antenna Pol.: VERTICAL EUT Pol.: E2 Plane



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	29.89	24.95	4.94	54.00	-24.11	
4824.00	Н	Peak	42.24	37.30	4.94	74.00	-31.76	

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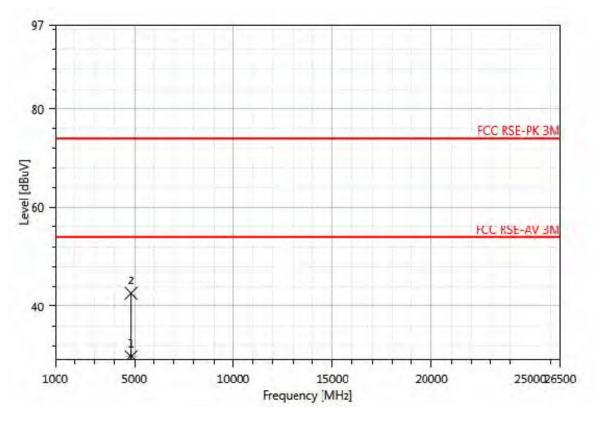
Page 83 of 145

Operation Mode: 802.11n20 Test Date: 12/28/2016

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



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	29.85	24.91	4.94	54.00	-24.15
4824.00	Н	Peak	42.62	37.68	4.94	74.00	-31.38

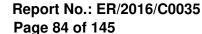
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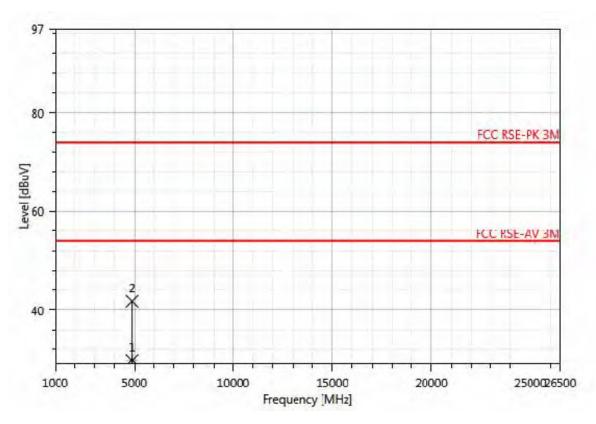




Fundamental Frequency: 2437 MHz Temp. / Humi.: 21 deg C/62 RH

Operation Band: Tx CH MID Test Engineer: Mike

EUT Pol.: E2 Plane Measurement Antenna Pol.: VERTICAL



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	29.81	24.68	5.13	54.00	-24.19
4874.00	Н	Peak	41.81	36.68	5.13	74.00	-32.19

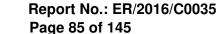
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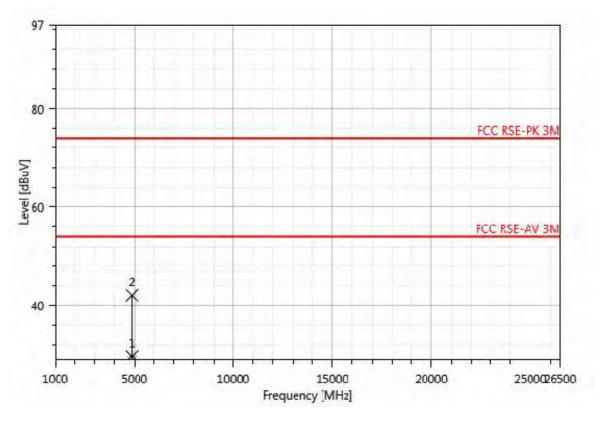




Fundamental Frequency: 2437 MHz Temp. / Humi.: 21 deg C/62 RH

Operation Band: Tx CH MID Test Engineer: Mike

EUT Pol.: E2 Plane Measurement Antenna Pol.: HORIZONTAL



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	29.73	24.60	5.13	54.00	-24.27
4874.00	Н	Peak	42.13	36.99	5.13	74.00	-31.87

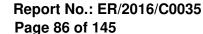
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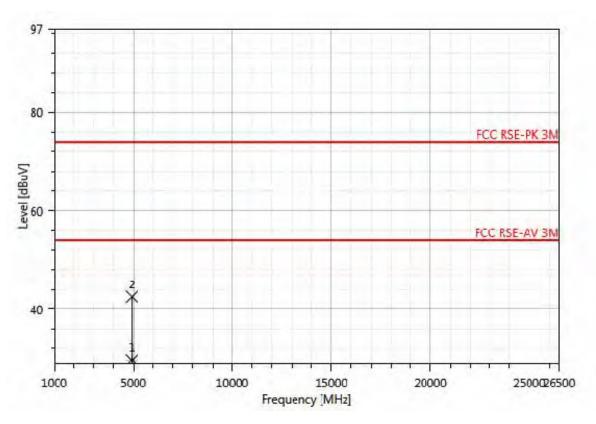




Fundamental Frequency: 2462 MHz Temp. / Humi.: 21 deg C/62 RH

Operation Band: Tx CH HIGH Test Engineer: Mike

EUT Pol.: E2 Plane Measurement Antenna Pol.: VERTICAL



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
4924.00	Н	Average	29.61	24.36	5.25	54.00	-24.39
4924.00	Н	Peak	42.53	37.28	5.25	74.00	-31.47

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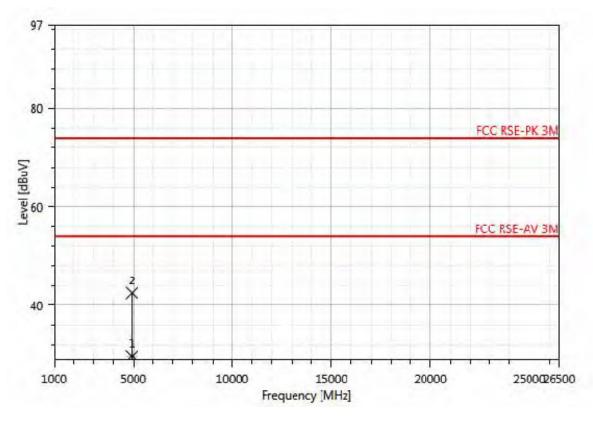
Page 87 of 145

Operation Mode: 802.11n20 Test Date: 12/28/2016

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



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
4924.00	Н	Average	29.64	24.39	5.25	54.00	-24.36
4924.00	Н	Peak	42.51	37.26	5.25	74.00	-31.49

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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

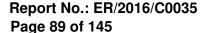
	SGS Conducted Room							
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.			
TYPE		NUMBER	NUMBER	CAL.				
Power Meter	Anritsu	ML2495A	1005007	12/15/2016	12/14/2017			
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017			
EXA Spectrum	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017			
Analyzer								
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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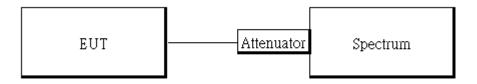
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12.3 Test Set-up



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

POWEF	RDENSITY	802.11b M	ODE	POWER DENSITY 802.11g MODE			
Fraguency RF Power Max		Maximum		Frequency	RF Power	Maximum	
Frequency (MHz)	Density	Limit	Result	(MHz)	Density	Limit	Result
(1011 12)	(dBm)	(dBm)		(1011 12)	(dBm)	(dBm)	
2412	-5.98	8.00	PASS	2412	-7.98	8.00	PASS
2437	-4.91	8.00	PASS	2437	-7.05	8.00	PASS
2462	-4.89	8.00	PASS	2462	-7.35	8.00	PASS

POWER DENSITY 802.11n HT20 MODE							
Frequency	RF Power	Maximum					
(MHz)	Density	Lim it	Result				
(IVIITZ)	(dBm)	(dBm)					
2412	-8.10	8.00	PASS				
2437	-7.56	8.00	PASS				
2462	-8.22	8.00	PASS				

Bandedge Limit 802.11b MODE							
Frequency	RF Power	Bandedge					
(MHz)	Density	Limit					
(1011 12)	(dBm)	(dBm)					
2412	7.35	-12.65					
2462	8.34	-11.66					

Bandedge Limit 802.11g MODE						
Frequency	RF Power	Bandedge				
(MHz)	Density	Limit				
(1011 12)	(dBm)	(dBm)				
2412	4.08	-15.92				
2462	4.55	-15.45				

Bandedge Limit 802.11n20 MODE						
Frequency	RF Power	Bandedge				
(MHz)	Density	Limit				
(1711 12)	(dBm)	(dBm)				
2412	4.27	-15.73				
2462	3.58	-16.42				

*Refer to next page for plots

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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)



802.11q **Power Spectral Density Test Plot (CH-Low)**



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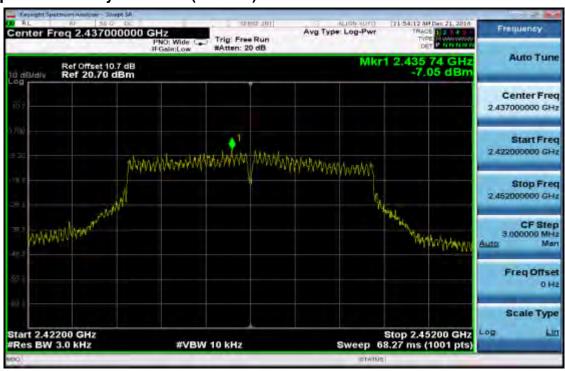
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台灣檢驗科技股份有限公司



Power Spectral Density Test Plot (CH-Mid)



Power Spectral Density Test Plot (CH-High)



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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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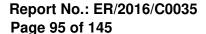
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Power Spectral Density Test Plot (CH-High)



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



802.11b PSD for Bandedge Limit(CH-High)



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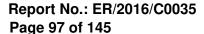
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802.11g PSD for Bandedge Limit(CH-Low)



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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14 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

14.1 Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1093 RF exposure is calculated.

Limits for Maximum Permissive Exposure (MPE)

		,	,					
Frequency Range	Electric Field	Magnetic Field	Power Density	Averaging Time				
(MHz)	Strength (V/m)	Strength (A/m)	(mW/cm ²)	(minute)				
	Limits for General Population/Uncontrolled Exposure							
0.3-1.34	614	1.63	*(100)	30				
1.34-30	824/f	2.19/f	*(180/f ²)	30				
30-300	27.5	0.073	0.2	30				
300-1500	/	/	F/1500	30				
1500-15000	/	/	1.0	30				

F = frequency in MHz

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^{* =} Plane-wave equipment power density



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14.2 Maximum Permissible Exposure (MPE) Evaluation (Worst Case)

802.11	b Main							
СН	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit		RESULT	
1	2412	1	19.00	79.43	1 W att =	30.00	dBm	PASS
6	2437	1	19.61	91.41	1 W att =	30.00	dBm	PASS
11	2462	1	19.80	95.50	1 W att =	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	16.11	40.83	1 W att =	30.00	dBm	PASS
6	2437	1	16.72	46.99	1 W att =	30.00	dBm	PASS
11	2462	1	16.87	48.64	1 W att =	30.00	dBm	PASS

MPE Prediction (WLAN-802.11 b)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

 $S=PG/4\pi R^2$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

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Max. output power including tune-up tolerancel:	16.87	(dBm)
Max. output power including tune-up tolerancel:	48.640721	(mW)
Duty cycle:	99.54	(%)
Maximum Pav :	48.416973	(mW)
Peak Antenna gain (Maximum):	0.8	(dBi)
Peak Antenna gain (linear):	1.2022644	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2462	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.012	(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.012 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 2462MHz.

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APPENDIX 1 MEASUREMENT PLOT OF RADIATED SPURIOUS EMISSION

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Radiated Spurious Emission Measurement Photos Result (Below 1GHz)

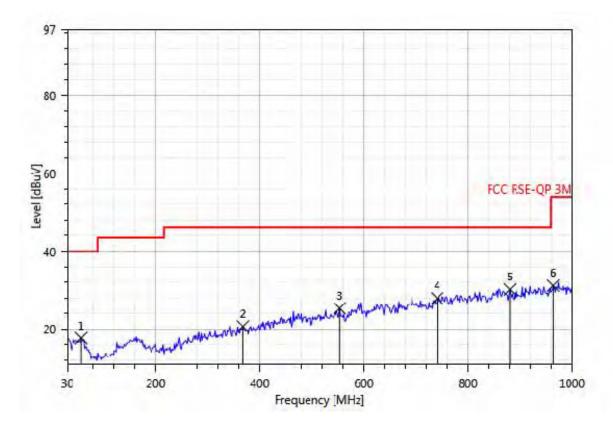
Note: The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Operation Mode: 802.11g Test Date: 12/28/2016

Fundamental Frequency: 2412 MHz Temp. / Humi.: 21 deg C/62 RH

Operation Band: Tx CH LOW Test Engineer:

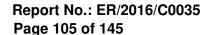
EUT Pol.: E2 Plane Measurement Antenna Pol.: VERTICAL



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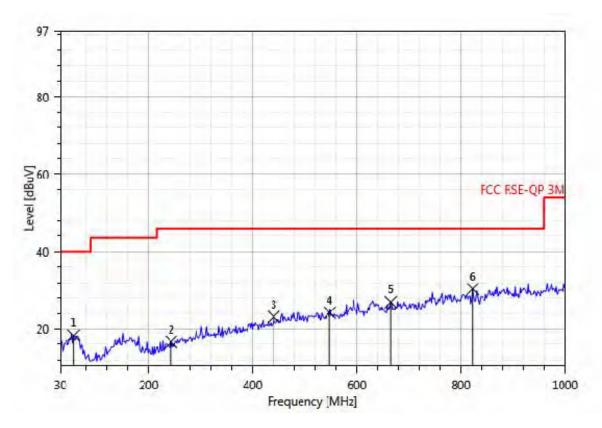




Fundamental Frequency: 2412 MHz Temp. / Humi.: 21 deg C/62 RH

Operation Band: Tx CH LOW Test Engineer: Mike

EUT Pol.: E2 Plane Measurement Antenna Pol.: HORIZONTAL



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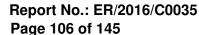
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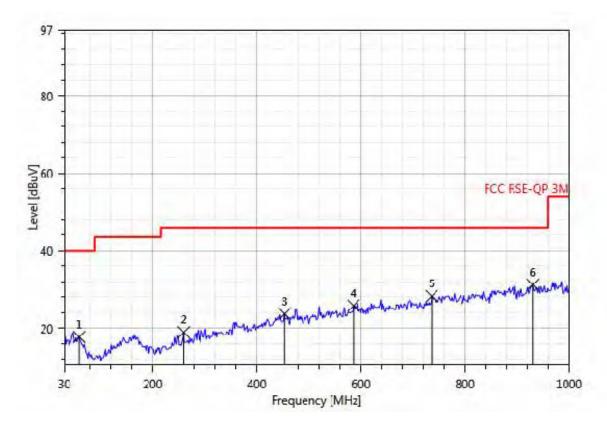




Fundamental Frequency: 2437 MHz Temp. / Humi.: 21 deg C/62 RH

Operation Band: Tx CH MID Test Engineer: Mike

EUT Pol.: E2 Plane Measurement Antenna Pol.: VERTICAL



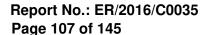
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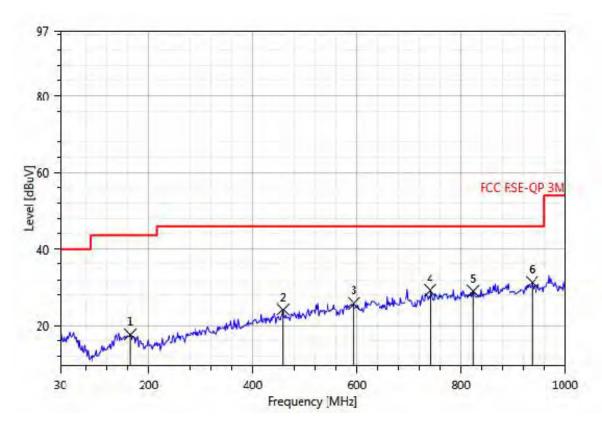




Fundamental Frequency: 2437 MHz Temp. / Humi.: 21 deg C/62 RH

Operation Band: Tx CH MID Test Engineer: Mike

EUT Pol.: E2 Plane Measurement Antenna Pol.: HORIZONTAL



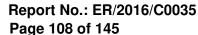
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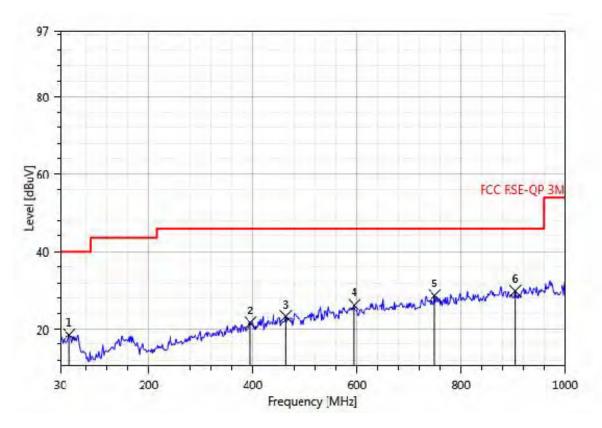




Fundamental Frequency: 2462 MHz Temp. / Humi.: 21 deg C/62 RH

Operation Band: Tx CH HIGH Test Engineer: Mike

EUT Pol.: E2 Plane Measurement Antenna Pol.: VERTICAL



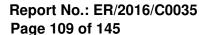
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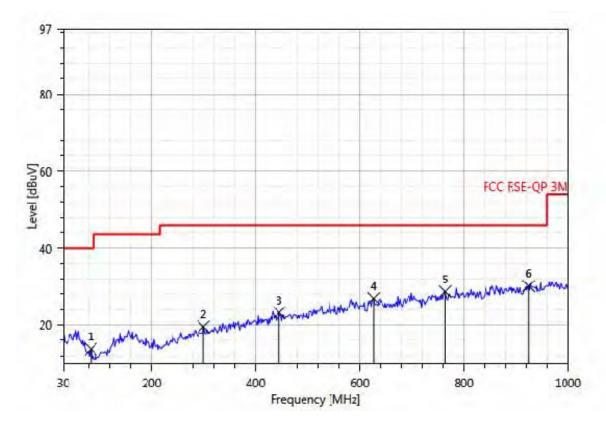


Operation Mode: 802.11g Test Date: 12/28/2016

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



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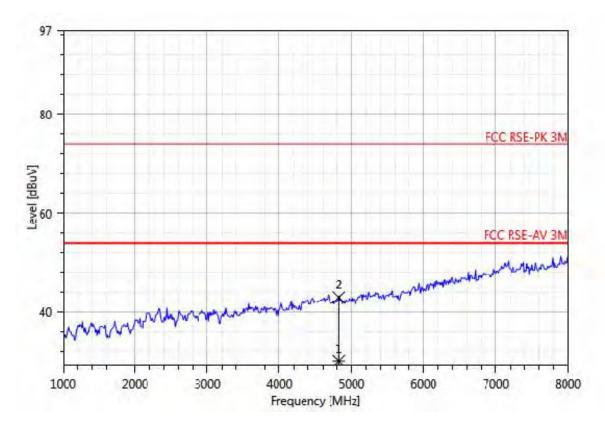
Radiated Spurious Emission Measurement Photos Result (Above 1GHz)

Operation Mode: Test Date: 802.11b 12/28/2016

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



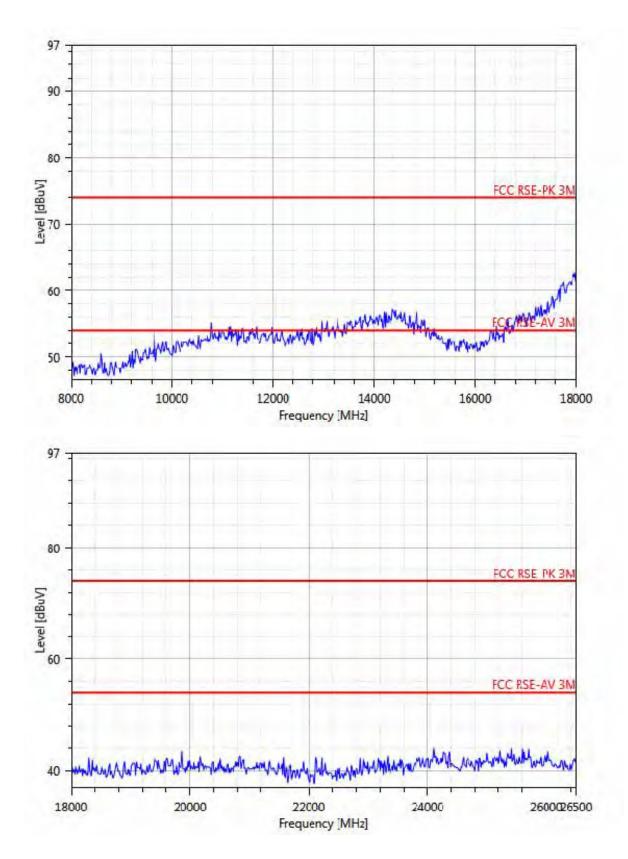
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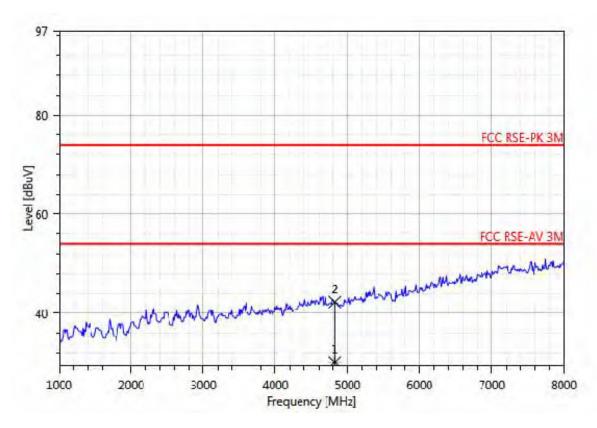
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Operation Mode: 802.11b Test Date: 12/28/2016

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



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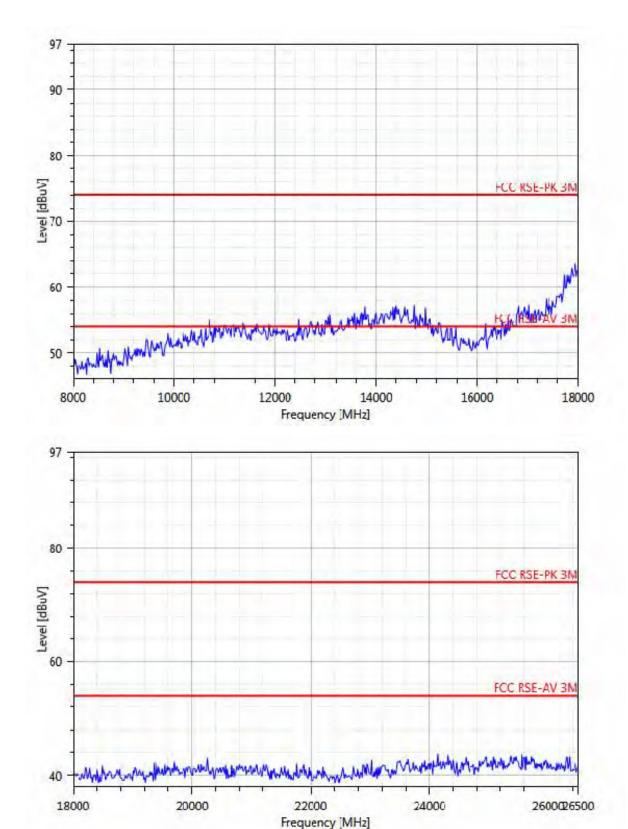
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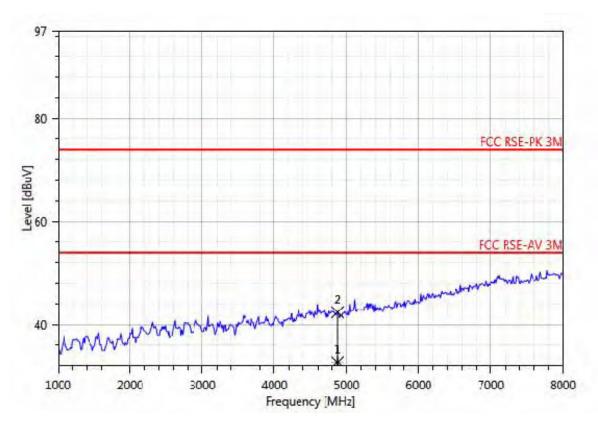
Report No.: ER/2016/C0035 Page 114 of 145

Operation Mode: 802.11b Test Date: 12/28/2016

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



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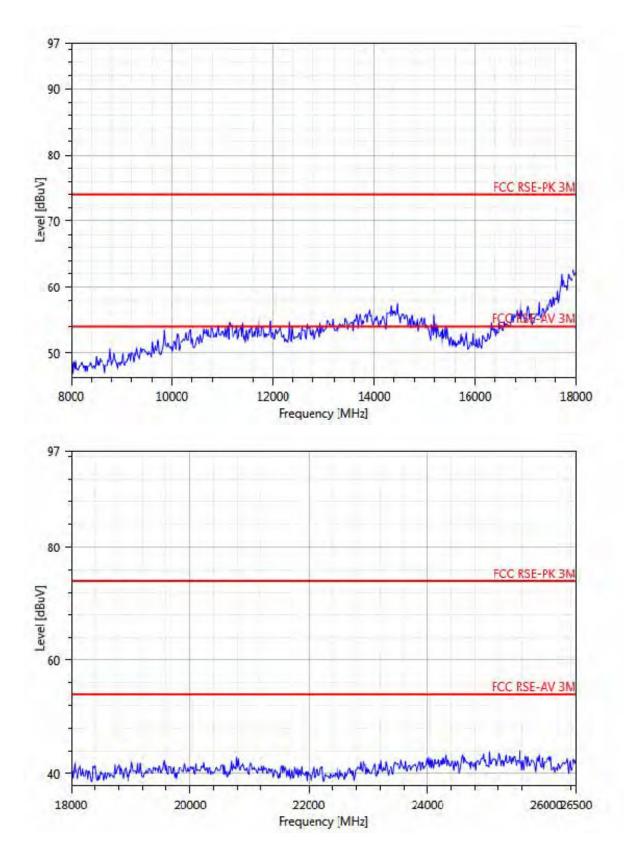
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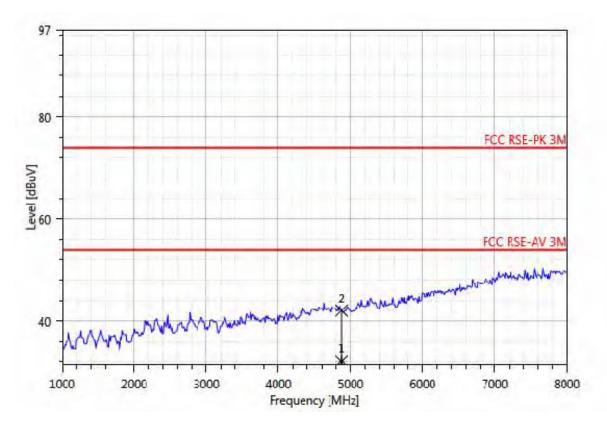


Operation Mode: 802.11b Test Date: 12/28/2016

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



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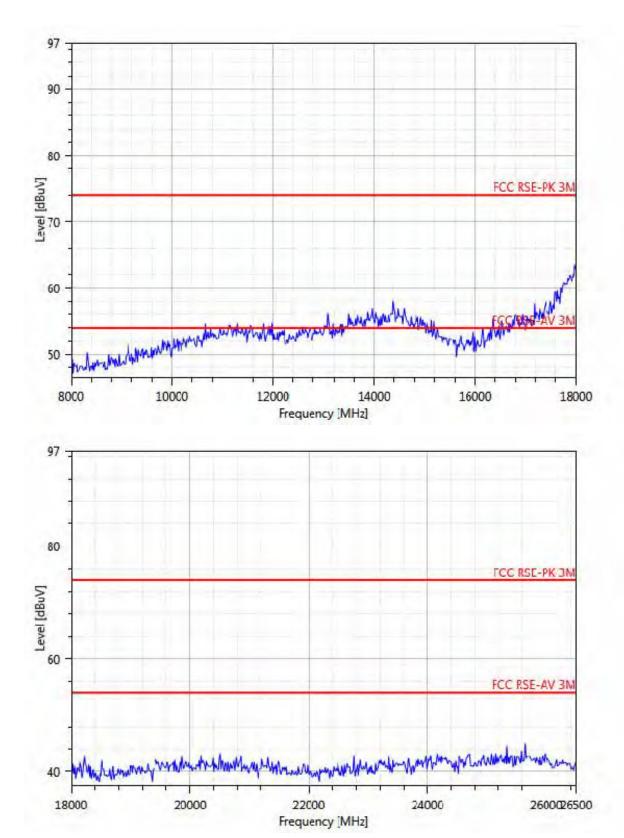
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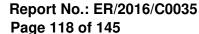
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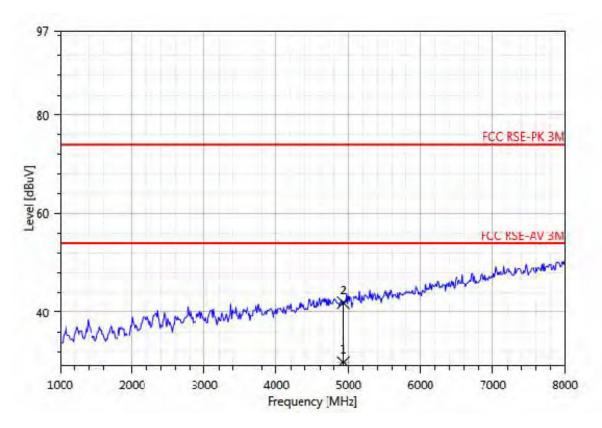


Operation Mode: 802.11b Test Date: 12/28/2016

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



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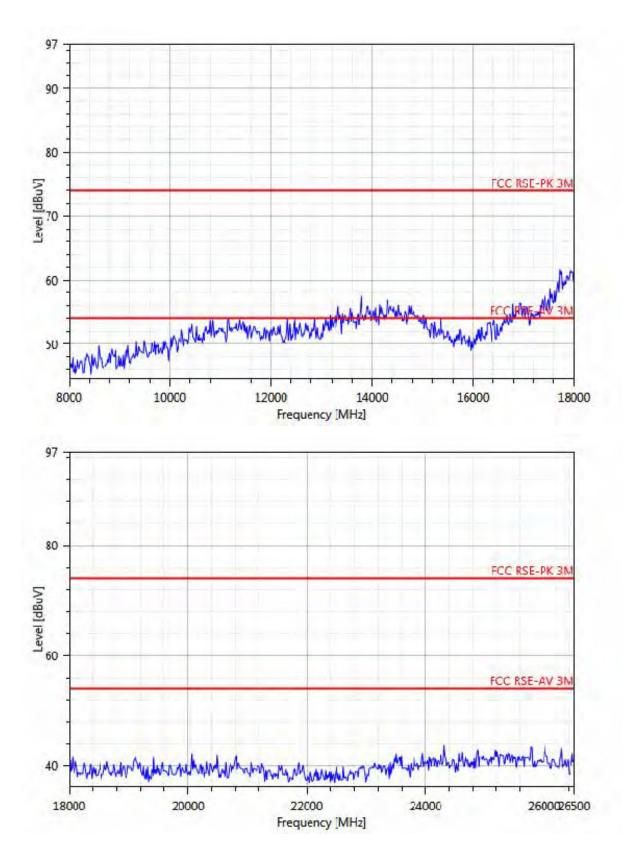
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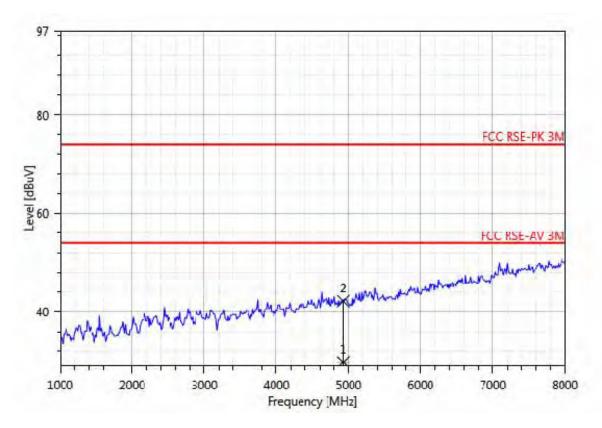
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Operation Mode: 802.11b Test Date: 12/28/2016

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



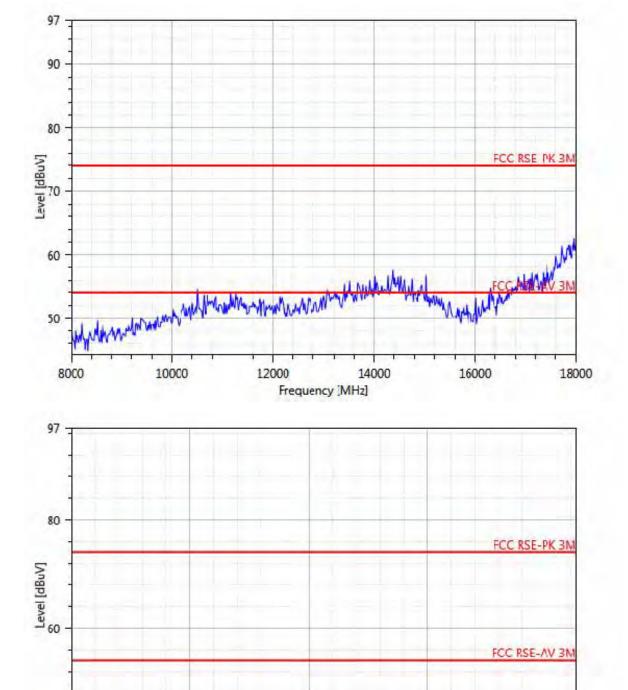
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22000

Frequency [MHz]

24000

18000

2600@6500



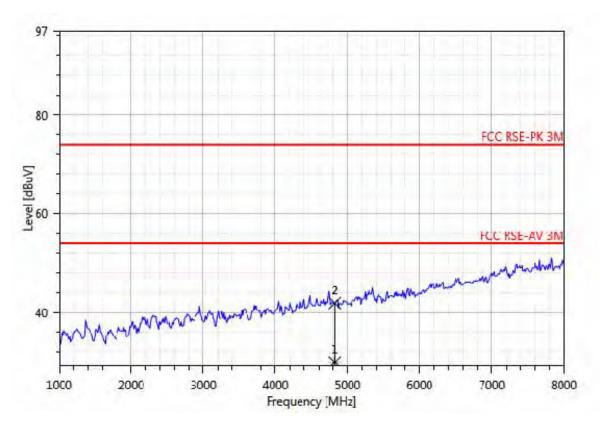
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Operation Mode: 802.11g Test Date: 12/28/2016

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



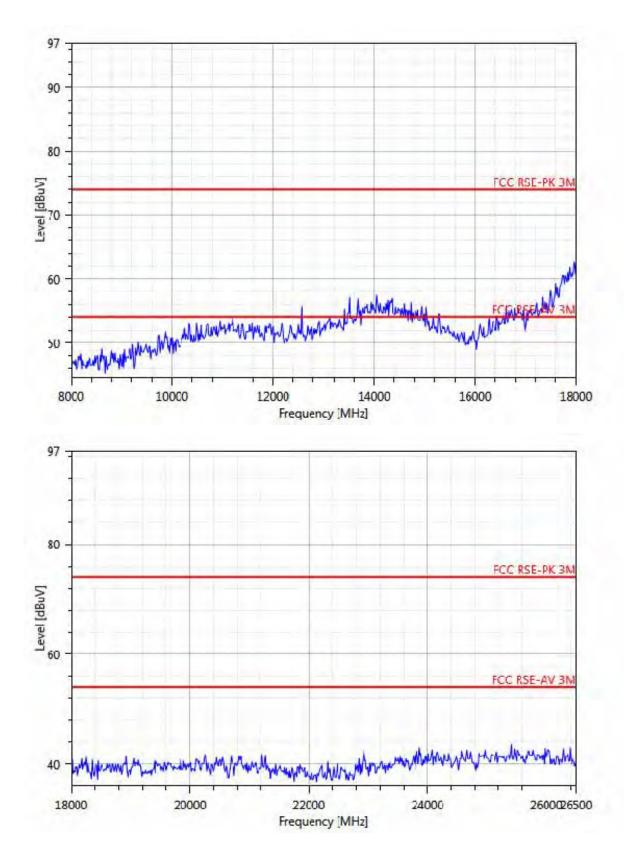
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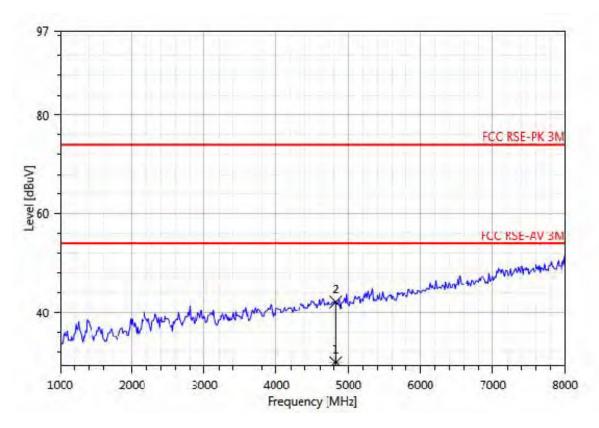
Page 124 of 145

Operation Mode: 802.11g Test Date: 12/28/2016

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



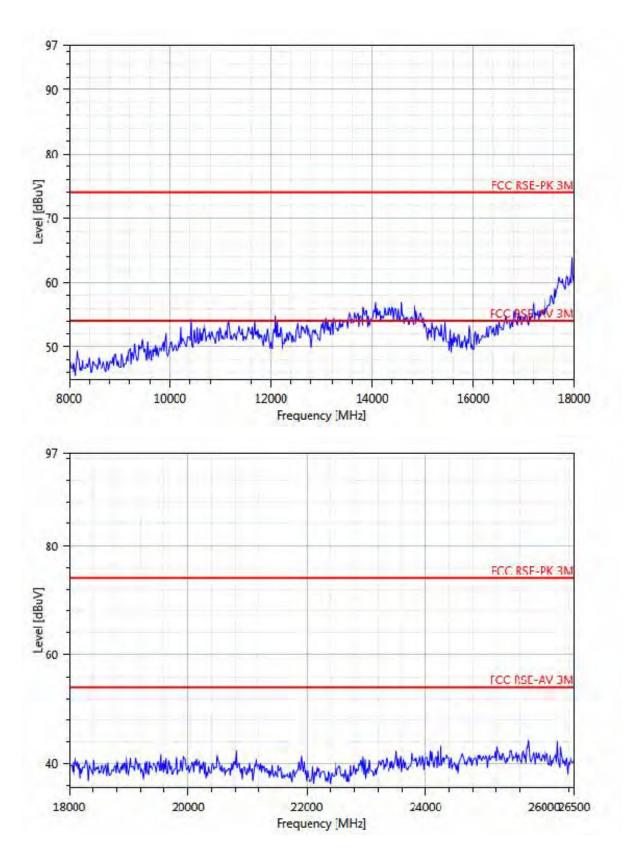
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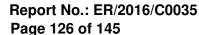




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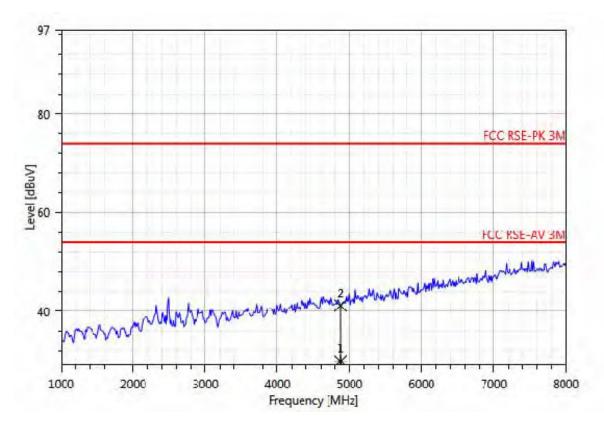


Operation Mode: 802.11g Test Date: 12/28/2016

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



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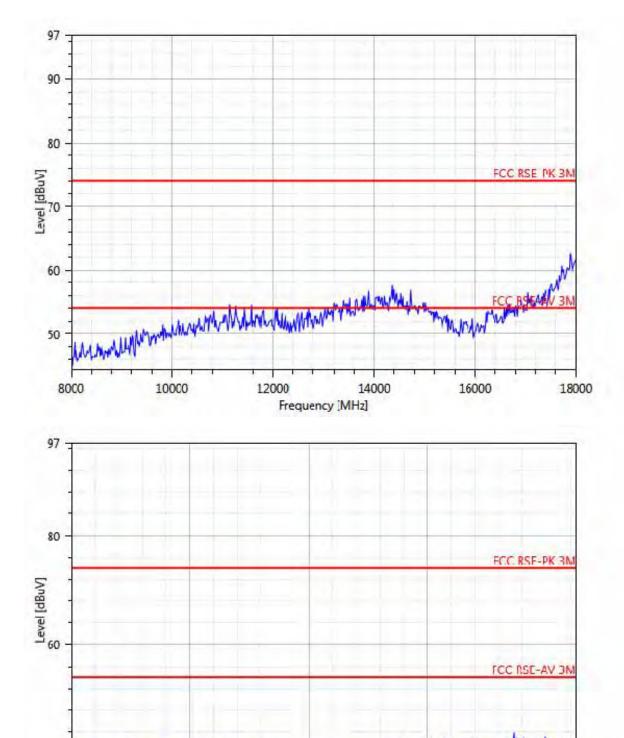
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22000

Frequency [MHz]

24000

18000

2600@6500

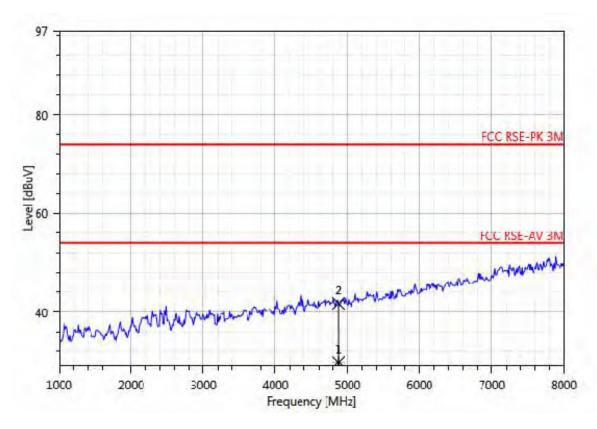


Operation Mode: 802.11g Test Date: 12/28/2016

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



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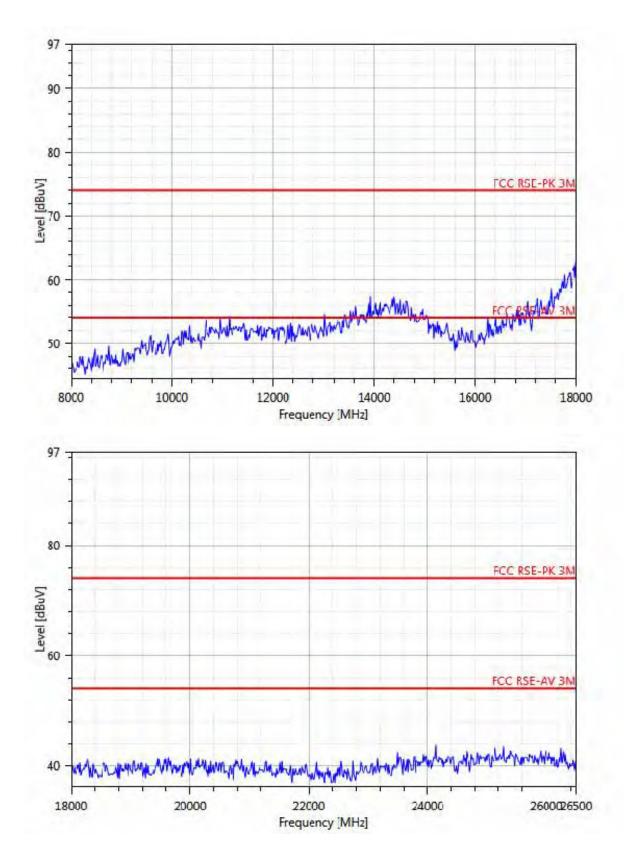
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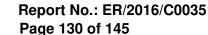




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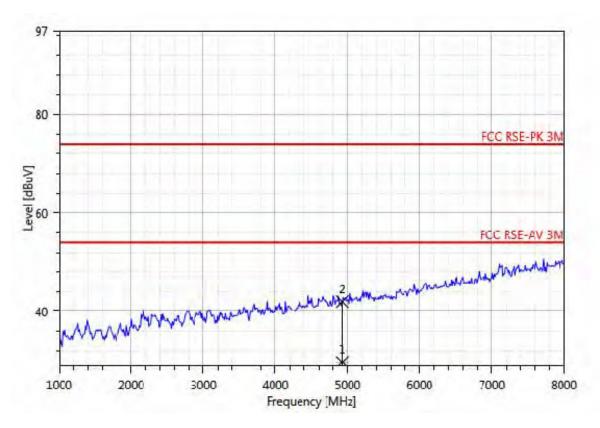


Operation Mode: 802.11g Test Date: 12/28/2016

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



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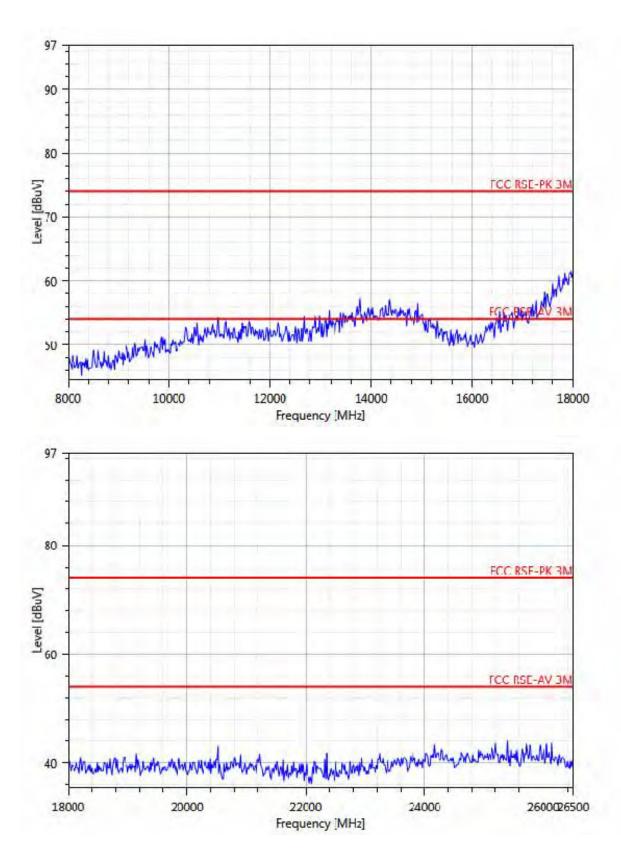
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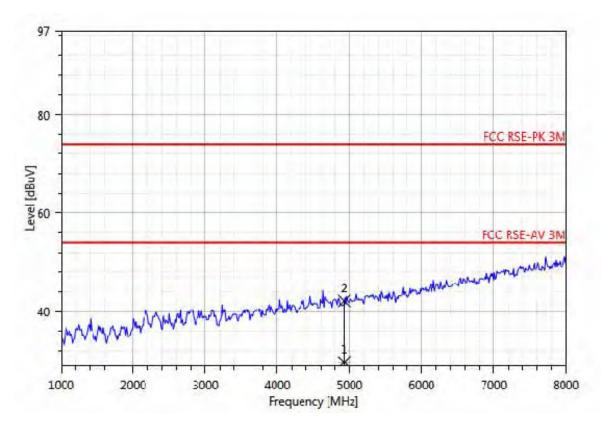
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Operation Mode: 802.11g Test Date: 12/28/2016

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



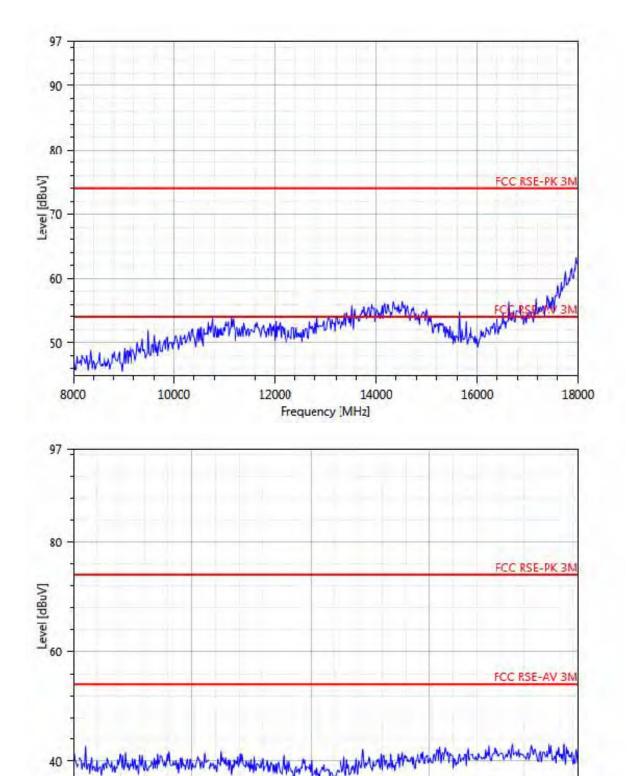
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22000

Frequency [MHz]

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24000

18000

2600@6500

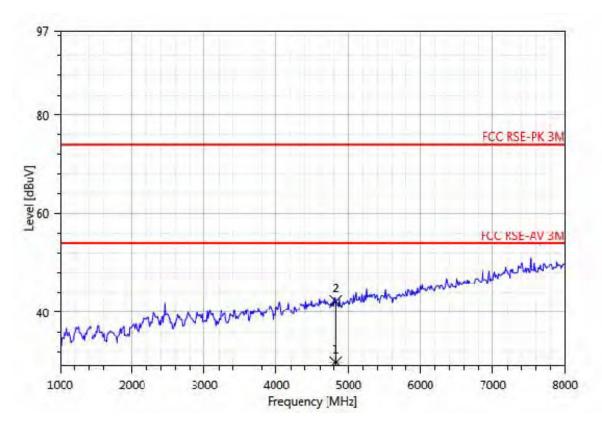


Operation Mode: 802.11n20 Test Date: 12/28/2016

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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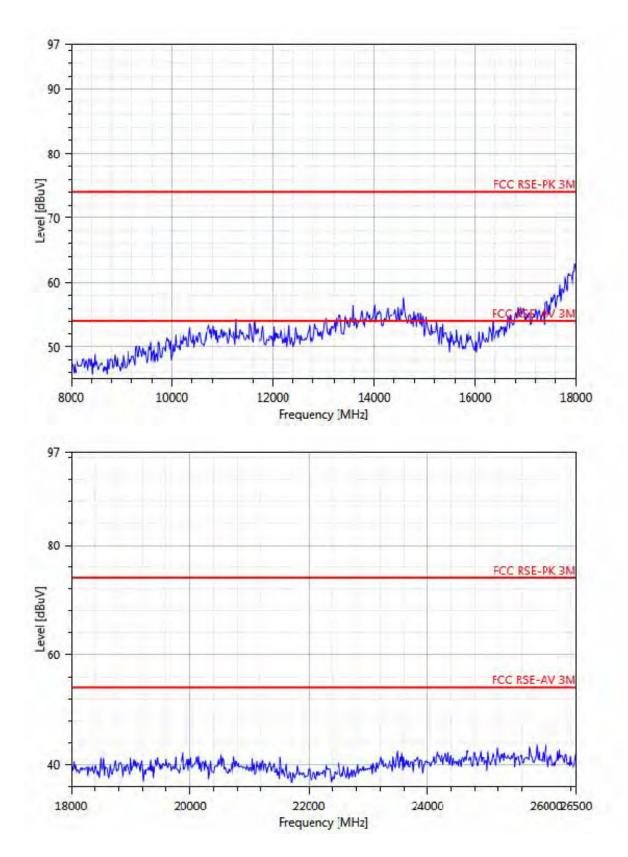
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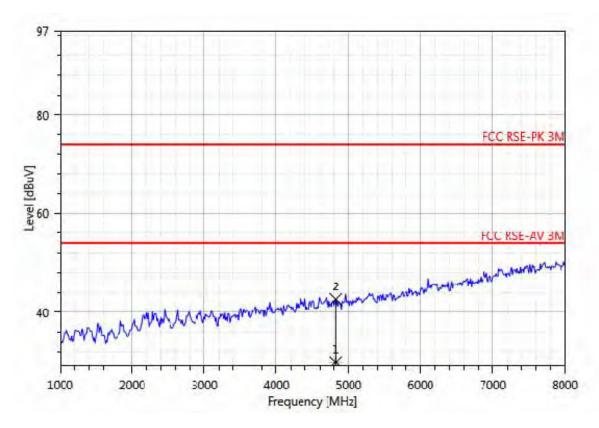


Operation Mode: 802.11n20 Test Date: 12/28/2016

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



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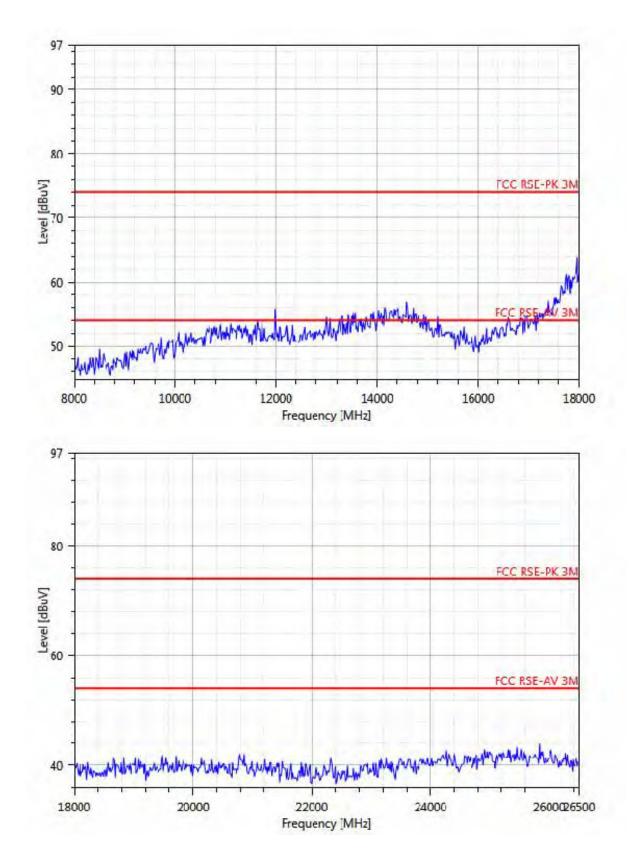
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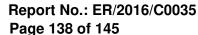


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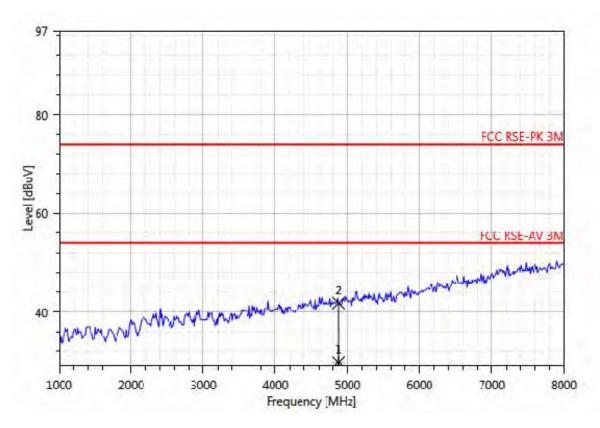


Operation Mode: 802.11n20 Test Date: 12/28/2016

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



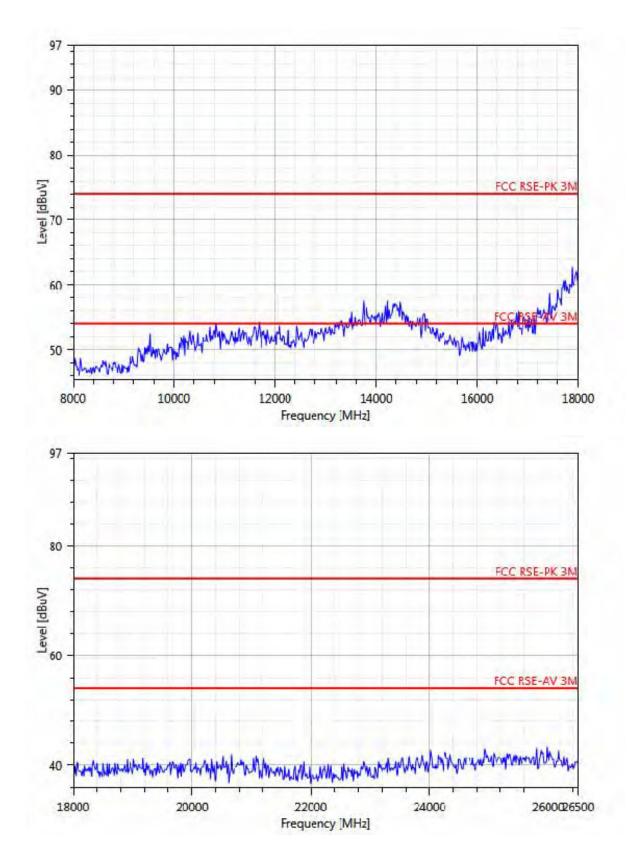
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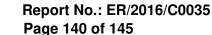




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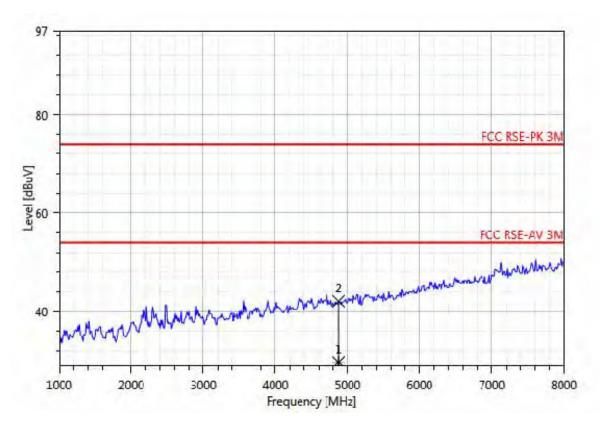


Operation Mode: 802.11n20 Test Date: 12/28/2016

Fundamental Frequency: 2437 MHz Temp. / Humi.: 21 deg C/62 RH

Operation Band: Mike Tx CH MID Test Engineer:

EUT Pol.: E2 Plane Measurement Antenna Pol.: HORIZONTAL



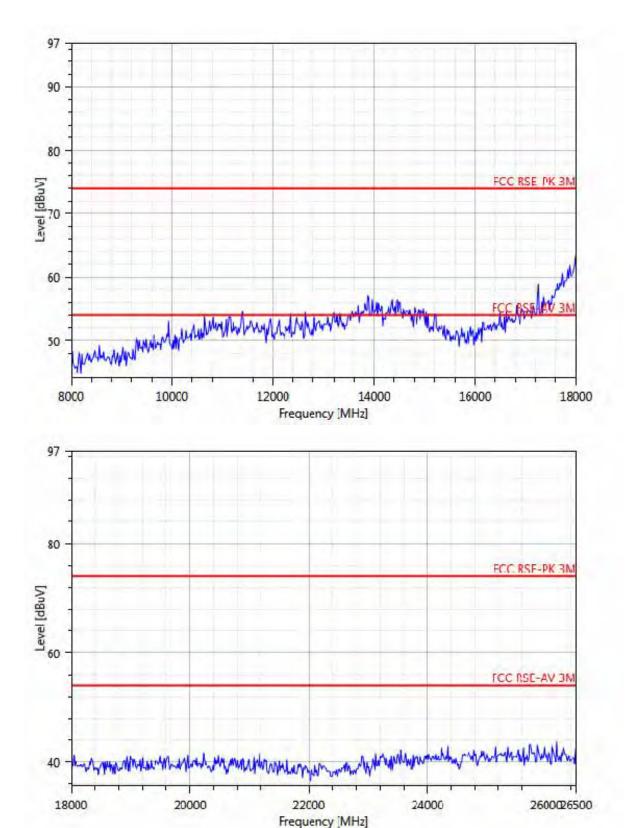
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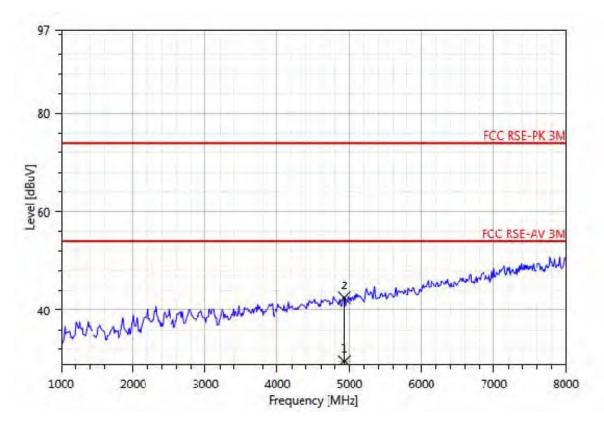
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Operation Mode: 802.11n20 Test Date: 12/28/2016

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



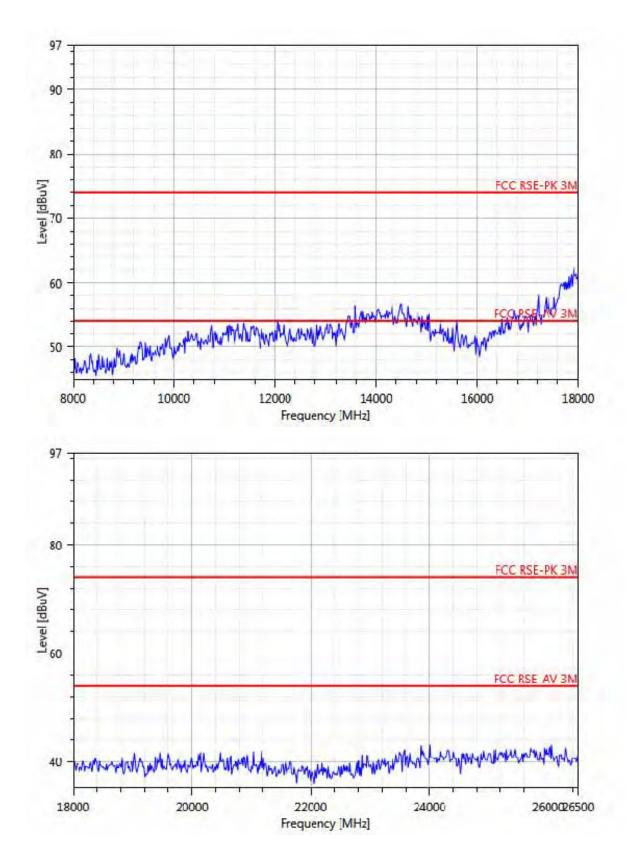
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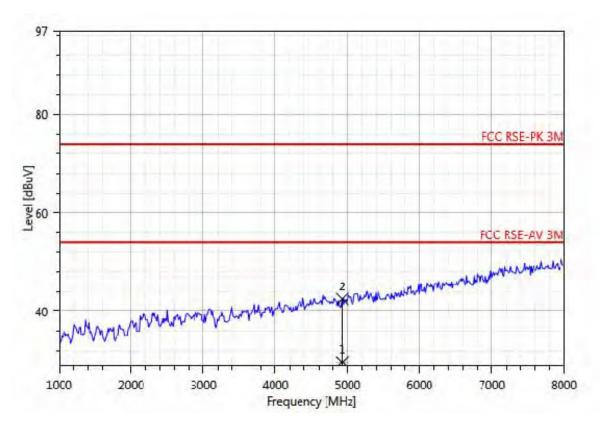
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Operation Mode: 802.11n20 Test Date: 12/28/2016

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



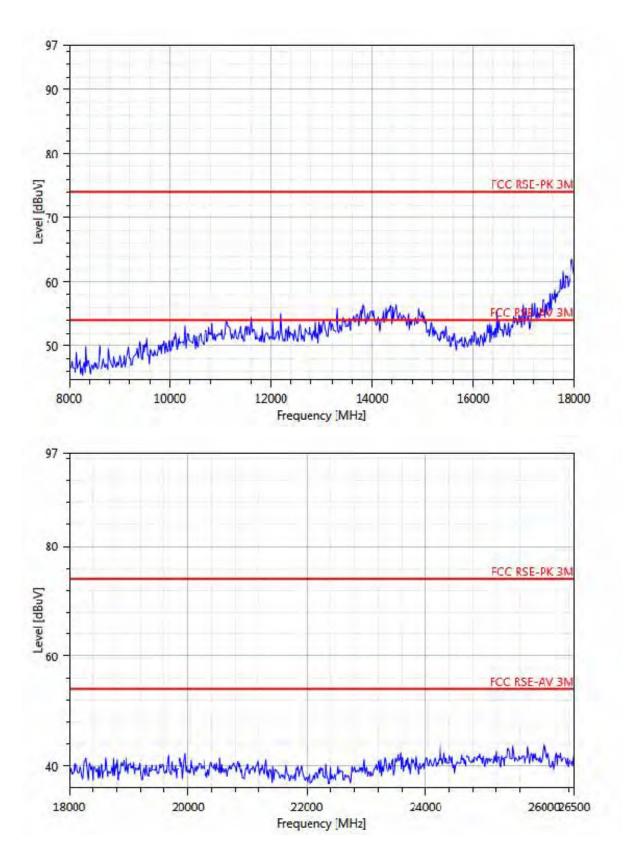
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~ End of Report ~

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