

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT CLASS II PC REPORT



FCC Applicant:	Acer Incorporated 8F., No. 88, Sec. 1, Xintai 5th Rd., Xizhi, New Taipei City 22181, Taiwan (R.O.C)
Product Name:	7c Modular Platform
Brand Name:	acer
Model No.:	QSIP7180
Model Difference:	N/A
Report Number:	ER/2021/70038
FCC ID	HLZQSIP7180
Issue Date:	Sep. 07, 2021
Date of Test:	Jul. 22, 2021 ~ Sep. 01, 2021
Date of EUT Received:	Jul. 09, 2021

CHUN-, CHIZEH, CHIFN Approved By Chun Chieh Chen

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT comply with FCC rule part §15.247.

The results of this report relate only to the sample identified in this report.

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Revision History					
Report Number Revision Description Issue Date Revised By					
ER/2021/70038	Rev.00	Original.	Sep. 07, 2021	Yi-Shan Tsai	

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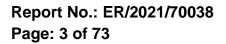




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GENERAL INFORMATION 1

1.1 Product description

Product Name:	7c Modular Platform
Brand Name:	acer
Model No.:	QSIP7180
Model No. of Host:	N20Q7
Model Difference:	N/A
Hardware Version:	N/A
Firmware Version:	N/A
EUT Series No.:	N8DAISY005117007F37600 (Conducted) N8A4DWW0031241CABC7600 (Radiated)
Power Supply:	11.4Vdc from Rechargeable Li-polymer Battery Pack 19Vdc from AC/DC Adapter

1.2 RF Specification

Wi-Fi 802.11	Frequency Range	Channels	Rated Power (dBm)	Modulation Technology
b			23.26	DSSS
g	2412-2472	13	25.22	
n_HT20			25.39	OFDM
n_HT40	2422-2462	9	24.69	
Modulation type CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM				
Transist	ion Rate	802.11 g: 802.11 n_	1/2/5.5/11 Mbps 6/9/12/18/24/36/48/54 Mbps _20MHz: 6.5 – 144.4Mbps _40MHz: 13.5 – 300.0Mbps	

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1.3 Antenna Designation

Antenna Type	Supplier	Main / Aux	Antenna Part No.	Freq. (MHz)	Peak An- tenna Gain (dBi)	Worst An- tenna Gain
PIFA	PIFA WNC		DQ6A15GC700	2412-2472	2.08	V
FIFA	VVINC	Aux	DQUATSGC700	2412-2472	1.56	
Note [.]						

vole:

Pre-scanned was done on the above antennas, measurements were demonstrated by using the an-1.

- tenna with the highest gain as the worst case scenarios.
- Antenna information is provided by the applicant. 2.

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1.4 Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.247 FCC KDB 558074 D01 DTS Meas, Guidance v05r02 FCC KDB 662911 D01 Multiple Transmitter Output v02r01 ANSI C63.10:2013

1.5 Test Facility

Laboratory	Test Site Address	Test Site	FCC Designation	IC CAB				
Laboratory	Test Sile Address	Name	number	identifier				
		SAC 1						
		SAC 3						
		Conduction 1						
		Conducted 1						
		Conducted 2						
	No.134, Wu Kung Road, New Taipei Indus-	Conducted 3						
	trial Park, Wuku District, New Taipei City,	Conducted 4	TW0027					
	Taiwan.	Conducted 5						
		Conducted 6						
		Conducted 7						
		Conducted 8	_					
		Conducted 9						
		Conducted 10						
SGS Taiwan Ltd.		Conduction A						
Central RF Lab.		SAC C	 	TW3702				
(TAF code 3702)		SAC D						
		SAC E						
		Conducted A						
		Conducted B						
		Conducted C						
	No.2, Keji 1st Rd., Guishan District, Taoyuan	Conducted D						
	City, Taiwan 333	Conducted E						
		Conducted F						
		Conducted G						
		Conducted H						
		Conducted I						
		Conducted J						
		Conducted						
.	TS8997							
	ame is remarked on the equipment list in		-	n indica-				
tion where	measurements occurred in specific test	site and addre	SS.					

1.6 Special Accessories

There are no special accessories used while test was conducted.

1.7 Equipment Modifications

There was no modification incorporated into the EUT.

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2 SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

2.3 Test Procedure

2.3.1 Conducted Test (RF)

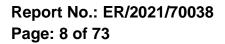
The active antenna port of the unlicensed wireless device is connected to the spectrum analyzer with attenuator to protect the instrumentation. If a second antenna port is available, it is tested at one operating frequency, with other port(s) appropriately terminated, to verify it has similar output characteristics as the fully tested port.

2.3.2 Radiated Emissions

The EUT is a placed on a turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

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2.4 Measurement Results Explanation Example

2.4.1 Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz

Radiated emission below 30MHz is measured in a 9m*9m*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

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

2.4.2 For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

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2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission



Fig. 2-2 Conducted (Antenna Port) Configuration



Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1	WLAN Test Software	N/A	N/A	N/A	N/A	N/A

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SUMMARY OF TEST RESULTS 3

FCC Rules	Description Of Test	Result
§15.247(b) (3)	Peak Output Power	Compliant
§15.247(d) §15.209	Radiated Band Edge & Radiated Spurious Emission	Compliant

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DESCRIPTION OF TEST MODES 4 4.1 Operated in 2400 ~ 2483.5MHz Band

13 channels are provided for 802.11b/g/n/ac 20M.

CHANNEL	FREQUENCY (MHz)		
1	2412		
2	2417		
3	2422		
4	2427		
5	2432		
6	2437		
7	2442		
8	2447		
9	2452		
10	2457		
11	2462		
12	2467		
13	2472		

	FREQUENCY
CHANNEL	(MHz)
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462

9 channels are provided for 802.11n/ac 40M

4.2 The Worst Test Modes and Channel Details

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

The gevin UE is pre-scanned among below modes.

Modulation	Transmission Chain				Multiple Transmission Spatial
🛛 802.11 b	🛛 Ch0	🛛 Ch1	🗆 Ch2	\Box Ch3	⊠ 2TX
⊠ 802.11 g	🛛 Ch0	🛛 Ch1	□ Ch2	\Box Ch3	🛛 2TX
🛛 802.11 n	🛛 Ch0	🛛 Ch1	\Box Ch2	\Box Ch3	🛛 MIMO

4. Therefore, below summary is the modes of test configuration that yield the highest reading and generate the highest emission chosen to carry out the relevantly mandatory test items.

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4.3 Radiated Emission Test:

RADIATED EMISSION TEST (ABOVE 1 GHz)									
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT				
802.11b 1 to 13 6 DSSS 1 2TX									

Note: The field strength of radiation emission was measured as NB Plane for channel Low, Mid and High.

4.4 Antenna Port Conducted Mesurement:

Conducted								
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT			
802.11b	1 to 13	1,2,6,10,11,12,13	DSSS	1	2TX			
802.11g	1 to 13	1,2,6,10,11,12,13	OFDM	6	2TX			
802.11n (HT20)	1 to 13	1,2,6,10,11,12,13	OFDM	MCS8	MIMO			
802.11n (HT40)	3 to 11	3,4,6,8,9,10,11	OFDM	MCS8	MIMO			

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MEASUREMENT UNCERTAINTY 5

Test Items		ncertain	ty
Peak Output Power		1	dB
Temperature		0.4	°C
Humidity	+/-	3.5	%
DC / AC Power Source	+/-	1	%

Radiated Spurio	Radiated Spurious Emission Measurement Uncertainty					
	+/-	2.64	dB	9kHz~30MHz		
Polarization: Vertical	+/-	4.93	dB	30MHz - 1000MHz		
	+/-	4.81	dB	1GHz - 18GHz		
	+/-	4.52	dB	18GHz - 40GHz		
	+/-	2.64	dB	9kHz~30MHz		
	+/-	4.45	dB	30MHz - 1000MHz		
Polarization: Horizontal	+/-	4.81	dB	1GHz - 18GHz		
	+/-	4.52	dB	18GHz - 40GHz		

Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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6 PEAK OUTPUT POWER MEASUREMENT

6.1 Standard Applicable

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

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

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

Note:

As per section F. 2). e). (ii) of FCC KDB 662911 D01

If antenna gains are not equal and each transmit antenna is driven by only one spatial stream, directional gain may be calculated by either of the following formulas.

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

where

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

NSS = the number of independent spatial streams of data;

NANT = the total number of antennas

 $g_{j,k} = /20$ 10Gk 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 antenna gain is not grater than 6 dBi. Therefore, reduction of power is not required.

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6.2 Measurement Equipment Used

	Conducted Emission Test Site: Conducted 4								
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUM- BER	LAST CAL.	CAL DUE.				
EXA Spectrum Analyzer	Agilent	N9010A	MY54200716	10/20/2020	10/19/2021				
Power Meter	Anritsu	ML2496A	1804001	03/02/2021	03/01/2022				
Power Sensor	Anritsu	MA2411B	1726104	03/02/2021	03/01/2022				
Power Sensor	Anritsu	MA2411B	1726107	03/02/2021	03/01/2022				
Attenuator	Mini-Circuit	BW- S10W2+	4	12/16/2020	12/15/2021				
Attenuator	Mini-Circuit	BW- S10W2+	2	12/16/2020	12/15/2021				
DC Block	Mini-Circuits	BLK-18-S+	1	12/16/2020	12/15/2021				

6.3 Test Set-up

Power Meter:

EUT Attenuator	Power Sensor	Power Meter
----------------	--------------	-------------

6.4 Measurement Procedure

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

Power Meter:

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

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

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

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6.5 Measurement Result

СН	Freq.	Data		Dutput wer	Total Peak Output Power	Limit	RESULT
	(MHz)	Rate	CHO	CH 1	(dBm)	(dBm)	
1	2412	1	20.12	20.31	23.23	30.00	PASS
2	2417	1	20.08	20.21	23.16	30.00	PASS
6	2437	1	20.52	19.96	23.26	30.00	PASS
10	2457	1	20.33	20.00	23.18	30.00	PASS
11	2462	1	19.00	18.68	21.85	30.00	PASS
12	2467	1	18.87	18.70	21.80	30.00	PASS
13	2472	1	17.19	17.49	20.35	30.00	PASS
802.1	1b_2TX						
			Avg. C	Dutput	Max. Avg. Output		
CH Freq.		Data	Po	wer	include tune up	Limit	DEGULT
СП	(MHz)	Rate	(dE	Bm)	tolerance Power	(dBm)	RESULT
			CH 0	CH 1	(dBm)		
1	2412	1	18.00	18.08	21.08	30.00	PASS
2	2417	1	17.85	18.17	21.06	30.00	PASS
6	2437	1	18.34	17.92	21.18	30.00	PASS
10	2457	1	18.24	18.01	21.17	30.00	PASS
11	2462	1	16.65	16.50	19.62	30.00	PASS
12	2467	1	16.35	16.51	19.47	30.00	PASS
13	2472	1	10.26	10.82	13.59	30.00	PASS
802.1	1g_2TX						
		_	Peak (Dutput	Total Peak		
СН	Freq.	Data		wer	Output Power	Limit	RESUL
	(MHz)	Rate	CH 0	CH 1	(dBm)	(dBm)	
1	2412	6	21.40	21.12	24.27	30.00	PASS
2	2417	6	22.05	21.98	25.03	30.00	PASS
6	2437	6	22.43	21.98	25.22	30.00	PASS
10	2457	6	22.12	21.34	24.76	30.00	PASS
11	2462	6	20.54	19.73	23.16	30.00	PASS
12	2467	6	19.29	18.60	21.97	30.00	PASS
13	2472	6	8.30	7.95	11.14	30.00	PASS
802.1 ⁻	1g_2TX		•		• • • •		•
			Avg. C	Dutput	Max. Avg. Output		
СН	Freq.	Data	Po	wer	include tune up	Limit	DECIN
Сп	(MHz)	Rate	(dE	3m)	tolerance Power	(dBm)	RESULT
			CH 0	CH 1	(dBm)		
1	2412	6	15.91	16.36	19.23	30.00	PASS
2	2417	6	17.53	17.81	20.76	30.00	PASS
6	2437	6	18.40	17.99	21.29	30.00	PASS
10	2457	6	17.40	17.13	20.35	30.00	PASS
11	2462	6	15.31	15.07	18.28	30.00	PASS
12	2467	6	13.28	13.35	16.40	30.00	PASS
13	2472	6	2.31	3.02	5.76	30.00	PASS

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	Freq.	Data	Peak C	Dutput	Total Peak	Limit	
СН			Po	wer	Output Power		RESULT
	(MHz)	Rate	CH 0	CH 1	(dBm)	(dBm)	
1	2412	MCS8	20.50	20.48	23.50	30.00	PASS
2	2417	MCS8	22.31	22.44	25.39	30.00	PASS
6	2437	MCS8	22.18	21.68	24.95	30.00	PASS
10	2457	MCS8	22.21	21.50	24.88	30.00	PASS
11	2462	MCS8	20.70	19.89	23.32	30.00	PASS
12	2467	MCS8	17.65	17.26	20.47	30.00	PASS
13	2472	MCS8	9.77	9.60	12.70	30.00	PASS
802.1	1n_HT20N	/ MIMO					
			Avg. C	Dutput	Max. Avg. Output		
СН	Freq.	Data	Po	wer	include tune up	Limit	RESULT
СП	(MHz)	Rate	(dE	3m)	tolerance Power	(dBm)	RESULI
			CH 0	ĆH 1	(dBm)		
1	2412	MCS8	15.02	15.24	18.22	30.00	PASS
2	2417	MCS8	17.82	18.02	21.01	30.00	PASS
6	2437	MCS8	17.87	17.48	20.77	30.00	PASS
10	2457	MCS8	17.30	16.98	20.23	30.00	PASS
11	2462	MCS8	15.26	14.99	18.22	30.00	PASS
12	2467	MCS8	12.27	11.97	15.21	30.00	PASS
13	2472	MCS8	3.45	4.14	6.90	30.00	PASS
802.1	1n_HT40N				· · ·		•
002.1	III_III 401		Peak (Dutput	Total Peak		
СН	Freq.	Data		wer	Output Power	Limit	RESULT
011	(MHz)	Rate	CH 0	CH 1	(dBm)	(dBm)	INCOULT
3	2422	MCS8	20.75	19.43	23.15	30.00	PASS
4	2422	MCS8	20.75	20.85	23.15	30.00	PASS
6	2427	MCS8	21.93	20.05	24.43	30.00	PASS
8	2437	MCS8	20.35	19.74	23.07	30.00	PASS
9	2447	MCS8	19.76	18.84	22.33	30.00	PASS
10	2457	MCS8	14.25	13.12	16.73	30.00	PASS
11	2462	MCS8	5.73	5.03	8.40	30.00	PASS
	1n_HT40N		0.70	0.00	0.40	00.00	1766
			Ava. C	Dutput	Max. Avg. Output		
	Freq.	Data	-	wer	include tune up	Limit	
СН	(MHz)	Rate		Bm)	tolerance Power	(dBm)	RESULT
	()		CH 0	CH 1	(dBm)	(*=)	
3	2422	MCS8	14.18	13.67	17.17	30.00	PASS
4	2427	MCS8	15.07	14.94	18.24	30.00	PASS
6	2427	MCS8	16.38	16.55	19.70	30.00	PASS
8	2437	MCS8	14.02	14.25	17.37	30.00	PASS
	27 7 1						
	2452	MCS8	13.37	1323	10.51	30.00	PASS
9 10	2452 2457	MCS8 MCS8	13.37 7.72	13.23 7.45	16.53 10.82	30.00 30.00	PASS PASS

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

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7 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

7.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands must also comply with the §15.209 limit as below.

And according to §15.33(a) (1) for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

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

Note:

1. The lower limit shall apply at the transition frequencies.

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7.2 Measurement Equipment Used: TX

Radiated Emission Test Site: SAC 3										
EQUIPMENT TYPE	MFR	MODEL NUM- BER	SERIAL NUM- BER	LAST CAL.	CAL DUE.					
Horn Antenna	SCHWARZ- BECK	BBHA9170	184	12/11/2020	12/10/2021					
Horn Antenna	SCHWARZ- BECK	BBHA9120D	1441	10/16/2020	10/15/2021					
Bi-log Antenna	SCHWARZ- BECK	VULB9168	300	11/18/2020	11/17/2021					
Loop Antenna	ETS.LIND- GREN	6502	148045	10/19/2020	10/18/2021					
PXA Spectrum Ana- lyzer	Agilent	N9030A	MY53120760	04/27/2021	04/26/2022					
EMI Test Receiver	R&S	ESCI	101338	03/22/2021	03/21/2022					
Pre-Amplifier	HP	8449B	3008A00578	12/16/2020	12/15/2021					
Pre-Amplifier	EMC Instru- ments	EMC184045B	980135	12/16/2020	12/15/2021					
Pre-Amplifier	HP	8447D	2944A07676	12/16/2020	12/15/2021					
Attenuator	Mini-Circuit	BW-S10W2+	4	12/16/2020	12/15/2021					
Filter 2400-2483.5 MHz	EWT	EWT-14-0166	M1	12/16/2020	12/15/2021					
High Pass Filter	WI	WHKX4.0/18G- 10SS	22	12/16/2020	12/15/2021					
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2636/2	12/16/2020	12/15/2021					
Coaxial Cable	Huber Suhner	SUCOFLEX 104	340057/4	12/16/2020	12/15/2021					
Coaxial Cable	Huber Suhner	SUCOFLEX 104PEA	800052/2	12/16/2020	12/15/2021					
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2621/2	12/16/2020	12/15/2021					
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2617/2	12/16/2020	12/15/2021					
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2630/2	12/16/2020	12/15/2021					
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY22962/2	12/16/2020	12/15/2021					
Site Cal	SGS	SAC 3	N/A	01/01/2021	12/31/2021					
Test Software	audix	e3	Ver. 6.11812c	N.C.R	N.C.R					

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

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7.3 Measurement Equipment Used: Bandedge

	Radiated Emission Test Site: SAC C											
EQUIPMENT TYPE	EQUIPMENT TYPE MFR M		SERIAL NUM- BER	LAST CAL.	CAL DUE.							
Horn Antenna	Schwarzbeck	BBHA9170	184	12/11/2020	12/10/2021							
Horn Antenna	Schwarzbeck	BBHA9120D	1187	01/11/2021	01/10/2022							
EMI Test Receiver	R&S	ESU 40	100363	04/28/2021	04/27/2022							
Pre-Amplifier	EMC Instru- ments	EMC0011830	980199	11/19/2020	11/18/2021							
Attenuator	Marvelous	WATT-218FS- 10	RF20	11/19/2020	11/18/2021							
Coaxial Cable	Huber Suhner	SUCOFLEX 104	MY17388/4	11/19/2020	11/18/2021							
Coaxial Cable	Huber Suhner	RG 214/U	W22.03	11/19/2020	11/18/2021							
Test Software	audix	e3	20923 sgs Ver.9	N.C.R	N.C.R							

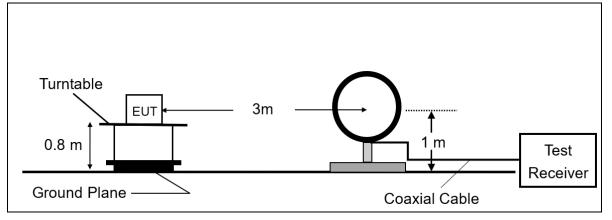
NOTE: N.C.R refers to Not Calibrated Required.

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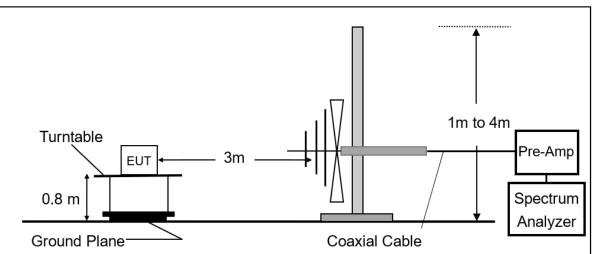


7.4 Test SET-UP

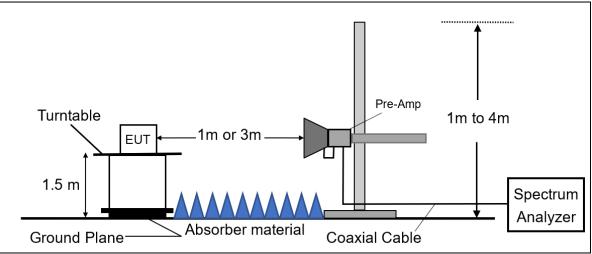
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz.



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



(C) Radiated Emission Test Set-Up, Frequency Above 1GHz.



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7.5 Measurement Procedure

- 1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 1.5m for frequency> 1GHz above ground plane.
- 3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 5. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.
- 6. Set the spectrum analyzer as RBW=100 kHz and VBW=300 kHz for Peak Detector (PK) at frequency between 30MHz and 1 GHz.
- 7. Use receiver mode as RBW=120 kHz for Quasi-peak (QP) at frequency between 30MHz and 1 GHz.
- 8. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
- 9. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
- 10. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- 11. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 12. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. On spectrum, change spectrum mode in linear display mode, and reduce VBW = 10Hz if average reading is measured.
- 13. Repeat above procedures until all default test channel measured were complete.

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7.6 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field Strength

CL = Cable Attenuation Factor (Cable Loss) AG = Amplifier Gain

AF = Antenna Factor

RA = Reading Amplitude

The limit of the emission level is expressed in dBuV/m, which converts 20*log(uV/m)

Actual FS(dB μ V/m) = SPA. Reading level(dB μ V) + Factor(dB) Factor(dB) = Antenna Factor(dB μ V/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

7.7 Test Results of Radiated Spurious Emissions from 9 kHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

7.8 Measurement Result

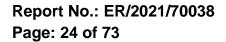
Note:

- 1. Refer to next page spectrum analyzer data chart and tabular data sheets.
- 2. Measurements are completed at peak and average level, the mark of average is the highest emission in restricted bands

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7.8.1 Radiated Band Edge Measurement Result

Report Number Operation Mode Test Frequency Test Mode	:ER/2021/700 :802.11b :2412 MHz :BE CH 01	038		Test Site Test Date Temp./Humi. Antenna Pol.	:SAC C :2021-08-23 :22.5/61 :Vertical	
EUT Pol	:NB Plane			Engineer	:Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2310	BuV/m) 	2358. Frequen	2382. cy (MHz)	2406.	2430	
Freq.		Spectrum eading Level	Factor	Actual FS	Limit @3m	Margin
MHz I	PK/QP/AV	dBµV	dB	dBµV/m		dB
2390.000 2390.000	Average Peak	33.48 47.87	5.18 5.18	38.66 53.05	54.00 74.00	-15.34 -20.95

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Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70 :802.11b :2412 MHz :BE CH 01 :NB Plane	0038		Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.5/61 :Horizontal :Enzo Chang	
120 Level (0 105.0 90.0 75.0 60.0 45.0 15.0 2310	1BuV/m)	2358. Frequen	2382. cy (MHz)	2406.	2430	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode F	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2389.808	Average	34.47	5.17	39.64	54.00	-14.36
2389.808	Peak	48.17	5.17	53.34	74.00	-20.66
2390.000	Average	34.61	5.18	39.79	54.00	-14.21
2390.000	Peak	46.72	5.18	51.91	74.00	-22.09

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Report Number	:ER/2021/	70038	-	Test Site	:SAC C	
Operation Mod	e :802.11b		-	Test Date	:2021-08-23	
Test Frequency	/ :2417 MHz	2	-	Temp./Humi.	:22.5/61	
Test Mode	:BE CH 02	2		Antenna Pol.	:Vertical	
EUT Pol	:NB Plane		I	Engineer	:Enzo Chang	
120 Level	(dBuV/m)		1			
105.0						
90.0				/	\rightarrow	
75.0						
60.0				2	<u> </u>	
45.0	and the spin of th		a waraa a a a a a a a a a a a a a a a a	1		
30.0						
15.0						
2310	2334.	2358. Frequer	2382. icy (MHz)	2406.	2430	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.000	Average	32.85	5.18	38.03	54.00	-15.97
2390.000	Peak	44.89	5.18	50.07	74.00	-23.93

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Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/7003 :802.11b :2417 MHz :BE CH 02 :NB Plane	38		Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.5/61 :Horizontal :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 15.0 2310	BuV/m)	2358. Frequence	2382. y (MHz)	2405.	2430	
Freq. MHz		Spectrum ading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2390.000 2390.000	Average Peak	34.58 46.48	5.18 5.18	39.76 51.66	54.00 74.00	-14.24 -22.34



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/ :802.11b :2457 MH: :BE CH 10 :NB Plane	z)		Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.5/61 :Vertical :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2450	BuV/m)	2490. Frequen	2510. cy (MHz)	2530.		
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz F	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500 2485.096 2485.096	Average Peak Average Peak	36.88 46.25 36.19 48.53	4.04 4.04 4.02 4.02	40.92 50.29 40.21 52.55	54.00 74.00 54.00 74.00	-13.08 -23.71 -13.79 -21.45



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/ :802.11b :2457 MHz :BE CH 10 :NB Plane	<u>z</u>)		Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.5/61 :Horizontal :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 0 2450	BuV/m)	2490. Frequent	2510. cy (MHz)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500 2484.295 2484.295	Average Peak Average Peak	37.99 49.20 37.07 50.94	4.04 4.04 4.03 4.03	42.03 53.23 41.10 54.97	54.00 74.00 54.00 74.00	-11.97 -20.77 -12.90 -19.03



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/7 :802.11b :2462 MHz :BE CH 11 :NB Plane			Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.5/61 :Vertical :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2450	BuV/m)	2490. Frequent	2510. cy (MHz)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz F	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500	Average Peak Average Peak	32.78 46.31 32.72 48.85	4.04 4.04 4.03 4.03	36.82 50.35 36.75 52.88	54.00 74.00 54.00 74.00	-17.18 -23.65 -17.25 -21.12



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/3 :802.11b :2462 MHz :BE CH 11 :NB Plane	2		Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.5/61 :Horizontal :Enzo Chang	
120 Level (0 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2450	1BuV/m)	2490. Frequen	2510. cy (MHz)	2530.	2550	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500 2484.615	Average Peak Average	35.41 46.87 34.15	4.04 4.04 4.03	39.45 50.91 38.18	54.00 74.00 54.00	-14.55 -23.09 -15.82
2484.615	Peak	50.37	4.03	54.40	74.00	-19.60



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/700 :802.11b :2467 MHz :BE CH 12 :NB Plane	038	Te Te Ar	est Site est Date emp./Humi. ntenna Pol. ngineer	:SAC C :2021-08-26 :24.1/54 :Vertical :Enzo Chang	
120 Level (d) 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2450	BuV/m)	2490.	2510.	2530.	2559	
2450	2470.	Frequen	icy (MHz)	2550.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode R	eading Level		FS	@3m	
MHz F	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500	Average Peak	45.01 49.45	4.04 4.04	49.05 53.49	54.00 74.00	-4.95 -20.51



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70038 :802.11b :2467 MHz :BE CH 12 :NB Plane		Test Site Test Date Temp./Humi. Antenna Pol. Engineer		
120 Level (d) 105.0 90.0 75.0 60.0 45.0 30.0 15.0 0 2450					
2450	2470.	Frequency (Mi	10. 2530 Iz)	. 2550	
Freq.	Detector Sp	ectrum Fac	tor Actual	Limit	Margin
	Mode Read	ling Level	FS	@3m	
MHz F	PK/QP/AV c	dBµV dE	B dBµV/n	n dBµV/m	dB
2483.500 2483.500	3	17.52 4.0 53.54 4.0		54.00 74.00	-2.44 -16.43



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70 :802.11b :2472 MHz :BE CH 13 :NB Plane	0038		Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.5/61 :Vertical :Enzo Chang	
120 Level (d) 105.0 90.0 75.0 60.0 45.0 30.0 15.0 0 2450	BuV/m)	2490. Frequen	2510. cy (MHz)	2530.	2550	
Freq.	Detector Mode F	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz F	PK/QP/AV	dBµV	dB	dBµV/m	_	dB
2483.500 2484.615 2484.615	Average Peak Average Peak Average Peak	45.77 52.55 45.18 51.57 44.93 51.10	4.04 4.03 4.03 4.00 4.00	49.81 56.58 49.21 55.60 48.93 55.10	54.00 74.00 54.00 74.00 54.00 74.00	-4.19 -17.42 -4.79 -18.40 -5.07 -18.90



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70 :802.11b :2472 MHz :BE CH 13 :NB Plane	0038		Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.5/61 :Horizontal :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2450	BuV/m)	2490. Frequent	2510. cy (MHz)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode F	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500 2486.699 2486.699	Average Peak Average Peak	47.74 55.03 45.91 52.95	4.04 4.04 4.01 4.01	51.78 59.07 49.92 56.96	54.00 74.00 54.00 74.00	-2.22 -14.93 -4.08 -17.04

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Report Number	:ER/2021/7	0038	Te	est Site	:SAC C	
Operation Mode	:802.11g		Te	est Date	:2021-08-26	
Test Frequency	:2412 MHz		Te	emp./Humi.	:24.2/55	
Test Mode	:BE CH 01		A	ntenna Pol.	:Vertical	
EUT Pol	:NB Plane		E	ngineer	:Enzo Chang	
120 Level (d	IBuV/m)					
105.0					m	
90.0				- (
75.0				-		
60.0			Å	34°		
45.0	and the second					
30.0						
15.0						
0 2310	2334.	2358. Frequen	2382. cy (MHz)	2406.	2430	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.000	Average	43.37	5.18	48.55	54.00	-5.45
2390.000	Peak	58.04	5.18	63.22	74.00	-10.78

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Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70038 :802.11g :2412 MHz :BE CH 01 :NB Plane	8	Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-26 :24.2/55 :Horizontal :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 9310	BuV/m)	2358. 22 Frequency (Mi	3B2. 2406	2430	
Freq. MHz	Mode Rea	pectrum Fac ding Level dBµV dB	FS	Limit @3m n dBµV/m	Margin dB
2390.000 2390.000	0	46.74 5.1 60.77 5.1		54.00 74.00	-2.08 -8.05

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Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70038 :802.11g :2417 MHz :BE CH 02 :NB Plane	Test Site Test Date Temp./Humi Antenna Pol Engineer		
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2310	BuV/m)	2382. ncy (MHz)	5. 2430	
Freq.	Detector Spectrum Mode Reading Level	Factor Actua FS	l Limit @3m	Margin
MHz F	PK/QP/AV dBµV	dB dBµV/r	m dBµV/m	dB
2389.423 2389.423	Average 35.77 Peak 51.83	5.15 40.92 5.15 56.98 5.10 40.00	74.00	-13.08 -17.02
2390.000 2390.000	Average37.81Peak50.59	5.1842.995.1855.77		-11.01 -18.23



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70 :802.11g :2417 MHz :BE CH 02 :NB Plane	038		Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.6/62 :Horizontal :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2310						
2310	2334.	2358. Frequen	2382. cy (MHz)	2406.	2430	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode R	eading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.000	Average	41.29	5.18	46.47	54.00	-7.53
2390.000	Peak	53.97	5.18	59.15	74.00	-14.85



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70 :802.11g :2457 MHz :BE CH 10 :NB Plane	038	T T A	est Site est Date emp./Humi. ntenna Pol. ngineer	:SAC C :2021-08-23 :22.6/62 :Vertical :Enzo Chang	
120 Level (d) 105.0 90.0 75.0 60.0 45.0 30.0 15.0						
2450	2470.	2490. Frequen	2510. cy (MHz)	2530.	2550	
Freq.	Detector Mode R	Spectrum eading Level	Factor	Actual FS	Limit @3m	Margin
MHz F	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500	Average Peak	38.42 51.31	4.04 4.04	42.46 55.34	54.00 74.00	-11.54 -18.66



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/7 :802.11g :2457 MHz :BE CH 10 :NB Plane		•	Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.6/62 :Horizontal :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 0 2450	BuV/m)	2490. Frequent	2510. cy (MHz)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz F	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500 2484.135 2484.135	Average Peak Average Peak	41.49 53.99 40.66 55.06	4.04 4.04 4.03 4.03	45.53 58.02 44.69 59.09	54.00 74.00 54.00 74.00	-8.47 -15.98 -9.31 -14.91



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/7 :802.11g :2462 MHz :BE CH 11 :NB Plane	0038		Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.6/62 :Vertical :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2450	BuV/m)	2490. Frequent	2510. cy (MH2)	2530.		
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500 2483.814 2483.814	Average Peak Average Peak	43.13 57.18 43.03 58.29	4.04 4.04 4.03 4.03	47.17 61.22 47.06 62.33	54.00 74.00 54.00 74.00	-6.83 -12.78 -6.94 -11.67



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/7 :802.11g :2462 MHz :BE CH 11 :NB Plane		-	Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.6/62 :Horizontal :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2450	BuV/m)	2490. Frequent	2510. cy (MHz)	2530.		
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500 2484.455 2484.455	Average Peak Average Peak	41.86 54.81 41.94 57.25	4.04 4.04 4.03 4.03	45.90 58.84 45.97 61.28	54.00 74.00 54.00 74.00	-8.10 -15.16 -8.03 -12.72



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70038 :802.11g :2467 MHz :BE CH 12 :NB Plane		Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.6/62 :Vertical :Enzo Chang	
120 Level (d) 105.0 90.0 75.0 60.0 45.0 30.0 15.0 0 2450		2490. 2510			
2450	2470.	Frequency (MHz)	. 2000.	2000	
Freq.	Detector Spec	ctrum Factor	Actual	Limit	Margin
	Mode Readin	g Level	FS	@3m	
MHz F	PK/QP/AV dB	μV dB	dBµV/m	dBµV/m	dB
2483.500 2483.500	9	.45 4.04 .38 4.04	46.49 60.42	54.00 74.00	-7.51 -13.58



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70038 :802.11g :2467 MHz :BE CH 12 :NB Plane	Ti Ti A	est Date : emp./Humi. : ntenna Pol. :	SAC C 2021-08-23 22.6/62 Horizontal Enzo Chang	
120 Level (d) 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2450		190. 2510.	2530.	2559	
2450	2470. 24 F	requency (MHz)	2530.	2550	
Freq.	Detector Spectr	rum Factor	Actual	Limit	Margin
	Mode Reading	Level	FS	@3m	
MHz F	PK/QP/AV dBµ	V dB	dBµV/m	dBµV/m	dB
2483.500 2483.500	Average 47.5 Peak 59.7		51.57 63.80	54.00 74.00	-2.43 -10.20



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/700 :802.11g :2472 MHz :BE CH 13 :NB Plane	038	T T A	est Site est Date emp./Humi. ntenna Pol. ingineer	:SAC C :2021-08-26 :24.2/55 :Vertical :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 0 2450	BuV/m)	2490.	2510.	2530.	2550	
		Frequen				
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode Ro	eading Level		FS	@3m	
MHz F	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500	Average Peak	40.11 54.61	4.04 4.04	44.15 58.65	54.00 74.00	-9.85 -15.35



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/700 :802.11g :2472 MHz :BE CH 13 :NB Plane	038	T T A	Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-26 :24.2/55 :Horizontal :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0	BuV/m)	2490.	2510.	2530.	2550	
_		Frequen		A / 1		·
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz F	Mode Ro PK/QP/AV	eading Level	dB	FS dBu\//m	@3m dBu\//m	dB
		dBµV	uD	dBµV/m	dBµV/m	UD
2483.500 2483.500	Average Peak	47.44 57.99	4.04 4.04	51.48 62.03	54.00 74.00	-2.52 -11.97



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70038 :802.11n20 :2412 MHz :BE CH 01 :NB Plane	ר ר <i>4</i>	Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.7/60 :Vertical :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2310	BuV/m)	358. 2382.	2406.	2430	
Freq.	Detector Spect Mode Reading		Actual FS	Limit @3m	Margin
MHz	PK/QP/AV dBµ	IV dB	dBµV/m	dBµV/m	dB
2390.000 2390.000	Average 43.7 Peak 57.5		48.94 62.72	54.00 74.00	-5.06 -11.28

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Report Number	:ER/2021/7	0038	Τe	est Site	:SAC C	
Operation Mode	:802.11n20		Te	est Date	:2021-08-23	
Test Frequency	:2412 MHz		Te	emp./Humi.	:22.7/60	
Test Mode	:BE CH 01		A	ntenna Pol.	:Horizontal	
EUT Pol	:NB Plane		Eı	ngineer	:Enzo Chang	
120 Level (d	IBuV/m)					
105.0				- m		
90.0				+++	\rightarrow	
75.0				M	- box	
60.0			Á	×*		
45.0	edan from an an	and a construction of the	and the second second			
30.0						
15.0						
2310	2334.	2358. Frequen	2382. cy (MHz)	2406.	2430	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.000	Average	46.81	5.18	51.99	54.00	-2.01
2390.000	Peak	60.08	5.18	65.26	74.00	-8.74

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Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/7 :802.11n20 :2417 MHz :BE CH 02 :NB Plane		-	Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.7/60 :Vertical :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0	2334.	2358. Frequen	2382. cy (MHz)	2406.	2430	
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2390.000 2390.000	Average Peak	40.11 52.60	5.18 5.18	45.29 57.78	54.00 74.00	-8.71 -16.22

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Report Number	:ER/2021/7	70038	Τe	est Site	:SAC C	
Operation Mode	:802.11n20)	Τe	est Date	:2021-08-23	
Test Frequency	:2417 MHz		Те	emp./Humi.	:22.7/60	
Test Mode	:BE CH 02		Ar	ntenna Pol.	:Horizontal	
EUT Pol	:NB Plane		Er	ngineer	:Enzo Chang	
120 Level (d	1BuV/m)		1			
105.0				r	m	
90.0				-	$-\lambda$	
75.0						
60.0			1	1		
45.0	and an a star and a star a					
30.0						
15.0						
2310	2334.	2358. Frequen	2382. cy (MHz)	2406.	2430	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.000	Average	43.21	5.18	48.39	54.00	-5.61
2390.000	Peak	54.74	5.18	59.92	74.00	-14.08

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Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/700 :802.11n20 :2457 MHz :BE CH 10 :NB Plane)38	ר ר ע	Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.7/60 :Vertical :Enzo Chang	
120 105.0 90.0 75.0 60.0 45.0 30.0 15.0	BuV/m)					
2450	2470.	2490. Frequen	2510. cy (MHz)	2530.	2550	
Freq.	Detector Mode Re	Spectrum eading Level	Factor	Actual FS	Limit @3m	Margin
MHz F	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500	Average Peak	39.56 53.03	4.04 4.04	43.60 57.07	54.00 74.00	-10.40 -16.93



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/7 :802.11n20 :2457 MHz :BE CH 10 :NB Plane)	Te Te Ai	est Site est Date emp./Humi. ntenna Pol. ngineer	:SAC C :2021-08-23 :22.7/60 :Horizontal :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 0 2450	BuV/m)	2490. Frequent	2510. cy (MHz)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz F	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500 2484.455 2484.455	Average Peak Average Peak	42.49 55.35 41.98 55.34	4.04 4.04 4.03 4.03	46.53 59.38 46.01 59.36	54.00 74.00 54.00 74.00	-7.47 -14.62 -7.99 -14.64



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/700 :802.11n20 :2462 MHz :BE CH 11 :NB Plane	038	Te Te An	est Site est Date emp./Humi. atenna Pol. agineer	:SAC C :2021-08-23 :22.7/60 :Vertical :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0						
2450	2470.	2490. Frequen	2510. cy (MHz)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode Re	eading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500	Average Peak	44.29 57.47	4.04 4.04	48.33 61.50	54.00 74.00	-5.67 -12.50
				-	-	-



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/700 :802.11n20 :2462 MHz :BE CH 11 :NB Plane	038	ר ר ק	Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.7/60 :Horizontal :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2450	BuV/m)	2490.		2530.	2550	
2450	2470.	Frequen	2510. cy (MHz)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode Re	eading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500	Average Peak	46.46 58.36	4.04 4.04	50.50 62.40	54.00 74.00	-3.50 -11.60



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70038 :802.11n20 :2467 MHz :BE CH 12 :NB Plane	Te Te An	est Date : emp./Humi. : atenna Pol. :	:SAC C :2021-08-23 :22.7/60 :Vertical :Enzo Chang	
120 Level (d) 105.0 90.0 75.0 60.0 45.0 30.0 15.0	BuV/m)				
2450	2470. 2490. Frequ	2510. ency (MHz)	2530.	2550	
Freq.	Detector Spectrum Mode Reading Leve	Factor	Actual FS	Limit @3m	Margin
MHz F	PK/QP/AV dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500	Average 42.78 Peak 55.26	4.04 4.04	46.82 59.29	54.00 74.00	-7.18 -14.71



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70038 :802.11n20 :2467 MHz :BE CH 12 :NB Plane	8	Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.7/60 :Horizontal :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2450	BuV/m)	2490. 2510 Frequency (MHz)	p. 2530.	2550	
Freq.	•	pectrum Factor ding Level	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV dB	dBµV/m	dBµV/m	dB
2483.500 2483.500 2483.974 2483.974	Peak Average	43.854.0455.874.0443.654.0356.604.03	47.89 59.90 47.68 60.64	54.00 74.00 54.00 74.00	-6.11 -14.10 -6.32 -13.36



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70038 :802.11n20 :2472 MHz :BE CH 13 :NB Plane	3	ד ד <i>4</i>	Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-26 :24.3/56 :Vertical :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 0 2450						
2450	2470.	2490. Frequency	2510. y (MHz)	2530.	2550	
Freq.	Detector Sp	pectrum	Factor	Actual	Limit	Margin
	Mode Read	ding Level		FS	@3m	
MHz F	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500	8	46.19 57.19	4.04 4.04	50.23 61.22	54.00 74.00	-3.77 -12.78



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/700 :802.11n20 :2472 MHz :BE CH 13 :NB Plane	038	Te Te Ai	est Site est Date emp./Humi. ntenna Pol. ngineer	:SAC C :2021-08-26 :24.3/56 :Horizontal :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 0 2450	BuV/m)	2490.	2510.	2530.		
2		Frequen	cy (MHz)	20001		
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode Re	eading Level		FS	@3m	
MHz F	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500	Average Peak	47.11 58.88	4.04 4.04	51.15 62.92	54.00 74.00	-2.85 -11.08

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Report Number	:ER/2021/7	70038	Т	est Site	:SAC C	
Operation Mode	:802.11n40)	Т	est Date	:2021-08-23	
Test Frequency	:2422 MHz		Т	emp./Humi.	:22.8/59	
Test Mode	:BE CH 03		A	ntenna Pol.	:Vertical	
EUT Pol	:NB Plane		E	ngineer	:Enzo Chang	
120 Level (dBuV/m)					
105.0					manyman	
90.0						
75.0						
60.0			-	zeroed		
45.0	an the second and a second and a second as a second		-de-dromon 1			
30.0						
15.0						
2310	2334.	2358. Frequer	2382. icy (MHz)	2406.	2430	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.000	Average	42.12	5.18	47.30	54.00	-6.70
2390.000	Peak	54.23	5.18	59.41	74.00	-14.59

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Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/7 :802.11n40 :2422 MHz :BE CH 03 :NB Plane)		Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.8/59 :Horizontal :Enzo Chang	
120 Level (0 105.0 90.0 75.0 60.0 45.0 15.0 2310	1BuV/m)	2358. Frequen	су (<mark>2382</mark> .	2406.	2430	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2388.461 2388.461 2390.000	Average Peak Average	45.86 55.59 46.48	5.11 5.11 5.18	50.97 60.71 51.66	54.00 74.00 54.00	-3.03 -13.29 -2.34
2390.000	Peak	57.09	5.18	62.27	74.00	-11.73



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70038 :802.11n40 :2427 MHz :BE CH 04 :NB Plane	Test Site Test Date Temp./Humi Antenna Pol Engineer	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2310	2334. 2358. Frequen	2382. 240	5. 2430
Freq.	DetectorSpectrumModeReading Level	Factor Actua FS	I Limit Margin @3m
MHz F	PK/QP/AV dBµV	dB dBµV/i	m dBµV/m dB
2389.808 2389.808 2390.000 2390.000	Average 40.32 Peak 53.25 Average 40.55 Peak 53.23	5.17 45.49 5.17 58.42 5.18 45.73 5.18 58.41	54.00-8.5174.00-15.5854.00-8.27



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/70038 :802.11n40 :2427 MHz :BE CH 04 :NB Plane	Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.8/59 :Horizontal :Enzo Chang
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2310	BuV/m)	ncy (MH2)	
Freq.	Detector Spectrum Mode Reading Level	Factor Actual FS	Limit Margin @3m
MHz F	PK/QP/AV dBµV	dB dBµV/m	n dBµV/m dB
2389.808 2389.808 2390.000 2390.000	Average 45.22 Peak 55.97 Average 45.26 Peak 55.34	5.1750.395.1761.155.1850.445.1860.52	54.00 -3.61 74.00 -12.85 54.00 -3.56 74.00 -13.48

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Report Number	:ER/2021/70	038			Tes	t Site	:SAC C		
Operation Mode	:802.11n40				Tes	t Date	:2021-08-	26	
Test Frequency	:2447 MHz				Ten	np./Humi.	:24.4/57		
Test Mode	:BE CH 08				Ante	enna Pol.	:Vertical		
EUT Pol	:NB Plane				Eng	ineer	:Enzo Cha	ang	
d an Level (d	BuV/m)								
120									
105.0								-	
90.0			-					-	
75.0	$ \rightarrow $							-	
60.0	hum	magne						-	
45.0		1				amen markana	una wana buga		
30.0								_	
15.0								-	
2450	2470.	2	490. Frequen	2510 cy (MHz)	p.	2530.	25	50	
Freq.	Detector	Spect	rum	Factor		Actual	L	imit	Margin
	Mode R	eading	, Level			FS	Q	23m	
MHz F	PK/QP/AV	dBµ	١V	dB		dBµV/m	dB	µV/m	dB
2483.500	Average	43.9	95	4.04		47.99	54	4.00	-6.01
2483.500	Peak	56.2	25	4.04		60.28	74	4.00	-13.72

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Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/700 :802.11n40 :2447 MHz :BE CH 08 :NB Plane	38	-	Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-26 :24.4/57 :Horizontal :Enzo Chang	
120 105.0 90.0 75.0 60.0 45.0 30.0 15.0	BuV/m)					
2450	2470.	2490. Frequen	2510. cy (MHz)	2530.	2550	
Freq.		Spectrum ading Level	Factor	Actual FS	Limit @3m	Margin
MHz F	PK/QP/AV	dBµV	dB	dBµV/m		dB
2483.500 2483.500	Average Peak	47.33 60.50	4.04 4.04	51.37 64.53	54.00 74.00	-2.63 -9.47



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/ :802.11n4 :2452 MHz :BE CH 09 :NB Plane	0 <u>z</u> 9	Ti Ti A	est Site est Date emp./Humi. ntenna Pol. ngineer	:SAC C :2021-08-23 :22.8/59 :Vertical :Enzo Chang	
120 Level (105.0 90.0 75.0 60.0 45.0 30.0 15.0 92450	1BuV/m)	2490. Frequent	2510. cy (MH2)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500 2484.295 2484.295	Average Peak Average Peak	44.42 55.89 44.08 56.46	4.04 4.04 4.03 4.03	48.46 59.93 48.11 60.48	54.00 74.00 54.00 74.00	-5.54 -14.07 -5.89 -13.52



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/7 :802.11n40 :2452 MHz :BE CH 09 :NB Plane)	ר ר ע	Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.8/59 :Horizontal :Enzo Chang	
120 Level (105.0 90.0 75.0 60.0 45.0 30.0 15.0 2450	1BuV/m)		2510. cy (MHz)	2530.		
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500 2484.295 2484.295	Average Peak Average Peak	45.86 57.62 44.98 59.73	4.04 4.04 4.03 4.03	49.90 61.66 49.01 63.76	54.00 74.00 54.00 74.00	-4.10 -12.34 -4.99 -10.24



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/ :802.11n4 :2457 MH: :BE CH 10 :NB Plane	0 z)		Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC C :2021-08-23 :22.8/59 :Vertical :Enzo Chang	
120 Level (105.0 90.0 75.0 60.0 45.0 30.0 15.0 0 2450	1BuV/m)	2490. Frequen	2510. cy (MHz)	2530.		
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500	Average	36.87	4.04	40.91	54.00	-13.09
2483.500	Peak	48.05	4.04	52.09	74.00	-21.91
2485.256	Average	36.03	4.02	40.05	54.00	-13.95
2485.256	Peak	48.52	4.02	52.54	74.00	-21.46



Report Number Operation Mode Test Frequency Test Mode EUT Pol	:ER/2021/7003 :802.11n40 :2457 MHz :BE CH 10 :NB Plane	38	Te Te Ar	est Site est Date emp./Humi. ntenna Pol. ngineer	:SAC C :2021-08-23 :22.8/59 :Horizontal :Enzo Chang	
120 Level (d 105.0 90.0 75.0 60.0 45.0 30.0 15.0 2450	Bu√/m)	2490.	2510. cy (MHz)	2530.	2550	
_		Frequend				
Freq.		Spectrum	Factor	Actual	Limit	Margin
		ading Level		FS	@3m	
MHz F	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500 2483.500	Average Peak	37.28 51.15	4.04 4.04	41.32 55.19	54.00 74.00	-12.68 -18.81

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	Report Number	:ER/2021/7	0038	3		Tes	t Site	:SAC C		
	Operation Mode	:802.11n40				Tes	t Date	:2021-08-	23	
	Test Frequency	:2462 MHz				Terr	np./Humi.	:22.8/59		
	Test Mode	:BE CH 11				Ante	enna Pol.	:Vertical		
	EUT Pol	:NB Plane				Eng	ineer	:Enzo Cha	ang	
	120 Level (d	BuV/m)								
	105.0									
	90.0	-								
	75.0	V	Ţ							
	60.0			L						
	45.0		-	harmon		·····			-	
	30.0		-							
	15.0		-							
	0 2450	2470.		2490. Freque	2510 ncy (MHz)) .	2530.	25	50	
	Freq.	Detector	Sp	pectrum	Factor		Actual	L	imit	Margin
		Mode I	Read	ding Level			FS	a	3m	
_	MHz F	PK/QP/AV		dBµV	dB		dBµV/m	dB	uV/m	dB
	2483.500	Average		43.25	4.04		47.29	54	1.00	-6.71
	2483.500	Peak		54.22	4.04		58.26	74	1.00	-15.74

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Report Number	12102021/1			Γest Site Γest Date	:SAC C :2021-08-23	
Test Frequency	/ :2462 MHz		Т	ſemp./Humi.	:22.8/59	
Test Mode	:BE CH 11		A	Antenna Pol.	:Horizontal	
EUT Pol	:NB Plane		E	Engineer	:Enzo Chang	
105.0 90.0 75.0 60.0	(dBuV/m)					
45.0 30.0						
15.0						
0 2450	2470.	2490. Frequer	2510. icy (MHz)	2530.	2550	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500	Average	45.24	4.04	49.28	54.00	-4.72
2483.500	Peak	57.41	4.04	61.44	74.00	-12.56

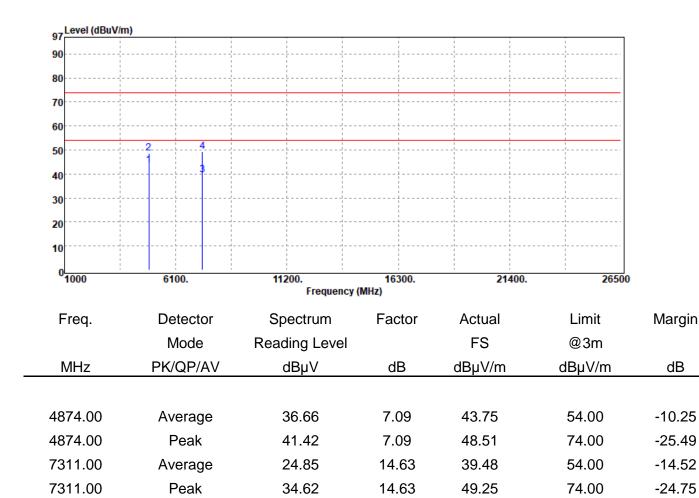
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7.8.2 Above 1GHz Emission:

Report Number	:ER-2021-70038	Test Site	:SAC 3
Operation Mode	:802.11b	Test Date	:2021-08-18
Test Frequency	:2437 MHz	Temp./Humi.	:27.4/48
Test Mode	:Tx CH Mid	Antenna Pol.	:VERTICAL
EUT Pol	:NB Plane	Engineer	:Ricky Chen



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26500

Report Number	:ER-2021-70038			Test Site		:SAC 3	
Operation Mode	:802.11b			Test Date		:2021-08-18	3
Test Frequency	:2437 MHz			Temp./Hum	i.	:27.4/48	
Test Mode	:Tx CH Mid			Antenna Po	l.	:HORIZON	TAL
EUT Pol	:NB Plane			Engineer		:Ricky Chen	
97 Level (dBuV/m)							
90							
80			 				
70			 				
60			 ; ; ; ;			1 	
50		 	 				
40	3		 			1 	
30			 1 			1 	
20		- - - - - -	 , , , , , , , , , , , , , , , , , , , ,				

11200. 16300. Frequency (MHz)

Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Average	40.03	7.09	47.12	54.00	-6.88
4874.00	Peak	44.82	7.09	51.91	74.00	-22.09
7311.00	Average	24.79	14.63	39.42	54.00	-14.58
7311.00	Peak	34.29	14.63	48.92	74.00	-25.08

~ End of Report ~

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