

FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

For

CONSUMER CAMERA

MODEL NUMBER: IPC-A46LP-C

ADDTIONAL MODEL NUMBER: IPC-A46LP-C-imou; IPC-A46LN-C; IPC-A46LN-Cimou; TP7S-4M-C; IPC-TA46L-C-LC; LC-K26L-4M-C; IPC-A46L-C-LC

PROJECT NUMBER: 4790033180-3

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Prepared for

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	08/02/2021	Initial Issue	



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PASS

1. ATTESTATION OF TEST RESULTS

CFR 47 Part 15 Subpart C

Applicant Information

ST	ANDARD TEST RESULTS
	APPLICABLE STANDARDS
Date Tested:	Jul 20, 2021~ Aug 02, 2021
Data of Receipt Sample:	Jul 20, 2021
Sample Number:	TP7S-4M-C; IPC-TA46L-C-LC; LC-K26L-4M-C; IPC-A46L-C-LC 4083925
Additional No. :	IPC-A46LP-C-imou; IPC-A46LN-C; IPC-A46LN-C-imou;
Model Name:	IPC-A46LP-C
EUT Description Product Name:	CONSUMER CAMERA
Manufacturer Information Company Name: Address:	Hangzhou Huacheng Network Technology Co.,Ltd. No.2930, Nanhuan Road, Binjiang District, Hangzhou, China
Company Name: Address:	Hangzhou Huacheng Network Technology Co.,Ltd. No.2930, Nanhuan Road, Binjiang District, Hangzhou, China



Summary of Test Results							
Clause	Test Items	FCC Rules	Test Results				
1	6db DTS Bandwidth	FCC 15.247 (a) (2)	PASS				
2	Conducted Power	FCC 15.247 (b) (3)	PASS				
3	Power Spectral Density	FCC 15.247 (e)	PASS				
4	Conducted Band edge And Spurious emission	FCC 15.247 (d)	PASS				
5	Radiated Band edges and Spurious emission	FCC 15.247 (d) FCC 15.209 FCC 15.205	PASS				
6	Conducted Emission Test For AC Power Port	FCC 15.207	PASS				
7	Antenna Requirement	FCC 15.203	PASS				
Remark: 1) The measurement result for the sample received is <pass> according to < ANSI C63.10-2013,</pass>							

FCC CFR 47 Part 2, FCC CFR 47 Part 15C> when <Accuracy Method> decision rule is applied.

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	A2LA (Certificate No.: 4829.01) UL-CCIC COMPANY LIMITED has been assessed and proved to be in compliance with A2LA. FCC (FCC Designation No.: CN1247) UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules. IC (IC Designation No.: 25056) UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.
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Note 1: All tests measurement facilities use to collect the measurement data are located at No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122, People's Republic of China

Note 2: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. These measurements below 30MHz had been correlated to measurements performed on an OFS.

Note 3: The test anechoic chamber in UL-CCIC COMPANY LIMITED had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.



4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty			
Conduction emission	3.1dB			
Radiation Emission test(include Fundamental emission) (9KHz-30MHz)	3.4dB			
Radiation Emission test(include Fundamental emission) (30MHz-1GHz)	3.4dB			
Radiation Emission test (1GHz to 26GHz)(include Fundamental emission)	3.9dB (1GHz-18Gz)			
	4.2dB (18GHz-26.5Gz)			
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.				



5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

Product Name:	CONSUMER CAMERA
Model No.:	IPC-A46LP-C
Operating Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz
Type of Modulation:	IEEE for 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE for 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n (HT20 and HT40): OFDM (64QAM, 16QAM, QPSK, BPSK)
Channels Step:	Channels with 5MHz step
Sample Type:	Fixed production
Test power grade:	N/A
Test software of EUT:	Secure CRT (manufacturer declare)
Antenna Type:	Monopole Antenna
Antenna Gain:	2.46 dBi

Remark:

Model No.:

No.:	Name:	No.:	Name:	No.:	Name:
1	IPC-A46LP-C	2	IPC-A46LP-C-imou	3	IPC-A46LN-C
4	IPC-A46LN-C-imou	5	TP7S-4M-C	6	IPC-TA46L-C-LC
7	LC-K26L-4M-C	8	IPC-A46L-C-LC		

Only the main model IPC-A46LP-C was tested and only the data of this model is shown in this test report. Since Their material, types of encloser, antenna location, electrical circuit design, layout, components used and internal wiring are identical, only the model name is different.



5.2. MAXIMUM OUTPUT POWER

Number of Transmit Chains (NTX)	IEE Std. 802.11	Channel Number	Max AV Conducted Power (dBm)
1	IEEE 802.11B SISO	1-11[11]	14.44
1	IEEE 802.11G SISO	1-11[11]	9.24
1	IEEE 802.11nHT20	1-11[11]	9.09
1	IEEE 802.11nHT40	3-9[7]	8.37

5.3. CHANNEL LIST

	Channel List for 802.11b/g/n (20 MHz)						
Channel	Frequency (MHz)	Channel	Frequenc y(MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	4	2427	7	2442	10	2457
2	2417	5	2432	8	2447	11	2462
3	2422	6	2437	9	2452		

	Channel List for 802.11n (40 MHz)						
Channel	Frequency (MHz)	Channel	Frequenc y(MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	5	2432	7	2442	9	2452
4	2427	6	2437	8	2447		

5.4. TEST CH	ANNEL CONFIGURATION	ON
Test Mode	Test Channel	Frequency

I est Mode	Test Channel	Frequency
WiFi TX(802.11b)	CH 1, CH 6, CH 11	2412MHz, 2437MHz, 2462MHz
WiFi TX(802.11g)	CH 1, CH 6, CH 11	2412MHz, 2437MHz, 2462MHz
WiFi TX(802.11n HT20)	CH 1, CH 6, CH 11	2412MHz, 2437MHz, 2462MHz
WiFi TX(802.11n HT40)	CH 3, CH 6, CH 9	2422MHz, 2437MHz, 2452MHz

5.5. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band								
Test Softw		Secure CRT						
	Transmit	Test Channel						
Modulation Mode	Antenna	NCB: 20MHz NCB: 40N				ICB: 40MHz		
Mode	Number	CH 1	CH 6	CH 11	CH 3	CH 6	CH 9	
802.11b	1	N/A	N/A	N/A				
802.11g	1	53	53	53	/			
802.11n HT20	1	53	53	53				
802.11n HT40	1		/		53	53	53	



5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	2400-2483.5	Monopole antenna	2.46

Test Mode	Transmit and Receive Mode	Description
IEEE 802.11b	⊠1TX, 1RX	Antenna1 can be used as transmitting/receiving antenna independently.
IEEE 802.11g	⊠1TX, 1RX	Antenna1 can be used as transmitting/receiving antenna independently.
IEEE 802.11N (HT20)	⊠1TX, 1RX	Antenna1 can be used as transmitting/receiving antenna independently.
IEEE 802.11N (HT40)	⊠1TX, 1RX	Antenna1 can be used as transmitting/receiving antenna independently.

5.7. THE WORSE CASE CONFIGURATIONS

For the product, there two transmission antennas, and pre-testing both of them, only the worse data for the antenna is recorded in the report.

Worst-case data rates as provided by the client were:

802.11b mode: 1 Mbps 802.11g mode: 6 Mbps 802.11n HT20 mode: MCS0 802.11n HT40 mode: MCS0



5.8. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests			
Relative Humidity	55 ~ 65%			
Atmospheric Pressure:	1001Pa			
Temperature	TN	20 ~ 28°C		
	VL	N/A		
Voltage :	VN	AC 120V		
	VH	N/A		

Note: VL= Lower Extreme Test Voltage VN= Nominal Voltage VH= Upper Extreme Test Voltage TN= Normal Temperature



5.9. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Description
1	Laptop	ThinkPad	E590	N/A
2	SD Card	N/A	N/A	Supply by UL Lab

I/O PORT

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	USB to TTL	USB	100cm Length	N/A
2	LAN	LAN	LAN	100cm Length	N/A

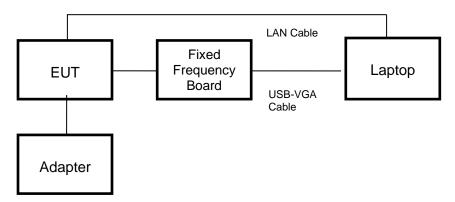
ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	AC Adapter	MASS POWER	E010- 1D050150VUU	INPUT:100-240V~, 50/60Hz, 0.3A OUTPUT:5.0V=1.5A

TEST SETUP

The EUT can work in an engineer mode with a software through a table PC.

SETUP DIAGRAM FOR TESTS



Remark: The EUT has been built one SD card during the testing



5.10. MEASURING INSTRUMENT AND SOFTWARE USED

Conducted Emissions (Instrument)											
Used	Equipment	Manufacturer	Mode	el No.	Seri	al No.	Upper Last Cal.	Last Cal.	Next Cal.		
\checkmark	EMI Test Receiver	R&S	ES	R3	12	6700	2019-12-12	2020-12-05	2021-12-04		
\checkmark	Two-Line V-Network	R&S	ENV	216	12	6701	2019-12-12	2020-12-05	2021-12-04		
	Artificial Mains Networks	R&S	EN	Y81	12	6711	2019-12-12	2020-12-05	2021-12-04		
	Software										
Used	Des	cription		Ma	anufac	turer	Name	Version			
\checkmark	Test Software for 0	Conducted distur	bance		R&S		EMC32	Ver. 9.25			
		Ra	diated	Emiss	ions (Instrum	ent)				
Used	Equipment	Manufacturer	Mode	el No.	Seri	al No.	Upper Last Cal.	Last Cal.	Next Cal.		
\checkmark	Spectrum Analyzer	Keysight	N90	10B	MY57	110128	2020-05-10	2021-05-09	2022-05-08		
\checkmark	EMI test receiver	R&S	ESF	R26	126	57603	2019-12-12	2020-12-05	2021-12-04		
\checkmark	Receiver Antenna (9kHz-30MHz)	Schwarzbeck	FMZB	1513	513	8-265	2018-06-15	2021-06-03	2022-06-02		
\checkmark	Receiver Antenna (30MHz-1GHz)	SunAR RF Motion	JB1		17	7821	N/A	2019-01-28	2022-01-27		
\checkmark	Receiver Antenna (1GHz-18GHz)	R&S	HF907		12	6705	2018-01-29	2019-01-28	2022-01-27		
\checkmark	Receiver Antenna (18GHz-26.5GHz)	Schwarzbeck	BBHA	9170	12	6706	2018-01-06	2019-01-05	2022-01-04		
\checkmark	Pre-amplification (To 18GHz)	Compliance Direction System Inc.	PAP-10	G18-50	1414()-13467	2019-03-18	2020-12-05	2021-12-04		
\checkmark	Pre-amplification (To 26.5GHz)	R&S	SCU	-26D	13	4668	2019-02-06	2020-09-27	2021-09-26		
V	Band Reject Filter	Wainwright	WRC 2350-2 2483.5-2 403	2400- 2533.5-		1	2020-05-10	2021-05-09	2022-05-08		
	Highpass Filter	Wainwright	WHK 2700-3 18000-	3000-		2	2020-05-10	2021-05-09	2022-05-08		
				Soft	ware						
Used	Descr	iption	N	lanufac	turer		Name	Version			
\checkmark	Test Software for R	adiated disturbar	nce	Tonsce	end		JS32	V1.0			
			Ot	her ins	strum	ents					
Used	Equipment	Manufacturer	Model No.		Seri	al No.	Upper Last Cal.	Last Cal.	Next Cal.		
\checkmark	Spectrum Analyzer	Keysight	N90	10B	MY57	110128	2020-05-10	2021-05-09	2022-05-08		
\checkmark	Power Meter	Keysight	U202	21XA	MY57	110002	2020-05-10	2021-05-09	2022-05-08		



6. MEASUREMENT METHODS

No.	Test Item	KDB Name	Section
1	6dB Bandwidth	KDB 558074 D01 15.247 Meas Guidance v05r02	8.2
2	Conducted Output Power	KDB 558074 D01 15.247 Meas Guidance v05r02	8.3.1.3/8.3.2.3
3	Power Spectral Density	KDB 558074 D01 15.247 Meas Guidance v05r02	8.4
4	Out-of-band emissions in non-restricted bands	KDB 558074 D01 15.247 Meas Guidance v05r02	8.5
5	Out-of-band emissions in restricted bands	KDB 558074 D01 15.247 Meas Guidance v05r02	8.6
6	Band-edge	KDB 558074 D01 15.247 Meas Guidance v05r02	8.7
7	Conducted Emission Test For AC Power Port	ANSI C63.10-2013	6.2



7. ANTENNA PORT TEST RESULTS

7.1. ON TIME AND DUTY CYCLE

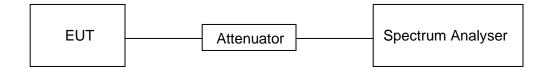
LIMITS

None; for reporting purposes only

PROCEDURE

FCC KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



<u>RESULTS</u>

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/T Minimum VBW (KHz)	Final Minimum VBW (KHz)
11B	8.375	8.455	0.991	99.1	0.04	0.12	0.01(Note 4)
11G	1.391	1.4597	0.953	95.3	0.21	0.72	1
11N HT20	5.079	5.153	0.986	98.6	0.06	0.20	0.01(Note 4)
11N HT40	2.467	2.536	0.973	97.3	0.12	0.41	1

Note: 1) Duty Cycle Correction Factor= $10\log(1/x)$.

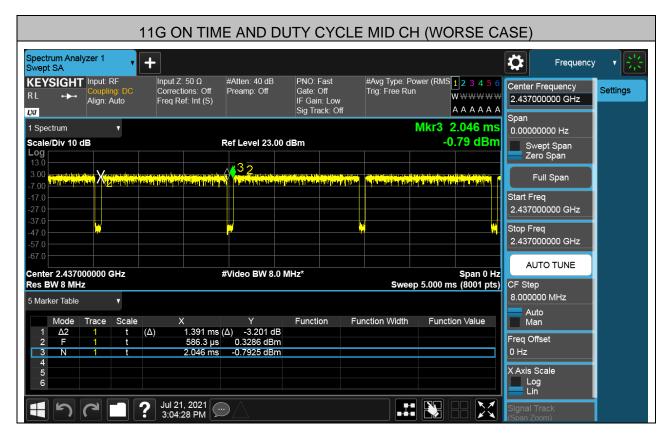
2) Where: x is Duty Cycle(Linear)

3) Where: T is On Time (transmit duration)

4) The minimum VBW should be 10Hz if the duty cycle is over 98%.

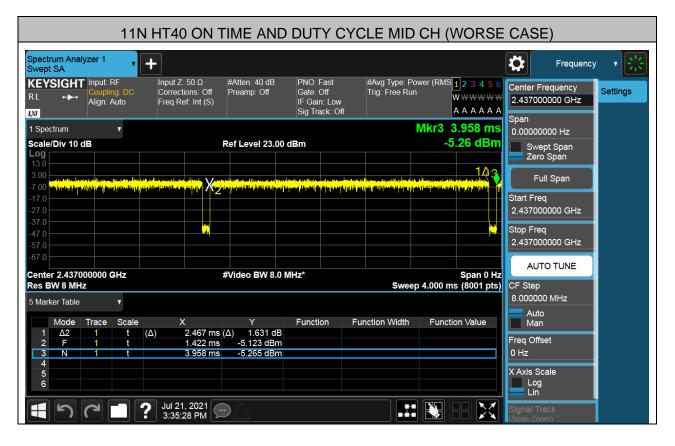


1	1B ON TIME AND D	UTY CYCLE MID	CH (WORSE CA	ASE)	
Spectrum Analyzer 1 Swept SA	+			Frequency	▼ * *
KEYSIGHT Input: RF RL Coupling: DC Align: Auto Align: Auto	Input Z: 50 Ω #Atten: 40 dB Corrections: Off Freq Ref: Int (S)	PNO: Fast #Avg Typ Gate: Off Trig: Free IF Gain: Low Sig Track: Off	e: Power (RMS 1 2 3 4 5 6 Run A A A A A A	Center Frequency 2.437000000 GHz	Settings
1 Spectrum v Scale/Div 10 dB Log	Ref Level 23.00		Mkr3 9.370 ms 4.57 dBm	Span 0.000000000 Hz Swept Span	
13.0 3.00 -7.00	312			Zero Span Full Span	
-17.0 -27.0 -37.0				Start Freq 2.437000000 GHz Stop Freq	
-47.0 -57.0 -67.0				2.437000000 GHz	
Center 2.437000000 GHz Res BW 8 MHz	#Video BW 8.0		Span 0 Hz weep 40.00 ms (8001 pts)	AUTO TUNE CF Step 8.000000 MHz	
5 Marker Table Mode Trace Scale 1 Δ2 1 t (4)	X Y Δ) 8.375 ms (Δ) -0.3130 dB	Function Function Wid	dth Function Value	Auto Man	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Δ) 8.375 ms (Δ) -0.3130 dB 915.0 μs 4.718 dBm 9.370 ms 4.569 dBm			Freq Offset 0 Hz	
5				X Axis Scale Log Lin	
1 7 7 7 ?	Jul 21, 2021			Signal Track (Span Zoom)	





11N HT20	ON TIME AND D	UTY CYCLE MID	CH (WORSE	CASE)	
Spectrum Analyzer 1				Frequency	• 崇
KEYSIGHT Input: RF Input 2: 5 RL ↔ Coupling: DC Correction Align: Auto Freq Ref	ons: Off Preamp: Off G :: Int (S) IF	ate: Off Trig: Free Run Gain: Low		Center Frequency 2.437000000 GHz	Settings
1 Spectrum v Scale/Div 10 dB	Ref Level 23.00 dBn			Span 0.00000000 Hz	
	3 <u>12</u>			Swept Span Zero Span Full Span	
-7.00 -17.0 -27.0				Start Freq 2.437000000 GHz	
-37.0 -47.0 -57.0				Stop Freq 2.437000000 GHz	
-67.0 Center 2.437000000 GHz	#Video BW 8.0 MHz		Span 0 Hz	AUTO TUNE	
Res BW 8 MHz 5 Marker Table		Sweep	p 20.27 ms (8001 pts)	CF Step 8.000000 MHz Auto	
2 F 1 t 2	5.079 ms (Δ) 0.2355 dB 2.009 ms -0.7175 dBm	unction Function Width		Man Freq Offset	
4 5	7.162 ms -0.6811 dBm			0 Hz X Axis Scale	
				Log Lin Signal Track (Span Zoom)	





7.2. 6 dB BANDWIDTH

LIMITS

FCC Part15 (15.247) Subpart C			
Section Test Item Limit Frequency Range (MHz)			
FCC 15.247(a)(2)	6dB Bandwidth	>= 500KHz	2400-2483.5

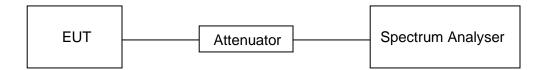
TEST PROCEDURE

Refer to FCC KDB 558074, connect the UUT to the spectrum analyzer and use the following settings:

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	For 6dB Bandwidth :100K
VBW	For 6dB Bandwidth : ≥3 × RBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

TEST SETUP





RESULTS

Test Mode	Test Channel	6dB bandwidth (MHz)	Result
	LCH	10.07	Pass
11B	MCH	10.05	Pass
	HCH	10.05	Pass
	LCH	16.35	Pass
11G	MCH	16.34	Pass
	НСН	16.35	Pass
	LCH	16.35	Pass
11N HT20	MCH	16.34	Pass
	НСН	16.35	Pass
	LCH	36.34	Pass
11N HT40	MCH	36.29	Pass
	НСН	36.33	Pass



For 6dB Bandwidth part:

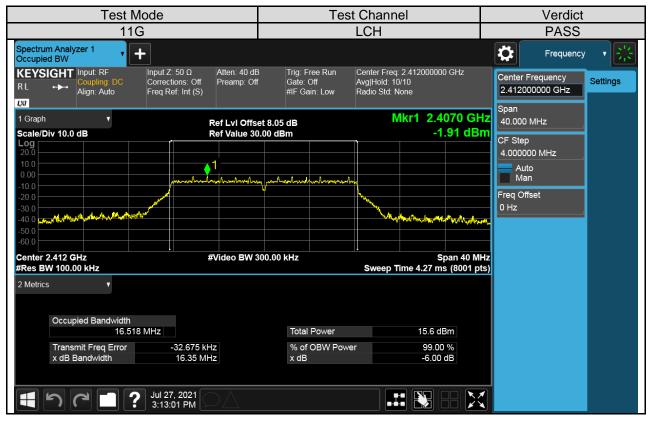




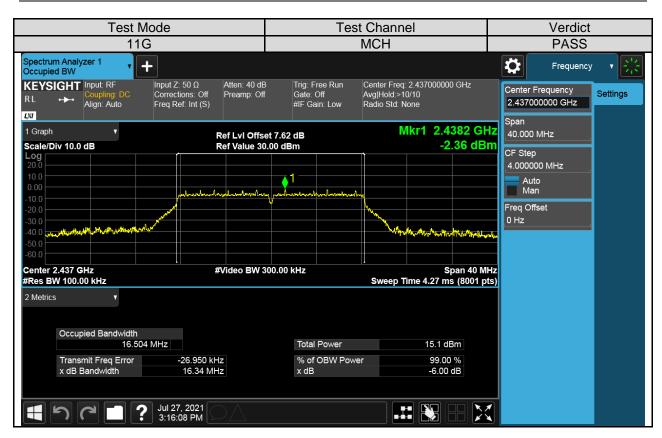
UL-CCIC COMPANY LIMITED

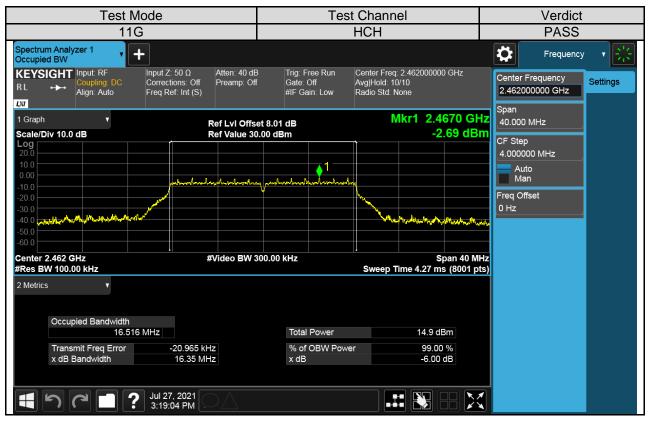




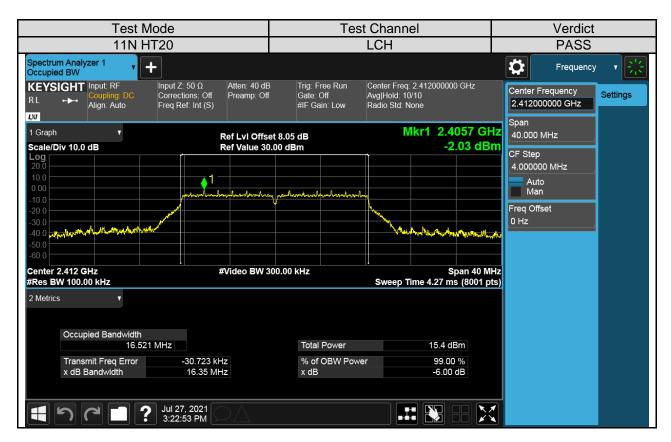


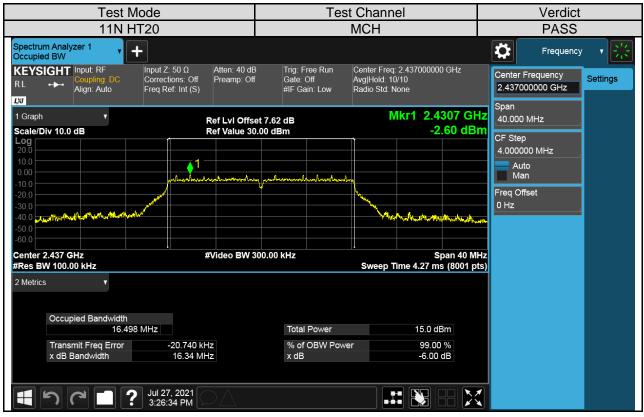




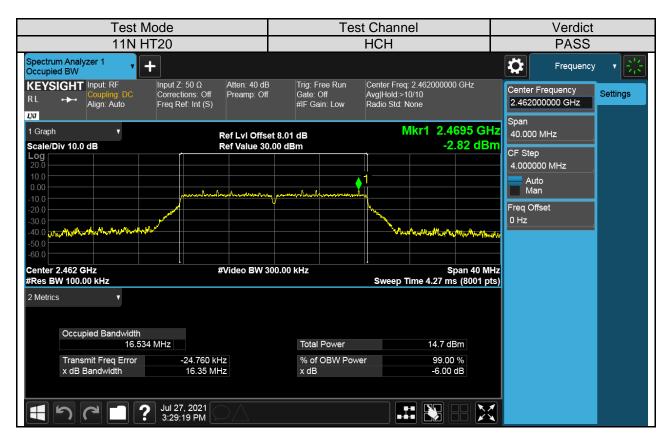


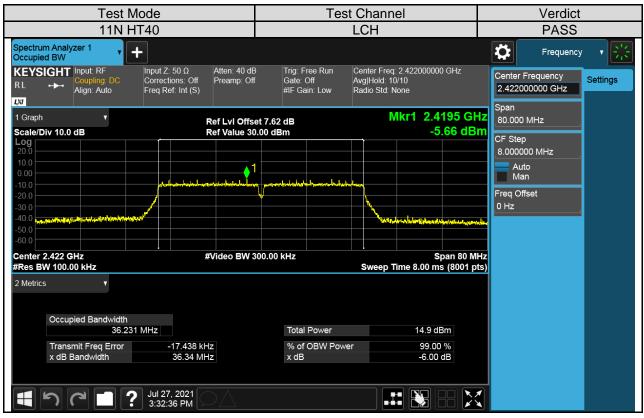






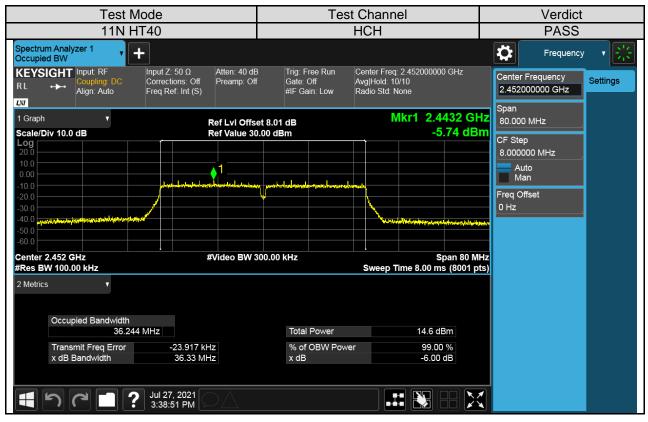














7.3. CONDUCTED POWER

LIMITS

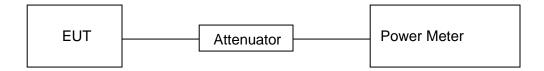
FCC Part15 (15.247) Subpart C			
Section Test Item Limit Frequency Range (MHz)			
FCC 15.247(b)(3)	Output Power	1 watt or 30dBm	2400-2483.5

TEST PROCEDURE

Place the EUT on the table and set it in the transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power sensor. Measure the power of each channel.

AVG Detector use for AVG result.

TEST SETUP



RESULTS

Test Mode	Test Channel	Maximum Conducted Output Power (AV) dBm	Result
	LCH	14.44	Pass
11B	MCH	13.86	Pass
	HCH	13.78	Pass
	LCH	9.24	Pass
11G	MCH	8.85	Pass
	HCH	8.56	Pass
	LCH	9.09	Pass
11N HT20	MCH	8.74	Pass
	HCH	8.48	Pass
11N HT40	LCH	8.22	Pass
	MCH	8.37	Pass
	НСН	8.09	Pass

Remark:

1) For all the test results has been adjusted the duty cycle factor.

2) For Correction Factor is refer to the result in section 7.1



7.4. POWER SPECTRAL DENSITY

LIMITS

FCC Part15 (15.247) Subpart C			
Section Test Item Limit Frequency Range (MHz)			
FCC §15.247 (e)	Power Spectral Density	8 dBm in any 3 kHz band	2400-2483.5

TEST PROCEDURE

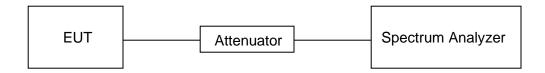
Refer to FCC KDB 558074, connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	3 kHz ≤ RBW ≤100 kHz
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

Allow trace to fully stabilize and use the peak marker function to determine the maximum amplitude level within the RBW.

If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST SETUP





RESULTS

Test Mode	Test Channel	Maximum Peak power spectral density (dBm/30kHz)	Result
	LCH	-0.48	Pass
11B	MCH	-0.89	Pass
	HCH	-1.12	Pass
	LCH	-7.50	Pass
11G	MCH	-6.95	Pass
	HCH	-6.74	Pass
	LCH	-7.00	Pass
11N HT20	MCH	-7.48	Pass
	НСН	-7.13	Pass
11N HT40	LCH	-10.96	Pass
	MCH	-10.25	Pass
	HCH	-10.58	Pass



Test Graphs:





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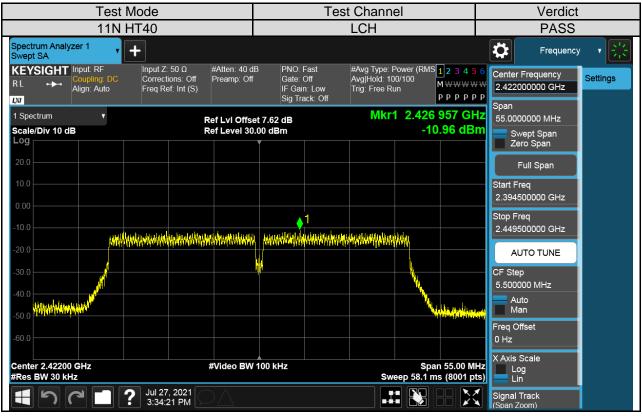




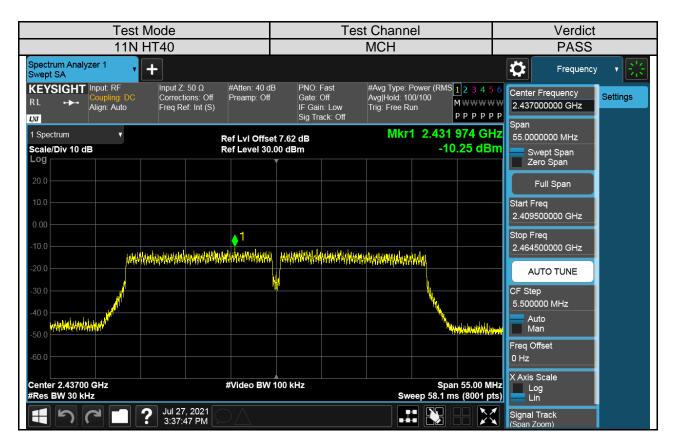
















7.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

<u>LIMITS</u>

FCC Part15 (15.247) Subpart C							
Section	Section Test Item Limit						
FCC §15.247 (d)	Conducted Bandedge and Spurious Emissions	At least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power					

TEST PROCEDURE

Refer to FCC KDB 558074, connect the UUT to the spectrum analyser and use the following

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	100K
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

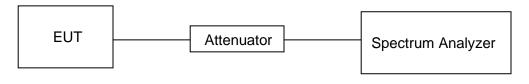
settings:

Use the peak marker function to determine the maximum PSD level.

Span	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100K
VBW	≥3 × RBW
measurement points	≥span/RBW
Trace	Max hold
Sweep time	Auto couple.

Use the peak marker function to determine the maximum amplitude level.

TEST SETUP



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Part I :Conducted Bandedge

RESULTS TABLE

Test Mode	Test Channel	Carrier Power[dBm]	Max. Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	4.702	-41.49	-25.3	PASS
IID	НСН	4.009	-41.41	-25.99	PASS
11G	LCH	-1.912	-42.19	-31.91	PASS
110	НСН	-2.717	-42.19	-32.72	PASS
11N HT20	LCH	-2.108	-41.92	-32.11	PASS
	НСН	-2.892	-42.19	-32.89	PASS
11N HT40	LCH	-5.476	-38.51	-35.48	PASS
	НСН	-5.202	-41.47	-35.2	PASS

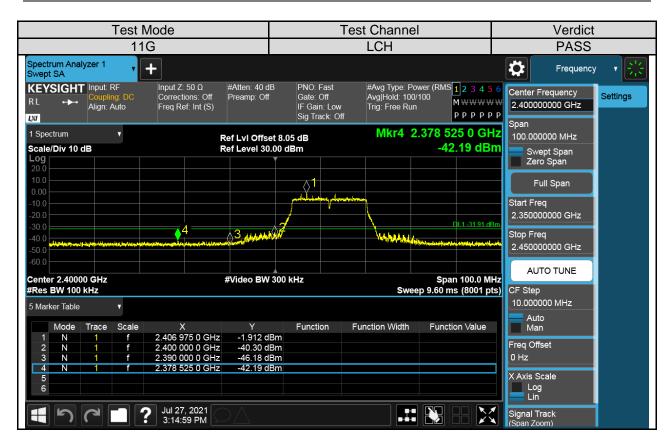


Test Mode Test Channel Verdict 11B LCH PASS Spectrum Analyzer 1 Swept SA Ö + Frequency V #Avg Type: Power (RMS 1 2 3 4 5 6 Avg|Hold: 100/100 Trig: Free Run Input Z: 50 Ω KEYSIGHT Input: RF #Atten: 40 dB PNO: Fast Center Frequency Settings Corrections: Off Freq Ref: Int (S) Preamp: Off Gate: Off Align: Auto 2.400000000 GHz IF Gain: Low рррррр Sig Track: Off Da Span Mkr4 2.353 775 0 GHz 1 Spectrum ۷ 100.000000 MHz Ref LvI Offset 8.55 dB -41.49 dBm Scale/Div 10 dB Ref Level 30.00 dBm Swept Span Zero Span _og $\Diamond 1$ Full Span Start Freq 2.350000000 GHz 4 3 Stop Freq 2.450000000 GHz AUTO TUNE Span 100.0 MHz Sweep 9.60 ms (8001 pts) Center 2.40000 GHz #Video BW 300 kHz #Res BW 100 kHz CF Step 10.000000 MHz 5 Marker Table V Auto Man Mode Trace Scale Function Function Width Function Value х 2.411 475 0 GHz 2.400 000 0 GHz 2.390 000 0 GHz 4.702 dBm Ν Freq Offset -29.73 dBm -43.99 dBm Ν 0 Hz 3 N -41.49 dBm 4 N 2.353 775 0 GHz X Axis Scale 5 Log Lin 6 Jul 21, 2021 2:53:16 PM \gtrsim ち ? ÷ Signal Track (Span Zoom) (\cdots)



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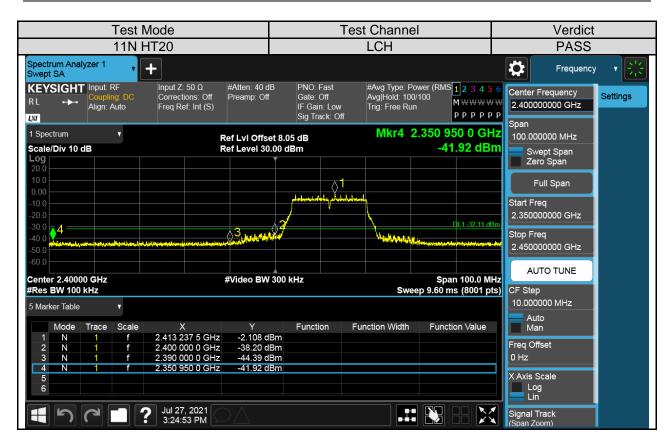






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Test N	lode	Tes	st Channel	Verdict
11N F	IT40		LCH	PASS
Spectrum Analyzer 1	+			Frequency v
KEYSIGHT Input: RF R L ↔ Align: Auto	Input Z: 50 Ω #Atten: 40 dB Corrections: Off Freq Ref: Int (S)	9 PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power (RMS 1 2 3 4 Avg Hold: 100/100 Trig: Free Run P P P F	2.400000000 GHz
1 Spectrum 🔹	Ref LvI Offset	7 62 dB	Mkr4 2.388 262 5 G	Span 100.000000 MHz
Scale/Div 10 dB	Ref Level 30.0		-38.51 d	Bm Swept Span Zero Span
10.0			1	Full Span
-10.0		ayahada babaha babaha aya aya aya aya aya aya aya aya aya	and any partial interior and a state of the first	Start Freq 2.350000000 GHz
-30.0 -40.0 -50.0		2		Stop Freq 2.450000000 GHz
-60.0 Center 2.40000 GHz	#Video BW 3	300 kHz	Span 100.0	
#Res BW 100 kHz			Sweep 9.60 ms (8001	pts) CF Step 10.000000 MHz
5 Marker Table Mode Trace Scale	X Y		unction Width Function Value	Auto
1 N 1 f 2 N 1 f	2.425 725 0 GHz -5.476 dB 2.400 000 0 GHz -42.99 dB			Freq Offset
3 N 1 f	2.390 000 0 GHz -42.53 dB	m		0 Hz
4 N 1 f 5 6	2.388 262 5 GHz -38.51 dB	m		X Axis Scale Log Lin
	Jul 27, 2021 3:34:31 PM			Signal Track (Span Zoom)

Test Mode	Test Channel	Verdict
11N HT40	НСН	PASS
Spectrum Analyzer 1		Frequency V 🔆
KEYSIGHT Input: RF Input: Z: 50 Ω #Atten: 40 c RL ← Coupling: DC Corrections: Off Preamp: Off Align: Auto Freq Ref: Int (S) Preamp: Off		2.483500000 GHz
1 Spectrum V Ref Lvi Offs		
Scale/Div 10 dB Ref Level 30		Swept Span Zero Span
10.0 0.00		Full Span
-10.0 Junt her and denote the constant data and data data a		Start Freq 2.433500000 GHz
-30.0 -40.0 -50.0		Stop Freq 2.533500000 GHz
-60.0 Center 2.48350 GHz #Video BW	/ 300 kHz Span 100.0 Mi	
#Res BW 100 kHz 5 Marker Table ▼	Sweep 9.60 ms (8001 pt	
Mode Trace Scale X Y	Function Function Width Function Value	Man
1 N 1 f 2.443 262 5 GHz -5.202 d 2 N 1 f 2.483 500 0 GHz -43.98 d		Freq Offset
3 N 1 f 2.500 000 GHz -44.75 d		0 Hz
4 N 1 f 2.494 787 5 GHz -41.47 d	Bm	X Auto Dasta
5		X Axis Scale
		Signal Track (Span Zoom)

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Part II :Conducted Emission

Test Result Table							
Test Mode	Channel	Pref(dBm)	Puw(dBm)	Verdict			
	LCH	See the test graphs	<limit< td=""><td>PASS</td></limit<>	PASS			
11B	MCH	See the test graphs	<limit< td=""><td>PASS</td></limit<>	PASS			
	НСН	See the test graphs	<limit< td=""><td>PASS</td></limit<>	PASS			
	LCH	See the test graphs	<limit< td=""><td>PASS</td></limit<>	PASS			
11G	MCH	See the test graphs	<limit< td=""><td>PASS</td></limit<>	PASS			
110	HCH	See the test graphs	<limit< td=""><td>PASS</td></limit<>	PASS			
	LCH	See the test graphs	<limit< td=""><td>PASS</td></limit<>	PASS			
11N HT20	MCH	See the test graphs	<limit< td=""><td>PASS</td></limit<>	PASS			
1111120	HCH	See the test graphs	<limit< td=""><td>PASS</td></limit<>	PASS			
	LCH	See the test graphs	<limit< td=""><td>PASS</td></limit<>	PASS			
11N HT40	MCH	See the test graphs	<limit< td=""><td>PASS</td></limit<>	PASS			
1111140	НСН	See the test graphs	<limit< td=""><td>PASS</td></limit<>	PASS			



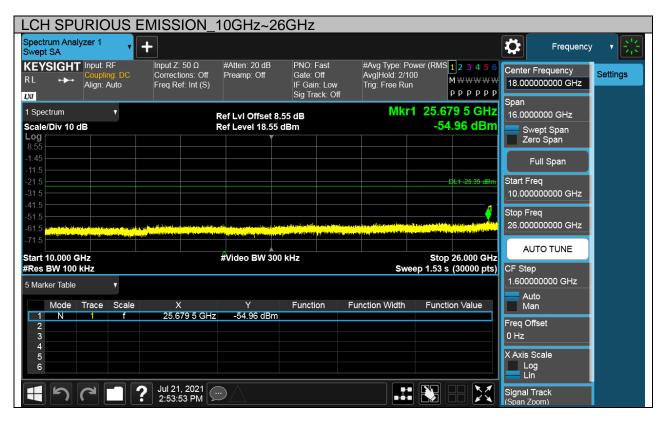
Test Mode	Channel	Verdict
11B	LCH	PASS





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LCH SPL	JRIOUS	SEMISSION_	30MHz~10	GHz					
Spectrum Analy Swept SA	yzer 1	• +						Frequency	
KEYSIGHT RL +++	Input: RF Coupling: D(Align: Auto	Input Z: 50 Ω Corrections: Off Freq Ref: Int (S)	#Atten: 20 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Avg Hold: 9/10 Trig: Free Run			Frequency 000000 GHz	Settings
1 Spectrum Scale/Div 10 d	, ∎		Ref LvI Offset 8.5 Ref Level 18.55 d		Mk	r2 3.720 7 GHz -57.45 dBm	9.970	00000 GHz wept Span ero Span	
8.55 -1.45 -11.5		1						Full Span	
-21.5 -31.5 -41.5						DL1-25.39 dBm		0000 мнz	
-51.5 -61.5 -71.5				en en stern 10 die en en stern		en benefit het hat geschellt benegens verden werd het erse An de het het en werden beiden de het erse het het erse An de het het erse kanne der het de het erse het het erse		0000000 GHz	
Start 30 MHz #Res BW 100 I	kHz		#Video BW 300	kHz	Swee	Stop 10.000 GHz p 954 ms (30000 pts)	CF Ste		
5 Marker Table	▼							00000 MHz uto	
Mode 1 N 2 N 3	Trace Sca 1 f 1 f	ale X 2.410 6 GHz 3.720 7 GHz		Function F	Function Width	Function Value	Freq C 0 Hz	an vffset	
4 5 6							X Axis Lo	og	
1	C	Jul 21, 2021 2:53:43 PM	$\odot \triangle$				Signal (Span Z		





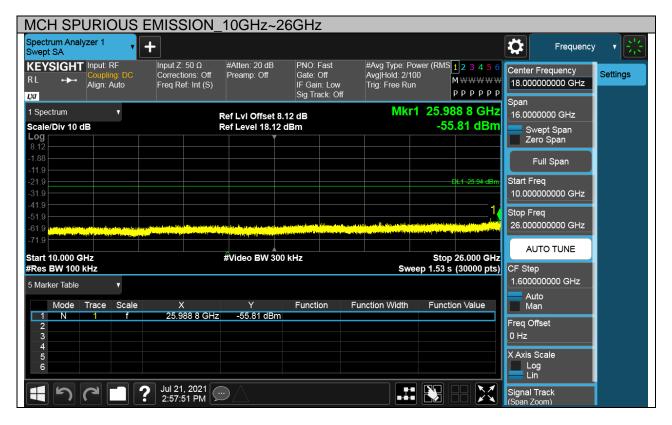
Test Mode	Channel	Verdict
11B	MCH	PASS





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MCH SPL	JRIOUS	EMISSION_	.30MHz~10)GHz					
Spectrum Analy Swept SA		+						Frequency	宗
KEYSIGHT RL ↔→→	Input: RF Coupling: DC Align: Auto	Input Ζ: 50 Ω Corrections: Off Freq Ref: Int (S)	#Atten: 20 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Pc Avg Hold: 10/1 Trig: Free Run			Frequency 000000 GHz	Settings
1 Spectrum Scale/Div 10 dl	B		Ref LvI Offset 8.1 Ref Level 18.12 d		Mk	r2 2.560 1 GHz -56.78 dBm	9.970	00000 GHz wept Span ero Span	
8.12 -1.88 -11.9 -21.9						DL1-25:94 dBm	Start F	Full Span	
-31.9 -41.9 -51.9		2	No J				Stop F	0000 MHz req 0000000 GHz	
-61.9 -71.9 Start 30 MHz #Res BW 100 k			#Video BW 300 I	<hz< td=""><td></td><td>Stop 10.000 GHz p 954 ms (30000 pts)</td><td></td><td>UTO TUNE</td><td></td></hz<>		Stop 10.000 GHz p 954 ms (30000 pts)		UTO TUNE	
5 Marker Table	T T				Swee	p 954 ms (50000 pts)	997.0	00000 MHz	
Mode 1 N 2 N 3 4 5 6	Trace Scale 1 f 1 f	X 2.434 8 GHz 2.560 1 GHz		Function	Function Width	Function Value	Freq C 0 Hz X Axis	Scale og	
し い (? Jul 21, 2021 2:57:41 PM					Signal (Span 2		





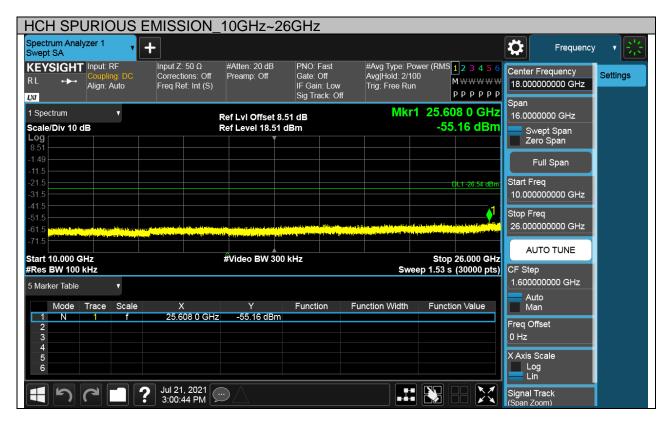
Test Mode	Channel	Verdict
11B	HCH	PASS





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HCH SPI	JRIOUS	EMISSION_	30MHz~10)GHz					
Spectrum Anal Swept SA		+						Frequency	マ影
KEYSIGHT	Input: RF Coupling: DC Align: Auto	Input Ζ: 50 Ω Corrections: Off Freq Ref: Int (S)	#Atten: 20 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Avg Hold: 9/10 Trig: Free Run		5.01500	requency 0000 GHz	Settings
1 Spectrum Scale/Div 10 c	v IB		Ref LvI Offset 8.5 Ref Level 18.51 d		Mk	r2 4.924 1 GHz -56.33 dBm	Swe	000 GHz pt Span Span	
8.51 -1.49 -11.5 -21.5						DL1 -26.54 dBm	Fu Start Free	il Span	
-31.5 -41.5 -51.5			2				30.0000 Stop Fred	00 MHz	
Start 30 MHz			#Video BW 300	kHz		Stop 10.000 GHz	AUT	O TUNE	
#Res BW 100 5 Marker Table	KHZ V				Swee	p 954 ms (30000 pts)	997.000	DOO MHz	
Mode 1 N 2 N 3 4 5 6	Trace Scale 1 f 1 f	X 2.464 1 GHz 4.924 1 GHz		Function	Function Width	Function Value	Auto Man Freq Offs 0 Hz X Axis So	et	
1 5	6	? Jul 21, 2021 3:00:35 PM					Lin Signal Tra (Span Zoo		





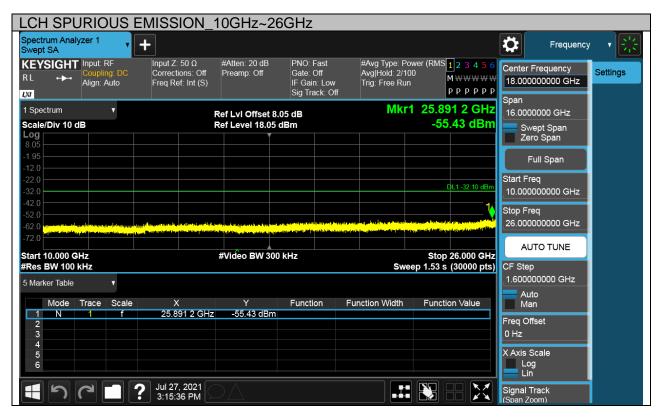
Test Mode	Channel	Verdict
11G	LCH	PASS





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LCH SPURI	OUS EN	AISSION_3	30MHz~10	GHz				
Spectrum Analyzer 1 Swept SA								Frequency v
	t: RF bling: DC n: Auto	Input Z: 50 Ω Corrections: Off Freq Ref: Int (S)	#Atten: 20 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Avg Hold: 10/1 Trig: Free Run		Center Frequ 5.01500000 Span	Jetungs
1 Spectrum Scale/Div 10 dB	•		Ref LvI Offset 8.0 Ref Level 18.05 d		Mkı	r2 3.758 2 GHz -57.70 dBm	9.97000000 Swept S Zero Sp	Span
8.05 -1.95 -12.0		}1 ├					Full S	pan
-22.0 -32.0 -42.0			2			DL1 -32.10 dBm	Start Freq 30.000000 N	MHz
-52.0 -62.0 -72.0							Stop Freq 10.0000000	
Start 30 MHz #Res BW 100 kHz		~	#Video BW 300	kHz	Sweep	Stop 10.000 GHz 5 954 ms (30000 pts)	AUTO T CF Step	UNE
5 Marker Table	•	×.					997.000000 — Auto	MHz
Mode Trace 1 N 1 2 N 1 3 3 1	e Scale f f	X 2.415 6 GHz 3.758 2 GHz	Y -4.288 dBm -57.70 dBm	Function F	Function Width	Function Value	Man Freq Offset 0 Hz	
4 5 6							X Axis Scale Log Lin	
5	2?	Jul 27, 2021 3:15:27 PM					Signal Track (Span Zoom)	





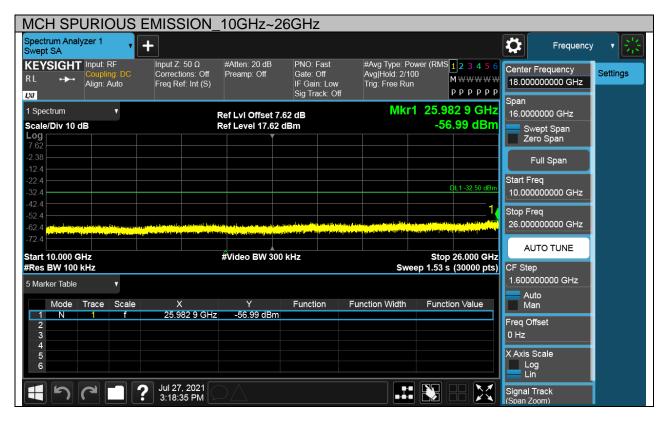
Test Mode	Channel	Verdict
11G	MCH	PASS





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MCH SPL	JRIOUS	EMISSION_	30MHz~100	SHz				
Spectrum Analy: Swept SA	· · · · ·	+					Fre	quency 🔻 🔆
KEYSIGHT RL ↔	Input: RF Coupling: DC Align: Auto	Input Ζ: 50 Ω Corrections: Off Freq Ref: Int (S)	Preamp: Off	PNO: Fast Gate: Off F Gain: Low Sig Track: Off	#Avg Type: Pow Avg Hold: 15/10 Trig: Free Run	er (RMS <mark>1</mark> 23456 0 M\#\#\#\# PPPPPP	Center Frequen 5.015000000 G Span	Jetunys I
1 Spectrum Scale/Div 10 de Log 7.62	B		Ref LvI Offset 7.62 c Ref Level 17.62 dBn		Mkr	2 3.771 5 GHz -58.27 dBm	9.97000000 GH Swept Spa Zero Span	
-2.38 -12.4 -22.4 -32.4						DL1 -32.50 dBm	Full Spar Start Freq 30.000000 MH;	
-42.4 -52.4 -62.4 -72.4					and a distribution of the strategy of the stra	in a star of a star for the formula of a star of the formula of the star of th	Stop Freq 10.000000000	
Start 30 MHz #Res BW 100 k	Hz		#Video BŴ 300 kH:	Z	Sweep	Stop 10.000 GHz 954 ms (30000 pts)	AUTO TUN CF Step 997.000000 MH	
1 N	Trace Scale	X 2.438 2 GHz	-2.254 dBm	unction Fu	nction Width	Function Value	Auto Man	
2 N 3 4 5 6		3.771 5 GHz	-58.27 dBm				0 Hz X Axis Scale Log	
1 50		? Jul 27, 2021 3:18:25 PM					Lin Signal Track (Span Zoom)	





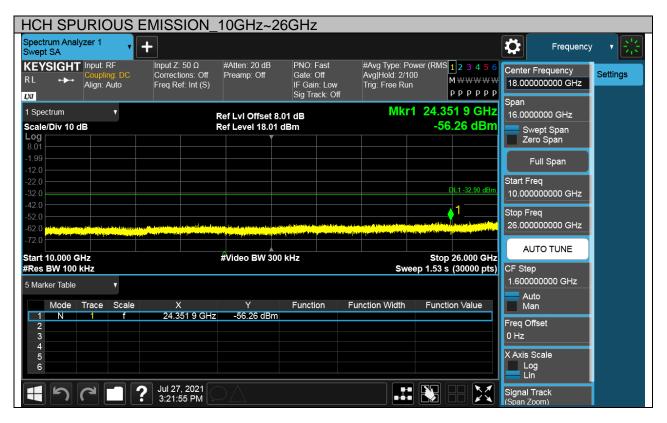
Test Mode	Channel	Verdict
11G	НСН	PASS





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HCH SPI	JRIOUS	EMISSION_	30MHz~10	GHz				
Spectrum Anal Swept SA	yzer 1 🔻	+					Frequency	
KEYSIGHT	Input: RF Coupling: DC Align: Auto	Input Ζ: 50 Ω Corrections: Off Freq Ref: Int (S)	#Atten: 20 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Avg Hold: 28/1 Trig: Free Run		Center Frequency 5.015000000 GHz	Settings
1 Spectrum Scale/Div 10 c	, IB		Ref LvI Offset 8.01 Ref Level 18.01 dE		Mk	r2 5.058 4 GHz -57.40 dBm	Span 9.97000000 GHz Swept Span Zero Span	
8.01 -1.99 -12.0		1					Full Span	
-22.0 -32.0 -42.0			2			DL1 -32.90 dBm	Start Freq 30.000000 MHz	
-52.0 -62.0 -72.0						en tallen med hang en generale de la fait het de rek met te vegen tallen te vege Sen se en en en en gemenne als als fait het en en de te vegen an ander de en g	Stop Freq 10.00000000 GHz	
Start 30 MHz #Res BW 100	kHz		#Video BW 300 k	(Hz	Swee	Stop 10.000 GHz p 954 ms (30000 pts)	AUTO TUNE	
5 Marker Table Mode	▼ Trace Scale	×	Y	Function Fu	Inction Width	Function Value	997.000000 MHz Auto Man	
1 N 2 N 3	1 f 1 f	2.458 1 GHz 5.058 4 GHz					Freq Offset 0 Hz	
4 5 6							X Axis Scale Log Lin	
1 5	C	? Jul 27, 2021 3:21:46 PM					Signal Track (Span Zoom)	





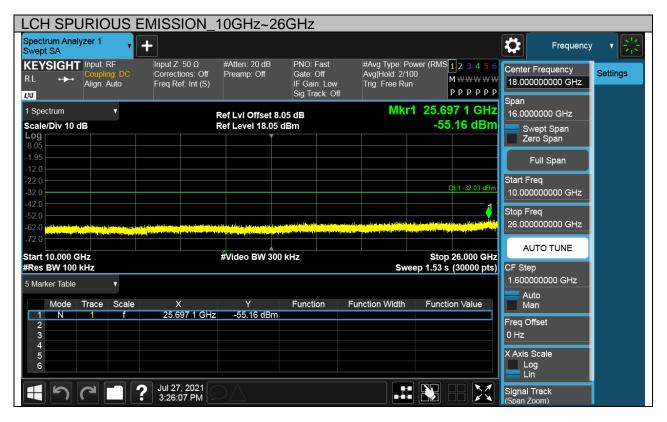
Test Mode	Channel	Verdict
11N HT20	LCH	PASS





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LCH SPL	JRIOUS E	EMISSION_3	30MHz~10	GHz					
Spectrum Analy Swept SA	´ 'l	+					*	Frequency	v <mark>512</mark>
KEYSIGHT RL ↔	Input: RF Coupling: DC Align: Auto	Input Ζ: 50 Ω Corrections: Off Freq Ref: Int (S)	#Atten: 20 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Pow Avg Hold: 42/10 Trig: Free Run	ver (RMS <mark>1</mark> 23456 00 MWWWWW PPPPPP	Center Fro 5.015000 Span	equency 0000 GHz	Settings
1 Spectrum Scale/Div 10 d 8.05 -1.95	IB		Ref LvI Offset 8.0 Ref Level 18.05 d		Mkr	2 3.758 9 GHz -56.81 dBm	9.970000 Swep Zero	000 GHz ot Span Span I Span	
-12.0 -22.0 -32.0 -42.0 -52.0 -62.0			2			DL1 -32.03 dBm	Start Freq 30.00000 Stop Freq 10.00000	00 MHz	
-72.0 Start 30 MHz #Res BW 100 I			#Video BW 300 I	kHz	Sweep	Stop 10.000 GHz 954 ms (30000 pts)	AUTO CF Step 997.0000		
5 Marker Table 1 Mode 1 N 2 N 3 4 5 6	Trace Scale	X 2.416 9 GHz 3.758 9 GHz	Y -2.222 dBm -56.81 dBm	Function Fu	unction Width	Function Value	Auto Man Freq Offse 0 Hz X Axis Sca Log Lin	ət ale	
		3:25:58 PM					Signal Tra (Span Zoor	n)	





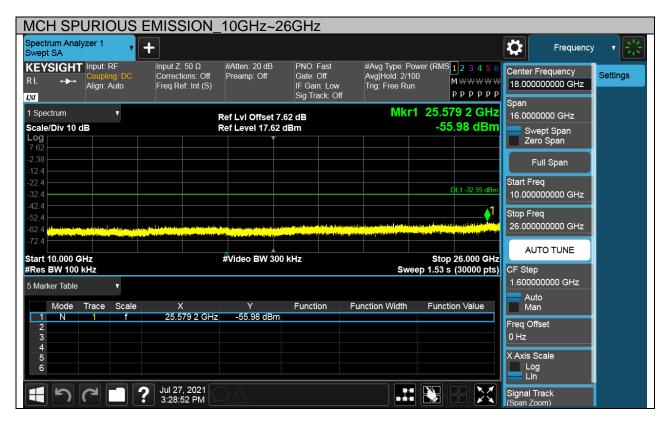
Test Mode	Channel	Verdict
11N HT20	MCH	PASS





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MCH SF	PURIC	DUS	EMISSION	_30MHz~1	0GHz					
Spectrum Ana Swept SA	alyzer 1	Y	+						Frequency	() 宗
KEYSIGH [™] RL ↔→→	T Input: Coupli Align: J	ng: DC	Input Ζ: 50 Ω Corrections: Off Freq Ref: Int (S)	#Atten: 20 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Of	Avg Hold: 8/10 Trig: Free Rur		5.015	Frequency 000000 GHz	Settings
1 Spectrum Scale/Div 10 Log	dB	T		Ref LvI Offset 7.6 Ref Level 17.62 d		Mk	r2 3.813 4 GHz -58.83 dBm	SIST SI	00000 GHz vept Span ero Span	
7.62 -2.38 -12.4			1						⁼ull Span	
-22.4 -32.4 -42.4				▲2			DL1 -32.55 dBm	Start F 30.000 Stop F	0000 MHz	
-52.4 -62.4 -72.4		i la la company de la comp					nda tang ang minakan minakan ng manakan kan ng manakan ng manakan ng manakan ng manakan ng manakan ng manakan Ng mang manakan ng man Ng mang manakan ng mana	10.000	eq 0000000 GHz JTO TUNE	
Start 30 MHz #Res BW 100) kHz	_		#Video BW 300	kHz	Swee	Stop 10.000 GHz p 954 ms (30000 pts)	CF Ste		
5 Marker Table	Trace	Scale	X 2.439 5 GH	Y Iz -3.465 dBm	Function	Function Width	Function Value	Au M	ıto	
1 N 2 N 3 4	1	f	3.813 4 GF					Freq O 0 Hz	ffset	
5								X Axis Lo	g	
1 5	6		? Jul 27, 2021 3:28:42 PM					Signal (Span Z		





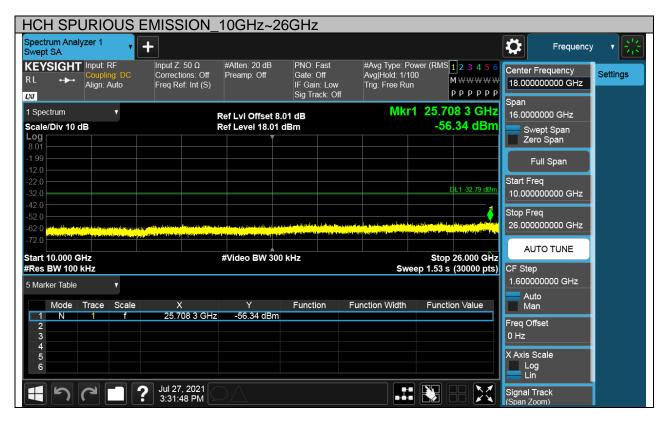
Test Mode	Channel	Verdict
11N HT20	HCH	PASS





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HCH SPL	JRIOUS	EMISSION_3	30MHz~100	GHz				
Spectrum Analy Swept SA	/zer 1 🔻	+					Frequenc	y v 2 13
KEYSIGHT RL ↔	Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corrections: Off Freq Ref: Int (S)	Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Avg Hold: 9/10 Trig: Free Rur		Center Frequency 5.015000000 GHz	Settings
1 Spectrum Scale/Div 10 d	₹ B		Ref LvI Offset 8.01 Ref Level 18.01 dBr		Mk	r2 7.135 5 GHz -58.31 dBm	Span 9.97000000 GHz Bwept Span	
Log 8.01 -1.99 -12.0		1					Zero Span Full Span	
-22.0 -32.0 -42.0						DL1 -32.79 dBm	Start Freq ,30.000000 MHz	
-52.0 -62.0 -72.0					2	hidlensk, mar og stallet det stallet en stelen og som hidlen og Frankrike som og som har for som en stelen og som hidlens og s	Stop Freq 10.00000000 GHz	
Start 30 MHz #Res BW 100 I	kHz		#Video BW 300 kH	Z	Swee	Stop 10.000 GHz p 954 ms (30000 pts)	AUTO TUNE	
	Trace Scale	X		Function Fu	nction Width	Function Value	997.000000 MHz Auto Man	J
1 N 2 N 3 4	1 f	2.468 4 GHz 7.135 5 GHz	-6.309 dBm -58.31 dBm				Freq Offset 0 Hz	
5 6							X Axis Scale Log Lin	
ר בו		? Jul 27, 2021 3:31:39 PM					Signal Track (Span Zoom)	1





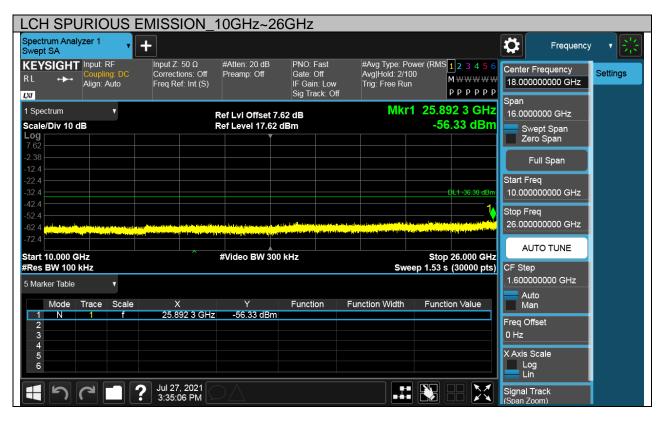
Test Mode	Channel	Verdict
11N HT40	LCH	PASS





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LCH SPL	JRIOUS I	EMISSION_3	30MHz~10	GHz				
Spectrum Analy Swept SA	yzer 1 🔻	+					Frequency	· · · · · · · · · · · · · · · · · · ·
KEYSIGHT	Input: RF Coupling: DC Align: Auto	Input Ζ: 50 Ω Corrections: Off Freq Ref: Int (S)	#Atten: 20 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Pov Avg Hold: 8/100 Trig: Free Run	ver (RMS <mark>1</mark> 23456) M\#\W\W PPPPPP	Center Frequency 5.015000000 GHz	Settings
1 Spectrum Scale/Div 10 d	T T		Ref LvI Offset 7.62 Ref Level 17.62 de	2 dB	Mkr	2 3.827 4 GHz -58.21 dBm	Span 9.97000000 GHz Swept Span	
Log 7.62 -2.38		1					Zero Span Full Span	
-12.4						DL1-36.30 dBm	Start Freq 30.000000 MHz	
-42.4 -52.4 -62.4							Stop Freq 10.000000000 GHz	
-72.4 Start 30 MHz #Res BW 100			#Video BW 300 k	(Hz	Swoon	Stop 10.000 GHz 954 ms (30000 pts)	AUTO TUNE CF Step	
5 Marker Table	v V				Sweep	/ 954 Ills (50000 pts)	997.000000 MHz	
Mode 1 N	Trace Scale	X 2.430 9 GHz	Y -6.487 dBm	Function Fu	unction Width	Function Value	Auto Man	
2 N 3	1 f	3.827 4 GHz					Freq Offset 0 Hz	
4 5 6							X Axis Scale Log Lin	
1		? Jul 27, 2021 3:34:57 PM					Signal Track (Span Zoom)	





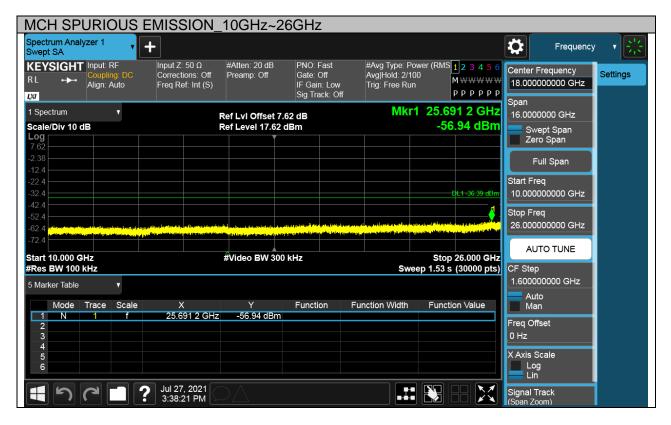
Test Mode	Channel	Verdict
11N HT40	MCH	PASS





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MCH SPL	JRIOUS	EMISSION_	30MHz~10)GHz					
Spectrum Analy Swept SA	/zer 1 🔻	+						Frequency v	$\frac{\lambda^{1}\lambda}{\lambda_{1}\lambda}$
KEYSIGHT RL ↔→	Input: RF Coupling: DC Align: Auto	Input Ζ: 50 Ω Corrections: Off Freq Ref: Int (S)	#Atten: 20 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Pov Avg Hold: 8/100 Trig: Free Run	ver (RMS <mark>123456</mark>) M WWWWW P P P P P P P	Center Freq 5.01500000 Span	Seturiya	s
1 Spectrum Scale/Div 10 dl Log 7 62 -2.38 -12.4 -22.4 -32.4	B		Ref LvI Offset 7.6 Ref Level 17.62 dl		Mkr	2 3.772 5 GHz -58.56 dBm	9.97000000 9.97000000 Swept S Zero Sp Full S Start Freq 30.000000	Span pan	
-42.4 -52.4 -62.4 -72.4 Start 30 MHz #Res BW 100 k	 Hz 		2 #Video BW 300 F		Sweep	Stop 10.000 GHz 954 ms (30000 pts)	Stop Freq 10.0000000 AUTO		
5 Marker Table	Trace Scale 1 f 1 f	X 2.420 6 GHz 3.772 5 GHz	Y -6.897 dBm -58.56 dBm	Function F	unction Width	Function Value	997.000000 Auto Man Freq Offset 0 Hz X Axis Scale Log Lin		
		? Jul 27, 2021 3:38:12 PM					Signal Track (Span Zoom)		





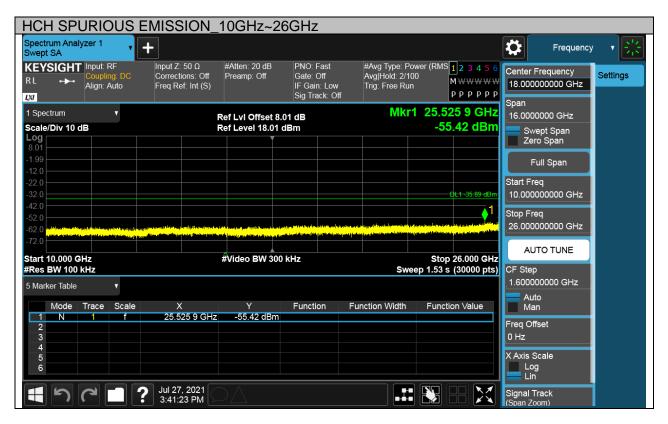
Test Mode	Channel	Verdict
11N HT40	HCH	PASS





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HCH SPL	JRIOUS	EMISSION_	_30MHz~10)GHz					
Spectrum Analy Swept SA	/zer 1 ,	+						Frequency	・ 栄
KEYSIGHT RL ↔→	Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corrections: Off Freq Ref: Int (S)	#Atten: 20 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Pow Avg Hold: 11/10 Trig: Free Run	rer (RMS <mark>1</mark> 23456 0 M \\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	5.0150	Frequency 00000 GHz	Settings
1 Spectrum Scale/Div 10 d Log	T B		Ref LvI Offset 8.0 Ref Level 18.01 d		Mkr	2 3.929 4 GHz -58.13 dBm	Sw	0000 GHz rept Span	
8.01 -1.99 -12.0		1					F	ro Span [:] ull Span	
-22.0 -32.0 -42.0			A2			DL1-35.89 dBm		000 MHz	
-52.0 -62.0 -72.0						la de anten a pella plante de la companya y proposa de la companya per nomena de la companya		000000 GHz	
Start 30 MHz #Res BW 100 I			#Video BW 300 I	kHz	Sweep	Stop 10.000 GHz 954 ms (30000 pts)	CF Step	0000 MHz	
5 Marker Table Mode	Trace Scale	X 2.467 1 GHz	Y -7.384 dBm	Function Fu	Inction Width	Function Value	Au Ma	to	
2 N 3 4	1 f	3.929 4 GHz					Freq Of 0 Hz		
5 6							X Axis S Lo Lir	g	
1 5		? Jul 27, 2021 3:41:14 PM					Signal T (Span Zo		





7.6. RADIATED TEST RESULTS

7.6.1.LIMITS AND PROCEDURE

<u>LIMITS</u>

Please refer to FCC §15.205 and §15.209 Radiation Disturbance Test Limit for ISED(9KHz-1GHz)

Please refer to FCC KDB 558074

Radiation Disturbance Test Limit for FCC (Class B)(9KHz-1GHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (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
960~1000	500	3

Note: 1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). This paragraph (f) shall not apply to Access BPL devices operating below 30 MHz.



Radiation Disturbance Test Limit for FCC (Above 1G)

Frequency (MHz)	dB(uV/m) (at 3 meters)			
	Peak	Average		
Above 1000	74	54		

Restricted bands of operation

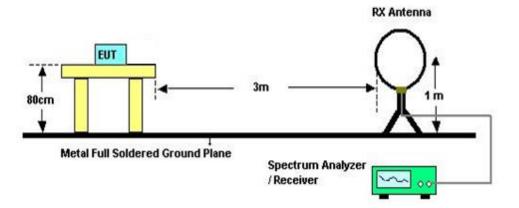
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

Note: ¹Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. ²Above 38.6c



TEST SETUP AND PROCEDURE

Below 30MHz



The setting of the spectrum analyser

RBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
VBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
Sweep	Auto
Detector	Peak/QP/ Average
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013

2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 0.8 meter above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1m height antenna tower.

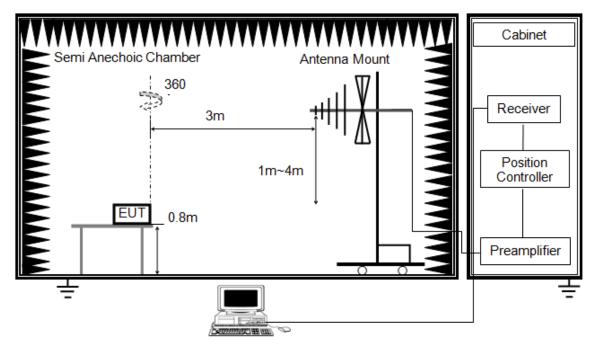
5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector

6. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

7. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)



Below 1G



The setting of the spectrum analyser

RBW	120K
VBW	300K
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

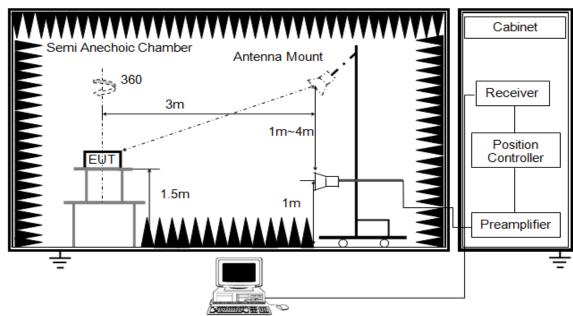
3. The EUT was placed on a turntable with 0.8 meter above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

6. For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration)





The setting of the spectrum analyser

RBW	1M
NBW	PEAK:3M AVG: See note6
Sweep	Auto
Detector	Peak/Average(10Hz)
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 1.5m above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

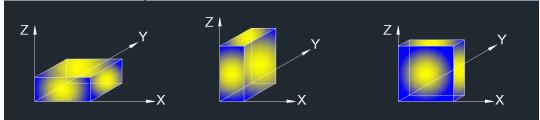
5. For measurement above 1GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

6. For measurements above 1 GHz, the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements; and 1 MHz resolution bandwidth with video bandwidth \geq 1/T but not less than the setting list in section 7.1 when use peak detector, max hold to be run for at least [50*(1/Duty Cycle)] traces for average measurements. For the Duty Cycle need to refer the results in section 7.1.

7. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)



X axis, Y axis, Z axis positions:



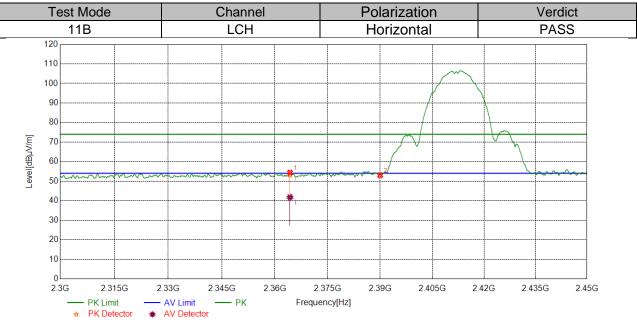
Note: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (Z axis) data recorded in the report.

Test Result Table	e		
Test Mode	Channel	Puw(dBm)	Verdict
	LCH	<limit< td=""><td>PASS</td></limit<>	PASS
11B	НСН	<limit< td=""><td>PASS</td></limit<>	PASS
	LCH	<limit< td=""><td>PASS</td></limit<>	PASS
11G	НСН	<limit< td=""><td>PASS</td></limit<>	PASS
	LCH	<limit< td=""><td>PASS</td></limit<>	PASS
11N HT20	НСН	<limit< td=""><td>PASS</td></limit<>	PASS
	LCH	<limit< td=""><td>PASS</td></limit<>	PASS
11N HT40	НСН	<limit< td=""><td>PASS</td></limit<>	PASS

7.6.2. RESTRICTED BANDEDGE



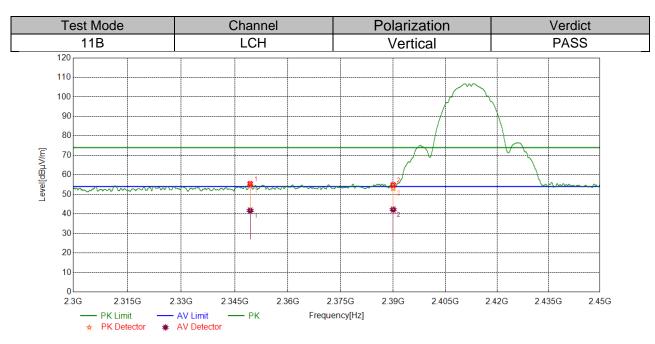
Test Graphs:



No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
4 0004 0000	2264 2020	41.56	12.84	54.40	74.00	-19.6	peak
1	1 2364.2830	28.95	12.84	41.79	54.00	-12.21	average
2	2390.0000	39.94	13.07	53.01	74.00	-20.99	peak

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. Measurement = Reading Level + Correct Factor.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

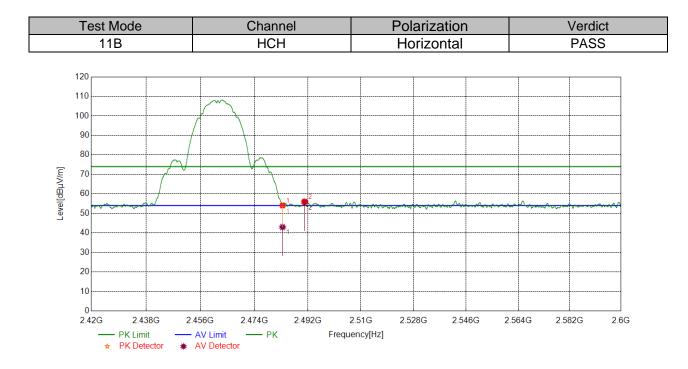




No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
(M	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	1 2349.3562	42.74	12.68	55.42	74.00	-18.58	peak
I		29.05	12.68	41.73	54.00	-12.27	average
2 2390.0000	41.78	13.07	54.85	74.00	-19.15	peak	
	29.13	13.07	42.20	54.00	-11.8	average	

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. Measurement = Reading Level + Correct Factor.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

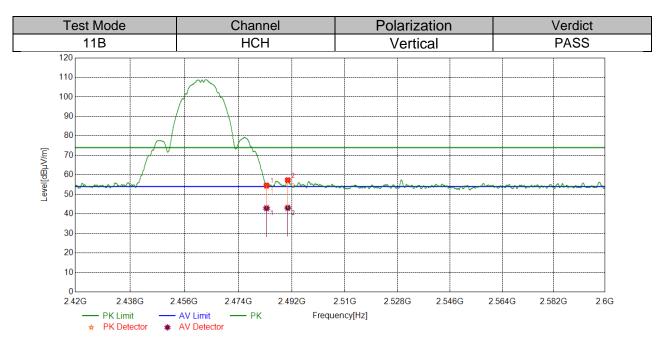




No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	1 2483.5000	41.13	12.97	54.10	74.00	-19.9	peak
I		30.03	12.97	43.00	54.00	-11	average
2	2 2400 0064	43.07	13.01	56.08	74.00	-17.92	peak
2 2490.9064	42.65	13.01	55.66	54.00	1.66	average	

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. Measurement = Reading Level + Correct Factor.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

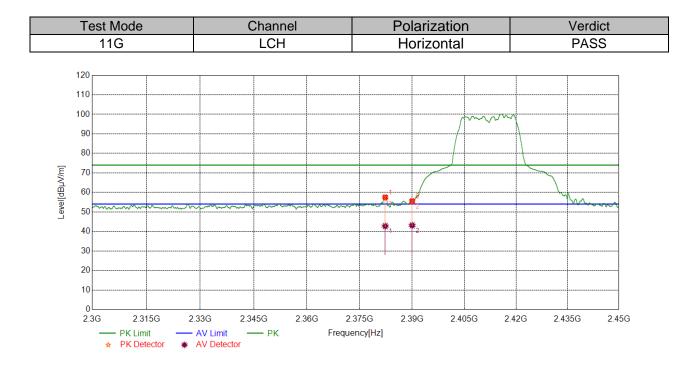




No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
(MHz)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	1 2483.5000	41.64	12.97	54.61	74.00	-19.39	peak
1		29.96	12.97	42.93	54.00	-11.07	average
2 2490.6588	44.32	13.01	57.33	74.00	-16.67	peak	
	30.08	13.01	43.09	54.00	-10.91	average	

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. Measurement = Reading Level + Correct Factor.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

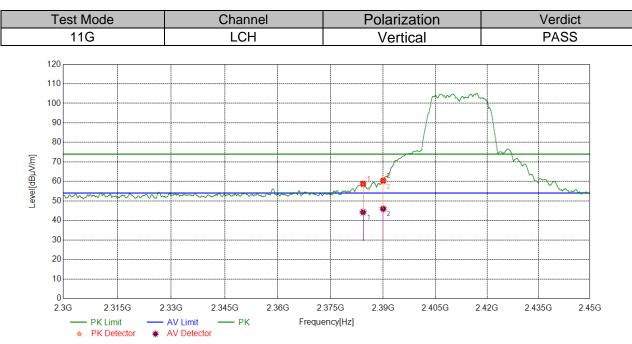




No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	1 2382.2853	44.45	13.06	57.51	74.00	-16.49	peak
1		29.68	13.06	42.74	54.00	-11.26	average
2	2 2390.0000	42.48	13.07	55.55	74.00	-18.45	peak
2		30.05	13.07	43.12	54.00	-10.88	average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. Measurement = Reading Level + Correct Factor.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

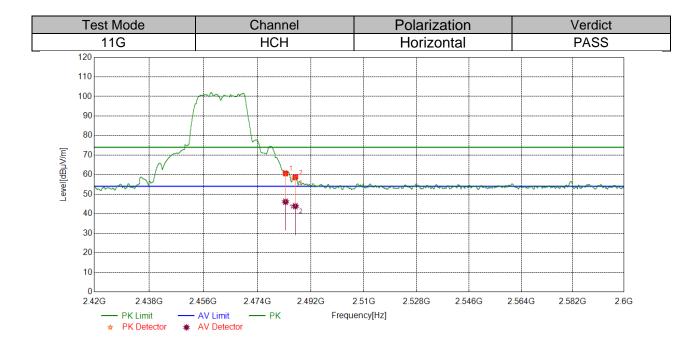




No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	1 2384.2355	45.75	13.06	58.81	74.00	-15.19	peak
1		31.17	13.06	44.23	54.00	-9.77	average
2	2 2390.0000	47.32	13.07	60.39	74.00	-13.61	peak
2		32.86	13.07	45.93	54.00	-8.07	average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. Measurement = Reading Level + Correct Factor.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.





No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
(M	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	4 0.400 5000	47.65	12.97	60.62	74.00	-13.38	peak
1 2483.5000	33.14	12.97	46.11	54.00	-7.89	average	
2 2486.7883	45.72	12.98	58.70	74.00	-15.3	peak	
	30.88	12.98	43.86	54.00	-10.14	average	

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. Measurement = Reading Level + Correct Factor.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.