

Report No.: FR853105F



# **FCC RADIO TEST REPORT**

FCC ID : UZ7TC520K

**Equipment**: Touch Computer

Brand Name : Zebra Model name : TC520K

**Applicant**: Zebra Technologies Corporation

1 Zebra Plaza Holtsville, NY 11742

Manufacturer : Zebra Technologies Corporation

1 Zebra Plaza Holtsville, NY 11742

Standard : FCC Part 15 Subpart E §15.407

The product was received on May 31, 2018 and testing was started from Jul. 10, 2018 and completed on Aug. 29, 2018. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Joseph Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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Report Template No.: BU5-FR15EWLB4 AC MA Version 2.1 Report Version

: 01

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**Appendix C. Radiated Spurious Emission Plots** 

Appendix D. Duty Cycle Plots

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# History of this test report

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Report No.	Version	Description	Issued Date
FR853105F	01	Initial issue of report	Aug. 29, 2018

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# **Summary of Test Result**

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Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.403 (i)	6dB & 26dB Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.407 (a)	Maximum Conducted Output Power	Pass	-
3.3	15.407 (a)	Power Spectral Density	Pass	-
3.4	15.407(b)	Unwanted Emissions	Pass	Under limit 3.89 dB at 11490.000 MHz
3.5	15.207	AC Conducted Emission	Pass	Under limit 16.44 dB at 0.301 MHz
3.6	15.407 (c)	Automatically Discontinue Transmission	Pass	-
3.7	15.203 & 15.407 (a)	Antenna Requirement Pass		-

Reviewed by: Wii Chang

Report Producer: Natasha Hsieh

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# 1 General Description

# 1.1 Product Feature of Equipment Under Test

Product Feature			
Equipment	Touch Computer		
Brand Name	Zebra		
Model Name	TC520K		
FCC ID	UZ7TC520K		
	NFC		
EUT supports Radios application	WLAN 11a/b/g/n HT20/HT40		
EO I Supports Radios application	WLAN 11ac VHT20/VHT40/VHT80		
	Bluetooth BR/EDR/LE		
HW Version	DV		
SW Version	91-09-14.00-ON-U00-STD		
FW Version	FUSION_QA_2_1.0.0.027_O		
MFD	20-JUL-18		
EUT Stage	Engineering Sample		

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**Remark:** The above EUT's information was declared by manufacturer.

	Specification of Accessories				
Adapter	Brand Name	Zebra	Part Number	PWR-WUA5V12W0US	
Battery 1	Brand Name	Zebra	Part Number	BT-000314-50	
Battery 2	Brand Name	Zebra	Part Number	BT-000314-01	
USB cable	<b>Brand Name</b>	Zebra	Part Number	CBL-TC51-USB1-01	
Headset Jumper 1	<b>Brand Name</b>	Zebra	Part Number	CBL-TC51-HDST25-01	
Headset Jumper 2	<b>Brand Name</b>	Zebra	Part Number	CBL-TC51-HDST35-01	
2.5mm Earphone	<b>Brand Name</b>	Zebra	Part Number	HDST-25MM-PTVP-01	
3.5mm Earphone	<b>Brand Name</b>	Zebra	Part Number	HDST-35MM-PTVP-01	
Exoskeleton	<b>Brand Name</b>	Zebra	Part Number	SG-TC51-EX01-01	
Trigger Handle	<b>Brand Name</b>	Zebra	Part Number	TRG-TC51-SNP1-01	
Soft Holster	<b>Brand Name</b>	Zebra	Part Number	SG-TC51-HLSTR1-01	
Hand strap	Brand Name	Zebra	Part Number	SG-TC51-BHDSTP1-03	
USB-C Adapter	Brand Name	Zebra	Part Number	ADPTR-TC56-USBC-01	
USB Type C cable	Brand Name	Zebra	Part Number	N/A	

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# 1.2 Product Specification of Equipment Under Test

Standa	Standards-related Product Specification			
Tx/Rx Channel Frequency Range	5745 MHz ~ 5825 MHz			
Maximum Output Power to Antenna <cdd modes=""></cdd>	<5745 MHz ~ 5825 MHz> <ant. 1=""> 802.11a: 18.26 dBm / 0.0670 W 802.11n HT20: 17.94 dBm / 0.0622 W 802.11n HT40: 16.67 dBm / 0.0465 W 802.11ac VHT20: 17.45 dBm / 0.0398 W 802.11ac VHT40: 16.00 dBm / 0.0398 W 802.11ac VHT80: 16.91 dBm / 0.0491 W <ant. 2=""> 802.11a: 17.13 dBm / 0.0516 W 802.11a: 17.13 dBm / 0.0516 W 802.11n HT20: 17.18 dBm / 0.0522 W 802.11n HT40: 16.60 dBm / 0.0457 W 802.11ac VHT20: 17.17 dBm / 0.0521 W 802.11ac VHT40: 16.57 dBm / 0.0454 W 802.11ac VHT80: 16.74 dBm / 0.0472 W MIMO <ant. +="" 1="" 2=""> 802.11a: 20.06 dBm / 0.1014 W 802.11n HT20: 20.17 dBm / 0.1040 W 802.11n HT40: 19.88 dBm / 0.0973 W 802.11ac VHT20: 20.11 dBm / 0.1026 W 802.11ac VHT40: 19.83 dBm / 0.0962 W 802.11ac VHT80: 19.51 dBm / 0.0893 W</ant.></ant.></ant.>			
Maximum Output Power <txbf modes=""></txbf>	<pre>&lt;5745 MHz ~ 5825 MHz&gt; MIMO <ant. +="" 1="" 2=""> 802.11ac VHT20: 19.92 dBm / 0.0982 W 802.11ac VHT40: 19.66 dBm / 0.0925 W 802.11ac VHT80: 19.61 dBm / 0.0914 W</ant.></pre>			

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CANT. 1>   802.11a : 16.90 MHz	Standards-related Product Specification				
802.11n HT20 : 17.95 MHz	<ant. 1=""></ant.>				
802.11n HT40 : 36.60 MHz		802.11a : 16.90 MHz			
802.11ac VHT80 : 76.68 MHz		802.11n HT20 : 17.95	MHz		
SANT. 2>		802.11n HT40 : 36.60	MHz		
802.11a : 16.90 MHz		802.11ac VHT80 : 76.6	68 MHz		
802.11n HT20 : 18.15 MHz		<ant. 2=""></ant.>			
S02.11n HT40 : 36.70 MHz		802.11a : 16.90 MHz			
S02.11ac VHT80 : 76.92 MHz					
MIMO < Ant. 1>   802.11a : 16.85 MHz   802.11n HT20 : 18.00 MHz   802.11n HT40 : 36.70 MHz   802.11a : 16.85 MHz   802.11a c VHT80 : 76.92 MHz   MIMO < Ant. 2>   802.11a : 16.85 MHz   802.11a : 16.85 MHz   802.11a : 16.85 MHz   802.11a : 16.85 MHz   802.11a c VHT80 : 36.70 MHz   802.11a c VHT80 : 76.80 MHz   802.11ac VHT80 : 76.80 MHz   MIMO < Ant. 1>   802.11ac VHT20 : 17.75 MHz   802.11ac VHT20 : 17.75 MHz   802.11ac VHT40 : 36.70 MHz   802.11ac VHT80 : 76.92 MHz   MIMO < Ant. 2>   802.11ac VHT20 : 18.90 MHz   802.11ac VHT20 : 18.90 MHz   802.11ac VHT20 : 36.70 MHz   802.11ac VHT80 : 77.04 MHz   77					
802.11a : 16.85 MHz   802.11n HT20 : 18.00 MHz   802.11a C VHT80 : 76.92 MHz		802.11ac VHT80 : 76.9	92 MHz		
802.11n HT20 : 18.00 MHz	<cdd modes=""></cdd>				
802.11n HT40 : 36.70 MHz					
802.11ac VHT80 : 76.92 MHz   MIMO <ant. 2=""> 802.11a : 16.85 MHz   802.11n HT20 : 18.00 MHz   802.11n HT40 : 36.70 MHz   802.11ac VHT80 : 76.80 MHz   802.11ac VHT80 : 76.80 MHz   802.11ac VHT20 : 17.75 MHz   802.11ac VHT40 : 36.70 MHz   802.11ac VHT80 : 76.92 MHz   802.11ac VHT80 : 76.92 MHz   802.11ac VHT20 : 18.90 MHz   802.11ac VHT20 : 18.90 MHz   802.11ac VHT40 : 36.70 MHz   802.11ac VHT40 : 36.70 MHz   802.11ac VHT80 : 77.04 MHz   802.11ac VHT80 : 70.00 MHz   802.11ac VH</ant.>					
MiMO <ant. 2="">   802.11a : 16.85 MHz     802.11n HT20 : 18.00 MHz     802.11n HT40 : 36.70 MHz     802.11ac VHT80 : 76.80 MHz     MiMO <ant. 1="">   802.11ac VHT20 : 17.75 MHz     802.11ac VHT40 : 36.70 MHz     802.11ac VHT40 : 36.70 MHz     802.11ac VHT40 : 36.70 MHz     802.11ac VHT80 : 76.92 MHz     MiMO <ant. 2="">     802.11ac VHT20 : 18.90 MHz     802.11ac VHT40 : 36.70 MHz     802.11ac VHT40 : 36.70 MHz     802.11ac VHT80 : 77.04 MHz     Rate of Modulation   Section     Antenna Gain / Gain   Gain     Characteristic   Section     Antenna Function Description   Section   Secti</ant.></ant.></ant.>					
802.11a : 16.85 MHz			92 MHz		
802.11n HT20 : 18.00 MHz					
802.11n HT40 : 36.70 MHz					
802.11ac VHT80 : 76.80 MHz					
MIMO < Ant. 1>   802.11ac VHT20 : 17.75 MHz     802.11ac VHT40 : 36.70 MHz     802.11ac VHT80 : 76.92 MHz     MIMO < Ant. 2>     802.11ac VHT20 : 18.90 MHz     802.11ac VHT40 : 36.70 MHz     802.11ac VHT40 : 36.70 MHz     802.11ac VHT40 : 36.70 MHz     802.11ac VHT80 : 77.04 MHz     Antenna Gain / Gain					
S02.11ac VHT20 : 17.75 MHz			80 MHZ		
S02.11ac VHT40 : 36.70 MHz					
802.11ac VHT80 : 76.92 MHz					
Antenna Gain / Gain         MIMO <ant. 2=""> 802.11ac VHT40 : 36.70 MHz 802.11ac VHT80 : 77.04 MHz           Antenna Gain / Gain         <a href="https://doi.org/10.250/"><a href="https://doi.org/10.250/"></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></ant.>	99% Occupied Bandwidth				
802.11ac VHT20 : 18.90 MHz   802.11ac VHT40 : 36.70 MHz   802.11ac VHT80 : 77.04 MHz					
802.11ac VHT40 : 36.70 MHz   802.11ac VHT80 : 77.04 MHz     Antenna Gain / Gain   Cain   Cant. 1> : PIFA Antenna with gain 3.00 dBi     Cant. 2> : PIFA Antenna with gain 2.80 dBi     S02.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)     802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 16QAM / 256QAM / 256QAM   256QAM / 256QAM / 256QAM / 256QAM	(TABI Modes)				
R02.11ac VHT80 : 77.04 MHz					
Antenna Gain / Gain					
Antenna Gain / Gain   Cant. 2> : PIFA Antenna with gain 2.80 dBi					
Rogential	Antenna Gain / Gain	•			
Note the following states   Solution   Sol	802 11a/n : OEDM (BPSK / OPSK / 16OAM / 64OAM)				
802.11 a/n/ac	Type of Modulation	,			AM)
802.11 a/n/ac			Ant. 1	Ant. 2	
Antenna Function Description         802.11 a/n/ac CDD MIMO 802.11ac         V         V		802.11 a/n/ac			
802.11ac <sub>V</sub>	Autonia Frantian Decementian			M	
	Antenna Function Description	CDD MIMO	V	V	
TXBF V V		802.11ac	\/	\/	
		TXBF	V	V	

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Note: MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.

## 1.3 Modification of EUT

No modifications are made to the EUT during all test items.

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# 1.4 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 and TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

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Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978		
Test Site No.	Sporton	Site No.	
rest site No.	TH05-HY	CO05-HY	

Note: The test site complies with ANSI C63.4 2014 requirement.

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Sporton Site No.  03CH12-HY	

Note: The test site complies with ANSI C63.4 2014 requirement.

# 1.5 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ANSI C63.10-2013

#### Remark:

- 1. All test items were verified and recorded according to the standards and without any deviation during the test.
- 2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

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# 2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane for CDD Mode; X plane for TXBF mode) were recorded in this report.

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b. AC power line Conducted Emission was tested under maximum output power.

# 2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
	149	5745	157	5785
5725-5850 MHz Band 4	151*	5755	159*	5795
(U-NII-3)	153	5765	161	5805
(3 : 3)	155#	5775	165	5825

#### Note:

- 1. The above Frequency and Channel in "\*" were 802.11n HT40 and 802.11ac VHT40.
- 2. The above Frequency and Channel in "#" were 802.11ac VHT80.

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# 2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

### **Single Mode**

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT20 (Covered by HT20)	MCS0
802.11ac VHT40 (Covered by HT40)	MCS0
802.11ac VHT80	MCS0

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### **MIMO Mode**

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT20 (Covered by HT20)	MCS0
802.11ac VHT40 (Covered by HT40)	MCS0
802.11ac VHT80	MCS0

### **TXBF Mode**

Modulation	Data Rate
802.11ac VHT20	MCS0
802.11ac VHT40	MCS0
802.11ac VHT80	MCS0

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Test Cases

Mode 1: WLAN (5GHz) Link + Bluetooth Link + Rugged Charge/USB Cable +
Scanner + without Exoskeleton + Battery 1 + Adapter (SAWA-65-20005A
(5V/2.5A)) + Headset Jumper (CBL-TC51-HDST25-01) + Earphone
(HDST-25MM-PTVP-01)

Remark: For Radiated Test Cases, the tests were performed with Rugged Charge/USB Cable,

Pottory 1. For phone (HDST-25MM-PTVP-01)

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emark: For Radiated Test Cases, the tests were performed with Rugged Charge/USB Cable,

Battery 1, Earphone (HDST-25MM-PTVP-01), Headset Jumper (CBL-TC51-HDST25-01),

and without Exoskeleton.

	Ch #		Band IV:57	25-5850 MHz	
	Ch. #	802.11a	802.11n HT20	802.11n HT40	802.11ac VHT80
L	Low	149	149	151	-
M	Middle	157	157	-	155
Н	High	165	165	159	-

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## <CDD Mode>

### <Antenna 1>

		802.11a	RF Output	Power	(dBm)					
	Power vs. C	hannel			Pow	er vs D	ata Rat	е		
Ob annual	Frequency	Data Rate (bps)				Data	Rate (	bps)		
Channel (MHz) 6M		channel	9M	12M	18M	24M	36M	48M	54M	
Duty (	Cycle (%)	95.31		93.24	92.20	89.31	87.25	81.75	76.40	75.31
CH 149	5745	18.24								
CH 157	5785	18.26	CH 157	18.23	18.25	18.25	18.24	18.25	18.22	16.23
CH 165	5825	18.25								

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	802.11n HT20 RF Output Power (dBm)												
ı	Power vs. Char	nnel	Power vs Data Rate										
Channal	Frequency	MCS Index				M	ICS Inde	€X					
Channel	(MHz)	MCS0	channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7			
Duty	Cycle (%)	94.96		91.04	88.10	84.72	80.93	77.27	74.70	72.73			
CH 149	5745	17.63											
CH 157	5785	17.94	CH 157	17.54	17.92	17.93	17.85	17.84	17.87	14.93			
CH 165	5825	17.69											

		802.11r	HT40 RF	Output	Power (	dBm)				
	Power vs. Char	nnel			Pov	ver vs D	ata Rat	е		
Ob ann al	Frequency	MCS Index				M	CS Inde	ex		
Channel	(MHz)	MCS0	channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Duty	Cycle (%)	91.18		86.32	80.77	76.79	69.70	64.91	63.30	62.75
CH 151	5755	16.67	CU 151	16.44	16.53	16.50	16.47	16.43	16.59	13.42
CH 159	5795	16.60	CH 151	10.44	16.53	16.50	16.47	10.43	16.59	13.42

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		802.1	1ac VHT20	RF O	ıtput Po	ower (d	Bm)				
P	ower vs. Cha	nnel			ı	Power v	s Data	Rate			
Oh ann a st	Frequency	MCS Index					MCS	Index			
Channel	(MHz)	MCS0	channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
Duty	Cycle (%)	95.50		91.11	88.80	86.49	81.11	76.67	75.00	73.89	71.01
CH 149	5745	17.05									
CH 157	5785	17.45	CH 157	17.00	17.43	17.43	17.41	17.40	17.40	17.43	14.42
CH 165	5825	17.15									

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		802	.11ac VH	T40 RF	Outpu	ıt Pow	er (dBr	n)				
Р	ower vs. Cha	nnel				Pow	er vs C	ata Ra	te			
Channal	Frequency	MCS Index	MC					CS Ind	ex			
Channel	(MHz)	MCS0	channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
Duty	Cycle (%)	92.16		86.01	81.99	76.74	71.64	64.96	62.50	61.54	59.18	58.33
CH 151	5755	16.00	CH 151	15.05	15 00	15 05	15 77	15 67	15.64	15 61	15 90	12.04
CH 159	5795	15.98	CH 131	15.95	10.62	10.60	13.77	13.07	13.64	10.01	13.80	12.94

		802	.11ac VH	T80 RF	Outpu	ıt Pow	er (dBr	n)				
Р	ower vs. Cha	nnel				Pow	er vs C	ata Ra	te			
Channel	Frequency	MCS Index	MCS Index									
Channel	(MHz)	MCS0	channel MCS1 MCS2 MCS3 MCS4 MCS5 MCS6 MCS7 MCS							MCS8	MCS9	
Duty	Cycle (%)	88.24		78.43	75.00	68.75	63.46	57.45	56.82	54.76	53.66	52.50
CH155	5775	16.91	CH155         16.88         16.80         16.86         16.71         16.78         16.75         16.80         16.78         13.65									

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### <Antenna 2>

	802.11a RF Output Power (dBm)												
	Power vs. C	hannel	Power vs Data Rate										
Ob ann al	Frequency	Data Rate (bps)				Data	Rate (	bps)					
Channel	Channel (MHz) 6M		channel	9M	12M	18M	24M	36M	48M	54M			
Duty	Cycle (%)	95.31		93.90	92.20	89.31	86.27	82.35	76.40	75.61			
CH 149	5745	17.12											
CH 157	H 157 5785 17.13		CH 157	17.07	17.10	17.12	17.12	17.10	17.09	15.11			
CH 165	5825	16.98											

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	802.11n HT20 RF Output Power (dBm)												
ı	Power vs. Char	nnel			Pov	ver vs D	ata Rat	е					
Channal	Frequency	MCS Index				M	CS Inde	€X					
Channel	(MHz)	channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7				
Duty	Cycle (%)	94.97		91.63	86.61	86.39	81.11	76.14	75.31	73.68			
CH 149	5745	17.18											
CH 157	5785	16.87	CH 149	17.16	17.17	17.17	17.16	17.08	17.11	14.16			
CH 165	5825	16.92											

		802.11r	HT40 RF	Output	Power (	dBm)				
	Power vs. Char	nnel			Pov	ver vs D	ata Rat	е		
Oh ann al	Frequency	MCS Index	MCS Index				ex			
Channel	(MHz)	Hz) MCS0 char		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Duty	Cycle (%)	91.18		86.01	81.73	77.65	66.67	64.91	64.22	62.75
CH 151	5755	16.60	CU 151	96 01	81.73	77.65	66 67	64.91	64.22	62.75
CH 159	5795	16.55	CH 151	86.01	01.73	77.00	66.67	04.91	04.22	02.75

	802.11ac VHT20 RF Output Power (dBm)														
P	ower vs. Cha	nnel			ı	Power v	s Data	Rate							
Channal	Frequency	MCS Index		MCS Index											
Channel	(MHz)	MCS0	channel MCS1 MCS2 MCS3 MCS4 MCS5 MCS6 MCS7						MCS8						
Duty	Duty Cycle (%)			91.85	88.80	87.07	82.03	78.33	75.61	75.32	72.46				
CH 149	5745	17.17													
CH 157	5785	16.85	CH 149	17.12	17.05	17.11	17.08	16.93	17.07	17.03	14.10				
CH 165	5825	16.75													

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		802	11ac VH	T40 RF	Outpu	ıt Pow	er (dBr	n)				
Р	ower vs. Cha	nnel				Pow	er vs D	ata Ra	te			
Channal							M	CS Ind	ex			
Channel	(MHz)	MCS0	channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
Duty	Duty Cycle (%) 92.			85.81	81.90	76.74	71.64	63.93	62.83	61.54	60.42	57.45
CH 151	5755	16.57	CH 151	0E 01	91.00	76 74	71.64	62.02	62.02	61 54	60.42	E7 1E
CH 159	5795	16.53	CH 151	85.81	01.90	70.74	71.04	03.93	02.03	01.54	00.42	37.43

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		802	.11ac VH	T80 RF	Outpu	ıt Pow	er (dBr	n)				
Р	ower vs. Cha	nnel				Pow	er vs C	ata Ra	ite			
Channal	Frequency	MCS Index		MCS Index								
Channel	(MHz)	MCS0	channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
Duty	Cycle (%)	88.24		78.22	74.67	70.31	62.26	59.57	56.82	55.81	53.66	50.00
CH155	5775	16.74	CH155	16.69	16.72	16.73	16.66	16.60	16.67	16.73	16.65	13.71

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### MIMO < Antenna 1+2>

		802.11a R	F Output F	ower (	dBm)					
	Power vs. C	hannel			Powe	er vs D	ata Rat	e		
	Frequency				Data	Rate (	bps)			
Channel	(MHz)	6M	channel	9M	12M	18M	24M	36M	48M	54M
CH 149	5745	19.35								
CH 157	5785	20.06	CH 157	19.90	19.93	3 20.05	19.99	20.04	20.05	18.04
CH 165	5825	20.02								

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		802.11r	HT20 RF	Output	Power (	dBm)				
	Power vs. Char	nnel			Pov	ver vs D	ata Rat	е		
	Frequency	MCS Index				M	CS Inde	€X		
Channel	(MHz)	MCS0	channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 149	5745	20.17								
CH 157	5785	19.93	CH 149	19.89	19.92	19.91	19.81	19.86	19.92	16.90
CH 165	5825	19.99								

		802.11r	HT40 RF	Output	Power (	dBm)						
ı	Power vs. Char	nel			Pov	ver vs D	ata Rat	е				
	Frequency MCS Index		x MCS Index									
Channel	(MHz)	MCS0	channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7		
CH 151	5755	19.88	CUAFA	10.70	10.75	40.50	10.01	10.55	10.50	40.54		
CH 159	5795	19.63	CH 151	19.78	19.75	19.58	19.61	19.55	19.59	16.51		

		802.11	1ac VHT20	RF Ou	itput Po	ower (d	Bm)				
P	ower vs. Cha	nnel			F	Power v	s Data	Rate			
	Frequency	MCS Index					MCS	Index			
Channel	Frequency (MHz)	MCS0	channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
CH 149	5745	20.11									
CH 157	5785	19.90	CH 149	19.87	19.89	19.88	19.79	19.84	19.86	19.89	16.87
CH 165	5825	19.94									

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		802	.11ac VH	T40 RF	Outpu	it Powe	er (dBn	n)				
Р	ower vs. Cha	nnel				Pow	er vs D	ata Ra	te			
	Frequency MCS Inde		x MCS Index					ex				
Channel	(MHz)	MCS0	channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
CH 151	5755	19.83	CH 454	10.70	10.6E	10 F7	10 FO	10.40	10.44	10.44	10.63	16.60
CH 159	5795	19.53	CH 151	19.70	19.05	19.57	19.59	19.49	19.44	19.44	19.63	10.00

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		802	.11ac VH	T80 RF	Outpu	ıt Powe	er (dBn	n)				
Р	ower vs. Cha				Pow	er vs D	ata Ra	te				
	Eroguenev	MCS Index		MCS Index								
Channel	Frequency (MHz)	MCS0	channel MCS1 MCS2 MCS3 MCS4 MCS5 MCS6 MCS7 MC						MCS8	MCS9		
CH155	5775	19.51	CH155 19.50 19.46 19.49 19.37 19.40 19.35 19.48 19.33 16.41							16.41		

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## <TXBF Mode>

### MIMO <Antenna 1+2>

		802.1	lac VHT20	RF Ou	itput Po	ower (d	Bm)				
F	ower vs. Cha	nnel			F	Power v	s Data	Rate			
	Frequency	MCS Index					MCS	Index			
Channel	(MHz)	MCS0	channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
CH 149	5745	19.88									
CH 157	5785	19.82	CH 165	19.72	19.82	19.82	19.82	19.72	19.82	19.82	16.82
CH 165	5825	19.92									

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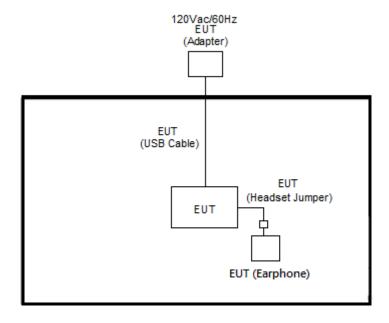
		802	.11ac VH	T40 RF	Outpu	t Powe	er (dBn	n)				
P	ower vs. Cha	nnel				Pow	er vs D	ata Ra	te			
	Frequency MCS Inde		x MCS Index									
Channel	(MHz)	MCS0	channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
CH 151	5755	19.66	CU 151	10.56	10 F1	10 F1	10 FG	10 F1	10 F1	10 FC	10.56	16 FG
CH 159	5795	19.51	CH 151	19.56	19.51	19.51	19.56	19.51	19.51	19.56	19.56	10.56

		802	.11ac VH	T80 RF	Outpu	it Powe	er (dBn	n)				
P	ower vs. Cha				Pow	er vs D	ata Ra	te				
	Fraguenay	MCS Index		MCS Index								
Channel	Frequency (MHz)	MCS0 channel MCS1 MCS2 MCS3 MCS4 MCS5 MCS6					MCS6	MCS7	MCS8	MCS9		
CH155	5775	19.61	1 CH155 19.51 19.47 19.46 19.51 19.47 19.46 19.51 19.51 16.6							16.51		

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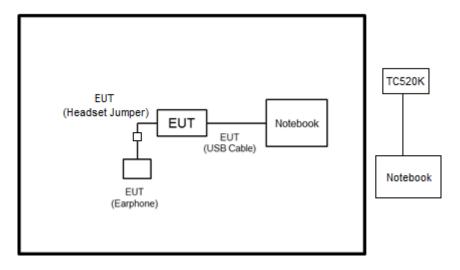
# 2.3 Connection Diagram of Test System

### <CDD Mode>



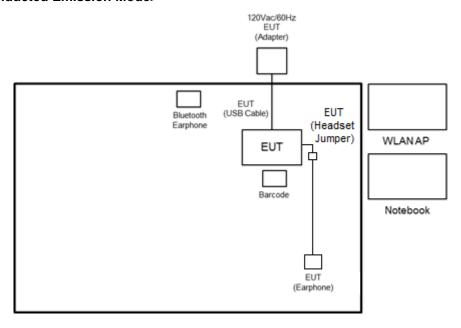
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### <TXBF Mode>



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### <AC Conducted Emission Mode>



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# 2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
3.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Notebook -01	Lenovo	E335	N/A	N/A	N/A
6.	Notebook -40	Lenovo	E335	N/A	N/A	N/A
7.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

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# 2.5 EUT Operation Test Setup

#### <CDD Mode>

The RF test items, utility "QRCT" was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

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#### <TXBF Mode>

The RF test items, utility "ADB" was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

## 2.6 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 attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

### Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB). = 4.2 + 10 = 14.2 (dB)

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## 3 Test Result

# 3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

## 3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz. 26dB and 99% Occupied bandwidth are reporting only.

### 3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.1.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
 Section C) Emission bandwidth for the band 5.725-5.85GHz

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- 2. Set RBW = 100kHz.
- 3. Set the VBW  $\geq$  3 x RBW.
- 4. Detector = Peak.
- 5. Trace mode = max hold
- 6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
- 7. Measure and record the results in the test report.

### 3.1.4 Test Setup



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## 3.1.5 Test Result

Toot Engineer	Derek Hsu, Kai Liao, Shiming Liu, and Bill Kuo	Temperature :	21~25°C
Test Engineer :	Delek Asu, Kai Liao, Shirning Liu, and Bili Kuo	Relative Humidity :	51~54%

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### <CDD Mode>

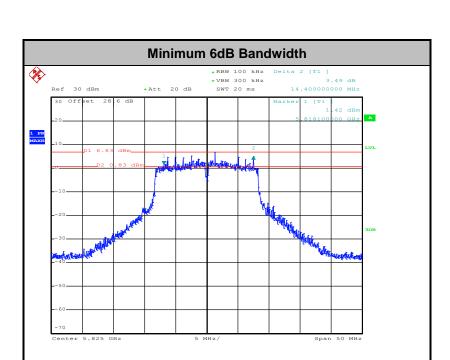
Mod.	Data Rate	<b>N</b> TX	СН.	Freq. (MHz)	Band	9% width Hz)	Band	dB width Hz)	Band	dB width Hz)	6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	(111112)	
11a	6Mbps	1	149	5745	16.85	16.90	25.90	25.90	15.00	15.30	0.5	Pass
11a	6Mbps	1	157	5785	16.80	16.80	26.05	25.70	15.50	15.10	0.5	Pass
11a	6Mbps	1	165	5825	16.90	16.80	25.85	25.20	15.40	14.40	0.5	Pass
HT20	MCS0	1	149	5745	17.95	18.15	26.40	29.05	16.80	15.45	0.5	Pass
HT20	MCS0	1	157	5785	17.95	17.95	26.50	26.30	15.95	16.50	0.5	Pass
HT20	MCS0	1	165	5825	17.95	18.00	27.20	26.40	16.15	15.10	0.5	Pass
HT40	MCS0	1	151	5755	36.50	36.70	41.89	41.94	35.10	36.00	0.5	Pass
HT40	MCS0	1	159	5795	36.60	36.60	41.76	42.02	34.92	35.02	0.5	Pass
VHT80	MCS0	1	155	5775	76.68	76.92	83.76	83.84	75.20	75.20	0.5	Pass
11a	6Mbps	2	149	5745	16.85	16.85	25.20	26.70	15.10	15.40	0.5	Pass
11a	6Mbps	2	157	5785	16.80	16.75	24.90	24.90	15.00	15.10	0.5	Pass
11a	6Mbps	2	165	5825	16.75	16.70	25.75	25.25	15.00	15.05	0.5	Pass
HT20	MCS0	2	149	5745	18.00	18.00	26.20	28.85	15.10	15.45	0.5	Pass
HT20	MCS0	2	157	5785	17.90	17.85	26.00	25.60	16.75	15.90	0.5	Pass
HT20	MCS0	2	165	5825	17.95	17.85	26.50	25.90	15.00	15.10	0.5	Pass
HT40	MCS0	2	151	5755	36.70	36.70	41.83	41.94	35.08	35.28	0.5	Pass
HT40	MCS0	2	159	5795	36.70	36.60	41.76	42.12	35.00	35.10	0.5	Pass
VHT80	MCS0	2	155	5775	76.92	76.80	84.16	82.56	75.20	73.92	0.5	Pass

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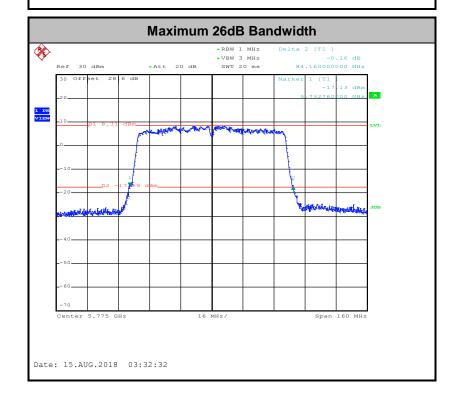
Report Version

Report Template No.: BU5-FR15EWLB4 AC MA Version 2.1

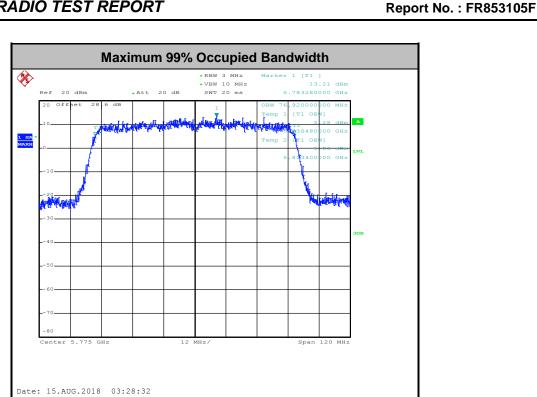
Date: 15.AUG.2018 01:19:24



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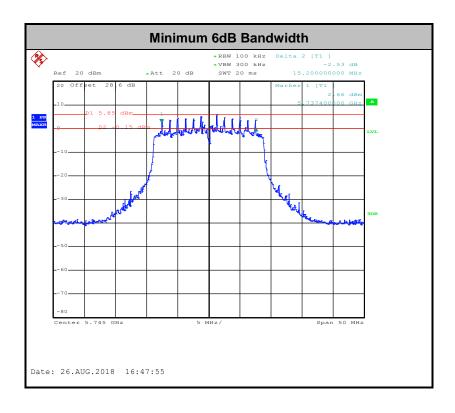
**Note:** The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

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### <TXBF Mode>

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		Bandwidth (MHz)		6 dB Bandwidth (MHz)		Bandwidth		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	(141112)					
VHT20	MCS0	2	149	5745	17.75	18.90	24.40	28.70	15.20	17.60	0.5	Pass				
VHT20	MCS0	2	157	5785	17.75	18.85	23.80	27.60	15.20	17.60	0.5	Pass				
VHT20	MCS0	2	165	5825	17.70	18.80	23.90	27.80	15.20	17.60	0.5	Pass				
VHT40	MCS0	2	151	5755	36.60	36.60	41.94	42.48	35.28	36.36	0.5	Pass				
VHT40	MCS0	2	159	5795	36.70	36.70 41.94 42.12 35.26 36.36 0.5		Pass								
VHT80	MCS0	2	155	5775	76.92	77.04	82.88	84.16	71.36	76.16	0.5	Pass				

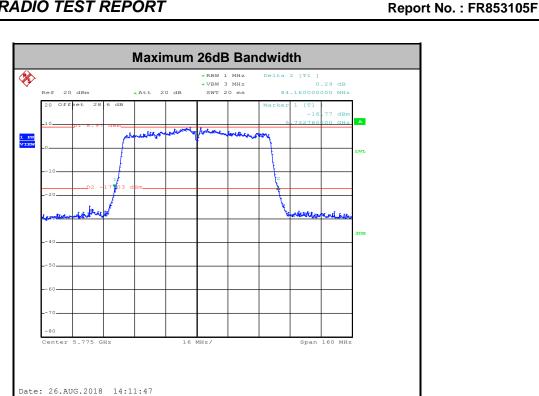
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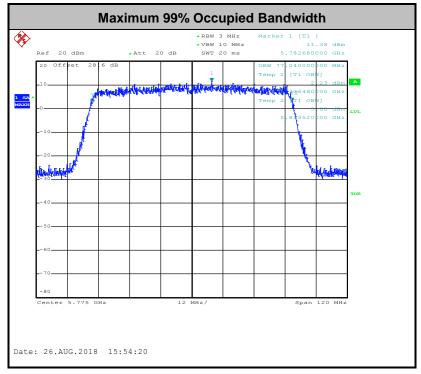


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Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

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# 3.2 Maximum Conducted Output Power Measurement

### 3.2.1 Limit of Maximum Conducted Output Power

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

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If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### 3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

#### 3.2.3 Test Procedures

#### <CDD Modes>

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM (Measurement using an RF average power meter):

- 1. Measurement is performed using a wideband RF power meter.
- 2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
- 3. Measure the average power of the transmitter, and the average power is corrected with duty factor,  $10 \log(1/x)$ , where x is the duty cycle.

### <TXBF Modes>

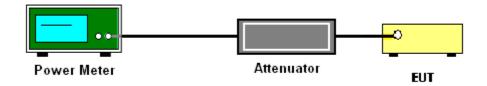
The testing follows Method PM-G of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 for TXBF modes.

Method PM-G (Measurement using a gated RF average power meter):

- 1. Measurement is performed using a wideband RF power meter.
- 2. The EUT is configured to transmit at its maximum power control level.
- 3. Measure the average power of the transmitter
- 4. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

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# 3.2.4 Test Setup



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# 3.2.5 Test Result of Maximum Conducted Output Power

Toot Engineer		Temperature :	21~25℃
rest Engineer :	Derek Hsu, Kai Liao, Shiming Liu, and Bill Kuo	Relative Humidity :	51~54%

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### <CDD Mode>

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Co	Average onducte Power (dBm)	ed	Cond Power (dE	CC ucted r Limit Bm)	(dl	G Bi)	Pass/Fail		
					Ant 1			Ant 2	SUM	Ant 1		Ant 1				
11a	6Mbps	1	149	5745	0.21	0.21	18.24	17.12		30.00	30.00	3.00	2.80	Pass		
11a	6Mbps	1	157	5785	0.21	0.21	18.26	17.13		30.00	30.00	3.00	2.80	Pass		
11a	6Mbps	1	165	5825	0.21	0.21	18.25	16.98		30.00	30.00	3.00	2.80	Pass		
HT20	MCS0	1	149	5745	0.22	0.22	17.63	17.18		30.00	30.00	3.00	2.80	Pass		
HT20	MCS0	1	157	5785	0.22	0.22	17.94	16.87		30.00	30.00	3.00	2.80	Pass		
HT20	MCS0	1	165	5825	0.22	0.22	17.69	16.92		30.00	30.00	3.00	2.80	Pass		
HT40	MCS0	1	151	5755	0.40	0.40	16.67	16.60	_	30.00	30.00	3.00	2.80	Pass		
HT40	MCS0	1	159	5795	0.40	0.40	16.60	16.55		30.00	30.00	3.00	2.80	Pass		
VHT20	MCS0	1	149	5745	0.20	0.20	17.05	17.17		30.00	30.00	3.00	2.80	Pass		
VHT20	MCS0	1	157	5785	0.20	0.20	17.45	16.85		30.00	30.00	3.00	2.80	Pass		
VHT20	MCS0	1	165	5825	0.20	0.20	17.15	16.75		30.00	30.00	3.00	2.80	Pass		
VHT40	MCS0	1	151	5755	0.35	0.35	16.00	16.57		30.00	30.00	3.00	2.80	Pass		
VHT40	MCS0	1	159	5795	0.35	0.35	15.98	16.53		30.00	30.00	3.00	2.80	Pass		
VHT80	MCS0	1	155	5775	0.54	0.54	16.91	16.74		30.00	30.00	3.00	2.80	Pass		
11a	6Mbps	2	149	5745	0.19	0.19	16.57	16.11	19.35	30	30.00		00	Pass		
11a	6Mbps	2	157	5785	0.19	0.19	17.21	16.89	20.06	30	30.00		30.00		00	Pass
11a	6Mbps	2	165	5825	0.19	0.19	17.20	16.81	20.02	30	.00	3.00		Pass		
HT20	MCS0	2	149	5745	0.20	0.20	17.21	17.10	20.17	30	.00	3.	00	Pass		
HT20	MCS0	2	157	5785	0.20	0.20	17.07	16.77	19.93	30	.00	3.	00	Pass		
HT20	MCS0	2	165	5825	0.20	0.20	17.10	16.85	19.99	30	.00	3.	00	Pass		
HT40	MCS0	2	151	5755	0.40	0.40	17.00	16.73	19.88	30	.00	3.	00	Pass		
HT40	MCS0	2	159	5795	0.40	0.40	16.88	16.33	19.63	30	.00	3.	00	Pass		
VHT20	MCS0	2	149	5745	0.20	0.20	17.16	17.04	20.11			3.	00	Pass		
VHT20	MCS0	2	157	5785	0.20	0.20	17.02	16.75	19.90			3.	00	Pass		
VHT20	MCS0	2	165	5825	0.20	0.20	17.05	16.80	19.94			3.	00	Pass		
VHT40	MCS0	2	151	5755	0.40	0.40	16.95	16.70	19.83			3.00		Pass		
VHT40	MCS0	2	159	5795	0.40	0.40	16.80	16.23	19.53	30	.00	3.00		Pass		
VHT80	MCS0	2	155	5775	0.54	0.54	16.57	16.43	19.51	30	.00	3.	00	Pass		

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## <TXBF Mode>

Mod.	Data Rate	<b>N</b> TX	СН.	Freq. (MHz)	Duty Factor (dB)		Co	Average FCC Conducted Conducted Power Power Limit (dBm) (dBm)			D (di	G Bi)	Pass/Fail			
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1 Ant 2		Ant 1	Ant 2			
VHT20	MCS0	2	149	5745	0.00	0.00	16.40	17.30	19.88	30.00		5.	91	Pass		
VHT20	MCS0	2	157	5785	0.00	0.00	16.50	17.10	19.82	30.	.00	5.	91	Pass		
VHT20	MCS0	2	165	5825	0.00	0.00	16.60	17.20	19.92	30.	30.00		91	Pass		
VHT40	MCS0	2	151	5755	0.00	0.00	16.60	16.70	19.66	30.00		5.	91	Pass		
VHT40	MCS0	2	159	5795	0.00	0.00	16.50	16.50	19.51	30.00		30.00 5.9		Pass		
VHT80	MCS0	2	155	5775	0.00	0.00	16.80	16.40	19.61	30.00		30.00		30.00 5.91		Pass

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# 3.3 Power Spectral Density Measurement

## 3.3.1 Limit of Power Spectral Density

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

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If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

## 3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

#### 3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section F) Maximum power spectral density.

#### <CDD Modes>

#### # Method SA-2 #

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(500kHz/RBW) to the test result.
- Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.

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#### <TXBF Modes>

#### # Method SA-3 #

(power averaging (rms) detection with max hold):

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time ≤ (number of points in sweep) × T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

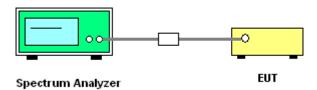
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- Detector = power averaging (rms).
- Trace mode = max hold.
- Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.
- 1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
- 2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
- For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

Method (c): Measure and add 10 log(N<sub>ANT</sub>) dB.

With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity  $10 \log(N_{ANT})$  dB is added to each spectrum value before comparing to the emission limit. The addition of  $10 \log(N_{ANT})$  dB serves to apportion the emission limit among the  $N_{ANT}$  outputs so that each output is permitted to contribute no more than  $1/N_{ANT}$  <sup>th</sup> of the PSD limit.

### 3.3.4 Test Setup



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# 3.3.5 Test Result of Power Spectral Density

Toot Engineer	Dorok Hou Kai Lina Shiming Liu, and Bill Kua	Temperature :	21~25℃
rest Engineer.	Derek Hsu, Kai Liao, Shiming Liu, and Bill Kuo	Relative Humidity :	51~54%

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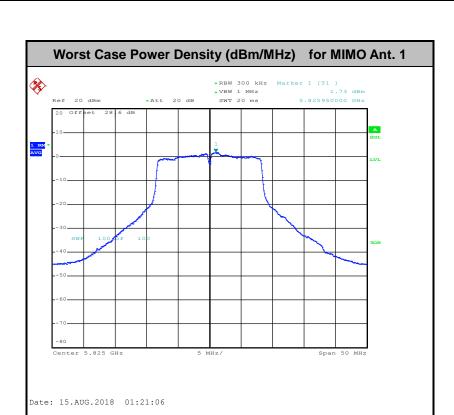
## <CDD Modes>

Mod.	Data Rate	<b>N</b> TX	СН.	Freq. (MHz)	Fac	ity ctor B)	(500 /RE Fac	10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			rage SD mit 500kHz)	(dl	G Bi)	Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	149	5745	0.21	0.21	2.22	2.22	3.09	1.54		30.00	30.00	3.00	2.80	Pass
11a	6Mbps	1	157	5785	0.21	0.21	2.22	2.22	2.42	1.69		30.00	30.00	3.00	2.80	Pass
11a	6Mbps	1	165	5825	0.21	0.21	2.22	2.22	2.67	1.15		30.00	30.00	3.00	2.80	Pass
HT20	MCS0	1	149	5745	0.22	0.22	2.22	2.22	1.25	1.61		30.00	30.00	3.00	2.80	Pass
HT20	MCS0	1	157	5785	0.22	0.22	2.22	2.22	1.97	0.57	-	30.00	30.00	3.00	2.80	Pass
HT20	MCS0	1	165	5825	0.22	0.22	2.22	2.22	1.21	0.74		30.00	30.00	3.00	2.80	Pass
HT40	MCS0	1	151	5755	0.40	0.40	2.22	2.22	-2.78	-2.28		30.00	30.00	3.00	2.80	Pass
HT40	MCS0	1	159	5795	0.40	0.40	2.22	2.22	-2.46	-2.96		30.00	30.00	3.00	2.80	Pass
VHT80	MCS0	1	155	5775	0.54	0.54	2.22	2.22	-5.35	-5.37		30.00	30.00	3.00	2.80	Pass
11a	6Mbps	2	149	5745	0.19	0.19	2.	22	0.84	0.76	6.07	30	.00	5.9	91	Pass
11a	6Mbps	2	157	5785	0.19	0.19	2.	22	1.71	1.64	6.94	30	.00	5.9	91	Pass
11a	6Mbps	2	165	5825	0.19	0.19	2.	22	1.92	1.56	7.15	30	.00	5.9	91	Pass
HT20	MCS0	2	149	5745	0.20	0.20	2.	22	1.56	1.83	7.06	30	.00	5.9	91	Pass
HT20	MCS0	2	157	5785	0.20	0.20	2.:	2.22		1.08	6.38	30	.00	5.9	91	Pass
HT20	MCS0	2	165	5825	0.20	0.20	2.:	2.22		0.95	6.53	30	.00	5.9	91	Pass
HT40	MCS0	2	151	5755	0.40	0.40	2.:	2.22		-2.02	3.28	30	.00	5.91		Pass
HT40	MCS0	2	159	5795	0.40	0.40	2.:	22	-2.20	-2.44	3.03	30	.00	5.91		Pass
VHT80	MCS0	2	155	5775	0.54	0.54	2.	22	-5.10	-5.76	0.13	30	.00	5.9	91	Pass

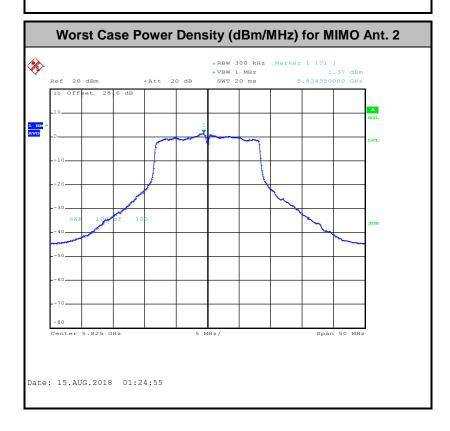
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## <TXBF Modes>

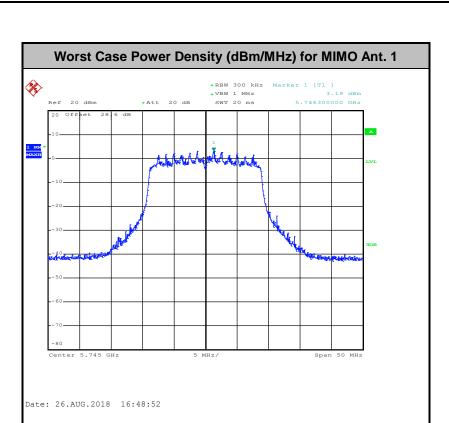
Mod.	Data Rate	<b>N</b> TX	СН.	Freq. (MHz)		ity etor B)	10log (500kHz /RBW) Factor (dB)			,		Average PSD Limit (dBm/500kHz)				Pass /Fail				
					Ant 1	Ant 2	Ant 1 Ant 2		Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2					
VHT20	MCS0	2	149	5745	0.00	0.00	2.2	22	5.41	6.91	9.92	30	.00	5.	91	Pass				
VHT20	MCS0	2	157	5785	0.00	0.00	2.2	22	5.80	6.36	9.37	30	.00	5.91		Pass				
VHT20	MCS0	2	165	5825	0.00	0.00	2.2	2.22		6.27	9.28	30	.00	5.	91	Pass				
VHT40	MCS0	2	151	5755	0.00	0.00	2.22		2.22		2.22		2.57	2.88	5.89	30	.00	5.	91	Pass
VHT40	MCS0	2	159	5795	0.00	0.00	2.:	2.22		2.22		2.81	6.42	30	.00	5.	91	Pass		
VHT80	MCS0	2	155	5775	0.00	0.00	0 2.22 -0.12 -0.46 2.89 30.00 5.9		30.00		91	Pass								

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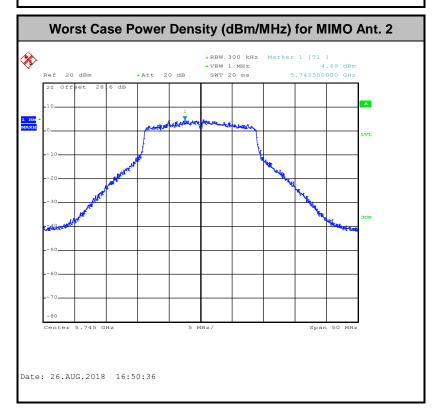
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#### 3.4 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

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#### 3.4.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5.725-5.85 GHz band: 15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
- (2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

**Note:** The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3}$$
 µV/m, where P is the eirp (Watts)

EIRP (dBm)	Field Strength at 3m (dBµV/m)
- 27	68.3

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- (3) KDB789033 D02 v02r01 G)2)c)
  - (i) Section 15.407(b)(1) to (b)(3) specify the unwanted emission limits for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz.<sup>3</sup>

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- (ii) Section 15.407(b)(4) specifies the unwanted emission limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are in terms of a Peak detector. An alternative to the band emissions mask is specified in Section 15.407(b)(4)(ii). The alternative limits are based on the highest antenna gain specified in the filing. There are also marketing and importation restrictions for the devices using the alternative limit.<sup>4</sup>
- **Note 3:** An out-of-band emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz peak emission limit.
- **Note 4:** Only devices with antenna gains of 10 dBi or less may be approved using the emission limits specified in Section 15.247(d) till March 2, 2018; all other devices operating in this band must use the mask specified in Section 15.407(b)(4)(i).

#### 3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

#### 3.4.3 Test Procedures

- The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
   Section G) Unwanted emissions measurement.
  - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
    - RBW = 120 kHz
    - VBW = 300 kHz
    - Detector = Peak
    - Trace mode = max hold
  - (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
    - RBW = 1 MHz
    - VBW ≥ 3 MHz
    - Detector = Peak
    - Sweep time = auto
    - Trace mode = max hold
  - (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
    - RBW = 1 MHz
    - VBW = 10 Hz, when duty cycle is no less than 98 percent.
    - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

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2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.

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- 3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- 4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
- 5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
- 6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
- 7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

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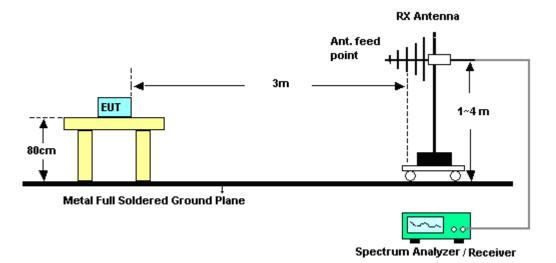
# 3.4.4 Test Setup

#### For radiated emissions below 30MHz



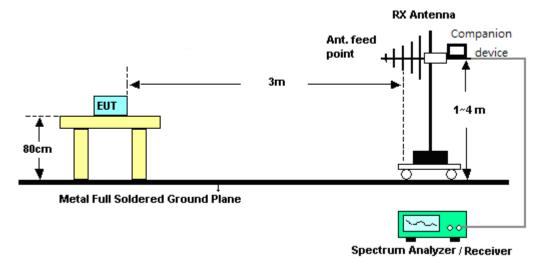
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# For radiated emissions from 30MHz to 1GHz <CDD Mode>



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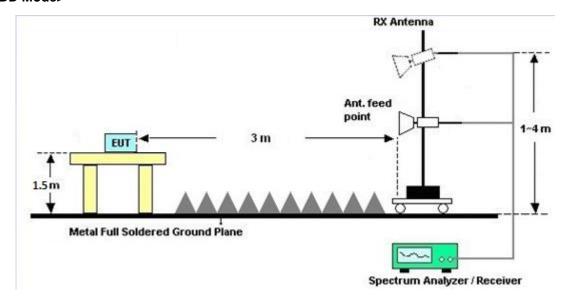
#### <TXBF Modes>



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#### For radiated emissions above 1GHz

#### <CDD Mode>

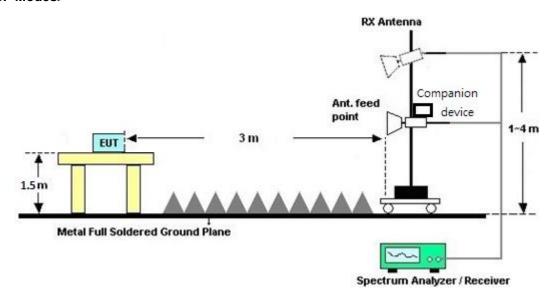


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#### <TXBF Modes>



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#### 3.4.5 Test Results of Radiated Emissions (9 kHz ~ 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 line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

#### 3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix B and C.

#### 3.4.7 Duty Cycle

Please refer to Appendix D.

#### 3.4.8 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C.

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#### 3.5 AC Conducted Emission Measurement

#### 3.5.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

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Eroquency of emission (MUz)	Conducted limit (dBµV)				
Frequency of emission (MHz)	Quasi-peak	Average			
0.15-0.5	66 to 56*	56 to 46*			
0.5-5	56	46			
5-30	60	50			

<sup>\*</sup>Decreases with the logarithm of the frequency.

#### 3.5.2 Measuring Instruments

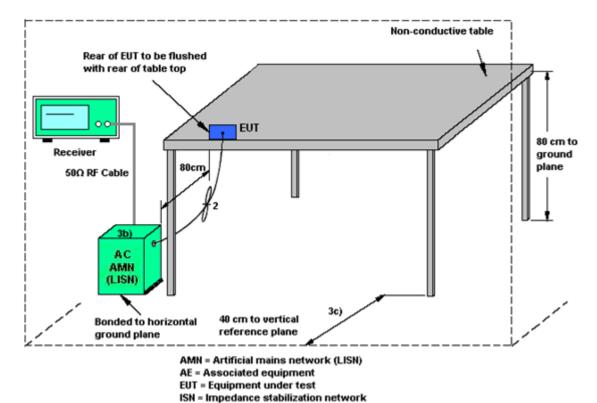
See list of measuring equipment of this test report.

#### 3.5.3 Test Procedures

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- 2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 3. All the support units are connecting to the other LISN.
- 4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- 5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- 6. Both sides of AC line were checked for maximum conducted interference.
- 7. The frequency range from 150 kHz to 30 MHz was searched.
- 8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

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# 3.5.4 Test Setup



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3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix A.

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# 3.6 Automatically Discontinue Transmission

#### 3.6.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

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#### 3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

#### 3.6.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

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### 3.7 Antenna Requirements

#### 3.7.1 Standard Applicable

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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#### 3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

#### 3.7.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = GANT + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = 10 log(NANT/NSS=1) dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with

GANT set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain  $G_{ANT}$  is set equal to the antenna having the highest gain, i.e., F(2)f(i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

<cdd modes=""></cdd>						
			DG	DG	Power	PSD
			for	for	Limit	Limit
	Ant. 1	Ant. 2	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
Band IV	3.00	2.80	3.00	5.91	0.00	0.00

Power Limit Reduction = DG(Power) - 6dBi, ( min = 0 )

 $PSD \ Limit \ Reduction = DG(PSD) - 6dBi, \ (min = 0)$ 

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#### **TXBF modes**

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

$$Directional Gain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^{2}}{N_{ANT}} \right]$$

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where

Each antenna is driven by no more than one spatial stream;

 $N_{SS}$  = the number of independent spatial streams of data;

 $N_{ANT}$  = the total number of antennas

 $g_{j,k} = 10^{G_k/20}$  if the kth antenna is being fed by spatial stream j, or zero if it is not;  $G_k$  is the gain in dBi of the kth antenna.

The EUT supports beamforming for 802.11ac modes.

The directional gain calculation is following F)2)e)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

			DG	DG	Power	PSD
			for	for	Limit	Limit
	Ant 1	Ant 2	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
Band IV	3.00	2.80	5.91	5.91	0.00	0.00

Power Limit Reduction = DG(Power) - 6dBi, (min = 0)

 $PSD\ Limit\ Reduction = DG(PSD) - 6dBi, (min = 0)$ 

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# 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 26, 2017	Jul. 10, 2018~ Aug. 29, 2018	Sep. 25, 2018	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	0846202	300MHz~40GH z	Sep. 26, 2017	Jul. 10, 2018~ Aug. 29, 2018	Sep. 25, 2018	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101067	9kHz ~ 30GHz	Nov. 13, 2017	Jul. 10, 2018~ Aug. 29, 2018	Nov. 12, 2018	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC130048 4	N/A	Mar. 01, 2018	Jul. 10, 2018~ Aug. 29, 2018	Feb. 28, 2019	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jul. 17, 2018	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	3.6GHz	Dec. 08, 2017	Jul. 17, 2018	Dec. 07, 2018	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 30, 2017	Jul. 17, 2018	Nov. 29, 2018	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jul. 17, 2018	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 03, 2018	Jul. 17, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 03, 2018	Jul. 17, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Nov. 23, 2017	Aug. 02, 2018 ~ Aug. 27, 2018	Nov. 22, 2018	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D&00800 N1D01N-06	37059&01	30MHz~1GHz	Oct. 14, 2017	Aug. 02, 2018 ~ Aug. 27, 2018	Oct. 13, 2018	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120D	9120D-132 8	1GHz ~ 18GHz	Oct. 20, 2017	Aug. 02, 2018 ~ Aug. 27, 2018	Oct. 19, 2018	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 584	18GHz ~ 40GHz	Nov. 27, 2017	Aug. 02, 2018 ~ Aug. 27, 2018	Nov. 26, 2018	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 26, 2018	Aug. 02, 2018 ~ Aug. 27, 2018	Mar. 25, 2019	Radiation (03CH12-HY)
Preamplifier	Keysight	83017A	MY532701 48	1GHz~26.5GHz	Jan. 15, 2018	Aug. 02, 2018 ~ Aug. 27, 2018	Jan. 14, 2019	Radiation (03CH12-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590074	1GHz~18GHz	May 21, 2018	Aug. 02, 2018 ~ Aug. 27, 2018	May 20, 2019	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz ~ 40GHz	Dec. 05, 2017	Aug. 02, 2018 ~ Aug. 27, 2018	Dec. 04, 2018	Radiation (03CH12-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100390	20Hz~26.5GHz	Dec. 25, 2017	Aug. 02, 2018 ~ Aug. 27, 2018	Dec. 24, 2018	Radiation (03CH12-HY)
Spectrum Analyzer	Keysight	N9010A	MY542004 85	10Hz ~ 44GHz	Oct. 31, 2017	Aug. 02, 2018 ~ Aug. 27, 2018	Oct. 30, 2018	Radiation (03CH12-HY)
Filter	Woken	WHKX8-5272. 5-6750-18000 -40ST	SN2	6.75G Highpass	Mar. 21, 2018	Aug. 02, 2018 ~ Aug. 27, 2018	Mar. 20, 2019	Radiation (03CH12-HY)
Filter	Wainwright	WLJ4-1000-1 530-6000-40S T	SN3	1.53 GHz Lowpass	Mar. 21, 2018	Aug. 02, 2018 ~ Aug. 27, 2018	Mar. 20, 2019	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY15539/ 4	30M-18G	Mar. 14, 2018	Aug. 02, 2018 ~ Aug. 27, 2018	Mar. 13, 2019	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30M~40GHz	Oct. 17, 2017	Aug. 02, 2018 ~ Aug. 27, 2018	Oct. 16, 2018	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30M~40GHz	Oct. 17, 2017	Aug. 02, 2018 ~ Aug. 27, 2018	Oct. 16, 2018	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500- B	N/A	1m~4m	N/A	Aug. 02, 2018 ~ Aug. 27, 2018	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Aug. 02, 2018 ~ Aug. 27, 2018	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-00098 9	N/A	N/A	Aug. 02, 2018 ~ Aug. 27, 2018	N/A	Radiation (03CH12-HY)

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# 5 Uncertainty of Evaluation

#### <u>Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)</u>

Measuring Uncertainty for a Level of Confidence	2.7
of 95% (U = 2Uc(y))	2.1

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#### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence	E 4
of 95% (U = 2Uc(y))	5.1

#### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

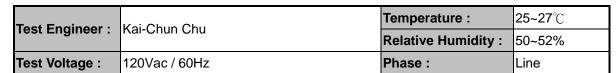
Measuring Uncertainty for a Level of Confidence	5.2
of 95% (U = 2Uc(y))	5.2

#### Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

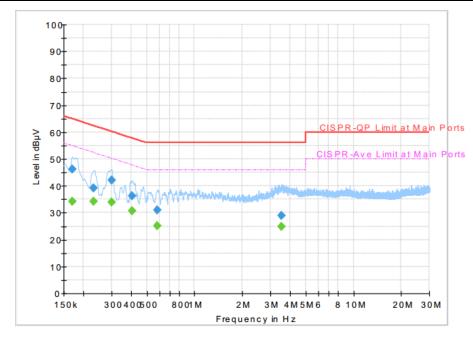
Measuring Uncertainty for a Level of Confidence	4.7
of 95% (U = 2Uc(y))	4.7

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# **Appendix A. AC Conducted Emission Test Results**



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#### **Final Result**

Frequency	QuasiPeak	CAverage	Limit	Margin	Lina	Tilta.	Corr.
(MHz)	(dBµV)	(dBµV)	(dBµV)	(dB)	Line	Filter	(dB)
0.170250		34.17	54.95	20.78	L1	OFF	19.5
0.170250	46.29		64.95	18.66	L1	OFF	19.5
0.231000		34.25	52.41	18.16	L1	OFF	19.5
0.231000	39.15		62.41	23.26	L1	OFF	19.5
0.300750		33.78	50.22	16.44	L1	OFF	19.5
0.300750	42.10		60.22	18.12	L1	OFF	19.5
0.406500		30.58	47.72	17.14	L1	OFF	19.5
0.406500	36.34		57.72	21.38	L1	OFF	19.5
0.582000		25.19	46.00	20.81	L1	OFF	19.5
0.582000	30.99		56.00	25.01	L1	OFF	19.5
3.518250		24.99	46.00	21.01	L1	OFF	19.7
3.518250	29.02		56.00	26.98	L1	OFF	19.7

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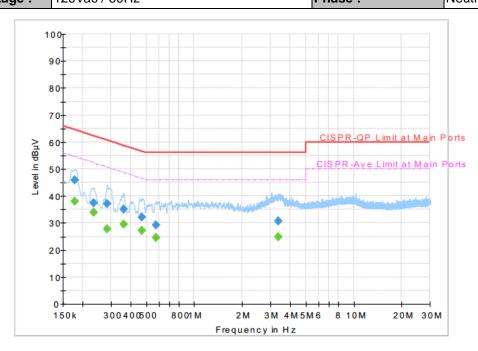
 Test Engineer :
 Kai-Chun Chu

 Test Voltage :
 120Vac / 60Hz

 Test Voltage :
 120 Vac / 60Hz

 Test Voltage :
 Neutral

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#### **Final Result**

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.177000		38.13	54.63	16.50	N	OFF	19.5
0.177000	45.99		64.63	18.64	N	OFF	19.5
0.233250		33.90	52.33	18.43	N	OFF	19.5
0.233250	37.51		62.33	24.82	N	OFF	19.5
0.282750		27.83	50.74	22.91	N	OFF	19.5
0.282750	37.14		60.74	23.60	N	OFF	19.5
0.361500		29.39	48.69	19.30	N	OFF	19.5
0.361500	35.05		58.69	23.64	N	OFF	19.5
0.469500		27.22	46.52	19.30	N	OFF	19.5
0.469500	32.28		56.52	24.24	N	OFF	19.5
0.575250		24.57	46.00	21.43	N	OFF	19.5
0.575250	29.34		56.00	26.66	N	OFF	19.5
3.374250		24.84	46.00	21.16	N	OFF	19.7
3.374250	30.73		56.00	25.27	N	OFF	19.7

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# Appendix B. Radiated Spurious Emission

Test Engineer :	Jack Cheng, Lance Chiang, and Peter Liao	Temperature :	22~25°C
rest Engineer .		Relative Humidity :	53~67%

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#### <CDD Mode>

#### Band 4 - 5725~5850MHz

#### WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos		Avg.	
1		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	(dB <sub>µ</sub> V)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
		5639.6	54.89	-13.31	68.2	43.47	32.19	10.45	31.22	100	53	Р	Н
		5698.2	64.74	-39.13	103.87	53.22	32.27	10.5	31.25	100	53	Р	Н
		5714.6	67.71	-41.58	109.29	56.17	32.29	10.51	31.26	100	53	Р	Н
		5725	77.43	-44.77	122.2	65.86	32.31	10.52	31.26	100	53	Р	Н
	*	5745	113.49	-	-	101.88	32.34	10.54	31.27	100	53	Р	Н
	*	5745	102.85	-	-	91.24	32.34	10.54	31.27	100	53	Α	Н
802.11a													Н
CH 149													Н
5745MHz		5647.6	55.26	-12.94	68.2	43.83	32.19	10.46	31.22	102	348	Р	V
37 4314112		5697.2	64.89	-38.25	103.14	53.37	32.27	10.5	31.25	102	348	Р	V
		5712.4	67.05	-41.62	108.67	55.51	32.29	10.51	31.26	102	348	Р	V
		5725	76.83	-45.37	122.2	65.26	32.31	10.52	31.26	102	348	Р	V
	*	5745	113.22	-	-	101.61	32.34	10.54	31.27	102	348	Р	V
	*	5745	102.61	-	-	91	32.34	10.54	31.27	102	348	Α	V
													V
													V

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WIFI Limit Antenna Table Peak Pol. Note **Frequency** Level Over Read Path Preamp Ant Ant. Limit Line Level **Factor** Loss Factor Pos Pos Avg. ( deg ) (P/A) (H/V) (MHz) (dBµV/m) (dB) (dBµV/m) (dB<sub>µ</sub>V) ( dB/m ) (dB) (dB) (cm) 5644.8 53.68 -14.52 68.2 42.25 32.19 31.22 104 Η 10.46 61 5697 55.1 -47.89 102.99 43.58 32.27 10.5 31.25 104 61 Ρ Н 5718.6 58.81 -51.6 110.41 47.25 32.31 10.51 31.26 104 61 Ρ Н Ρ 5724.2 58.8 -61.58 120.38 47.23 32.31 10.52 31.26 104 61 Н 5785 114.36 102.69 32.39 31.29 Ρ 10.57 104 61 Η \* 5785 102.92 91.25 32.39 10.57 31.29 104 61 Α Н 5852.6 59.3 -56.97 116.27 47.52 32.48 10.62 31.32 104 61 Ρ Н 5855.2 58.32 -52.42 110.74 46.51 32.51 10.62 31.32 104 61 Ρ Н 5876 55.29 -49.17 104.46 43.45 32.53 10.64 31.33 104 61 Н Р 32.63 Н 5940.8 55.5 -12.768.2 43.55 10.69 31.37 104 61 Н 802.11a Н **CH 157** 31.22 Ρ V 5640 54.79 -13.41 68.2 43.37 32.19 10.45 100 359 5785MHz ٧ 5697.4 55.5 -47.78 103.28 43.98 32.27 10.5 31.25 100 359 5720 58.57 -52.23110.8 47 32.31 10.52 31.26 100 359 Ρ ٧ 5722.8 60.13 -57.05 117.18 48.56 32.31 10.52 31.26 100 359 Ρ ٧ 32.39 Ρ ٧ 5785 115.57 103.9 10.57 31.29 100 359 \* 32.39 31.29 100 ٧ 5785 104.22 92.55 10.57 359 Α 5850.4 61.8 -59.49 121.29 50.02 32.48 10.62 31.32 100 359 ٧ Ρ ٧ 5855.2 60.98 -49.76 110.74 49.17 32.51 10.62 31.32 100 359 Ρ 5876 59.02 -45.44 104.46 47.18 32.53 10.64 31.33 100 359 ٧ 32.6 100 359 Р ٧ 5934.8 55.46 -12.74 68.2 43.55 10.68 31.37 V ٧

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WIFI Preamp Note Over Limit Read Antenna **Path** Ant **Table** Peak Pol. **Frequency** Level Limit Line Level **Factor** Factor Pos Pos Ant. Loss Avg. (dBµV/m) (dB) (dBµV/m) ( dB/m ) ( deg ) (P/A) (H/V) (MHz) (dB<sub>µ</sub>V) (dB) (dB) ( cm ) \* 114.19 102.44 32.46 5825 10.6 31.31 100 54 Η \* 5825 103.13 91.38 32.46 10.6 31.31 100 --54 Α Н 5850.8 68.25 -52.13 120.38 56.47 32.48 10.62 31.32 100 54 Ρ Н 57.06 32.51 31.33 100 Ρ Η 5861 68.87 -40.25 109.12 10.63 54 5875.2 65.38 -39.67 105.05 53.54 32.53 10.64 31.33 100 54 Ρ Н 54 Р 5926.4 56.85 -11.35 68.2 44.93 32.6 10.67 31.35 100 Н Н Н 802.11a **CH 165** 5825 113.84 102.09 32.46 10.6 31.31 100 353 ٧ 5825MHz ٧ 5825 102.94 91.19 32.46 31.31 100 353 Α \_ \_ 10.6 32.48 100 353 Р ٧ 5852 68.45 -49.19 117.64 56.67 10.62 31.32 Р ٧ 5855.8 67.85 -42.73 110.58 56.04 32.51 10.62 31.32 100 353 5875 65.37 -39.83 105.2 53.53 32.53 10.64 31.33 100 353 Ρ V Р ٧ 5935.2 56.82 -11.38 68.2 44.91 32.6 10.68 31.37 100 353 ٧ ٧ ٧ No other spurious found. Remark All results are PASS against Peak and Average limit line.

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#### Band 4 5725~5850MHz

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#### WIFI 802.11a (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol
Ant. 1		( MHz )	( dBµV/m )	Limit (dB)	Line ( dBµV/m )	Level (dBµV)	Factor ( dB/m )	Loss (dB)	Factor (dB)	Pos (cm)		Avg. (P/A)	(H/\
		11490	62.46	-11.54	74	62.16	40.11	16.49	56.3	216	210	Р	Н
		11490	48.96	-5.04	54	48.66	40.11	16.49	56.3	216	210	Α	Н
		17235	51.95	-16.25	68.2	46.2	41.54	20.78	56.57	100	0	Р	Н
802.11a													Н
CH 149		11490	59.31	-14.69	74	59.01	40.11	16.49	56.3	100	16	Р	٧
5745MHz		11490	45.37	-8.63	54	45.07	40.11	16.49	56.3	100	16	Α	V
		17235	51.69	-16.51	68.2	45.94	41.54	20.78	56.57	100	0	Р	V
													V
		11570	59.48	-14.52	74	59.3	39.93	16.55	56.3	100	22	Р	Н
		11570	46.28	-7.72	54	46.1	39.93	16.55	56.3	100	22	Α	Н
000.44		17355	50.73	-17.47	68.2	44.7	41.96	20.88	56.81	100	0	Р	Н
802.11a CH 157													Н
5785MHz		11570	59	-15	74	58.82	39.93	16.55	56.3	100	356	Р	٧
3763WH2		11570	44.92	-9.08	54	44.74	39.93	16.55	56.3	100	356	Α	V
		17355	51.22	-16.98	68.2	45.19	41.96	20.88	56.81	100	0	Р	٧
													٧
		11650	57.67	-16.33	74	57.58	39.77	16.62	56.3	100	22	Р	Н
		11650	43.65	-10.35	54	43.56	39.77	16.62	56.3	100	22	Α	Н
000 44 -		17475	50.04	-18.16	68.2	43.74	42.38	20.97	57.05	100	0	Р	Н
802.11a CH 165													Н
5825MHz		11650	54.95	-19.05	74	54.86	39.77	16.62	56.3	100	334	Р	V
JULUITII IL		11650	41.17	-12.83	54	41.08	39.77	16.62	56.3	100	334	Α	V
		17475	50.83	-17.37	68.2	44.53	42.38	20.97	57.05	100	0	Р	٧
													V

- All results are PASS against Peak and Average limit line.

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# Band 4 5725~5850MHz WIFI 802.11n HT20 (Band Edge @ 3m)

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WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant. 1		( MHz )	( dBµV/m )	Limit (dB)	Line ( dBµV/m )	Level ( dBµV )	Factor ( dB/m )	Loss (dB)	Factor ( dB )	Pos ( cm )	Pos ( deg )	Avg. (P/A)	(H/V)
		5609	55.14	-13.06	68.2	43.78	32.14	10.43	31.21	101	54	Р	Н
		5687.2	63.14	-32.62	95.76	51.63	32.27	10.49	31.25	101	54	Р	Н
		5720	66.05	-44.75	110.8	54.48	32.31	10.52	31.26	101	54	Р	Н
		5725	75.04	-47.16	122.2	63.47	32.31	10.52	31.26	101	54	Р	Н
	*	5745	112.33	-	-	100.72	32.34	10.54	31.27	101	54	Р	Н
	*	5745	100.92	-	-	89.31	32.34	10.54	31.27	101	54	Α	Н
802.11n													Н
HT20													Н
CH 149		5624	54.89	-13.31	68.2	43.49	32.17	10.44	31.21	100	11	Р	٧
5745MHz		5699.2	60.89	-43.72	104.61	49.37	32.27	10.5	31.25	100	11	Р	٧
		5720	65.13	-45.67	110.8	53.56	32.31	10.52	31.26	100	11	Р	٧
		5725	74.29	-47.91	122.2	62.72	32.31	10.52	31.26	100	11	Р	٧
	*	5745	112.27	-	-	100.66	32.34	10.54	31.27	100	11	Р	٧
	*	5745	100.81	-	-	89.2	32.34	10.54	31.27	100	11	Α	٧
													٧
													V

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WIFI Limit Antenna Table Peak Pol. Note Frequency Level Over Read Path Preamp Ant Ant. Limit Line Level **Factor** Loss Factor Pos Pos Avg. (dBµV/m) ( deg ) (P/A) (H/V) (MHz) (dB) (dBµV/m) (dB<sub>µ</sub>V) ( dB/m ) (dB) (dB) (cm) 55 54.29 -13.91 68.2 42.93 32.14 31.2 105 Η 5601 10.42 104.46 44.13 5699 55.65 -48.81 32.27 10.5 31.25 105 55 Ρ Н 5714.8 58.73 -50.62 109.35 47.19 32.29 10.51 31.26 105 55 Ρ Н Ρ 5723.8 58.36 -61.1 119.46 46.79 32.31 10.52 31.26 105 55 Н 5785 112.99 101.32 32.39 31.29 Ρ \_ 10.57 105 55 Η \* 5785 101.34 89.67 32.39 10.57 31.29 105 55 Н Α 5851.4 61.44 -57.57 119.01 49.66 32.48 10.62 31.32 105 55 Ρ Н 5857 59.06 -51.18 110.24 47.25 32.51 10.62 31.32 105 55 Ρ Н 5877.6 56.29 -46.98 103.27 44.45 32.53 10.64 31.33 105 55 Н Р 32.63 Н 5939 55.34 -12.8668.2 43.4 10.68 31.37 105 55 Η 802.11n Н HT20 CH 157 31.22 Ρ V 5630 54.37 -13.83 68.2 42.98 32.17 10.44 100 11 5785MHz Ρ ٧ 5696 54.75 -47.5 102.25 43.23 32.27 10.5 31.25 100 11 5713 57.62 -51.22 108.84 46.08 32.29 10.51 31.26 100 11 Ρ ٧ 5722.8 58.58 -58.6 117.18 47.01 32.31 10.52 31.26 100 Ρ ٧ 11 32.39 Ρ ٧ 5785 113.29 101.62 10.57 31.29 100 11 \* 32.39 31.29 ٧ 5785 101.62 89.95 10.57 100 11 Α 5850 61.35 -60.85 122.2 49.57 32.48 10.62 31.32 100 11 Ρ ٧ Ρ ٧ 5855 59.52 -51.28 110.8 47.71 32.51 10.62 31.32 100 11 Ρ ٧ 5878 58 -44.97 102.97 32.53 10.64 31.33 100 46.16 11 5926.2 55.03 32.6 Р ٧ -13.17 68.2 43.11 10.67 31.35 100 11 V ٧

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WIFI Level Preamp Note Over Limit Read Antenna **Path** Ant Table Peak Pol. **Frequency** Limit Line Factor Factor Pos Pos Ant. Level Loss Avg. (dB) (dBµV/m) (dBµV/m) ( dB/m ) ( deg ) (P/A) (H/V) (MHz) (dBµV) (dB) (dB) ( cm ) \* 112.87 101.12 32.46 100 5825 10.6 31.31 55 Η \* 5825 101.24 89.49 32.46 10.6 31.31 100 Н --55 Α 5850.2 67.65 -54.09 121.74 55.87 32.48 10.62 31.32 100 55 Ρ Н 5857.8 63.89 32.51 31.33 100 Ρ Н -46.12 110.01 52.09 10.62 55 5875.6 63 -41.75 104.75 51.16 32.53 10.64 31.33 100 55 Ρ Н Р 5939 55.47 -12.73 68.2 43.53 32.63 10.68 31.37 100 55 Н Н 802.11n Н HT20 **CH 165** 5825 113.07 101.32 32.46 10.6 31.31 107 10 ٧ 5825MHz ٧ 5825 101.58 32.46 31.31 107 Α \_ -89.83 10.6 10 Р ٧ 5850.2 68.45 -53.29 121.74 56.67 32.48 10.62 31.32 107 10 Р ٧ 5857.2 63.76 -46.42 110.18 51.95 32.51 10.62 31.32 107 10 5875.2 61.48 -43.57 105.05 49.64 32.53 10.64 31.33 107 Ρ V 10 Р ٧ 5934.8 55.64 -12.5668.2 43.73 32.6 10.68 31.37 107 10 ٧ ٧ No other spurious found. Remark All results are PASS against Peak and Average limit line.

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# Band 4 5725~5850MHz

Report No.: FR853105F

### WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	( dBµV/m )		( dBµV/m )	(dB <sub>µ</sub> V)	( dB/m )	( dB )	(dB)	( cm )	( deg )		(H/V
		11490	62.05	-11.95	74	61.75	40.11	16.49	56.3	100	22	Р	Н
		11490	45.72	-8.28	54	45.42	40.11	16.49	56.3	100	22	Α	Н
802.11n		17235	51.04	-17.16	68.2	45.29	41.54	20.78	56.57	100	0	Р	Н
HT20													Н
CH 149		11490	59.91	-14.09	74	59.61	40.11	16.49	56.3	100	333	Р	V
5745MHz		11490	44.29	-9.71	54	43.99	40.11	16.49	56.3	100	333	Α	V
		17235	50.55	-17.65	68.2	44.8	41.54	20.78	56.57	100	0	Р	V
													V
		11570	60.21	-13.79	74	60.03	39.93	16.55	56.3	100	21	Р	Н
		11570	44.13	-9.87	54	43.95	39.93	16.55	56.3	100	21	Α	Н
802.11n		17355	51.03	-17.17	68.2	45	41.96	20.88	56.81	100	0	Р	Н
HT20													Н
CH 157		11570	57.88	-16.12	74	57.7	39.93	16.55	56.3	100	336	Р	V
5785MHz		11570	42.66	-11.34	54	42.48	39.93	16.55	56.3	100	336	Α	V
		17355	51.97	-16.23	68.2	45.94	41.96	20.88	56.81	100	0	Р	V
													V
		11650	57.38	-16.62	74	57.29	39.77	16.62	56.3	100	220	Р	Н
		11650	41.84	-12.16	54	41.75	39.77	16.62	56.3	100	220	Α	Н
802.11n		17475	49.85	-18.35	68.2	43.55	42.38	20.97	57.05	100	0	Р	Н
HT20													Н
CH 165		11650	55.38	-18.62	74	55.29	39.77	16.62	56.3	100	358	Р	V
5825MHz		11650	40.76	-13.24	54	40.67	39.77	16.62	56.3	100	358	Α	V
		17475	49.83	-18.37	68.2	43.53	42.38	20.97	57.05	100	0	Р	V
			10.00	. 5.57	33.2	10.00	12.00	20.01	01.00	. 50	J	•	V

Remark

1. No other spurious found.

2. All results are PASS against Peak and Average limit line.

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# Band 4 5725~5850MHz WIFI 802.11n HT40 (Band Edge @ 3m)

Report No.: FR853105F

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant. 1		( MHz )	( dBµV/m )	Limit (dB)	Line ( dBµV/m )	Level ( dBµV )	Factor ( dB/m )	Loss (dB)	Factor (dB)	Pos (cm)	Pos ( deg )	Avg.	
		5649	55.19	-13.01	68.2	43.76	32.19	10.46	31.22	103	62	P	Н
		5698.8	63.29	-41.03	104.32	51.77	32.27	10.5	31.25	103	62	Р	Н
		5717.6	74.75	-35.38	110.13	63.19	32.31	10.51	31.26	103	62	Р	Н
		5724.4	74.03	-46.8	120.83	62.46	32.31	10.52	31.26	103	62	Р	Н
	*	5755	108.72	-	-	97.09	32.36	10.54	31.27	103	62	Р	Н
	*	5755	97.8	-	-	86.17	32.36	10.54	31.27	103	62	Α	Н
		5854.8	57.73	-53.53	111.26	45.92	32.51	10.62	31.32	103	62	Р	Н
		5855.6	58.27	-52.36	110.63	46.46	32.51	10.62	31.32	103	62	Р	Н
		5889.2	55.54	-39.12	94.66	43.67	32.56	10.65	31.34	103	62	Р	Н
		5925.8	55.18	-13.02	68.2	43.26	32.6	10.67	31.35	103	62	Р	Н
802.11n													Н
HT40													Н
CH 151		5649.6	57.26	-10.94	68.2	45.8	32.22	10.46	31.22	100	357	Р	V
5755MHz		5691.6	69.24	-29.77	99.01	57.73	32.27	10.49	31.25	100	357	Р	٧
		5719.2	72.92	-37.66	110.58	61.35	32.31	10.52	31.26	100	357	Р	V
		5725	74.66	-47.54	122.2	63.09	32.31	10.52	31.26	100	357	Р	V
	*	5755	109.94	-	-	98.31	32.36	10.54	31.27	100	357	Р	V
	*	5755	99.1	-	-	87.47	32.36	10.54	31.27	100	357	Α	V
		5853.4	59.33	-55.12	114.45	47.55	32.48	10.62	31.32	100	357	Р	V
		5855.4	58.94	-51.75	110.69	47.13	32.51	10.62	31.32	100	357	Р	V
		5877.8	57.48	-45.64	103.12	45.64	32.53	10.64	31.33	100	357	Р	V
		5946.4	55.1	-13.1	68.2	43.15	32.63	10.69	31.37	100	357	Р	V
													V
													V

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WIFI Limit Antenna Table Peak Pol. Note Frequency Level Over Read Path Preamp Ant Ant. Limit Line Level **Factor** Loss Factor Pos Pos Avg. (dBµV/m) ( deg ) (P/A) (H/V) (MHz) (dB) (dBµV/m) (dB<sub>µ</sub>V) ( dB/m ) (dB) (dB) (cm) 5624.2 54.5 -13.7 68.2 43.1 32.17 10.44 31.21 102 Η 62 44.59 Ρ 5691.2 56.1 -42.61 98.71 32.27 10.49 31.25 102 62 Н 5713.6 60.59 -48.42 109.01 49.05 32.29 10.51 31.26 102 62 Ρ Н Ρ 5724 61.67 -58.25 119.92 50.1 32.31 10.52 31.26 102 62 Н 5795 109.22 97.52 32.41 10.58 31.29 102 Ρ 62 Η \* 5795 98.42 86.72 32.41 10.58 31.29 102 62 Α Н 5850.4 65.98 -55.31 121.29 54.2 32.48 10.62 31.32 102 62 Ρ Н 5855.6 65.09 -45.54 110.63 53.28 32.51 10.62 31.32 102 62 Ρ Н 5876.8 61.88 -41.98 103.86 50.04 32.53 10.64 31.33 102 62 Н Ρ 5929.2 44.75 31.35 102 Н 56.68 -11.52 68.2 32.6 10.68 62 Η 802.11n Н **HT40 CH 159** -13.76 32.17 31.21 Ρ ٧ 5628.2 54.44 68.2 43.04 10.44 103 356 5795MHz ٧ 5695.4 61.28 -40.53 101.81 49.76 32.27 10.5 31.25 103 356 5716 61.49 -48.19 109.68 49.95 32.29 10.51 31.26 103 356 Ρ ٧ 5722.4 62.33 -53.94 116.27 50.76 32.31 10.52 31.26 103 356 Ρ ٧ 110.46 103 356 Ρ ٧ 5795 98.76 32.41 10.58 31.29 \* 32.41 31.29 103 356 ٧ 5795 99.62 87.92 10.58 Α 5852 67.1 -50.54 117.64 55.32 32.48 10.62 31.32 103 356 ٧ Ρ ٧ 5857 66.26 -43.98 110.24 54.45 32.51 10.62 31.32 103 356 32.53 Ρ ٧ 5877.4 63.68 -39.74 103.42 51.84 10.64 31.33 103 356 45.36 32.6 103 356 Р ٧ 5927 57.29 -10.91 68.2 10.68 31.35 V ٧ 1. No other spurious found. Remark All results are PASS against Peak and Average limit line.

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# Band 4 5725~5850MHz

Report No.: FR853105F

### WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol
Ant. 1		(MHz)	( dBµV/m )	Limit (dB)	Line ( dBµV/m )	Level ( dBµV )	Factor ( dB/m )	Loss (dB)	Factor (dB)	Pos ( cm )	Pos ( deg )	Avg. (P/A)	
		11510	53.83	-20.17	74	53.53	40.1	16.5	56.3	100	22	Р	Н
		11510	42.02	-11.98	54	41.72	40.1	16.5	56.3	100	22	Α	Н
802.11n		17265	49.75	-18.45	68.2	43.91	41.66	20.81	56.63	100	0	Р	Н
HT40													Н
CH 151		11510	54	-20	74	53.7	40.1	16.5	56.3	100	355	Р	V
5755MHz		11510	41.63	-12.37	54	41.33	40.1	16.5	56.3	100	355	Α	V
		17265	49.49	-18.71	68.2	43.65	41.66	20.81	56.63	100	0	Р	V
													V
		11590	53.45	-20.55	74	53.29	39.89	16.57	56.3	100	22	Р	Н
		11590	40.21	-13.79	54	40.05	39.89	16.57	56.3	100	22	Α	Н
802.11n		17385	51.26	-16.94	68.2	45.15	42.08	20.9	56.87	100	0	Р	Н
HT40													Н
CH 159		11590	49.38	-24.62	74	49.22	39.89	16.57	56.3	100	0	Р	V
5795MHz		17385	50.77	-17.43	68.2	44.66	42.08	20.9	56.87	100	0	Р	V
													V
													V

Remark

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No other spurious found.

<sup>2.</sup> All results are PASS against Peak and Average limit line.

# Band 4 5725~5850MHz WIFI 802.11ac VHT80 (Band Edge @ 3m)

Report No.: FR853105F

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos		Avg.	
1		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	(dB <sub>µ</sub> V)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V
		5648.6	54.01	-14.19	68.2	42.58	32.19	10.46	31.22	103	62	Р	Н
		5695.4	68.66	-33.15	101.81	57.14	32.27	10.5	31.25	103	62	Р	Н
		5718.8	72.77	-37.69	110.46	61.2	32.31	10.52	31.26	103	62	Р	Н
		5720.2	73.19	-38.07	111.26	61.62	32.31	10.52	31.26	103	62	Р	Н
	*	5775	105.86	-	-	94.19	32.39	10.56	31.28	103	62	Р	Н
	*	5775	95.29	-	-	83.62	32.39	10.56	31.28	103	62	Α	Н
		5853.8	69.2	-44.34	113.54	57.39	32.51	10.62	31.32	103	62	Р	Н
		5858.8	68.18	-41.55	109.73	56.38	32.51	10.62	31.33	103	62	Р	Н
		5877	63.85	-39.86	103.71	52.01	32.53	10.64	31.33	103	62	Р	Н
		5950	55.11	-13.09	68.2	43.16	32.63	10.69	31.37	103	62	Р	Н
802.11ac													Н
VHT80													Н
CH 155		5646	54.65	-13.55	68.2	43.22	32.19	10.46	31.22	105	357	Р	V
5775MHz		5698.6	69.38	-34.79	104.17	57.86	32.27	10.5	31.25	105	357	Р	V
		5718.8	72.99	-37.47	110.46	61.42	32.31	10.52	31.26	105	357	Р	V
		5720.2	73.48	-37.78	111.26	61.91	32.31	10.52	31.26	105	357	Р	V
	*	5775	106.4	-	-	94.73	32.39	10.56	31.28	105	357	Р	V
	*	5775	96.56	-	-	84.89	32.39	10.56	31.28	105	357	Α	V
		5851.2	71.39	-48.07	119.46	59.61	32.48	10.62	31.32	105	357	Р	V
		5858.8	70.28	-39.45	109.73	58.48	32.51	10.62	31.33	105	357	Р	V
		5875.4	65.04	-39.86	104.9	53.2	32.53	10.64	31.33	105	357	Р	V
		5931.8	55.31	-12.89	68.2	43.38	32.6	10.68	31.35	105	357	Р	V
													V
													V

Remark

2. All results are PASS against Peak and Average limit line.

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# Band 4 5725~5850MHz

Report No.: FR853105F

### WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	(dBµV)	( dB/m )	(dB)	( dB )	( cm )	( deg )	(P/A)	(H/V)
		11550	48.97	-25.03	74	48.75	39.98	16.54	56.3	100	0	Р	Н
		17325	49.56	-18.64	68.2	43.62	41.84	20.85	56.75	100	0	Р	Н
802.11ac													Н
VHT80													Н
CH 155		11550	48.84	-25.16	74	48.62	39.98	16.54	56.3	100	0	Р	V
5775MHz		17325	49.8	-18.4	68.2	43.86	41.84	20.85	56.75	100	0	Р	V
													V
													V

Remark

1. No other spurious found.

2. All results are PASS against Peak and Average limit line.

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#### Band 4 - 5725~5850MHz

Report No.: FR853105F

# WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	(dBµV)	( dB/m )	( dB )	( dB )	( cm )	(deg)	(P/A)	(H/V)
		5628.8	53.76	-14.44	68.2	42.37	32.17	10.44	31.22	102	71	Р	Н
		5699.6	60.89	-44.02	104.91	49.37	32.27	10.5	31.25	102	71	Р	Н
		5717.4	68.85	-41.22	110.07	57.31	32.29	10.51	31.26	102	71	Р	Н
		5723.8	77.86	-41.6	119.46	66.29	32.31	10.52	31.26	102	71	Р	Н
	*	5745	111.4	-	-	99.79	32.34	10.54	31.27	102	71	Р	Н
	*	5745	100.31	-	-	88.7	32.34	10.54	31.27	102	71	Α	Н
000 44 5													Н
802.11a													Н
CH 149 5745MHz		5648.8	55.04	-13.16	68.2	43.61	32.19	10.46	31.22	100	91	Р	V
37 43WH 12		5699.8	62.9	-42.15	105.05	51.38	32.27	10.5	31.25	100	91	Р	٧
		5717.4	70.62	-39.45	110.07	59.08	32.29	10.51	31.26	100	91	Р	٧
		5724.2	81	-39.38	120.38	69.43	32.31	10.52	31.26	100	91	Р	٧
	*	5745	113.23	-	-	101.62	32.34	10.54	31.27	100	91	Р	V
	*	5745	102.16	-	-	90.55	32.34	10.54	31.27	100	91	Α	٧
													٧
													٧

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WIFI Limit Antenna Table Peak Pol. Note **Frequency** Level Over Read Path Preamp Ant Ant. Limit Line Level **Factor** Loss **Factor** Pos Pos Avg. (dBµV/m) ( deg ) (P/A) (H/V) 2 (MHz) (dB) (dBµV/m) (dB<sub>µ</sub>V) ( dB/m ) (dB) (dB) (cm) 5630.4 53.97 -14.2368.2 42.58 32.17 31.22 100 Η 10.44 0 57.18 Ρ 5699.8 -47.87 105.05 45.66 32.27 10.5 31.25 100 0 Н 5720 59.57 -51.23 110.8 48 32.31 10.52 31.26 100 0 Ρ Н Ρ 5724.4 61.13 -59.7 120.83 49.56 32.31 10.52 31.26 100 0 Н 5785 110.46 98.79 32.39 31.29 Ρ \_ 10.57 100 0 Η \* 5785 99.25 87.58 32.39 10.57 31.29 100 0 Α Н 5850.4 61.25 -60.04 121.29 49.47 32.48 10.62 31.32 100 0 Р Н 5855.8 60.23 -50.35 110.58 48.42 32.51 10.62 31.32 100 0 Ρ Н 5875.2 56.05 -49 105.05 44.21 32.53 10.64 31.33 100 0 Ρ Н Р 32.63 Н 5946 54.74 -13.46 68.2 42.79 10.69 31.37 100 0 Η 802.11a Н **CH 157** -14.16 301 Ρ V 5625.2 54.04 68.2 42.64 32.17 10.44 31.21 93 5785MHz ٧ 5698 58.3 -45.43 103.73 46.78 32.27 10.5 31.25 301 93 Ρ 5719.8 61.18 -49.56 110.74 49.61 32.31 10.52 31.26 301 93 Ρ ٧ 5724.8 62.81 -58.93 121.74 51.24 32.31 10.52 31.26 301 93 Ρ ٧ 32.39 301 Ρ ٧ 5785 112.7 101.03 10.57 31.29 93 \* 32.39 31.29 ٧ 5785 101.56 89.89 10.57 301 93 Α 5850.8 63.3 -57.08 120.38 51.52 32.48 10.62 31.32 301 93 Ρ ٧ Ρ ٧ 5855.6 61.92 -48.71 110.63 50.11 32.51 10.62 31.32 301 93 32.53 Ρ ٧ 5880.4 59.29 101.19 47.45 10.64 31.33 301 93 -41.9 5942.4 43.11 32.63 301 Р ٧ 55.06 -13.14 68.2 10.69 31.37 93 V ٧

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WIFI Preamp Note Over Limit Read Antenna **Path** Ant **Table** Peak Pol. **Frequency** Level Limit Line Level Factor Factor Pos Pos Ant. Loss Avg. (dBµV/m) (dB) (dBµV/m) (dB<sub>µ</sub>V) ( dB/m ) ( deg ) (P/A) (H/V) 2 (MHz) (dB) (dB) ( cm ) \* 110.68 32.46 105 5825 98.93 10.6 31.31 72 Η 5825 99.47 87.72 32.46 10.6 31.31 105 --72 Α Н 5850 67.02 -55.18 122.2 55.24 32.48 10.62 31.32 105 72 Ρ Н 5855 32.51 31.32 105 72 Ρ Η 66.75 -44.05 110.8 54.94 10.62 5875.2 63.75 -41.3 105.05 51.91 32.53 10.64 31.33 105 72 Ρ Н Р 5935.6 55.38 -12.82 68.2 43.47 32.6 10.68 31.37 105 72 Н Н Н 802.11a **CH 165** 5825 111.65 99.9 32.46 10.6 31.31 105 95 ٧ 5825MHz ٧ 5825 100.87 89.12 32.46 31.31 105 95 Α \_ \_ 10.6 5852.8 32.48 105 Р ٧ 68.4 -47.42 115.82 56.62 10.62 31.32 95 Ρ ٧ 5859 68.41 -41.27 109.68 56.61 32.51 10.62 31.33 105 95 5875.2 65.58 -39.47 105.05 53.74 32.53 10.64 31.33 105 Ρ V 95 Р ٧ 5926.8 56.73 -11.47 68.2 44.8 32.6 10.68 31.35 105 95 ٧ ٧ ٧ No other spurious found. Remark All results are PASS against Peak and Average limit line.

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#### Band 4 5725~5850MHz

Report No.: FR853105F

# WIFI 802.11a (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos		Avg.	
2		(MHz)	( dBµV/m )		( dBµV/m )	(dB <sub>µ</sub> V)	( dB/m )	( dB )	( dB )	( cm )		(P/A)	1
		11490	60.2	-13.8	74	59.9	40.11	16.49	56.3	100	22	Р	Н
		11490	45.76	-8.24	54	45.46	40.11	16.49	56.3	100	22	Α	Н
000 44 -		17235	51.16	-17.04	68.2	45.41	41.54	20.78	56.57	100	0	Р	Н
802.11a													Н
CH 149		11490	58.97	-15.03	74	58.67	40.11	16.49	56.3	100	358	Р	V
5745MHz		11490	44.22	-9.78	54	43.92	40.11	16.49	56.3	100	358	Α	V
		17235	50.72	-17.48	68.2	44.97	41.54	20.78	56.57	100	0	Р	V
													V
		11570	58.52	-15.48	74	58.34	39.93	16.55	56.3	100	22	Р	Н
		11570	44.2	-9.8	54	44.02	39.93	16.55	56.3	100	22	Α	Н
		17355	52.2	-16	68.2	46.17	41.96	20.88	56.81	100	0	Р	Н
802.11a													Н
CH 157		11570	56.93	-17.07	74	56.75	39.93	16.55	56.3	100	358	Р	V
5785MHz		11570	42.6	-11.4	54	42.42	39.93	16.55	56.3	100	358	Α	V
		17355	50.86	-17.34	68.2	44.83	41.96	20.88	56.81	100	0	Р	V
													V
		11650	57.05	-16.95	74	56.96	39.77	16.62	56.3	216	231	Р	Н
		11650	42.45	-11.55	54	42.36	39.77	16.62	56.3	216	231	Α	Н
		17475	49.63	-18.57	68.2	43.33	42.38	20.97	57.05	100	0	Р	Н
802.11a													Н
CH 165		11650	54.96	-19.04	74	54.87	39.77	16.62	56.3	109	332	Р	V
5825MHz		11650	40.68	-13.32	54	40.59	39.77	16.62	56.3	109	332	Α	V
		17475	50.42	-17.78	68.2	44.12	42.38	20.97	57.05	100	0	Р	V
			332		33.2				31.03				V

Remark

- . No other spurious found.
- 2. All results are PASS against Peak and Average limit line.

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# Band 4 5725~5850MHz WIFI 802.11n HT20 (Band Edge @ 3m)

Report No.: FR853105F

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.		, <b></b> .		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	(dB <sub>µ</sub> V)	( dB/m )	( dB )	( dB )	(cm)	( deg )	(P/A)	(H/V)
		5648.8	57.21	-10.99	68.2	45.78	32.19	10.46	31.22	100	327	Р	Н
		5699.6	67.27	-37.64	104.91	55.75	32.27	10.5	31.25	100	327	Р	Н
		5720	71.59	-39.21	110.8	60.02	32.31	10.52	31.26	100	327	Р	Н
		5723.2	78.58	-39.52	118.1	67.01	32.31	10.52	31.26	100	327	Р	Н
	*	5745	110.39	-	-	98.78	32.34	10.54	31.27	100	327	Р	Н
	*	5745	99.05	-	-	87.44	32.34	10.54	31.27	100	327	Α	Н
802.11n													Н
HT20													П
CH 149		5645.2	56.56	-11.64	68.2	45.13	32.19	10.46	31.22	100	91	Р	<b>V</b>
5745MHz		5699.8	68.55	-36.5	105.05	57.03	32.27	10.5	31.25	100	91	Р	<b>V</b>
		5717.6	70.46	-39.67	110.13	58.9	32.31	10.51	31.26	100	91	Р	<
		5725	78.35	-43.85	122.2	66.78	32.31	10.52	31.26	100	91	Р	٧
	*	5745	112.82	-	-	101.21	32.34	10.54	31.27	100	91	Р	٧
	*	5745	101.45	-	-	89.84	32.34	10.54	31.27	100	91	Α	V
													٧
													٧

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WIFI Limit Antenna Table Peak Pol. Note **Frequency** Level Over Read Path Preamp Ant Ant. Limit Line Level **Factor** Loss Factor Pos Pos Avg. (dBµV/m) ( deg ) (P/A) (H/V) 2 (MHz) (dB) (dBµV/m) (dB<sub>µ</sub>V) ( dB/m ) (dB) (dB) ( cm ) 5626.2 54.13 -14.07 68.2 42.73 32.17 31.21 100 70 Η 10.44 5698.2 55.14 -48.73 103.87 43.62 32.27 10.5 31.25 100 70 Ρ Н 5714.2 58.53 -50.65 109.18 46.99 32.29 10.51 31.26 100 70 Ρ Н Ρ 5723.6 60.48 -58.53 119.01 48.91 32.31 10.52 31.26 100 70 Н 5785 109.71 98.04 32.39 31.29 100 Ρ 10.57 70 Η \* 5785 98.49 86.82 32.39 10.57 31.29 100 70 Н Α 5850.2 61.09 -60.65 121.74 49.31 32.48 10.62 31.32 100 70 Р Н 5855.8 60.26 -50.32 110.58 48.45 32.51 10.62 31.32 100 70 Ρ Н 5879.4 56.93 -45 101.93 45.09 32.53 10.64 31.33 100 70 Н Р 32.63 70 Н 5946 54.86 -13.34 68.2 42.91 10.69 31.37 100 Η 802.11n Н HT20 CH 157 5605.2 -14.1 Ρ V 54.1 68.2 42.75 32.14 10.42 31.21 100 89 5785MHz ٧ 5698.2 56.76 -47.11 103.87 45.24 32.27 10.5 31.25 100 89 Ρ 5716.4 60.9 -48.89109.79 49.36 32.29 10.51 31.26 100 89 Ρ ٧ 5724 62.08 -57.84 119.92 50.51 32.31 10.52 31.26 100 89 Ρ ٧ 100.68 32.39 Ρ ٧ 5785 112.35 10.57 31.29 100 89 \* 32.39 31.29 ٧ 5785 100.87 -89.2 10.57 100 89 Α 5850.6 63.26 -57.57 120.83 51.48 32.48 10.62 31.32 100 89 Ρ ٧ Ρ ٧ 5855 62.21 -48.59 110.8 50.4 32.51 10.62 31.32 100 89 32.53 Ρ ٧ 5876.4 58.98 -45.18 104.16 47.14 10.64 31.33 100 89 44.04 32.63 Р ٧ 5947.6 55.99 -12.21 68.2 10.69 31.37 100 89 V ٧

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WIFI Preamp Note Over Limit Read Antenna **Path** Ant Table Peak Pol. **Frequency** Level Line Limit **Factor** Factor Pos Pos Ant. Level Loss Avg. (dB) (dBµV/m) (dBµV/m) ( dB/m ) ( deg ) (P/A) (H/V) 2 (MHz) (dBµV) (dB) (dB) ( cm ) \* 108.49 32.46 100 5825 96.74 10.6 31.31 68 Η \* 5825 97.5 85.75 32.46 10.6 31.31 100 Н --68 Α 5850.6 67.43 -53.4 120.83 55.65 32.48 10.62 31.32 100 68 Ρ Н 5856.2 32.51 31.32 100 Ρ Η 67.09 -43.37 110.46 55.28 10.62 68 5877 64.58 -39.13 103.71 52.74 32.53 10.64 31.33 100 68 Ρ Н Р 5930.4 55.07 -13.13 68.2 43.14 32.6 10.68 31.35 100 68 Н Н 802.11n Н HT20 **CH 165** 5825 110.17 98.42 32.46 10.6 31.31 100 90 ٧ 5825MHz ٧ 5825 99.74 87.99 32.46 31.31 100 90 Α \_ \_ 10.6 5850.6 100 Р ٧ 69.63 -51.2 120.83 57.85 32.48 10.62 31.32 90 Ρ ٧ 5858 68.68 -41.28 109.96 56.88 32.51 10.62 31.33 100 90 5875 66.12 -39.08 105.2 54.28 32.53 10.64 31.33 100 Ρ V 90 Ρ ٧ 5929 58.67 -9.53 68.2 46.74 32.6 10.68 31.35 100 90 ٧ ٧ No other spurious found. Remark All results are PASS against Peak and Average limit line.

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## WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		(MHz)	( dBµV/m )		( dBµV/m )	(dB <sub>µ</sub> V)	( dB/m )	( dB )	(dB)	( cm )	( deg )	(P/A)	(H/V
		11490	60.51	-13.49	74	60.21	40.11	16.49	56.3	213	231	Р	Н
		11490	44.88	-9.12	54	44.58	40.11	16.49	56.3	213	231	Α	Н
802.11n		17235	50.43	-17.77	68.2	44.68	41.54	20.78	56.57	100	0	Р	Н
HT20													Н
CH 149		11490	57.74	-16.26	74	57.44	40.11	16.49	56.3	100	332	Р	V
5745MHz		11490	42.57	-11.43	54	42.27	40.11	16.49	56.3	100	332	Α	V
		17235	50.59	-17.61	68.2	44.84	41.54	20.78	56.57	100	0	Р	V
													V
		11570	58.4	-15.6	74	58.22	39.93	16.55	56.3	100	222	Р	Н
		11570	42.91	-11.09	54	42.73	39.93	16.55	56.3	100	222	Α	Н
802.11n		17355	51.78	-16.42	68.2	45.75	41.96	20.88	56.81	100	0	Р	Н
HT20													Н
CH 157		11570	57.24	-16.76	74	57.06	39.93	16.55	56.3	100	355	Р	V
5785MHz		11570	41.68	-12.32	54	41.5	39.93	16.55	56.3	100	355	Α	V
		17355	51.6	-16.6	68.2	45.57	41.96	20.88	56.81	100	0	Р	V
													V
		11650	54.66	-19.34	74	54.57	39.77	16.62	56.3	100	50	Р	Н
		11650	41.88	-12.12	54	41.79	39.77	16.62	56.3	100	50	Α	Н
802.11n		17475	50.88	-17.32	68.2	44.58	42.38	20.97	57.05	100	0	Р	Н
HT20													Н
CH 165		11650	53.86	-20.14	74	53.77	39.77	16.62	56.3	100	359	Р	V
5825MHz		11650	41.46	-12.54	54	41.37	39.77	16.62	56.3	100	359	Α	V
		17475	49.84	-18.36	68.2	43.54	42.38	20.97	57.05	100	0	Р	V
				. 3.00								-	V

Remark

1. No other spurious found.

2. All results are PASS against Peak and Average limit line.

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## Band 4 5725~5850MHz WIFI 802.11n HT40 (Band Edge @ 3m)

Report No.: FR853105F

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		(MHz)	( dBµV/m )	` ,	( dBµV/m )		( dB/m )	( dB )	( dB )	( cm )	( deg )		
		5649.2	54.17	-14.03	68.2	42.74	32.19	10.46	31.22	237	66	Р	Н
		5695	61.75	-39.76	101.51	50.23	32.27	10.5	31.25	237	66	Р	Н
		5719.2	76.64	-33.94	110.58	65.07	32.31	10.52	31.26	237	66	Р	Н
		5725	78.49	-43.71	122.2	66.92	32.31	10.52	31.26	237	66	Р	Н
	*	5755	107.84	-	-	96.21	32.36	10.54	31.27	237	66	Р	Н
	*	5755	97.1	-	-	85.47	32.36	10.54	31.27	237	66	Α	Н
		5850.6	56.97	-63.86	120.83	45.19	32.48	10.62	31.32	237	66	Р	Н
		5859.4	57.76	-51.81	109.57	45.96	32.51	10.62	31.33	237	66	Р	Н
		5878.2	55.01	-47.81	102.82	43.17	32.53	10.64	31.33	237	66	Р	Н
		5935.2	54.14	-14.06	68.2	42.23	32.6	10.68	31.37	237	66	Р	Н
802.11n													Н
HT40													Н
CH 151		5649.4	55.96	-12.24	68.2	44.53	32.19	10.46	31.22	100	89	Р	V
5755MHz		5698.6	64.06	-40.11	104.17	52.54	32.27	10.5	31.25	100	89	Р	V
		5716.4	78.11	-31.68	109.79	66.57	32.29	10.51	31.26	100	89	Р	V
		5725	80.34	-41.86	122.2	68.77	32.31	10.52	31.26	100	89	Р	V
	*	5755	109.1	-	-	97.47	32.36	10.54	31.27	100	89	Р	V
	*	5755	98.46	-	-	86.83	32.36	10.54	31.27	100	89	Α	V
		5850	58.16	-64.04	122.2	46.38	32.48	10.62	31.32	100	89	Р	V
		5858.2	58.26	-51.64	109.9	46.46	32.51	10.62	31.33	100	89	Р	V
		5880	55.72	-45.77	101.49	43.88	32.53	10.64	31.33	100	89	Р	V
		5930.4	54.31	-13.89	68.2	42.38	32.6	10.68	31.35	100	89	Р	V
													V
													V

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WIFI Limit Antenna Table Peak Pol. Note Frequency Level Over Read **Path** Preamp Ant Ant. Limit Line Level **Factor** Loss Factor Pos Pos Avg. (dBµV/m) ( deg ) (P/A) (H/V) 2 (MHz) (dB) (dBµV/m) (dBµV) ( dB/m ) (dB) (dB) (cm) 10.43 5617 53.48 -14.72 68.2 42.09 32.17 31.21 239 63 Η 100.04 44.32 Ρ 5693 55.83 -44.21 32.27 10.49 31.25 239 63 Н 5716.6 57.41 -52.44 109.85 45.87 32.29 10.51 31.26 239 63 Ρ Н Ρ 5723.8 58.84 -60.62 119.46 47.27 32.31 10.52 31.26 239 63 Н 5795 107.25 32.41 10.58 31.29 239 Ρ 95.55 63 Н \* 5795 96.63 84.93 32.41 10.58 31.29 239 63 Α Н 5851 62.31 -57.61 119.92 50.53 32.48 10.62 31.32 239 63 Р Н 5855 61.92 -48.88 110.8 50.11 32.51 10.62 31.32 239 63 Ρ Н 5875.6 59.34 -45.41 104.75 47.5 32.53 10.64 31.33 239 63 Н Р 31.37 239 Н 5936.2 54.6 -13.6 68.2 42.69 32.6 10.68 63 Н 802.11n Н **HT40 CH 159** 32.14 Ρ ٧ 5608 54.29 -13.91 68.2 42.93 10.43 31.21 100 93 5795MHz Ρ ٧ 5698 56.17 -47.56 103.73 44.65 32.27 10.5 31.25 100 93 5717.8 60.12 -50.06 110.18 48.56 32.31 10.51 31.26 100 93 Ρ ٧ 5724.8 60.43 -61.31 121.74 48.86 32.31 10.52 31.26 100 93 Ρ ٧ 100 93 Ρ ٧ 5795 109.2 97.5 32.41 10.58 31.29 \* 98.43 32.41 31.29 100 ٧ 5795 86.73 10.58 93 Α 5851.2 64.48 -54.98 119.46 52.7 32.48 10.62 31.32 100 93 Ρ ٧ Ρ ٧ 5856.8 63.68 -46.62 110.3 51.87 32.51 10.62 31.32 100 93 Ρ ٧ 5875.2 60.46 -44.59 105.05 48.62 32.53 10.64 31.33 100 93 Р 68.2 44.48 32.6 100 ٧ 5934.4 56.39 -11.81 10.68 31.37 93 V ٧ 1. No other spurious found. Remark All results are PASS against Peak and Average limit line.

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## WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	(dBµV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V
		11510	54.32	-19.68	74	54.02	40.1	16.5	56.3	100	21	Р	Н
		11510	41.53	-12.47	54	41.23	40.1	16.5	56.3	100	21	Α	Н
802.11n		17265	49.47	-18.73	68.2	43.63	41.66	20.81	56.63	100	0	Р	Н
HT40													Н
CH 151		11510	48.84	-25.16	74	48.54	40.1	16.5	56.3	100	0	Р	V
5755MHz		17265	50.08	-18.12	68.2	44.24	41.66	20.81	56.63	100	0	Р	V
													V
													V
		11590	53.5	-20.5	74	53.34	39.89	16.57	56.3	100	228	Р	Н
		11590	40.9	-13.1	54	40.74	39.89	16.57	56.3	100	228	Α	Н
802.11n		17385	50.27	-17.93	68.2	44.16	42.08	20.9	56.87	100	0	Р	Н
HT40													Н
CH 159		11590	52.49	-21.51	74	52.33	39.89	16.57	56.3	100	358	Р	V
5795MHz		11590	39.77	-14.23	54	39.61	39.89	16.57	56.3	100	358	Α	V
		17385	50.33	-17.87	68.2	44.22	42.08	20.9	56.87	100	0	Р	V
													V

Remark

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<sup>1.</sup> No other spurious found.

<sup>2.</sup> All results are PASS against Peak and Average limit line.

## Band 4 5725~5850MHz WIFI 802.11ac VHT80 (Band Edge @ 3m)

Report No.: FR853105F

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol
Ant.		<b>(</b> )		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		(MHz)	( dBµV/m )	, ,	( dBµV/m )	(dBµV)	( dB/m )	(dB)	(dB)	( cm )	( deg )	(P/A)	
		5642	54.76	-13.44	68.2	43.34	32.19	10.45	31.22	225	64	Р	Н
		5695.2	71.61	-30.05	101.66	60.09	32.27	10.5	31.25	225	64	Р	Н
		5718.8	75.41	-35.05	110.46	63.84	32.31	10.52	31.26	225	64	Р	Н
		5720.2	75.23	-36.03	111.26	63.66	32.31	10.52	31.26	225	64	Р	Н
	*	5775	103.29	-	-	91.62	32.39	10.56	31.28	225	64	Р	Н
	*	5775	93.37	-	-	81.7	32.39	10.56	31.28	225	64	Α	Н
		5851	70.23	-49.69	119.92	58.45	32.48	10.62	31.32	225	64	Р	Н
		5858.8	69.55	-40.18	109.73	57.75	32.51	10.62	31.33	225	64	Р	Н
		5877	63.76	-39.95	103.71	51.92	32.53	10.64	31.33	225	64	Р	Н
		5926.8	54.67	-13.53	68.2	42.74	32.6	10.68	31.35	225	64	Р	Н
802.11ac													Н
VHT80													Н
CH 155		5646.8	55.87	-12.33	68.2	44.44	32.19	10.46	31.22	100	89	Р	V
5775MHz		5695.2	73.47	-28.19	101.66	61.95	32.27	10.5	31.25	100	89	Р	V
		5718.8	77.15	-33.31	110.46	65.58	32.31	10.52	31.26	100	89	Р	V
		5720.2	77.28	-33.98	111.26	65.71	32.31	10.52	31.26	100	89	Р	V
	*	5775	105.15	-	-	93.48	32.39	10.56	31.28	100	89	Р	٧
	*	5775	95.24	-	-	83.57	32.39	10.56	31.28	100	89	Α	٧
		5851.2	72.56	-46.9	119.46	60.78	32.48	10.62	31.32	100	89	Р	V
		5858.6	71.21	-38.58	109.79	59.41	32.51	10.62	31.33	100	89	Р	V
		5877	65.66	-38.05	103.71	53.82	32.53	10.64	31.33	100	89	Р	V
		5927	55.18	-13.02	68.2	43.25	32.6	10.68	31.35	100	89	Р	V
													V
													+-

Remark

2. All results are PASS against Peak and Average limit line.

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#### WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	(dBµV)	( dB/m )	(dB)	(dB)	( cm )	( deg )	(P/A)	(H/V)
		11550	52.75	-21.25	74	52.53	39.98	16.54	56.3	100	216	Р	Н
		11550	39.93	-14.07	54	39.71	39.98	16.54	56.3	100	216	Α	Н
802.11ac		17325	49.88	-18.32	68.2	43.94	41.84	20.85	56.75	100	0	Р	Н
VHT80													Н
CH 155		11550	48.77	-25.23	74	48.55	39.98	16.54	56.3	100	0	Р	V
5775MHz		17325	49.34	-18.86	68.2	43.4	41.84	20.85	56.75	100	0	Р	V
													V
													V

Remark

1. No other spurious found.

2. All results are PASS against Peak and Average limit line.

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Report No.: FR853105F

## WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	(dBµV)	( dB/m )	( dB )	(dB)	( cm )	( deg )	(P/A)	(H/V)
		5635.6	54.69	-13.51	68.2	43.27	32.19	10.45	31.22	100	66	Р	Н
		5700	60.57	-44.63	105.2	49.05	32.27	10.5	31.25	100	66	Р	Н
		5719	62.32	-48.2	110.52	50.75	32.31	10.52	31.26	100	66	Р	Н
		5723.2	73.99	-44.11	118.1	62.42	32.31	10.52	31.26	100	66	Р	Н
	*	5745	115.47	-	-	103.86	32.34	10.54	31.27	100	66	Р	Н
	*	5745	104.59	-	-	92.98	32.34	10.54	31.27	100	66	Α	Н
000.44													Н
802.11a													Н
CH 149 5745MHz		5639.4	55.7	-12.5	68.2	44.28	32.19	10.45	31.22	100	93	Р	٧
3745WITIZ		5700	63.82	-41.38	105.2	52.3	32.27	10.5	31.25	100	93	Р	٧
		5719.4	66.37	-44.26	110.63	54.8	32.31	10.52	31.26	100	93	Р	٧
		5724.6	78.41	-42.88	121.29	66.84	32.31	10.52	31.26	100	93	Р	٧
	*	5745	115.06	-	-	103.45	32.34	10.54	31.27	100	93	Р	٧
	*	5745	104.59	-	-	92.98	32.34	10.54	31.27	100	93	Α	٧
													٧
													٧

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## FCC RADIO TEST REPORT

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.		/ <b></b> .		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	4150
1+2		( MHz )	( dBµV/m )	, ,	( dBµV/m )		( dB/m )	(dB)	(dB)	( cm )	( deg )		
		5624	54.51	-13.69	68.2	43.11	32.17	10.44	31.21	103	71	Р	Н
		5698.6	55.34	-48.83	104.17	43.82	32.27	10.5	31.25	103	71	Р	Н
		5716.8	58.78	-51.13	109.91	47.24	32.29	10.51	31.26	103	71	Р	Н
		5724.6	60.02	-61.27	121.29	48.45	32.31	10.52	31.26	103	71	Р	Н
	*	5785	116.73	-	-	105.06	32.39	10.57	31.29	103	71	Р	Н
	*	5785	105.95	-	-	94.28	32.39	10.57	31.29	103	71	Α	Н
		5854.4	58.43	-53.74	112.17	46.62	32.51	10.62	31.32	103	71	Р	Н
		5856.6	58.74	-51.61	110.35	46.93	32.51	10.62	31.32	103	71	Р	Н
		5876.6	55.72	-48.29	104.01	43.88	32.53	10.64	31.33	103	71	Р	Н
		5933	55.12	-13.08	68.2	43.19	32.6	10.68	31.35	103	71	Р	Н
													Н
802.11a													Н
CH 157		5637.6	55.19	-13.01	68.2	43.77	32.19	10.45	31.22	100	89	Р	V
5785MHz		5696.8	56.66	-46.18	102.84	45.14	32.27	10.5	31.25	100	89	Р	V
		5719.6	60.44	-50.25	110.69	48.87	32.31	10.52	31.26	100	89	Р	V
		5720.2	60.81	-50.45	111.26	49.24	32.31	10.52	31.26	100	89	Р	٧
	*	5785	117.16	-	-	105.49	32.39	10.57	31.29	100	89	Р	٧
	*	5785	106.18	-	-	94.51	32.39	10.57	31.29	100	89	Α	V
		5854.8	60.63	-50.63	111.26	48.82	32.51	10.62	31.32	100	89	Р	V
		5857	61.04	-49.2	110.24	49.23	32.51	10.62	31.32	100	89	Р	٧
		5877	57.27	-46.44	103.71	45.43	32.53	10.64	31.33	100	89	Р	٧
		5941.4	55.5	-12.7	68.2	43.55	32.63	10.69	31.37	100	89	Р	٧
													٧
													٧
											<u> </u>		

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WIFI Preamp Note Over Limit Read Antenna **Path** Ant **Table** Peak Pol. **Frequency** Level Limit Line Level Factor Factor Pos Pos Ant. Loss Avg. (dB<sub>µ</sub>V/m) (dB) (dBµV/m) ( dB/m ) ( deg ) (P/A) (H/V) 1+2 (MHz) (dB<sub>µ</sub>V) (dB) (dB) ( cm ) \* 114.33 102.58 32.46 5825 10.6 31.31 100 67 Η \* 5825 102.66 90.91 32.46 10.6 31.31 100 --67 Α Н 5851.4 70.23 -48.78 119.01 58.45 32.48 10.62 31.32 100 67 Ρ Н 5855 70.1 32.51 31.32 100 Ρ Η -40.7 110.8 58.29 10.62 67 5875 67.5 -37.7 105.2 55.66 32.53 10.64 31.33 100 67 Ρ Н Р 5927 56.91 -11.29 68.2 44.98 32.6 10.68 31.35 100 67 Н Н Н 802.11a **CH 165** 5825 116.69 104.94 32.46 10.6 31.31 100 91 ٧ 5825MHz ٧ 5825 105.98 94.23 32.46 31.31 100 91 Α \_ -10.6 32.51 100 Р ٧ 5854.8 63.75 -47.51 111.26 51.94 10.62 31.32 91 Ρ ٧ 5855.8 63.99 -46.59 110.58 52.18 32.51 10.62 31.32 100 91 5877 62.94 -40.77 103.71 51.1 32.53 10.64 31.33 100 91 Ρ V Р ٧ 5927.2 54.92 -13.28 68.2 42.99 32.6 10.68 31.35 100 91 ٧ ٧ ٧ No other spurious found. Remark All results are PASS against Peak and Average limit line.

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#### WIFI 802.11a (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	(dBµV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/\
		11490	63.44	-10.56	74	63.14	40.11	16.49	56.3	105	22	Р	Н
		11490	50.11	-3.89	54	49.81	40.11	16.49	56.3	105	22	Α	Н
000 44 -		17235	50.77	-17.43	68.2	45.02	41.54	20.78	56.57	100	0	Р	Н
802.11a													Н
CH 149 5745MHz		11490	61.13	-12.87	74	60.83	40.11	16.49	56.3	100	358	Р	٧
3743WITIZ		11490	47.98	-6.02	54	47.68	40.11	16.49	56.3	100	358	Α	V
		17235	53.05	-15.15	68.2	47.3	41.54	20.78	56.57	100	0	Р	V
													V
		11570	63.38	-10.62	74	63.2	39.93	16.55	56.3	100	22	Р	Н
		11570	49.75	-4.25	54	49.57	39.93	16.55	56.3	100	22	Α	Н
000.44		17355	51.26	-16.94	68.2	45.23	41.96	20.88	56.81	100	0	Р	Н
802.11a													Н
CH 157 5785MHz		11570	61.36	-12.64	74	61.18	39.93	16.55	56.3	102	331	Р	٧
3763WITIZ		11570	46.93	-7.07	54	46.75	39.93	16.55	56.3	102	331	Α	٧
		17355	52.56	-15.64	68.2	46.53	41.96	20.88	56.81	100	0	Р	٧
													٧
		11650	58.36	-15.64	74	58.27	39.77	16.62	56.3	100	256	Р	Н
		11650	46.54	-7.46	54	46.45	39.77	16.62	56.3	100	256	Α	Н
000.44		17475	49.82	-18.38	68.2	43.52	42.38	20.97	57.05	100	0	Р	Н
802.11a													Н
CH 165		11650	57.07	-16.93	74	56.98	39.77	16.62	56.3	106	334	Р	V
5825MHz		11650	45.15	-8.85	54	45.06	39.77	16.62	56.3	106	334	Α	V
		17475	49.88	-18.32	68.2	43.58	42.38	20.97	57.05	100	0	Р	V
													V

Remark

- . No other spurious found.
- 2. All results are PASS against Peak and Average limit line.

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## Band 4 5725~5850MHz WIFI 802.11n HT20 (Band Edge @ 3m)

Report No.: FR853105F

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.		,		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	(dB <sub>µ</sub> V)	( dB/m )	( dB )	( dB )	(cm)	( deg )	(P/A)	(H/V)
		5643.2	54.6	-13.6	68.2	43.18	32.19	10.45	31.22	100	71	Р	Н
		5692.2	64.07	-35.38	99.45	52.56	32.27	10.49	31.25	100	71	Р	Н
		5719.8	74.03	-36.71	110.74	62.46	32.31	10.52	31.26	100	71	Р	Н
		5721.6	76.41	-38.04	114.45	64.84	32.31	10.52	31.26	100	71	Р	Н
	*	5745	114.88	-	-	103.27	32.34	10.54	31.27	100	71	Р	Н
	*	5745	103.69	-	-	92.08	32.34	10.54	31.27	100	71	Α	Н
802.11n													Н
HT20													Н
CH 149		5647.4	58.31	-9.89	68.2	46.88	32.19	10.46	31.22	100	89	Р	V
5745MHz		5695.8	67.42	-34.68	102.1	55.9	32.27	10.5	31.25	100	89	Р	V
		5720	74.86	-35.94	110.8	63.29	32.31	10.52	31.26	100	89	Р	V
		5724.8	84.21	-37.53	121.74	72.64	32.31	10.52	31.26	100	89	Р	V
	*	5745	116.83	-	-	105.22	32.34	10.54	31.27	100	89	Р	V
	*	5745	106.17	-	-	94.56	32.34	10.54	31.27	100	89	Α	V
													V
													V

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WIFI Limit Antenna Table Peak Pol. Note **Frequency** Level Over Read Path Preamp Ant Ant. Limit Line Level **Factor** Loss Factor Pos Pos Avg. (dBµV/m) ( deg ) (P/A) (H/V) 1+2 (MHz) (dB) (dBµV/m) (dB<sub>µ</sub>V) ( dB/m ) (dB) (dB) ( cm ) 5641.8 54.24 -13.96 68.2 42.82 32.19 31.22 100 74 Η 10.45 5699.6 56.79 -48.12 104.91 45.27 32.27 10.5 31.25 100 74 Ρ Н 5719.8 62.11 -48.63 110.74 50.54 32.31 10.52 31.26 100 74 Ρ Н Ρ 5724.8 62.68 -59.06 121.74 51.11 32.31 10.52 31.26 100 74 Н 5785 114.28 102.61 32.39 31.29 100 Ρ 10.57 74 Η \* 5785 105.02 93.35 32.39 10.57 31.29 100 74 Н Α 5852.2 62.93 -54.25 117.18 51.15 32.48 10.62 31.32 100 74 Ρ Н 5855.4 61.51 -49.18 110.69 49.7 32.51 10.62 31.32 100 74 Ρ Н 5881 58.14 -42.6 100.74 46.3 32.53 10.64 31.33 100 74 Н Р 74 Н 5936.8 55.41 -12.7968.2 43.5 32.6 10.68 31.37 100 Η 802.11n Н HT20 CH 157 5613.4 -14.17 Ρ V 54.03 68.2 42.67 32.14 10.43 31.21 100 86 5785MHz ٧ 5696.6 55.05 -47.64 102.69 43.53 32.27 10.5 31.25 100 86 Ρ 5718.4 58.7 -51.65 110.35 47.14 32.31 10.51 31.26 100 86 Ρ ٧ 5720.8 59.19 -53.43 112.62 47.62 32.31 10.52 31.26 100 86 Ρ ٧ 101.85 32.39 86 Ρ ٧ 5785 113.52 10.57 31.29 100 \* 32.39 31.29 ٧ 5785 103.97 92.3 10.57 100 86 Α 5850.6 59.44 -61.39 120.83 47.66 32.48 10.62 31.32 100 86 Ρ ٧ Ρ ٧ 5855.4 58.33 -52.36 110.69 46.52 32.51 10.62 31.32 100 86 Ρ ٧ 5877 55.99 -47.72 103.71 44.15 32.53 10.64 31.33 100 86 54.91 42.98 32.6 Р ٧ 5932.2 -13.29 68.2 10.68 31.35 100 86 V ٧

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WIFI Level Preamp Note Over Limit Read Antenna **Path** Ant Table Peak Pol. **Frequency** Limit Line Level Factor Factor Pos Pos Ant. Loss Avg. (dB) (dBµV/m) (dBµV/m) ( dB/m ) ( deg ) (P/A) (H/V) 1+2 (MHz) (dB<sub>µ</sub>V) (dB) (dB) ( cm ) \* 116.19 104.44 32.46 100 5825 10.6 31.31 72 Η \* 5825 104.8 93.05 32.46 10.6 31.31 100 Н --72 Α 5850.2 70.55 -51.19 121.74 58.77 32.48 10.62 31.32 100 72 Ρ Н 5855.6 32.51 31.32 100 72 Ρ Η 69.79 -40.84 110.63 57.98 10.62 5875.2 66.59 -38.46 105.05 54.75 32.53 10.64 31.33 100 72 Ρ Н Р 5928.2 57.79 -10.41 68.2 45.86 32.6 10.68 31.35 100 72 Н Н 802.11n Н HT20 **CH 165** 5825 114.38 102.63 32.46 10.6 31.31 100 92 ٧ 5825MHz ٧ 5825 91.85 32.46 31.31 100 92 Α 103.6 -\_ 10.6 100 Р ٧ 5850.2 68.75 -52.99 121.74 56.97 32.48 10.62 31.32 92 Р ٧ 5872.8 62.77 -43.05 105.82 50.94 32.53 10.63 31.33 100 92 5876.4 62.06 -42.1 104.16 50.22 32.53 10.64 31.33 100 92 Ρ V Р ٧ 5936.6 55.78 -12.4268.2 43.87 32.6 10.68 31.37 100 92 ٧ ٧ No other spurious found. Remark All results are PASS against Peak and Average limit line.

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## WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	( dBµV/m )		( dBµV/m )	(dB <sub>µ</sub> V)	( dB/m )	( dB )	(dB)	( cm )		(P/A)	(H/V
		11490	64.45	-9.55	74	64.15	40.11	16.49	56.3	216	230	Р	Н
		11490	49.71	-4.29	54	49.41	40.11	16.49	56.3	216	230	Α	Н
802.11n		17235	51.96	-16.24	68.2	46.21	41.54	20.78	56.57	100	0	Р	Н
HT20													Н
CH 149		11490	62.37	-11.63	74	62.07	40.11	16.49	56.3	107	359	Р	V
5745MHz		11490	47.56	-6.44	54	47.26	40.11	16.49	56.3	107	359	Α	V
		17235	53.15	-15.05	68.2	47.4	41.54	20.78	56.57	100	0	Р	V
													V
		11570	61.16	-12.84	74	60.98	39.93	16.55	56.3	100	145	Р	Н
		11570	47.24	-6.76	54	47.06	39.93	16.55	56.3	100	145	Α	Н
802.11n		17355	52.35	-15.85	68.2	46.32	41.96	20.88	56.81	100	0	Р	Н
HT20													Н
CH 157		11570	61.15	-12.85	74	60.97	39.93	16.55	56.3	100	21	Р	V
5785MHz		11570	46.77	-7.23	54	46.59	39.93	16.55	56.3	100	21	Α	V
		17355	52.01	-16.19	68.2	45.98	41.96	20.88	56.81	100	0	Р	V
													V
		11650	59.48	-14.52	74	59.39	39.77	16.62	56.3	100	145	Р	Н
		11650	45.5	-8.5	54	45.41	39.77	16.62	56.3	100	145	Α	Н
802.11n		17475	49.94	-18.26	68.2	43.64	42.38	20.97	57.05	100	0	Р	Н
HT20													Н
CH 165		11650	59.65	-14.35	74	59.56	39.77	16.62	56.3	100	22	Р	V
5825MHz		11650	44.75	-9.25	54	44.66	39.77	16.62	56.3	100	22	Α	V
		17475	50.75	-17.45	68.2	44.45	42.38	20.97	57.05	100	0	Р	V
													V

Remark

1. No other spurious found.

2. All results are PASS against Peak and Average limit line.

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## Band 4 5725~5850MHz WIFI 802.11n HT40 (Band Edge @ 3m)

Report No.: FR853105F

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	( dBµV/m )	. ,	( dBµV/m )	(dB <sub>µ</sub> V)	( dB/m )	( dB )	( dB )	( cm )		(P/A)	
		5640.4	55.85	-12.35	68.2	44.43	32.19	10.45	31.22	100	72	Р	Н
		5698.6	64.64	-39.53	104.17	53.12	32.27	10.5	31.25	100	72	Р	Н
		5716.8	81.16	-28.75	109.91	69.62	32.29	10.51	31.26	100	72	Р	Н
		5724	80.18	-39.74	119.92	68.61	32.31	10.52	31.26	100	72	Р	Н
	*	5755	114.07	-	-	102.44	32.36	10.54	31.27	100	72	Р	Н
	*	5755	103.45	-	-	91.82	32.36	10.54	31.27	100	72	Α	Н
		5853.4	58.4	-56.05	114.45	46.62	32.48	10.62	31.32	100	72	Р	Н
		5857.4	58.36	-51.77	110.13	46.55	32.51	10.62	31.32	100	72	Р	Н
		5876	57.47	-46.99	104.46	45.63	32.53	10.64	31.33	100	72	Р	Η
		5926	55.39	-12.81	68.2	43.47	32.6	10.67	31.35	100	72	Р	Н
802.11n													Н
HT40													Н
CH 151		5649.4	58.22	-9.98	68.2	46.79	32.19	10.46	31.22	102	90	Р	٧
5755MHz		5698.6	68.19	-35.98	104.17	56.67	32.27	10.5	31.25	102	90	Р	٧
		5719.2	81.52	-29.06	110.58	69.95	32.31	10.52	31.26	102	90	Р	V
		5723.8	80.36	-39.1	119.46	68.79	32.31	10.52	31.26	102	90	Р	V
	*	5755	113.97	-	-	102.34	32.36	10.54	31.27	102	90	Р	V
	*	5755	103.53	-	-	91.9	32.36	10.54	31.27	102	90	Α	٧
		5850	61.65	-60.55	122.2	49.87	32.48	10.62	31.32	102	90	Р	V
		5859.4	59.82	-49.75	109.57	48.02	32.51	10.62	31.33	102	90	Р	V
		5879.6	58.09	-43.69	101.78	46.25	32.53	10.64	31.33	102	90	Р	V
		5925.8	54.68	-13.52	68.2	42.76	32.6	10.67	31.35	102	90	Р	٧
													V
													V

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WIFI Limit Antenna Table Peak Pol. Note Frequency Level Over Read **Path** Preamp Ant Ant. Limit Line Level **Factor** Loss Factor Pos Pos Avg. (dBµV/m) ( deg ) (P/A) (H/V) 1+2 (MHz) (dB) (dBµV/m) (dB<sub>µ</sub>V) ( dB/m ) (dB) (dB) ( cm ) 54.25 5613 -13.9568.2 42.89 32.14 31.21 101 70 Η 10.43 57.42 104.91 Ρ 5699.6 -47.49 45.9 32.27 10.5 31.25 101 70 Н 5719.8 60.76 -49.98 110.74 49.19 32.31 10.52 31.26 101 70 Ρ Н 70 Ρ 5724.6 61.79 -59.5 121.29 50.22 32.31 10.52 31.26 101 Н 5795 32.41 10.58 31.29 101 70 Ρ 113.6 \_ 101.9 Η \* 5795 102.84 91.14 32.41 10.58 31.29 101 70 Α Н 5854.2 65.35 -47.27 112.62 53.54 32.51 10.62 31.32 101 70 Ρ Н 5858 65.76 -44.2 109.96 53.96 32.51 10.62 31.33 101 70 Ρ Н 5877.8 62.34 -40.78103.12 50.5 32.53 10.64 31.33 101 70 Н Ρ 43.97 31.35 70 Н 5926.6 55.89 -12.31 68.2 32.6 10.67 101 Η 802.11n Н **HT40 CH 159** 5613.6 -14 32.14 31.21 Ρ ٧ 54.2 68.2 42.84 10.43 108 89 5795MHz Ρ ٧ 5698.6 57.7 -46.47 104.17 46.18 32.27 10.5 31.25 108 89 5719.4 59.9 -50.73 110.63 48.33 32.31 10.52 31.26 108 89 Ρ ٧ 5725 61.25 -60.95 122.2 49.68 32.31 10.52 31.26 108 89 Ρ ٧ 101.58 108 Ρ ٧ 5795 113.28 32.41 10.58 31.29 89 \* 32.41 31.29 108 ٧ 5795 103.19 -91.49 10.58 89 Α 5851.4 65.1 -53.91 119.01 53.32 32.48 10.62 31.32 108 89 Ρ ٧ Ρ ٧ 5857.2 64.71 -45.47 110.18 52.9 32.51 10.62 31.32 108 89 32.53 Ρ ٧ 5875.4 61.44 -43.46 104.9 49.6 10.64 31.33 108 89 Р 55.8 43.87 32.6 108 89 ٧ 5926.8 -12.4 68.2 10.68 31.35 V ٧ 1. No other spurious found. Remark All results are PASS against Peak and Average limit line.

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#### WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	(dBµV)	( dB/m )	( dB )	(dB)	( cm )	( deg )	(P/A)	(H/V
		11510	60.37	-13.63	74	60.07	40.1	16.5	56.3	100	34	Р	Н
		11510	48.29	-5.71	54	47.99	40.1	16.5	56.3	100	34	Α	Н
802.11n		17265	50.31	-17.89	68.2	44.47	41.66	20.81	56.63	100	0	Р	Н
HT40													Н
CH 151		11510	57.95	-16.05	74	57.65	40.1	16.5	56.3	100	359	Р	V
5755MHz		11510	46.59	-7.41	54	46.29	40.1	16.5	56.3	100	359	Α	V
		17265	50.78	-17.42	68.2	44.94	41.66	20.81	56.63	100	0	Р	V
													V
		11590	58.43	-15.57	74	58.27	39.89	16.57	56.3	100	35	Р	Н
		11590	46.68	-7.32	54	46.52	39.89	16.57	56.3	100	35	Α	Н
802.11n		17385	50.41	-17.79	68.2	44.3	42.08	20.9	56.87	100	0	Р	Н
HT40													Н
CH 159		11590	57.1	-16.9	74	56.94	39.89	16.57	56.3	100	357	Р	٧
5795MHz		11590	45.57	-8.43	54	45.41	39.89	16.57	56.3	100	357	Α	V
		17385	50.21	-17.99	68.2	44.1	42.08	20.9	56.87	100	0	Р	V
													٧

Remark

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<sup>1.</sup> No other spurious found.

<sup>2.</sup> All results are PASS against Peak and Average limit line.

## Band 4 5725~5850MHz WIFI 802.11ac VHT80 (Band Edge @ 3m)

Report No.: FR853105F

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos		Avg.	
1+2		(MHz)	( dBµV/m )		( dBµV/m )	(dBµV)	( dB/m )	( dB )	(dB)	(cm)	( deg )	(P/A)	
		5642.8	56.15	-12.05	68.2	44.73	32.19	10.45	31.22	100	72	Р	Н
		5697.2	73.09	-30.05	103.14	61.57	32.27	10.5	31.25	100	72	Р	Н
		5717.2	78.14	-31.88	110.02	66.6	32.29	10.51	31.26	100	72	Р	Н
		5725	78.98	-43.22	122.2	67.41	32.31	10.52	31.26	100	72	Р	Н
	*	5775	110.36	-	-	98.69	32.39	10.56	31.28	100	72	Р	Н
	*	5775	99.59	-	-	87.92	32.39	10.56	31.28	100	72	Α	Н
		5851.2	74.61	-44.85	119.46	62.83	32.48	10.62	31.32	100	72	Р	Н
		5866	73.09	-34.63	107.72	61.28	32.51	10.63	31.33	100	72	Р	Н
		5885	65.54	-32.23	97.77	53.71	32.53	10.64	31.34	100	72	Р	Н
		5930.6	54.61	-13.59	68.2	42.68	32.6	10.68	31.35	100	72	Р	Н
802.11ac													Н
VHT80													Н
CH 155		5645.2	56.84	-11.36	68.2	45.41	32.19	10.46	31.22	100	89	Р	V
5775MHz		5699.8	75.09	-29.96	105.05	63.57	32.27	10.5	31.25	100	89	Р	V
		5717.2	79.38	-30.64	110.02	67.84	32.29	10.51	31.26	100	89	Р	V
		5724.6	80.67	-40.62	121.29	69.1	32.31	10.52	31.26	100	89	Р	V
	*	5775	110.34	-	-	98.67	32.39	10.56	31.28	100	89	Р	V
	*	5775	100.1	-	-	88.43	32.39	10.56	31.28	100	89	Α	V
		5850.4	77.25	-44.04	121.29	65.47	32.48	10.62	31.32	100	89	Р	V
		5865.4	74.61	-33.28	107.89	62.8	32.51	10.63	31.33	100	89	Р	V
		5885.2	67.69	-29.94	97.63	55.86	32.53	10.64	31.34	100	89	Р	V
		5927.4	54.81	-13.39	68.2	42.88	32.6	10.68	31.35	100	89	Р	V
													V
													V

Remark

. No other spurious found.

2. All results are PASS against Peak and Average limit line.

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#### WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.	j j			Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	( dBµV/m )	(dB)	(dBµV/m)	(dBµV)	( dB/m )	(dB)	( dB )	( cm )	( deg )	(P/A)	(H/V)
		11550	59.71	-14.29	74	59.49	39.98	16.54	56.3	100	53	Р	Н
		11550	44.64	-9.36	54	44.42	39.98	16.54	56.3	100	53	Α	Н
802.11ac		17325	50.26	-17.94	68.2	44.32	41.84	20.85	56.75	100	0	Р	Н
VHT80													Н
CH 155		11550	57.38	-16.62	74	57.16	39.98	16.54	56.3	100	355	Р	V
5775MHz		11550	44.42	-9.58	54	44.2	39.98	16.54	56.3	100	355	Α	V
		17325	49.57	-18.63	68.2	43.63	41.84	20.85	56.75	100	0	Р	V
													٧

Remark

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<sup>1.</sup> No other spurious found.

<sup>2.</sup> All results are PASS against Peak and Average limit line.

### **Emission below 1GHz**

Report No.: FR853105F

## 5GHz WIFI 802.11a (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	(dBµV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
		39.45	25.05	-14.95	40	35.26	19.28	0.84	30.33	-	-	Р	Н
		58.89	23.1	-16.9	40	40.61	11.86	1.09	30.46	-	-	Р	Н
		127.2	27.87	-15.63	43.5	39.29	17.4	1.58	30.4	-	-	Р	Н
		765.5	31.29	-14.71	46	28.84	27.95	3.87	29.37	-	-	Р	Н
		868.4	33.63	-12.37	46	29.61	29.06	4.15	29.19	100	0	Р	Н
		970.6	35.35	-18.65	54	29.01	30.82	4.46	28.94	-	-	Р	Н
													Н
													Н
													Н
													Н
5GHz													Н
802.11a													Н
LF		34.32	30.66	-9.34	40	37.67	22.49	0.76	30.26	100	0	Р	V
<b>-</b> :		66.45	28.84	-11.16	40	46.18	11.97	1.15	30.46	-	-	Р	V
		78.33	30.08	-9.92	40	46.16	13.11	1.26	30.45	-	-	Р	V
		570.9	29.47	-16.53	46	29.94	25.85	3.35	29.67	-	-	Р	V
		867	33.89	-12.11	46	29.88	29.05	4.15	29.19	-	-	Р	V
		948.9	35	-11	46	29.05	30.52	4.43	29	-	-	Р	V
													V
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													V
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													V
			1										V

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#### <TXBF Mode>

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#### Band 4 - 5725~5850MHz

## WIFI 802.11ac VHT20 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	(dBµV)	( dB/m )	(dB)	(dB)	( cm )	( deg )	(P/A)	(H/V)
		5626.4	54.92	-13.28	68.2	43.52	32.17	10.44	31.21	104	97	Р	Н
		5696.8	61.09	-41.75	102.84	49.57	32.27	10.5	31.25	104	97	Р	Н
		5720	68.52	-42.28	110.8	56.95	32.31	10.52	31.26	104	97	Р	Н
		5724.6	78.02	-43.27	121.29	66.45	32.31	10.52	31.26	104	97	Р	Н
	*	5745	112.81	-	-	101.2	32.34	10.54	31.27	104	97	Р	Н
	*	5745	100.97	-	-	89.36	32.34	10.54	31.27	104	97	Α	Н
802.11ac													Н
VHT20													Н
CH 149		5642.6	54.44	-13.76	68.2	43.02	32.19	10.45	31.22	101	108	Р	٧
5745MHz		5699.6	58.6	-46.31	104.91	47.08	32.27	10.5	31.25	101	108	Р	٧
		5720	66.86	-43.94	110.8	55.29	32.31	10.52	31.26	101	108	Р	٧
		5724.8	77.7	-44.04	121.74	66.13	32.31	10.52	31.26	101	108	Р	٧
	*	5745	114.25	-	-	102.64	32.34	10.54	31.27	101	108	Р	٧
	*	5745	101.3	-	-	89.69	32.34	10.54	31.27	101	108	Α	V
													V
													٧

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WIFI Preamp Note Level Over Limit Read Antenna Path Ant **Table** Peak Pol. Frequency Factor Ant. Limit Line Level Loss Factor Pos Pos Avg. ( dB ) ( dB \( \psi V/m \) 1+2 (MHz) (dBµV/m) (dB<sub>µ</sub>V) ( dB/m ) (dB) (dB) (cm) (deg) (P/A) (H/V) 5642.8 54.67 -13.5368.2 43.25 32.19 10.45 31.22 100 224 Н 54.51 Р 5698.4 -49.51 104.02 42.99 32.27 10.5 31.25 100 224 Н 5714.2 55.6 -53.58 109.18 44.06 32.29 10.51 31.26 100 224 Ρ Н 5723.6 56.49 -62.52 119.01 44.92 32.31 10.52 31.26 100 224 Ρ Н \* 5785 112.62 100.95 32.39 10.57 31.29 100 224 Ρ Н 5785 31.29 100 224 100.31 88.64 32.39 10.57 Α Η Р 5851.4 47.18 32.48 31.32 100 224 58.96 -60.05 119.01 10.62 Η 5857.6 58.16 -51.91 110.07 46.35 32.51 10.62 31.32 100 224 Ρ Н 44.14 Ρ 5878.8 55.98 -46.4 102.38 32.53 10.64 31.33 100 224 Η Ρ 5949.8 55.17 -13.03 68.2 43.22 32.63 10.69 31.37 100 224 Н 802.11ac Н VHT20 Н CH 157 5632 54.08 -14.12 68.2 42.68 32.17 10.45 31.22 100 108 Ρ V 5785MHz 5700 57.7 -47.5 105.2 46.18 32.27 10.5 31.25 100 108 Ρ ٧ 5719.4 61.25 -49.38 110.63 49.68 32.31 10.52 31.26 100 108 Ρ ٧ ٧ 5724.8 61.77 -59.97 121.74 50.2 32.31 10.52 31.26 100 108 Ρ 5785 113.48 101.81 32.39 10.57 31.29 100 108 ٧ \* 32.39 ٧ 5785 101.73 90.06 10.57 31.29 100 108 Α V 5851.2 63.26 -56.2 119.46 51.48 32.48 10.62 31.32 100 108 Ρ 5857.8 60.69 -49.32 110.01 48.89 32.51 10.62 31.33 100 108 Ρ ٧ ٧ 5876.6 57.68 -46.33 104.01 45.84 32.53 10.64 31.33 100 108 Ρ Ρ 5947 55.16 -13.04 68.2 43.21 32.63 10.69 31.37 100 108 ٧ ٧ ٧

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WIFI Level Preamp Note Over Limit Read Antenna **Path** Ant Table Peak Pol. **Frequency** Limit Line Factor Factor Pos Pos Ant. Level Loss Avg. (dB) (dBµV/m) (dBµV/m) ( dB/m ) ( deg ) (P/A) (H/V) 1+2 (MHz) (dB<sub>µ</sub>V) (dB) (dB) ( cm ) \* 114.06 102.31 32.46 222 5825 10.6 31.31 104 Η \* 5825 101.39 89.64 32.46 10.6 31.31 104 222 Н --Α 5850 68.71 -53.49 122.2 56.93 32.48 10.62 31.32 104 222 Ρ Н 5855.6 32.51 31.32 104 222 Н 64.02 -46.61 110.63 52.21 10.62 5879 60.55 -41.68 102.23 48.71 32.53 10.64 31.33 104 222 Ρ Н Р 5948.6 55.26 -12.94 68.2 43.31 32.63 10.69 31.37 104 222 Н Н 802.11ac VHT20 Н **CH 165** 5825 113.7 101.95 32.46 10.6 31.31 100 109 ٧ 5825MHz ٧ 5825 101.53 32.46 31.31 100 109 Α \_ \_ 89.78 10.6 100 109 Ρ ٧ 5850.2 70.15 -51.59 121.74 58.37 32.48 10.62 31.32 Р ٧ 5855.8 65.91 -44.67 110.58 54.1 32.51 10.62 31.32 100 109 5876.2 64.28 -40.03 104.31 52.44 32.53 10.64 31.33 100 109 Ρ V Р ٧ 5927.8 55.52 -12.68 68.2 43.59 32.6 10.68 31.35 100 109 ٧ ٧ No other spurious found. Remark All results are PASS against Peak and Average limit line.

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## WIFI 802.11ac VHT20 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.		(	( 15 )// >	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	(116
1+2		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	-	( dB/m )	(dB)	(dB)	( cm )	(deg)		
		11490	56.4	-17.6	74	56.1	40.11	16.49	56.3	109	195	Р	Н
		11490	43.97	-10.03	54	43.67	40.11	16.49	56.3	109	195	Α	Н
802.11ac		17235	51.07	-17.13	68.2	45.32	41.54	20.78	56.57	100	0	Р	Н
VHT20													Н
CH 149		11490	56.73	-17.27	74	56.43	40.11	16.49	56.3	100	133	Р	V
5745MHz		11490	44.37	-9.63	54	44.07	40.11	16.49	56.3	100	133	Α	V
		17235	51.48	-16.72	68.2	45.73	41.54	20.78	56.57	100	0	Р	V
													V
		11570	56.5	-17.5	74	56.32	39.93	16.55	56.3	107	195	Р	Н
		11570	44.13	-9.87	54	43.95	39.93	16.55	56.3	107	195	Α	Н
802.11ac		17355	50.34	-17.86	68.2	44.31	41.96	20.88	56.81	100	0	Р	Н
VHT20													Н
CH 157		11570	57.31	-16.69	74	57.13	39.93	16.55	56.3	109	27	Р	V
5785MHz		11570	44.83	-9.17	54	44.65	39.93	16.55	56.3	109	27	Α	V
		17355	50.52	-17.68	68.2	44.49	41.96	20.88	56.81	100	0	Р	V
													V
		11650	55.28	-18.72	74	55.19	39.77	16.62	56.3	100	185	Р	Н
		11650	42.33	-11.67	54	42.24	39.77	16.62	56.3	100	185	Α	Н
802.11ac		17475	49.31	-18.89	68.2	43.01	42.38	20.97	57.05	100	0	Р	Н
VHT20													Н
CH 165		11650	56.61	-17.39	74	56.52	39.77	16.62	56.3	100	131	Р	V
5825MHz		11650	43.31	-10.69	54	43.22	39.77	16.62	56.3	100	131	Α	V
		17475	50.05	-18.15	68.2	43.75	42.38	20.97	57.05	100	0	Р	V
													V

Remark

1. No other spurious found.

2. All results are PASS against Peak and Average limit line.

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## Band 4 5725~5850MHz WIFI 802.11ac VHT40 (Band Edge @ 3m)

Report No.: FR853105F

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	( dBµV/m )	, ,	( dBµV/m )	(dBµV)	( dB/m )	( dB )	( dB )	(cm)		(P/A)	
		5644.6	54.44	-13.76	68.2	43.01	32.19	10.46	31.22	101	223	Р	Н
		5698.6	60.91	-43.26	104.17	49.39	32.27	10.5	31.25	101	223	Р	Н
		5718.4	75.42	-34.93	110.35	63.86	32.31	10.51	31.26	101	223	Р	Н
		5722.2	76	-39.82	115.82	64.43	32.31	10.52	31.26	101	223	Р	Н
	*	5755	110.04	-	-	98.41	32.36	10.54	31.27	101	223	Р	Н
	*	5755	96.75	-	-	85.12	32.36	10.54	31.27	101	223	Α	Н
		5850	55.96	-66.24	122.2	44.18	32.48	10.62	31.32	101	223	Р	Н
		5862	55.72	-53.12	108.84	43.91	32.51	10.63	31.33	101	223	Р	Н
		5890.6	55.27	-38.35	93.62	43.4	32.56	10.65	31.34	101	223	Р	Н
		5927.8	54.91	-13.29	68.2	42.98	32.6	10.68	31.35	101	223	Р	Н
802.11ac													Н
VHT40													Н
CH 151		5647.4	56.87	-11.33	68.2	45.44	32.19	10.46	31.22	102	108	Р	V
5755MHz		5699	66.58	-37.88	104.46	55.06	32.27	10.5	31.25	102	108	Р	٧
		5717.6	80.05	-30.08	110.13	68.49	32.31	10.51	31.26	102	108	Р	<b>V</b>
		5720.6	83.36	-28.81	112.17	71.79	32.31	10.52	31.26	102	108	Р	٧
	*	5755	110.55	-	-	98.92	32.36	10.54	31.27	102	108	Р	٧
	*	5755	97.36	-	-	85.73	32.36	10.54	31.27	102	108	Α	٧
		5852.4	59.13	-57.6	116.73	47.35	32.48	10.62	31.32	102	108	Р	٧
		5860.6	58.5	-50.73	109.23	46.69	32.51	10.63	31.33	102	108	Р	V
		5880.8	56.8	-44.09	100.89	44.96	32.53	10.64	31.33	102	108	Р	٧
		5929.8	55.97	-12.23	68.2	44.04	32.6	10.68	31.35	102	108	Р	٧
													V
													٧

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WIFI Preamp Note Level Over Limit Read Antenna Path **Table** Peak Pol. Frequency Ant Ant. Limit Line Level **Factor** Loss Factor Pos Pos Avg. ( dB ) ( dB \( \psi V/m \) 1+2 (MHz) (dBµV/m) (dB<sub>µ</sub>V) ( dB/m ) (dB) (dB) (cm) (deg) (P/A) (H/V) 5643.6 53.64 -14.56 68.2 42.22 32.19 10.45 31.22 100 223 Н Р 5684.8 54.9 -39.09 93.99 43.39 32.27 10.49 31.25 100 223 Н 5716.8 57.07 -52.84 109.91 45.53 32.29 10.51 31.26 100 223 Ρ Н 5721.6 56.21 -58.24 114.45 44.64 32.31 10.52 31.26 100 223 Ρ Н \* 5795 110.56 98.86 32.41 10.58 31.29 100 223 Ρ Н 5795 223 97.59 85.89 32.41 10.58 31.29 100 Α Η Р 5854.6 32.51 100 223 65.01 -46.7 111.71 53.2 10.62 31.32 Н 5858.8 62.36 -47.37 109.73 50.56 32.51 10.62 31.33 100 223 Ρ Н Ρ 5876 58.47 -45.99 104.46 46.63 32.53 10.64 31.33 100 223 Н Ρ 5946.6 56.17 -12.0368.2 44.22 32.63 10.69 31.37 100 223 Н 802.11ac Н **VHT40** Н **CH 159** 5627.8 54.39 -13.81 68.2 42.99 32.17 10.44 31.21 107 109 Ρ ٧ 5795MHz 5696.2 60.19 -42.21 102.4 48.67 32.27 10.5 31.25 107 109 Ρ ٧ 5719.6 62.79 -47.9 110.69 51.22 32.31 10.52 31.26 107 109 Ρ ٧ ٧ 5722.6 64 -52.73 116.73 52.43 32.31 10.52 31.26 107 109 Ρ 5795 110.45 98.75 32.41 10.58 31.29 107 109 ٧ \* ٧ 5795 97.77 86.07 32.41 10.58 31.29 107 109 Α 5850.6 66.5 -54.33 120.83 54.72 32.48 10.62 31.32 107 109 Ρ V 5858.8 66.08 -43.65 109.73 54.28 32.51 10.62 31.33 107 109 Ρ ٧ ٧ 5876.6 62.54 -41.47 104.01 50.7 32.53 10.64 31.33 107 109 Ρ Ρ 5932.6 55.97 -12.2368.2 44.04 32.6 10.68 31.35 107 109 ٧ ٧ ٧ No other spurious found. Remark

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All results are PASS against Peak and Average limit line.

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Report No.: FR853105F

## WIFI 802.11ac VHT40 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol
Ant. 1+2		( MHz )	( dBµV/m )	Limit (dB)	Line ( dBµV/m )	Level ( dBµV )	Factor ( dB/m )	Loss (dB)	Factor (dB)	Pos ( cm )	Pos ( deg )	Avg. (P/A)	
		11510	56.51	-17.49	74	56.21	40.1	16.5	56.3	100	195	Р	Н
		11510	40.5	-13.5	54	40.2	40.1	16.5	56.3	100	195	Α	Н
802.11ac		17265	50.99	-17.21	68.2	45.15	41.66	20.81	56.63	100	0	Р	Н
VHT40													Н
CH 151		11510	57.07	-16.93	74	56.77	40.1	16.5	56.3	100	131	Р	V
5755MHz		11510	41.23	-12.77	54	40.93	40.1	16.5	56.3	100	131	Α	V
		17265	50.43	-17.77	68.2	44.59	41.66	20.81	56.63	100	0	Р	V
													V
		11590	55.22	-18.78	74	55.06	39.89	16.57	56.3	106	193	Р	Н
		11590	40.29	-13.71	54	40.13	39.89	16.57	56.3	106	193	Α	Н
802.11ac		17385	50.61	-17.59	68.2	44.5	42.08	20.9	56.87	100	0	Р	Н
VHT40													Н
CH 159		11590	54.86	-19.14	74	54.7	39.89	16.57	56.3	100	100	Р	V
5795MHz		11590	40.26	-13.74	54	40.1	39.89	16.57	56.3	100	100	Α	V
		17385	50.77	-17.43	68.2	44.66	42.08	20.9	56.87	100	0	Р	V
													V

Remark

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<sup>1.</sup> No other spurious found.

<sup>2.</sup> All results are PASS against Peak and Average limit line.

## Band 4 5725~5850MHz WIFI 802.11ac VHT80 (Band Edge @ 3m)

Report No.: FR853105F

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	( dBµV/m )		( dBµV/m )	(dBµV)	( dB/m )	( dB )	(dB)	( cm )		(P/A)	
		5640	54.53	-13.67	68.2	43.11	32.19	10.45	31.22	109	91	Р	Н
		5699	66.75	-37.71	104.46	55.23	32.27	10.5	31.25	109	91	Р	Н
		5714.4	70.9	-38.33	109.23	59.36	32.29	10.51	31.26	109	91	Р	Н
		5724.6	72.59	-48.7	121.29	61.02	32.31	10.52	31.26	109	91	Р	Н
	*	5775	107.41	-	-	95.74	32.39	10.56	31.28	109	91	Р	Н
	*	5775	92.76	-	-	81.09	32.39	10.56	31.28	109	91	Α	Н
		5852.4	68.2	-48.53	116.73	56.42	32.48	10.62	31.32	109	91	Р	Н
		5855.2	67.65	-43.09	110.74	55.84	32.51	10.62	31.32	109	91	Р	Н
		5879.2	59.62	-42.46	102.08	47.78	32.53	10.64	31.33	109	91	Р	Н
		5931.2	54.04	-14.16	68.2	42.11	32.6	10.68	31.35	109	91	Р	Н
802.11ac													Н
VHT80													Н
CH 155		5633.2	55.73	-12.47	68.2	44.31	32.19	10.45	31.22	100	108	Р	V
5775MHz		5698.6	66.22	-37.95	104.17	54.7	32.27	10.5	31.25	100	108	Р	V
		5717.8	70.78	-39.4	110.18	59.22	32.31	10.51	31.26	100	108	Р	V
		5723	70.69	-46.95	117.64	59.12	32.31	10.52	31.26	100	108	Р	V
	*	5775	108.13	-	-	96.46	32.39	10.56	31.28	100	108	Р	V
	*	5775	93.75	-	-	82.08	32.39	10.56	31.28	100	108	Α	V
		5851	67.24	-52.68	119.92	55.46	32.48	10.62	31.32	100	108	Р	V
		5856.8	65.94	-44.36	110.3	54.13	32.51	10.62	31.32	100	108	Р	V
		5876.4	60.03	-44.13	104.16	48.19	32.53	10.64	31.33	100	108	Р	V
		5937.6	54.92	-13.28	68.2	43.01	32.6	10.68	31.37	100	108	Р	V
													V
													V

Remark

. No other spurious found.

2. All results are PASS against Peak and Average limit line.

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#### WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	( dBµV/m )	(dB)	(dBµV/m)	(dBµV)	( dB/m )	( dB )	( dB )	( cm )	(deg)	(P/A)	(H/V
		11550	53.28	-20.72	74	53.06	39.98	16.54	56.3	100	185	Р	Н
		11550	38.56	-15.44	54	38.34	39.98	16.54	56.3	100	185	Α	Н
802.11ac		17325	51.19	-17.01	68.2	45.25	41.84	20.85	56.75	100	0	Р	Н
VHT80													Н
CH 155		11550	53.46	-20.54	74	53.24	39.98	16.54	56.3	100	130	Р	V
5775MHz		11550	39.07	-14.93	54	38.85	39.98	16.54	56.3	100	130	Α	V
		17325	51.09	-17.11	68.2	45.15	41.84	20.85	56.75	100	0	Р	V
													V

Remark

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<sup>1.</sup> No other spurious found.

<sup>2.</sup> All results are PASS against Peak and Average limit line.

## Note symbol

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*	Fundamental Frequency which can be ignored. However, the level of any
	unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is <b>over limit</b> line.
P/A	Peak or Average
H/V	Horizontal or Vertical

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#### A calculation example for radiated spurious emission is shown as below:

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WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	(dBµV)	( dB/m )	( dB )	(dB)	( cm )	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	Р	Н
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	Α	Н

- 1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
- 2. Level(dBµV/m) = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBµV) Preamp Factor(dB)
- 3. Over Limit(dB) = Level(dB $\mu$ V/m) Limit Line(dB $\mu$ V/m)

#### For Peak Limit @ 2390MHz:

- 1. Level(dBµV/m)
- = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBµV) Preamp Factor(dB)
- $= 32.22(dB/m) + 4.58(dB) + 54.51(dB\mu V) 35.86 (dB)$
- $= 55.45 (dB\mu V/m)$
- 2. Over Limit(dB)
- = Level(dBµV/m) Limit Line(dBµV/m)
- $= 55.45(dB\mu V/m) 74(dB\mu V/m)$
- = -18.55(dB)

#### For Average Limit @ 2390MHz:

- Level(dBµV/m)
- = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBµV) Preamp Factor(dB)
- $= 32.22(dB/m) + 4.58(dB) + 42.6(dB\mu V) 35.86 (dB)$
- $= 43.54 (dB\mu V/m)$
- 2. Over Limit(dB) = Level(dB $\mu$ V/m) Limit Line(dB $\mu$ V/m)
- $= 43.54(dB\mu V/m) 54(dB\mu V/m)$
- = -10.46(dB)

Both peak and average measured complies with the limit line, so test result is "PASS".

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# Appendix C. Radiated Spurious Emission Plots

Test Engineer :	Jack Cheng, Lance Chiang, and Peter Liao	Temperature :	22~25°C
rest Engineer.	Jack Cherry, Lance Chiang, and Feter Liao	Relative Humidity :	53~67%

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#### Note symbol

-L	Low channel location
-R	High channel location

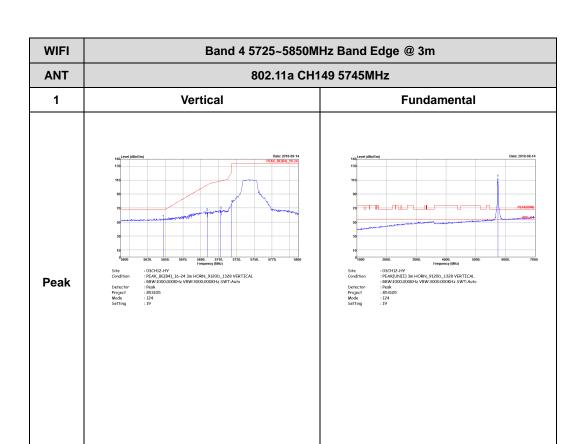
#### <CDD Mode>

#### Band 4 - 5725~5850MHz

#### WIFI 802.11a (Band Edge @ 3m)

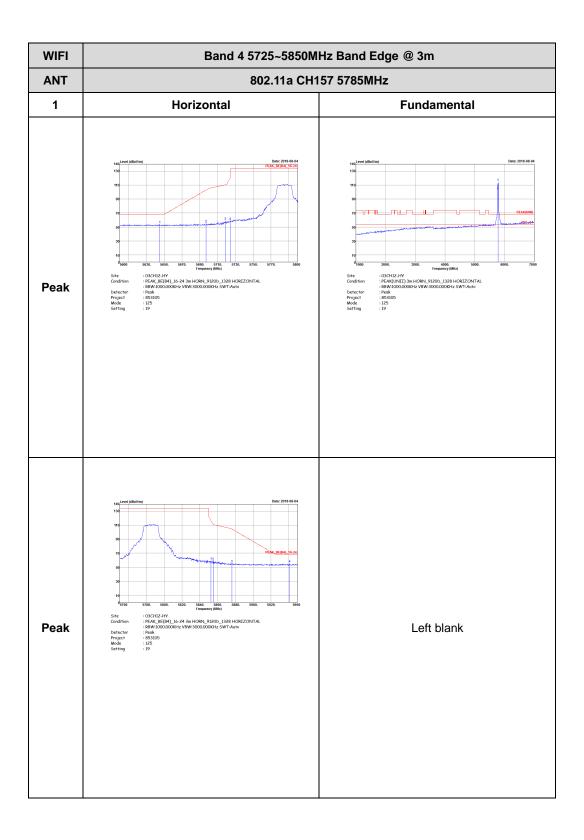
WIFI	Band 4 5725~5850MHz Band Edge @ 3m		
ANT	802.11a CH149 5745MHz		
1	Horizontal	Fundamental	
Peak	Control (EMM/100)   Cont	Date: 2918 08.14  10  10  10  10  10  10  10  10  10	

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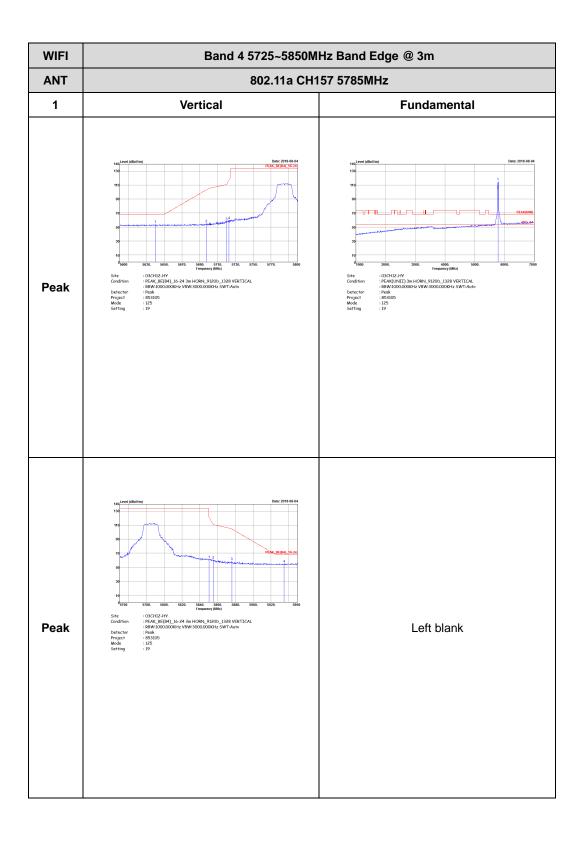
TEL: 886-3-327-3456 Page Number : C2 of C100



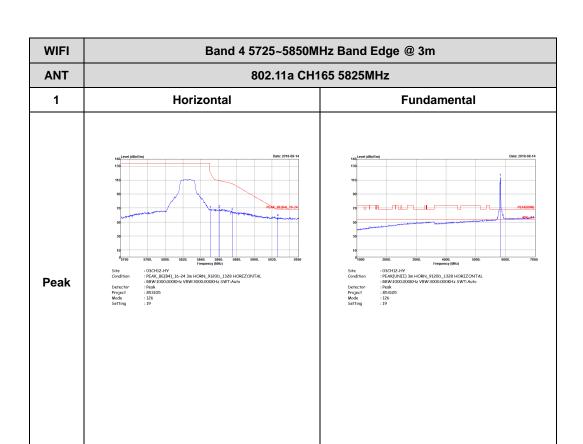


TEL: 886-3-327-3456 Page Number : C3 of C100

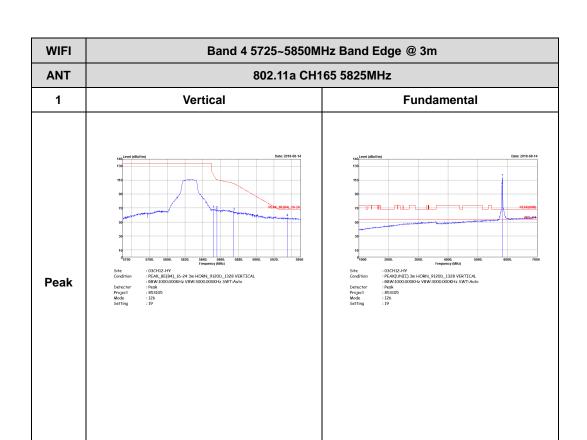




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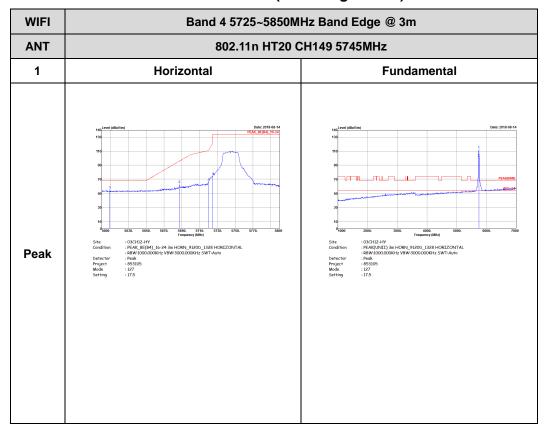
TEL: 886-3-327-3456 Page Number : C5 of C100



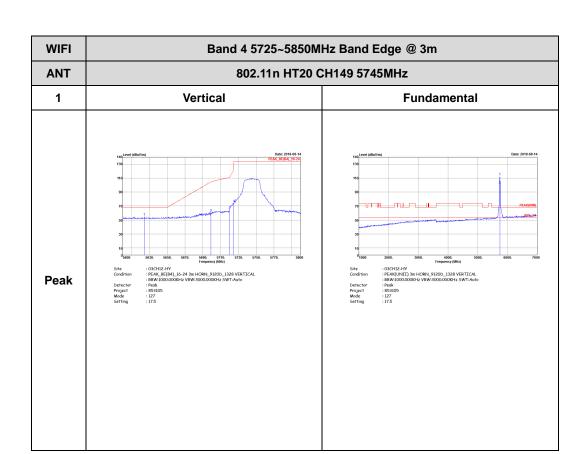
TEL: 886-3-327-3456 Page Number : C6 of C100

# Band 4 5725~5850MHz WIFI 802.11n HT20 (Band Edge @ 3m)

Report No.: FR853105F



TEL: 886-3-327-3456 Page Number : C7 of C100



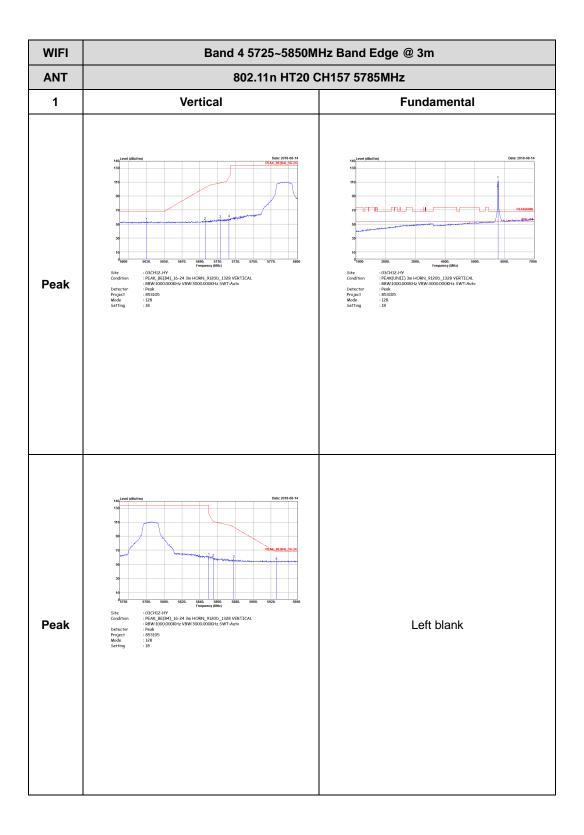
TEL: 886-3-327-3456 Page Number : C8 of C100

WIFI Band 4 5725~5850MHz Band Edge @ 3m ANT 802.11n HT20 CH157 5785MHz 1 Horizontal **Fundamental** Peak : 03CH12-HY
: PGAK\_BE(B4\_16-24 3m HORN\_91200\_1328 HORIZONTAL
: RBW:1000.0000Hz VBW:3000.0000Hz SWT-Auto
: Peak
: 893105
: 128
: 18 Left blank Peak

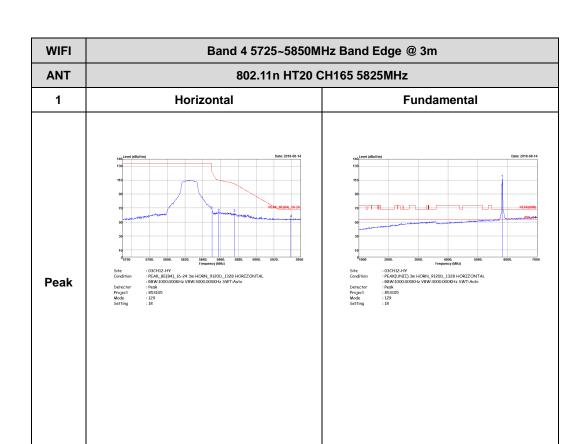
Report No.: FR853105F

TEL: 886-3-327-3456 Page Number : C9 of C100

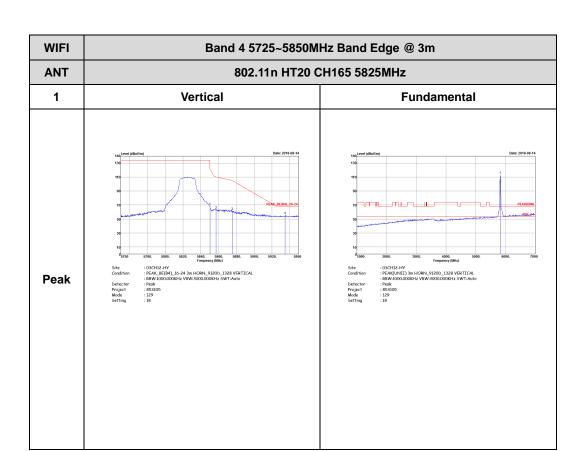




TEL: 886-3-327-3456 Page Number : C10 of C100



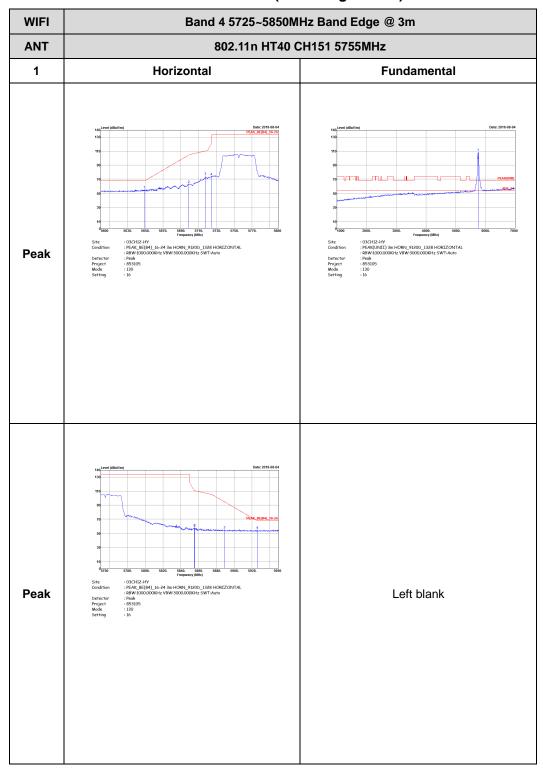
TEL: 886-3-327-3456 Page Number : C11 of C100



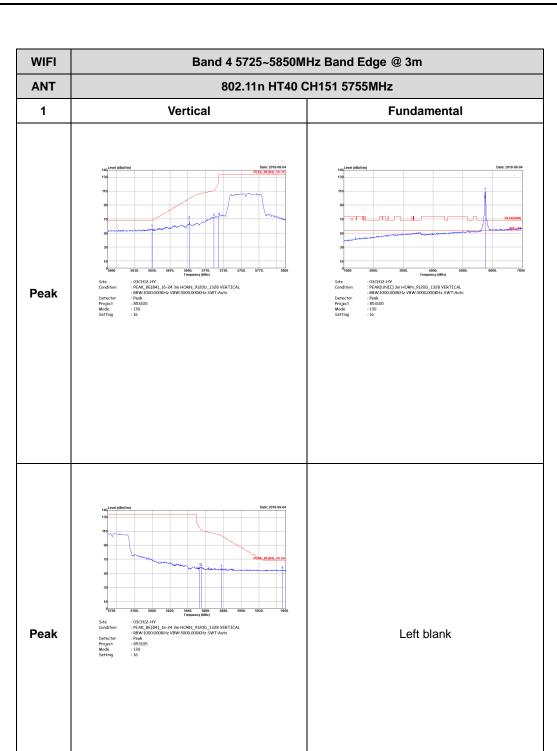
TEL: 886-3-327-3456 Page Number : C12 of C100

### Band 4 5725~5850MHz WIFI 802.11n HT40 (Band Edge @ 3m)

Report No.: FR853105F

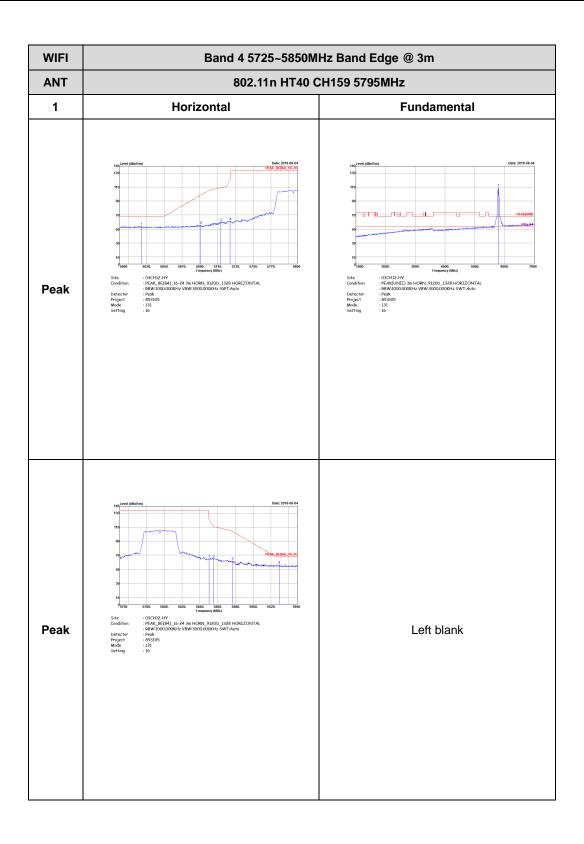


TEL: 886-3-327-3456 Page Number : C13 of C100



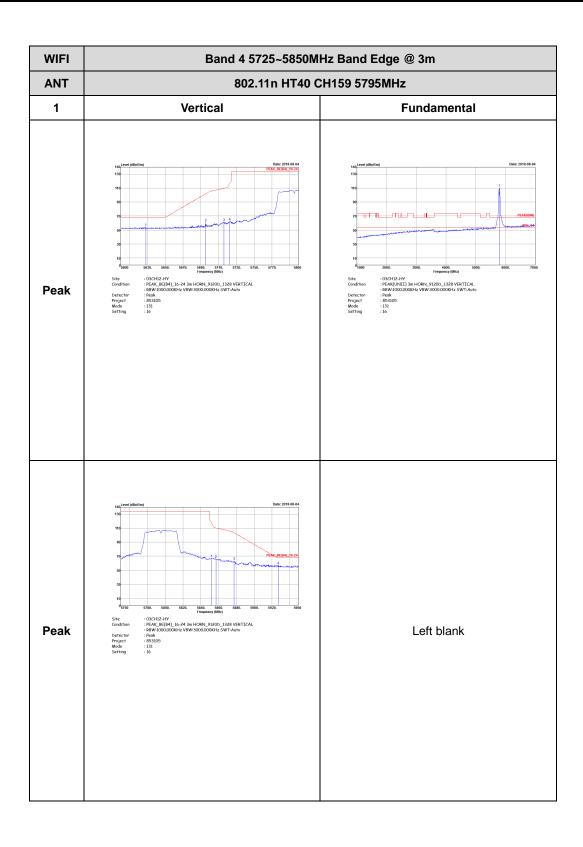
TEL: 886-3-327-3456 Page Number : C14 of C100





TEL: 886-3-327-3456 Page Number : C15 of C100

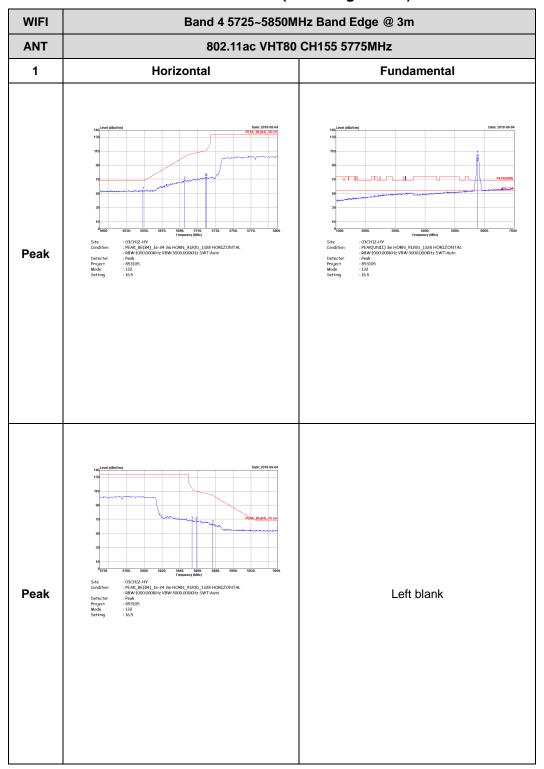




: C16 of C100 TEL: 886-3-327-3456 Page Number

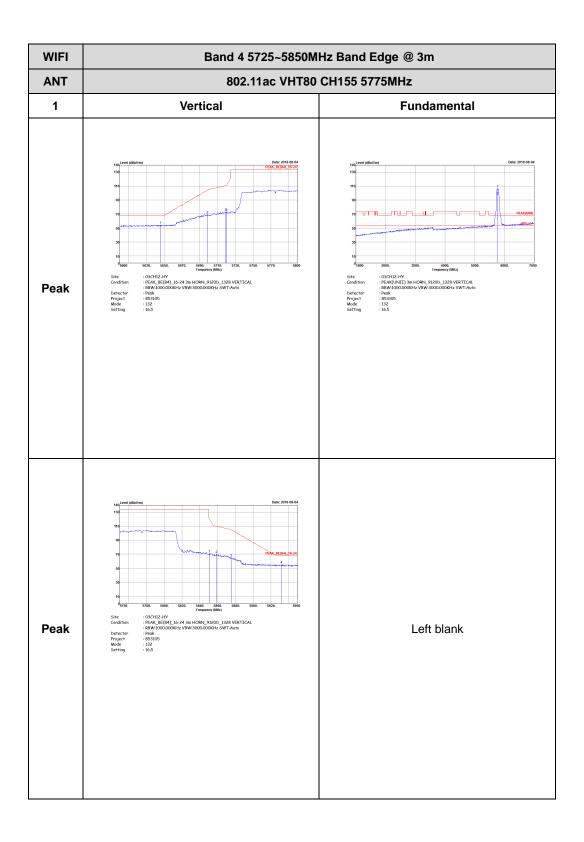
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Report No.: FR853105F



TEL: 886-3-327-3456 Page Number : C17 of C100



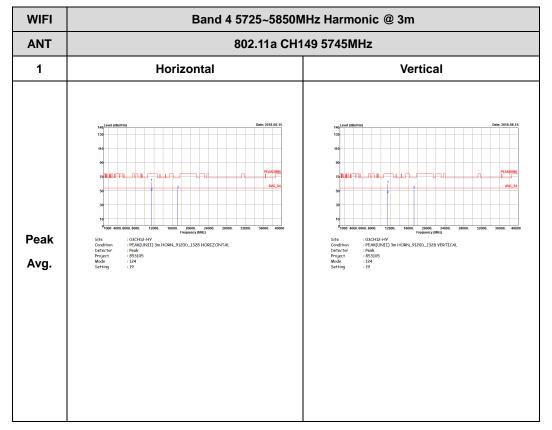


TEL: 886-3-327-3456 Page Number : C18 of C100

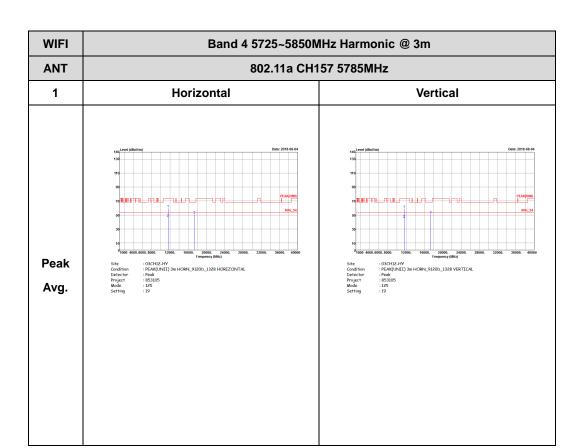
# Band 4 - 5725~5850MHz

Report No.: FR853105F

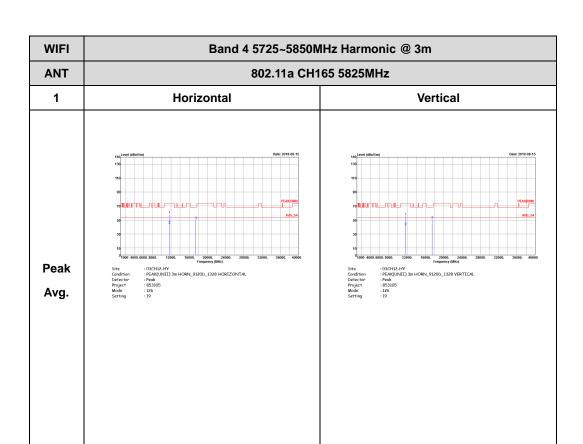
### WIFI 802.11a (Harmonic @ 3m)



TEL: 886-3-327-3456 Page Number : C19 of C100



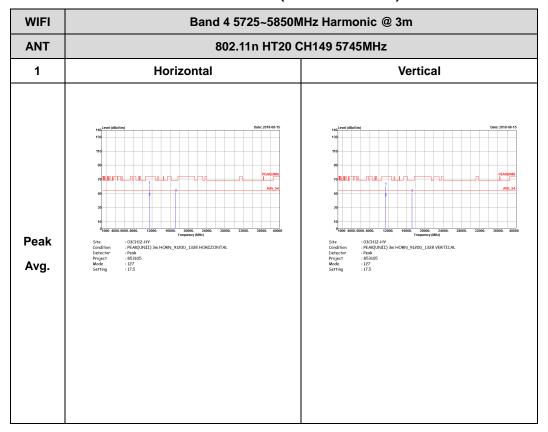
TEL: 886-3-327-3456 Page Number : C20 of C100



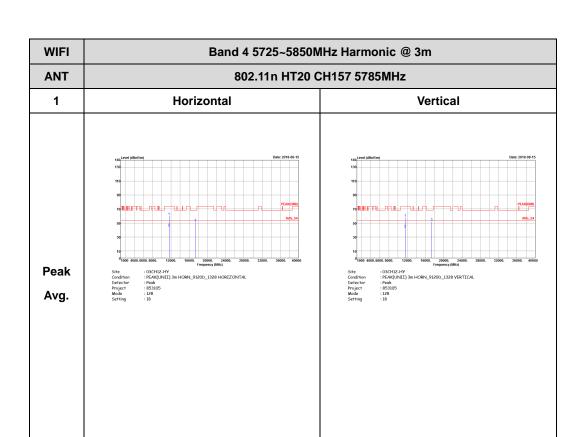
TEL: 886-3-327-3456 Page Number : C21 of C100

# Band 4 5725~5850MHz WIFI 802.11n HT20 (Harmonic @ 3m)

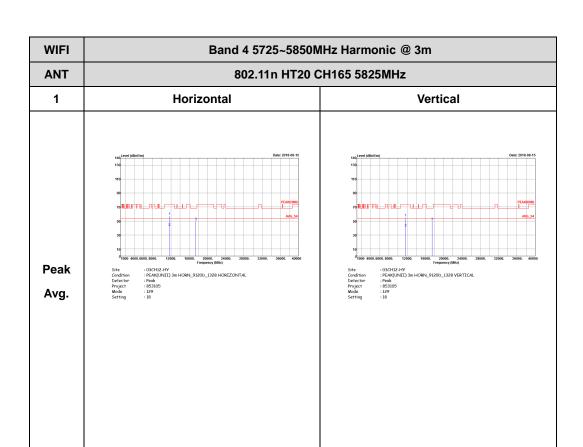
Report No.: FR853105F



TEL: 886-3-327-3456 Page Number : C22 of C100



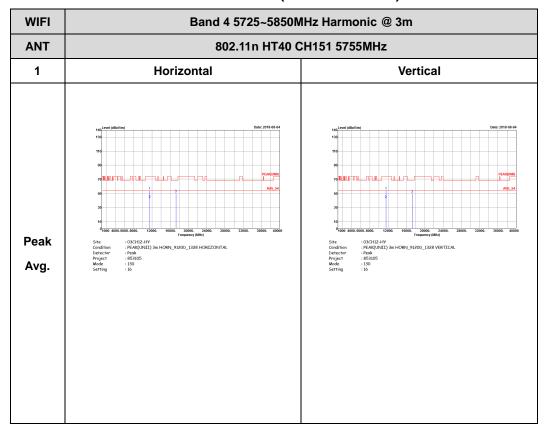
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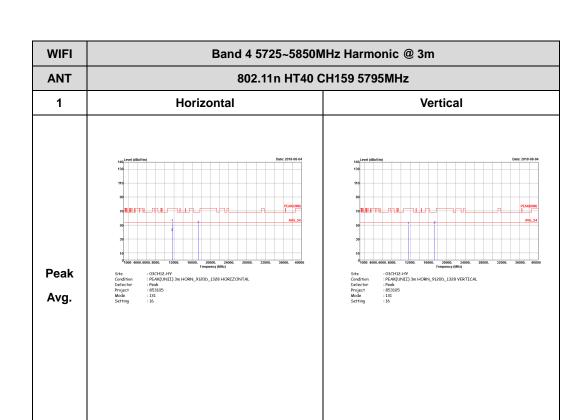
TEL: 886-3-327-3456 Page Number : C24 of C100

## Band 4 5725~5850MHz WIFI 802.11n HT40 (Harmonic @ 3m)

Report No.: FR853105F



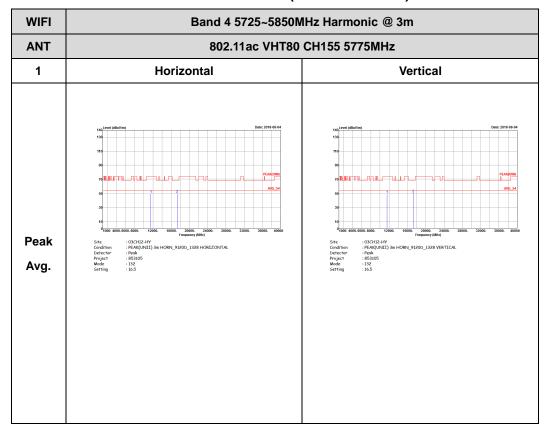
TEL: 886-3-327-3456 Page Number : C25 of C100



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### Band 4 5725~5850MHz WIFI 802.11ac VHT80 (Harmonic @ 3m)

Report No.: FR853105F

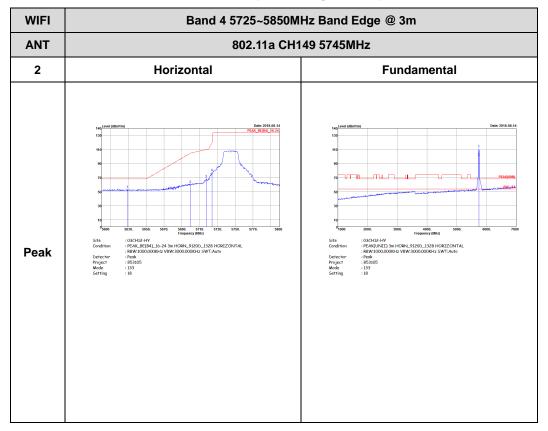


TEL: 886-3-327-3456 Page Number : C27 of C100

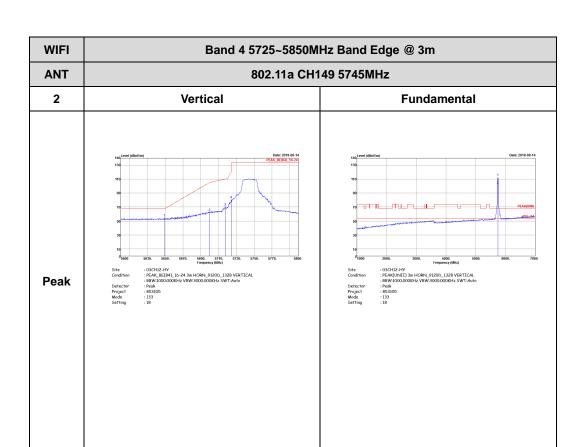
#### Band 4 - 5725~5850MHz

Report No.: FR853105F

### WIFI 802.11a (Band Edge @ 3m)

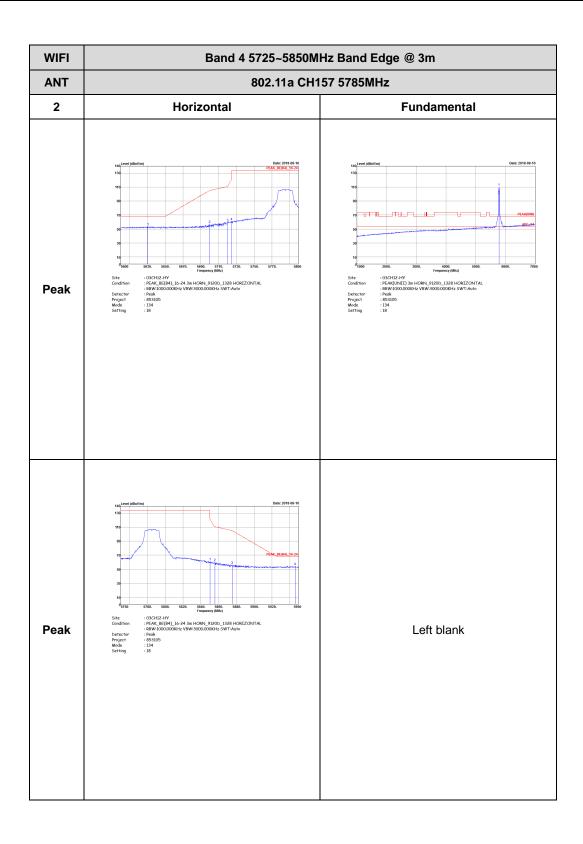


TEL: 886-3-327-3456 Page Number : C28 of C100



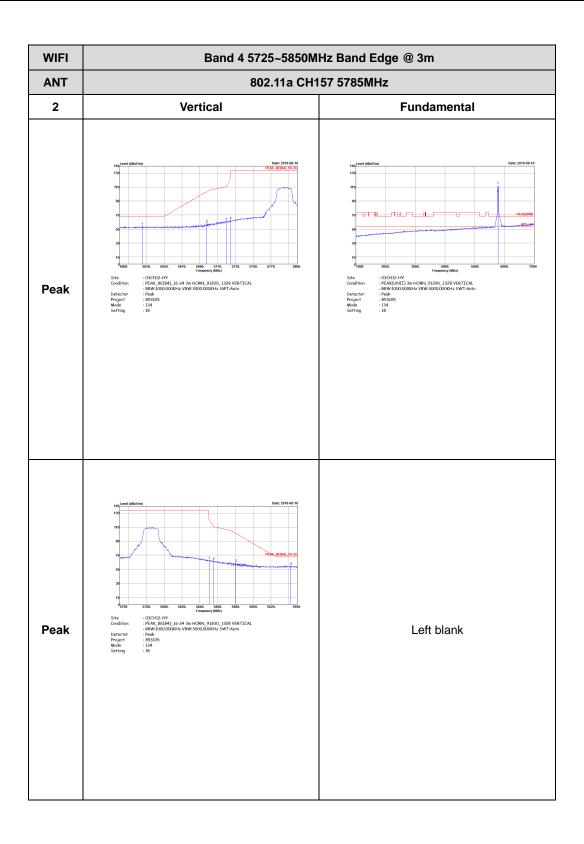
TEL: 886-3-327-3456 Page Number : C29 of C100



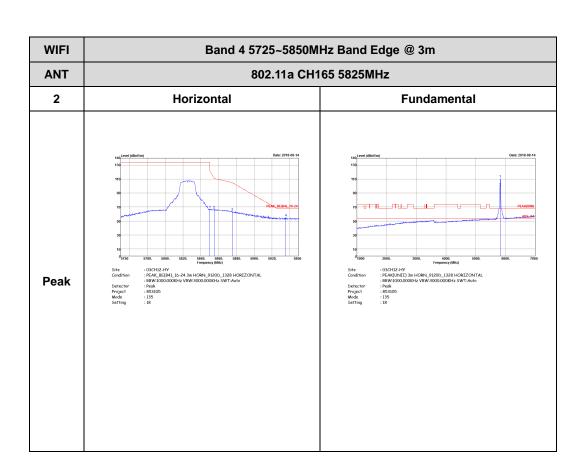


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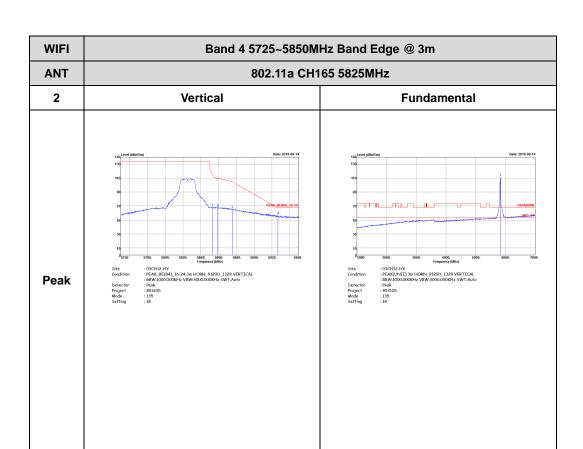




TEL: 886-3-327-3456 Page Number : C31 of C100



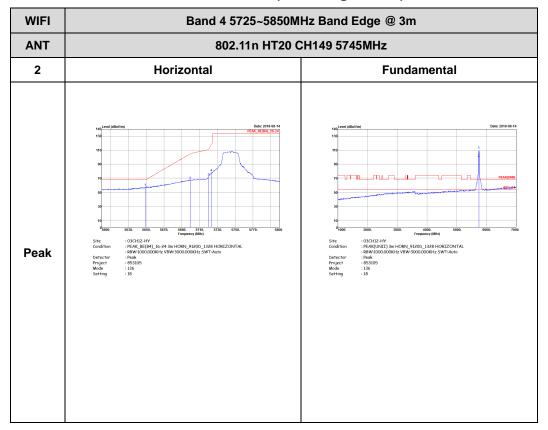
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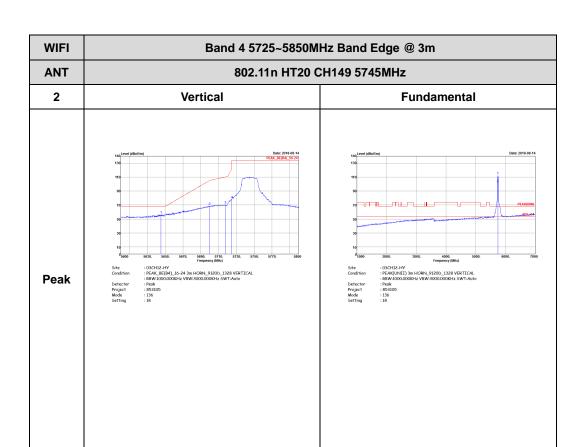
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## Band 4 5725~5850MHz WIFI 802.11n HT20 (Band Edge @ 3m)

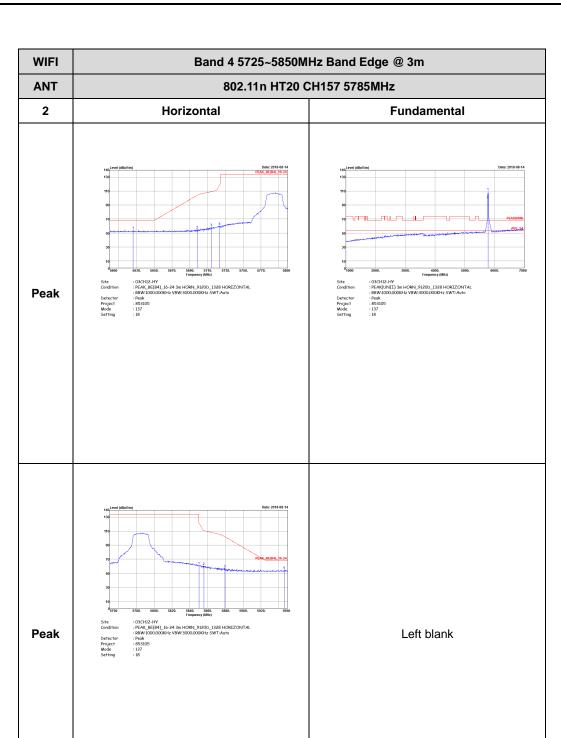
Report No.: FR853105F



TEL: 886-3-327-3456 Page Number : C34 of C100

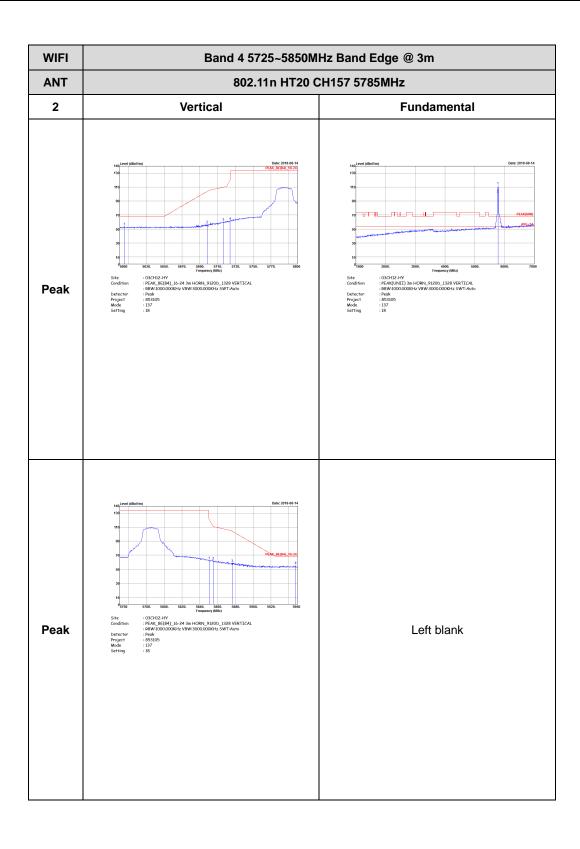


TEL: 886-3-327-3456 Page Number : C35 of C100

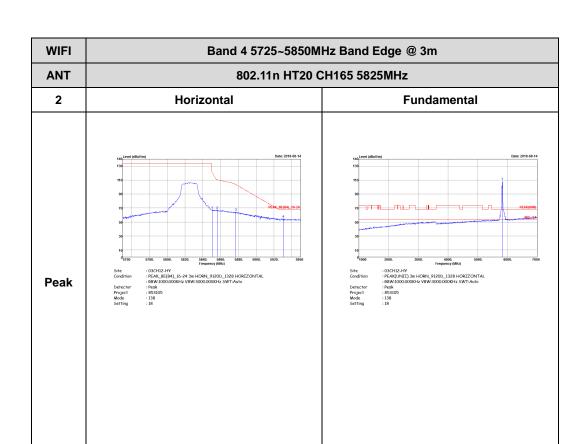


TEL: 886-3-327-3456 Page Number : C36 of C100

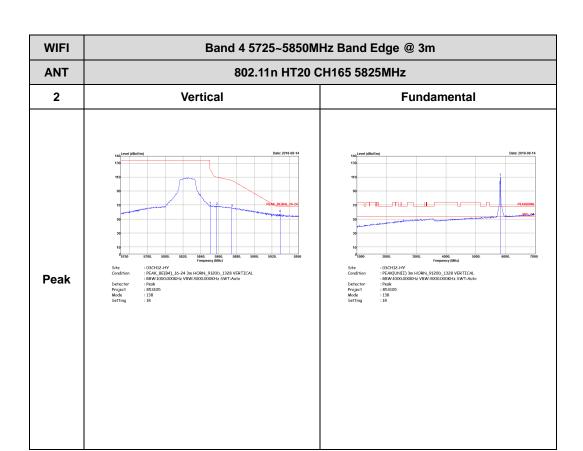




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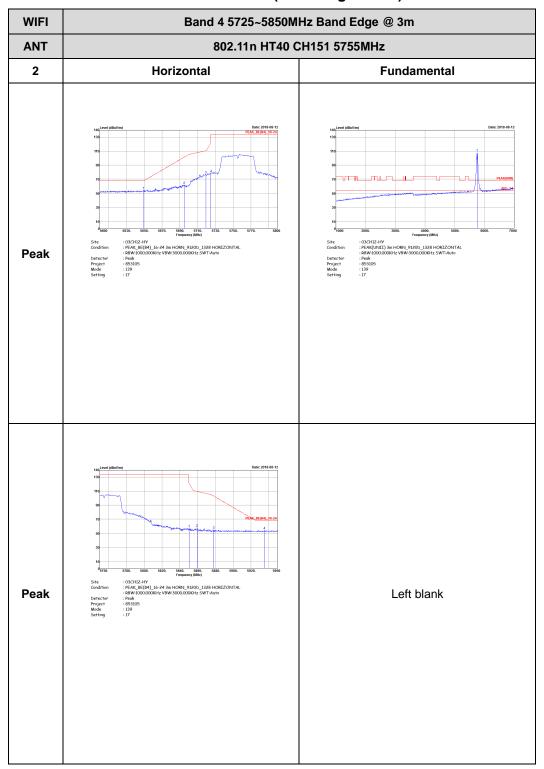
TEL: 886-3-327-3456 Page Number : C38 of C100



TEL: 886-3-327-3456 Page Number : C39 of C100

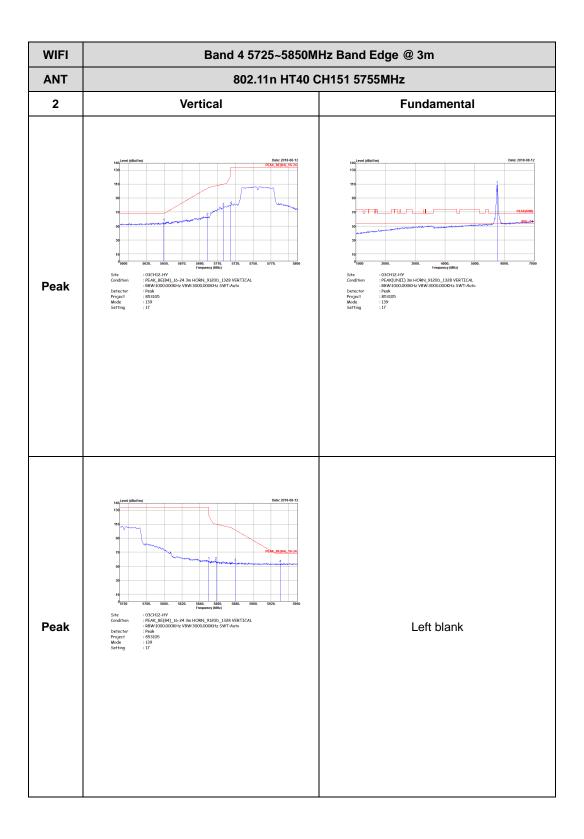
### Band 4 5725~5850MHz WIFI 802.11n HT40 (Band Edge @ 3m)

Report No.: FR853105F



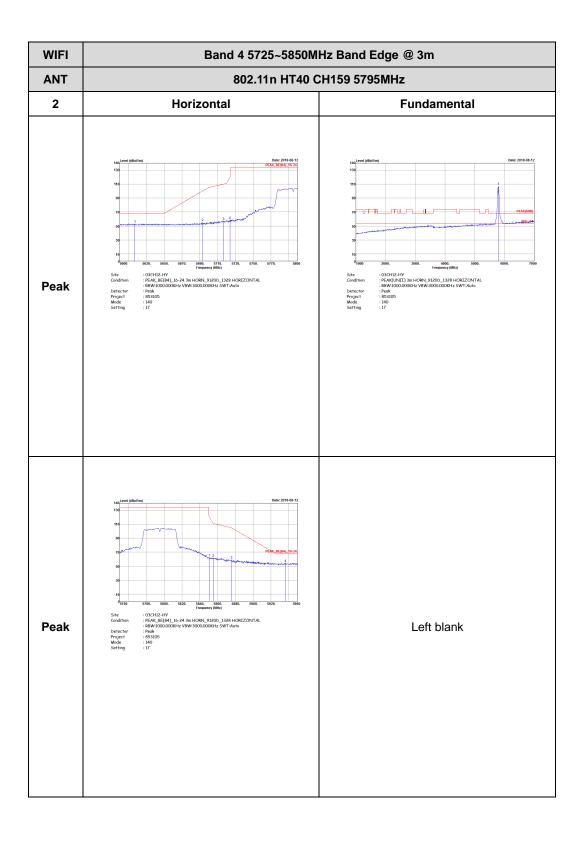
TEL: 886-3-327-3456 Page Number : C40 of C100





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TEL: 886-3-327-3456 Page Number : C42 of C100



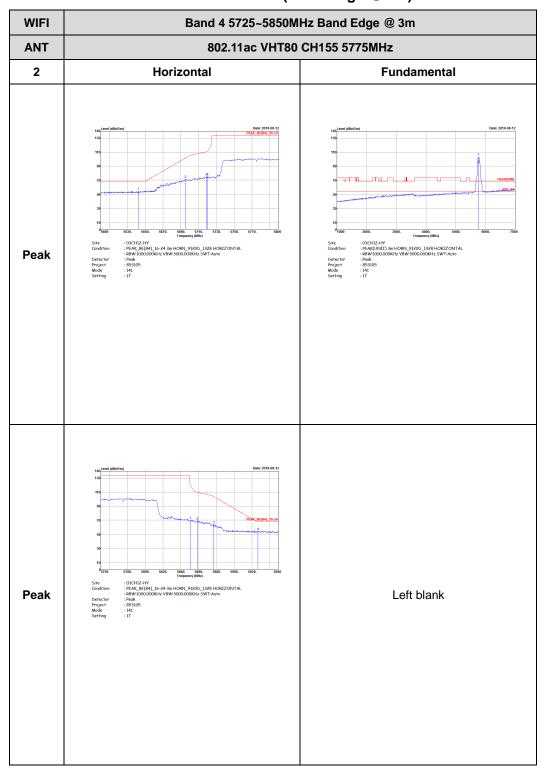
WIFI Band 4 5725~5850MHz Band Edge @ 3m ANT 802.11n HT40 CH159 5795MHz 2 Vertical **Fundamental** Peak : 03CH12-HY Frequency (BMs)
:PEAK\_BE(BA)\_16-24 3m HORPL\_9120D\_1328 VERTICAL
:BRW.1000.0000Hz VBW.3000.000Hz SWT-Auto
:Peak
:BS3105
:140
:17 Left blank Peak

Report No.: FR853105F

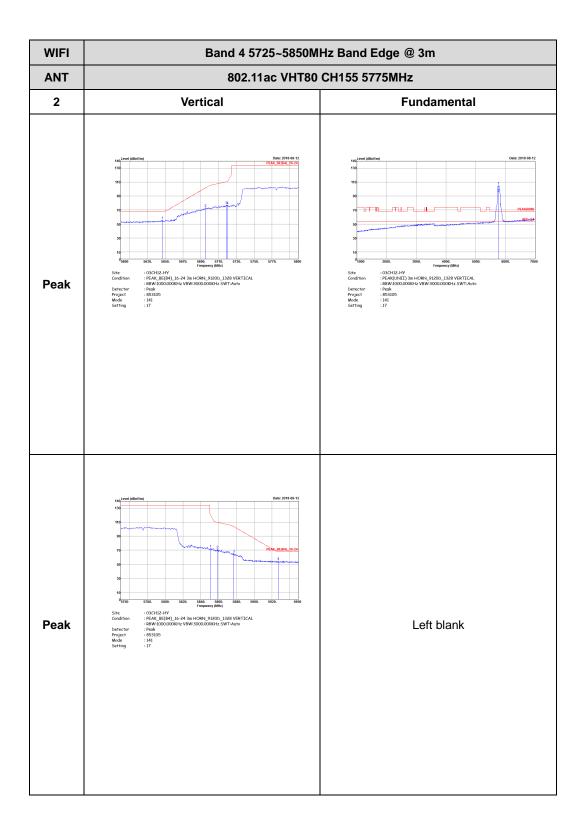
TEL: 886-3-327-3456 Page Number : C43 of C100

### Band 4 5725~5850MHz WIFI 802.11ac VHT80 (Band Edge @ 3m)

Report No.: FR853105F



TEL: 886-3-327-3456 Page Number : C44 of C100

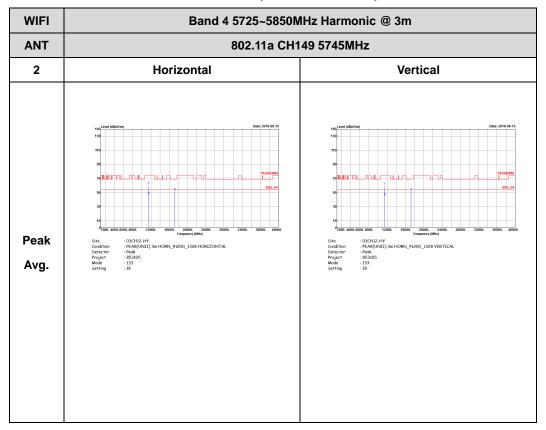


TEL: 886-3-327-3456 Page Number : C45 of C100

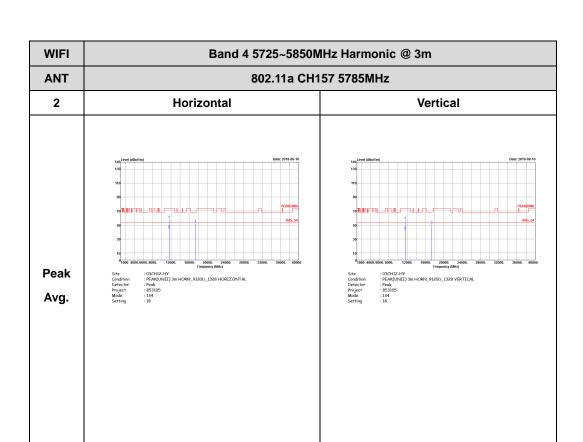
#### Band 4 - 5725~5850MHz

Report No.: FR853105F

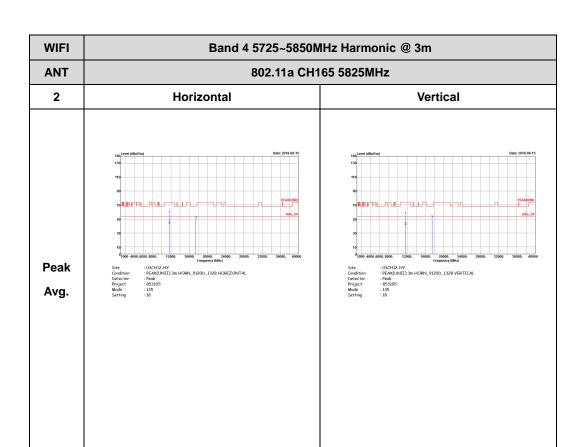
### WIFI 802.11a (Harmonic @ 3m)



TEL: 886-3-327-3456 Page Number : C46 of C100



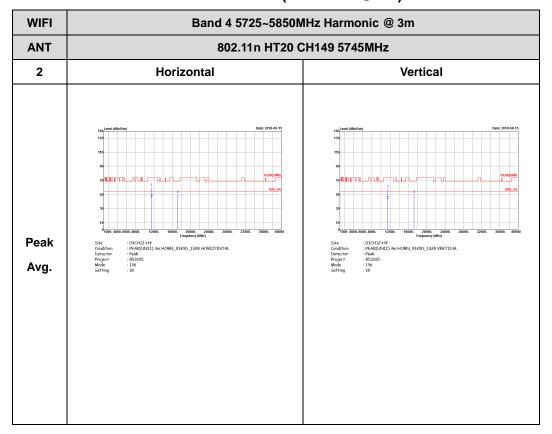
TEL: 886-3-327-3456 Page Number : C47 of C100



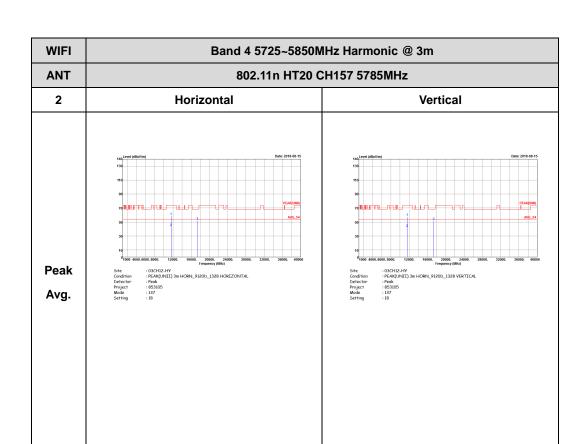
TEL: 886-3-327-3456 Page Number : C48 of C100

# Band 4 5725~5850MHz WIFI 802.11n HT20 (Harmonic @ 3m)

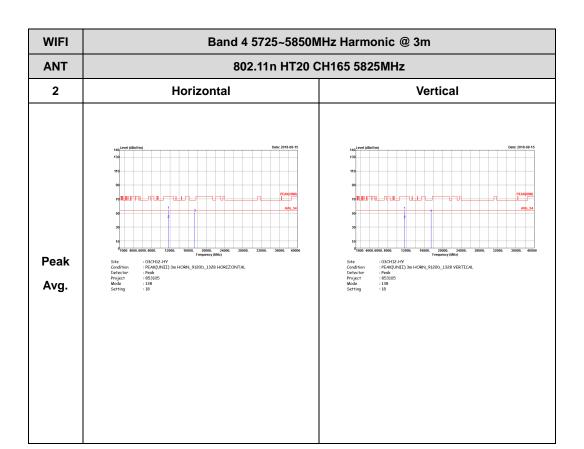
Report No.: FR853105F



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TEL: 886-3-327-3456 Page Number : C51 of C100