RF Exposure Evaluation

FCC ID: 2AT4M-C116EP-G4S

1. Client Information

Applicant	:	SEMMAX(HONGKONG)LIMITED
Address	:	1002C, Block D, Fortune Fort Tower,138 Baoyuan Road, Bao'an District, Shenzhen,China
Manufacturer	:	SEMMAX(HONGKONG)LIMITED
Address	:	1002C, Block D, Fortune Fort Tower,138 Baoyuan Road, Bao'an District, Shenzhen,China

2. General Description of EUT

EUT Name	:	Notebook	
Models No.	:	C116EP-G4S,C116EP-G4S-01,C116EP-G4S-02, C116EP-G4S-03,NVN-ED01	
Model Difference	:	All models are in the same PCB layout interior structure and electrical circuits, the only difference is the color.	
Product Description	:	Operation Frequency:	**2.4G:** 802.11b/g/n(HT20): 2412MHz~2462MHz Bluetooth 4.0(BLE): 2402MHz~2480MHz **5G:** U-NII-1: 5180MHz~5240MHz U-NII-3: 5745MHz~5825MHz
		Modulation Type:	802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/n: OFDM(BPSK,QPSK,16QAM, 64QAM) 802.11a: OFDM (QPSK, BPSK, 16QAM) 802.11ac: OFDM (QPSK, BPSK, 16QAM, 64QAM, 256QAM) BLE: GFSK
Power Supply	:	AC Adapter(BCT 120250-UPP30WD): Input: AC 100-240V, 50/60Hz, 0.8A Output: DC 12V, 2500mA	
Software Version	:	N/A	
Hardware Version	:	EM_IG520_272B_V2.0	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

Note: More test information about the EUT please refer the RF Test Report.

1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, China
Tel: +86 75526509301 Fax: +86 75526509195

SAR Test Exclusion Calculations

1. FCC: According to KDB 447498 D01 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies v06.

(1) Clause 4.3: General SAR test reduction and exclusion guidance

Sub clause 4.31: Standalone SAR test exclusion considerations

1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6GHz at test separation distance≤5 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation, mm)]*[$\sqrt{f_{(GHz)}}$] ≤3.0 for 1-g SAR

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation, mm)]*[$\sqrt{f_{(GHz)}}$] ≤7.5.0 for 10-g SAR

2. Calculation:

Test separation: 5mm						
2.4G WiFi Mode(802.11b)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.412	8.12	8±0.5	8.5	7.079	2.199	**3.0**
2.437	8.08	8±0.5	8.5	7.079	2.210	**3.0**
2.462	8.14	8±0.5	8.5	7.079	2.222	**3.0**
2.4G WiFi Mode(802.11g)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.412	7.89	8±0.5	8.5	7.079	2.199	**3.0**
2.437	7.96	8±0.5	8.5	7.079	2.210	**3.0**
2.462	7.78	8±0.5	8.5	7.079	2.222	**3.0**
2.4G WiFi Mode(802.11n(HT20))						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.412	7.85	8±0.5	8.5	7.079	2.199	**3.0**
2.437	7.84	8±0.5	8.5	7.079	2.210	**3.0**
2.462	7.83	8±0.5	8.5	7.079	2.222	**3.0**

Test separation: 5mm						
BLE Mode (GFSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	-0.977	-1±1	0	1	0.310	**3.0**
2.442	-1.225	-1±1	0	1	0.313	**3.0**
2.480	-1.575	-1±1	0	1	0.315	**3.0**

Test separation: 5mm			
The worst RF Exposure Evaluation			
Worst Calculation Value		Total Calculation Value	Threshold Value
2.4G WiFi Mode	Bluetooth Mode		
2.222	0.315	2.537	**3.0**

Because the 2.4G WiFi and Bluetooth can be operated simultaneously, So the worst RF Exposure Evaluation is calculated as *2.222+0.315=2.537 / cm2 < limit 3.0*, So standalone SAR measurements are not required.

Test separation: 5mm						
5G WiFi						
Mode	Worst Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
U-NII-1 (5180MHz)	6.98	6.5±0.5	7	5.012	2.281	3.0
U-NII-3 (5825MHz)	6.46	6±0.5	6.5	4.467	2.156	

Test separation: 5mm			
The worst RF Exposure Evaluation			
Worst Calculation Value		Total Calculation Value	Threshold Value
5G WiFi Mode	Bluetooth Mode		
2.281	0.315	2.596	3.0

Because the 5G WiFi and Bluetooth can be operated simultaneously, So the worst RF Exposure Evaluation is calculated as *2.281+0.315=2.596 / cm2 < limit 3.0*, So standalone SAR measurements are not required.

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