

Report No.: FG281920-08E



FCC CO-LOCATION RADIO TEST REPORT

FCC ID : B94HNI57CPS

Equipment : Notebook Computer

Brand Name : HP

Model Name : HSN-I57C Applicant : HP Inc.

1501 Page Mill Road, Palo Alto CA 94304 USA

Standard : FCC 47 CFR Part 2, 24(E), 27

The product was received on Sep. 04, 2023 and testing was performed from Oct. 06, 2023 to Oct. 09, 2023. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Approved by: Louis Wu

Louis Wu

Sporton International Inc. Wensan Laboratory

No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)

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 : Oct. 20, 2023

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History of this test report

Report No. : FG281920-08E

Report No.	Version	Description	Issue Date
FG281920-08E	01	Initial issue of report	Oct. 17, 2023
FG281920-08E	02	Revise Product Feature of Equipment Under Test This report is an updated version, replacing the report issued on Oct. 17, 2023.	Oct. 20, 2023

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Summary of Test Result

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Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
2.0	§2.1053 §24.238 (a)	Radiated Spurious Emission (Band 25)	Dane	17.98 dB
3.2	§2.1051 §27.53 (m)(4)	Radiated Spurious Emission (Band 41)	Pass	under the limit at 10722.00 MHz

Conformity Assessment Condition:

- The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
- 2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty".

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sheng Kuo

Report Producer: Michelle Chen

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1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature					
General Specs	WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n/ac/ax, Wi-Fi 5GHz 802.11a/n/ac/ax, and Wi-Fi 6GHz 802.11ax				
Integrated WLAN Module	Brand Name: REALTEK Model Name: RTL8852CE FCC ID: TX2-RTL8852CE				
Integrated WLAN Module Brand Name: Intel Model Name: AX211NGW FCC ID: PD9AX211NG					
Antenna Type	WWAN: PIFA Antenna WLAN: <main>: PIFA Antenna <aux.>: PIFA Antenna Bluetooth: PIFA Antenna</aux.></main>				

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WWAN Antenna Information						
Antenna 5		16036B0327801 Peak gain (dBi)	Peak gain (dBi)	LTE Band 25: 2.83		
(Notebook Mode)	Part number		LTE Band 41: 0.47			
		(01EADL 13.G79)	Туре	PIFA		
Antonno F			Dook goin (dBi)	LTE Band 25: 2.26		
Antenna 5 (Tablet Mode)	Part number		Peak gain (dBi)	LTE Band 41: 0.64		
(Tablet Mode)		(81EABL15.G79)	Туре	PIFA		

Remark: The above EUT's information was declared by manufacturer. Please refer to Disclaimer in report summary.

1.2 Modification of EUT

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

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1.3 Testing Location

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No.
Test site No.	03CH21-HY
Test Engineer	Jack Cheng, Ray Lung and Sky Chang
Temperature (°C)	18~26
Relative Humidity (%)	50~70

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

FCC Designation No.: TW3786

1.4 Applicable Standards

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

- + ANSI C63.26-2015
- ANSI / TIA-603-E
- FCC 47 CFR Part 2, 24(E), 27
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05r02
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- FCC KDB 987594 D02 U-NII 6 GHz EMC Measurement v01r01
- FCC KDB 414788 D01 Radiated Test Site v01r01
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

Remark:

- 1. All test items were verified and recorded according to the standards and without any deviation during the test.
- 2. The TAF code is not including all the FCC KDB listed without accreditation.

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2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

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For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in Tablet Type (three orthogonal axis (X: flat, Y: portrait, Z: landscape)) and Notebook Type, and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and only the worst case emissions were reported in this report.

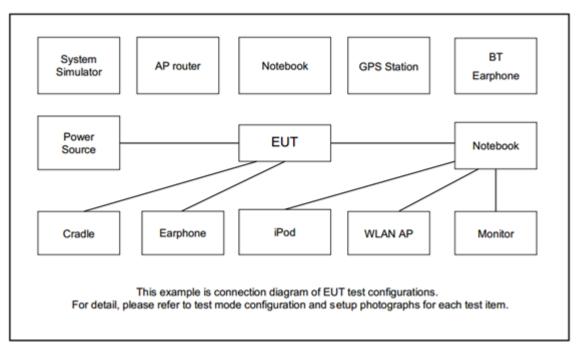
Modulation Type	Modulation
Α	QPSK

Test Item	Modulation Type	Bandwidth	RB Size	Channel
RSE	Α	10 MHz	1RB	L, M, H

Remark:

- Evaluated all the transmitter signal and reporting worst-case configuration among all modulation types.
- 2. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst-case emissions are reported.
- 3. During the Radiated Spurious Emission test, the EUT turn on the WLAN functions simultaneously.

2.2 Connection Diagram of Test System



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2.3 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A

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2.4 Frequency List of Low/Middle/High Channels

LTE Band 25 Channel and Frequency List							
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest			
40	Channel	26090	26340	26640			
10	Frequency	1855	1880	1910			
	LTE Band 41 Channel and Frequency List						
BW [MHz] Channel/Frequency(MHz)							
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest			
BW [MHz]	Channel/Frequency(MHz) Channel	Lowest 39700	Middle 40620	Highest 41540			

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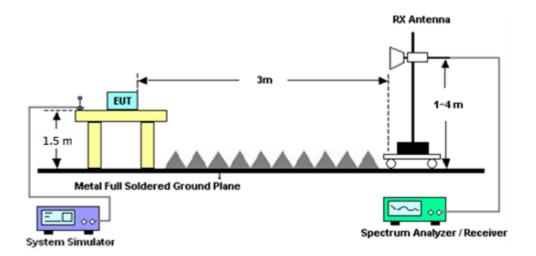
3 Radiated Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.1.1 Test Setup

For radiated test above 1GHz



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3.1.2 Test Result of Radiated Test

Please refer to Appendix A.

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3.2 Radiated Spurious Emission Measurement

3.2.1 Description of Radiated Spurious Emission Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E. For LTE Band 41

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The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 55 + 10 log (P) dB.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.2.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI C63.26-2015 section 5.5.4 Radiated measurement using the field strength method.

- 1. The EUT was placed on a turntable with 1.5 meter for frequency above 1GHz respectively above ground.
- 2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
- 3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
- 4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
- 5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
- To convert spectrum reading E(dBuV/m) to EIRP(dBm)
 EIRP(dBm) = Level (dBuV/m) + 20log(d) -104.77, where d is the distance at which filed strength limit is specified in the rules
- 7. Field Strength Level (dBm) = Spectrum Reading (dBm) + Antenna Factor + Cable Loss + Read Level Preamp Factor.
- 8. ERP (dBm) = EIRP (dBm) 2.15
- The RF fundamental frequency should be excluded against the limit line in the operating frequency band
- 10. For LTE Band 41

The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)

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4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Double Ridged Guide Horn Antenna	RFSPIN	DRH18-E	LE2C03A18EN	1GHz~18GHz	Jul. 12, 2023	Oct. 06, 2023~ Oct. 09, 2023	Jul. 11, 2024	Radiation (03CH21-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	1223	18GHz~40GHz	Jul. 10, 2023	Oct. 06, 2023~ Oct. 09, 2023	Jul. 09, 2024	Radiation (03CH21-HY)
Amplifier	EMEC	EM01G18GA	060876	1GHz~18GHz	Sep. 28, 2023	Oct. 06, 2023~ Oct. 09, 2023	Sep. 27, 2024	Radiation (03CH21-HY)
Preamplifier	EMEC	EM18G40G	060871	18GHz~40GHz	Aug. 30, 2023	Oct. 06, 2023~ Oct. 09, 2023	Aug. 29, 2024	Radiation (03CH21-HY)
Spectrum Analyzer	Keysight	N9010B	MY62170358	10Hz~44GHz	Aug. 28, 2023	Oct. 06, 2023~ Oct. 09, 2023	Aug. 27, 2024	Radiation (03CH21-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804397/2,8046 12/2,804614/2	30MHz~40GHz	Oct. 25, 2022	Oct. 06, 2023~ Oct. 09, 2023	Oct. 24, 2023	Radiation (03CH21-HY)
Hygrometer	TECPEL	DTM-303A	TP211568	N/A	Nov. 17, 2022	Oct. 06, 2023~ Oct. 09, 2023	Nov. 16, 2023	Radiation (03CH21-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Oct. 06, 2023~ Oct. 09, 2023	N/A	Radiation (03CH21-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Oct. 06, 2023~ Oct. 09, 2023	N/A	Radiation (03CH21-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Oct. 06, 2023~ Oct. 09, 2023	N/A	Radiation (03CH21-HY)
Software	Audix	E3 6.2009-8-24	RK-001053	N/A	N/A	Oct. 06, 2023~ Oct. 09, 2023	N/A	Radiation (03CH21-HY)

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5 Measurement Uncertainty

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of	3.31 dB
Confidence of 95% (U = 2Uc(y))	3.31 db

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Appendix A. Test Results of Radiated Test

A1. Summary of each worse mode

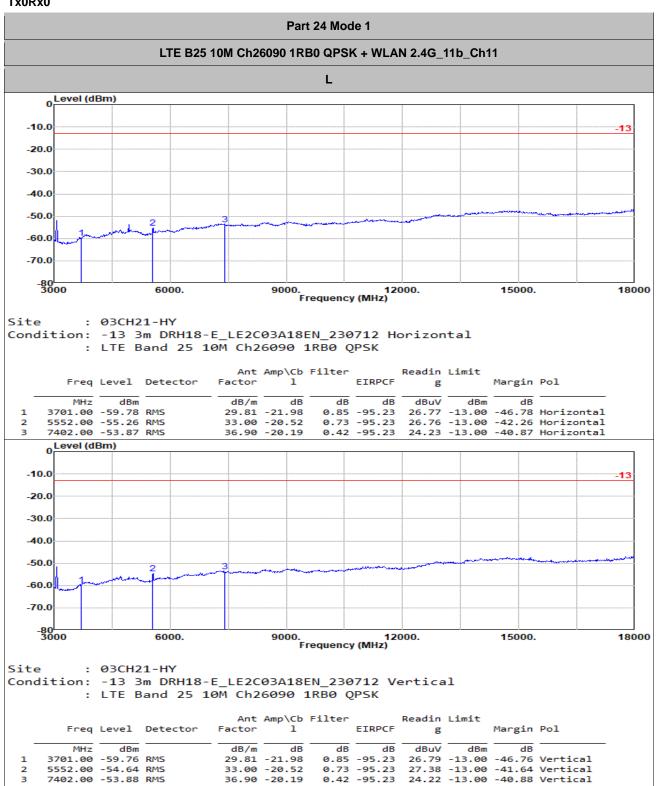
Part	Mode	Ch	Freq (MHz)	Level (dBm)	Detector	Ant Factor (dB/m)	Amp\CbI (dB)	Filter (dB)	EIRP CF (dB)	Reading (dBuV)	Limit (dBm)	Margin (dB)	Pol	Ant
24	1	Н	5717.000	-49.38	RMS	33.67	-20.54	0.69	-95.23	32.03	-13.00	-36.38	Н	Tx0Rx0
24	3	М	5627.000	-40.91	RMS	33.16	-20.53	10.63	-95.23	31.06	-13.00	-27.91	V	Tx0Rx0
27	2	Н	10722.000	-42.98	RMS	37.50	-20.32	10.45	-95.23	24.62	-25.00	-17.98	Ι	Tx0Rx0

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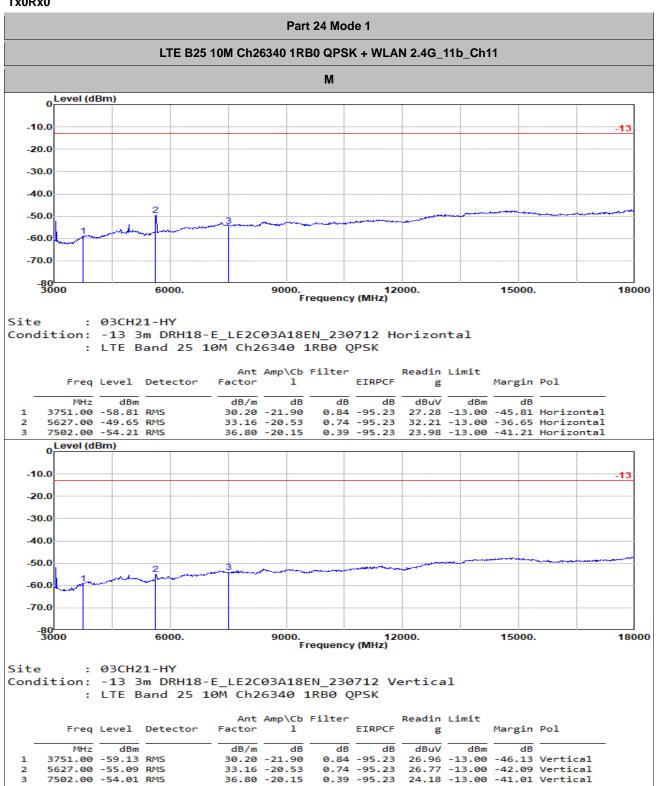
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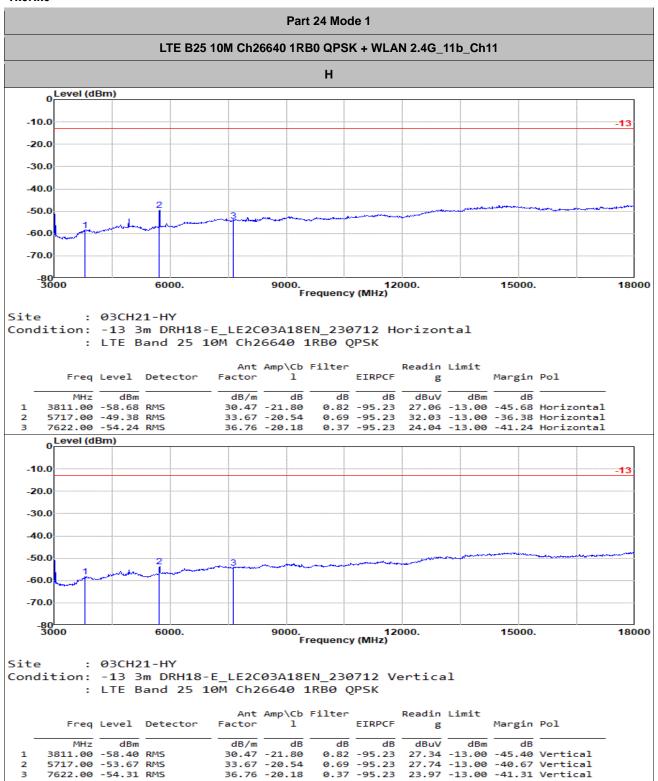


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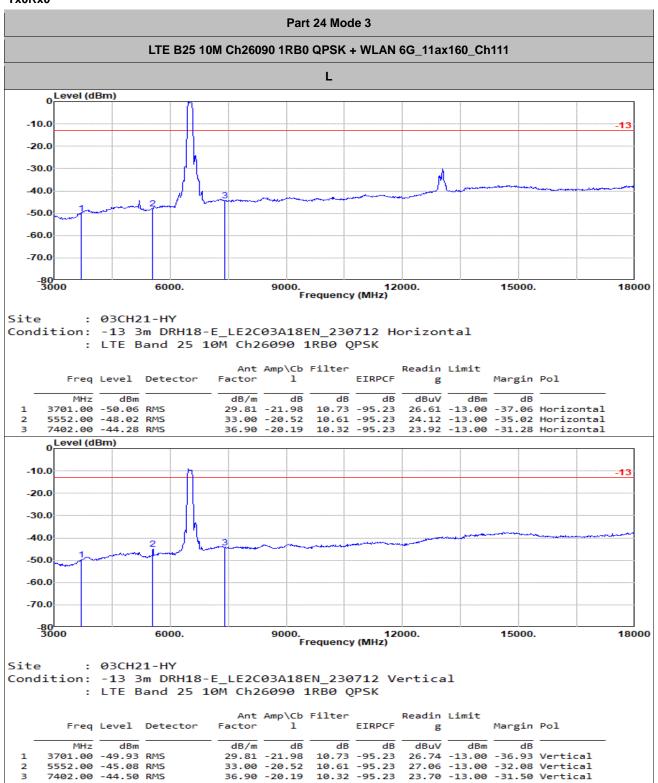
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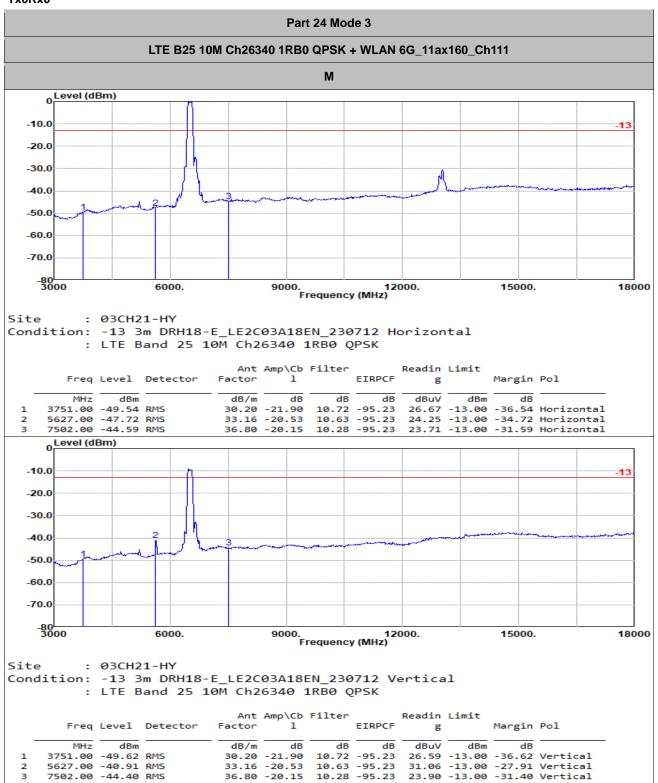
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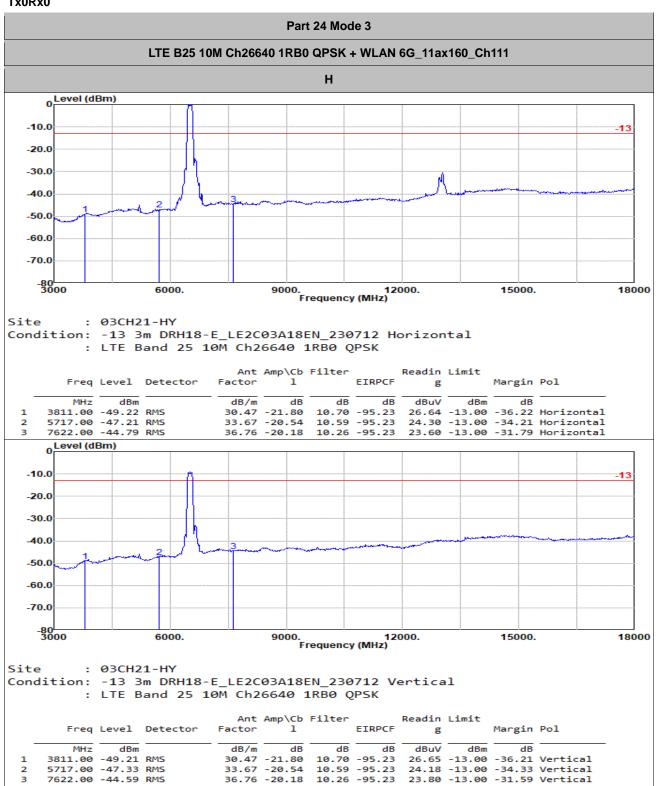
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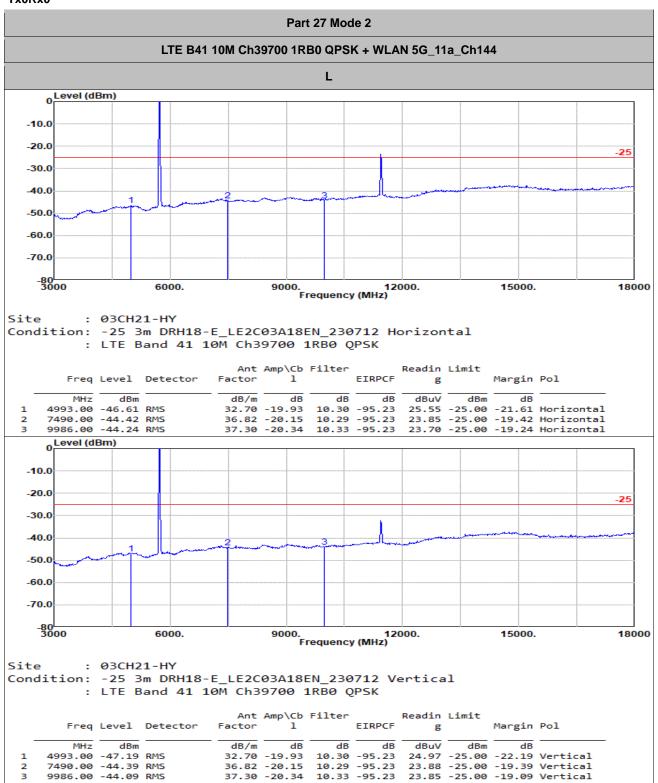
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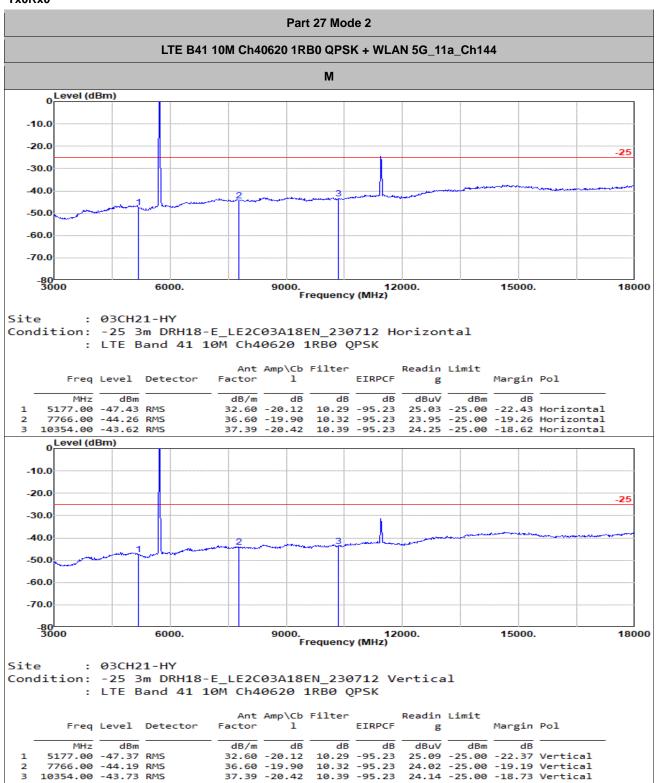
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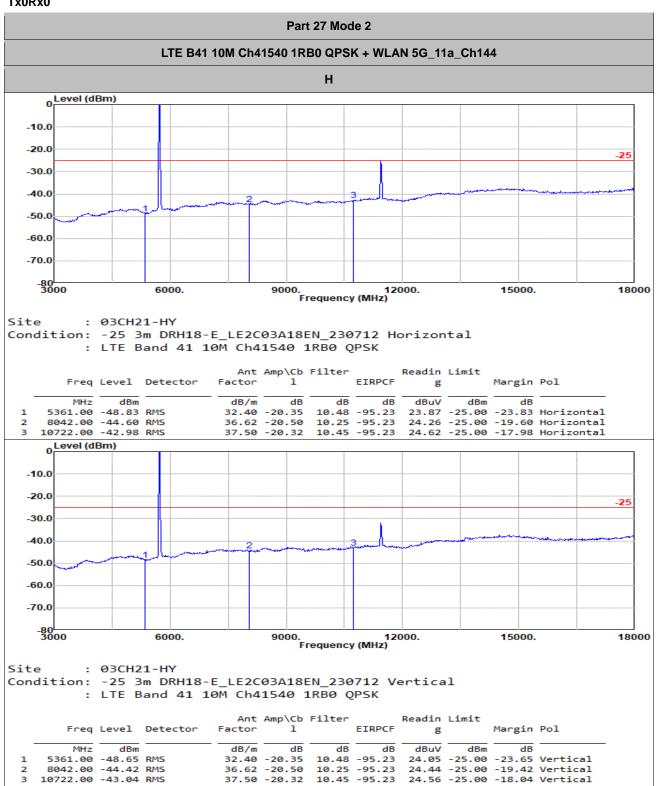
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