

FCC RF EXPOSURE REPORT

FCC ID: 2AMHM-AD00A10055

Report No. : BTL-FCCP-9-1911T165
Equipment : iTraMS Gen2A
Model Name : CU-303-0403
Brand Name : Bosch
Applicant : Robert Bosch Engineering & Business Solution Pvt. Ltd.
Address : 123, Industrial Layout, Hosur Road, Koramangala, Bengaluru,
560095 Bengaluru India

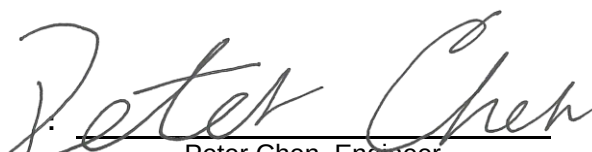
Radio Function : Bluetooth EDR/ Bluetooth LE/WLAN 2.4G/RLAN 5G/WCDMA/LTE

FCC Rule Part(s) : FCC Guidelines for Human Exposure IEEE C95.1 & FCC Part 2.1091
FCC Title 47 Part 2.1091, OET Bulletin 65 Supplement C

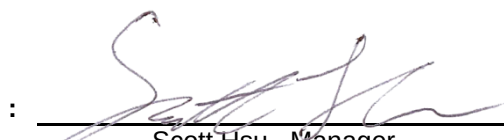
Date of Receipt : 2019/11/27
Date of Test : 2019/11/27 ~ 2020/1/7
Issued Date : 2020/3/18

The above equipment has been tested and found in compliance with the requirement of the above standards by BTL Inc.

Prepared by


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**Approved by**


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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue	2020/3/9
R01	Revised report to address TCB's comments.	2020/3/16
R02	Revised report to address TCB's comments.	2020/3/18

1. MPE CALCULATION METHOD

Calculation Method of RF Safety Distance:

$$S = \frac{PG}{4\pi^2} = \frac{EIRP}{4\pi^2}$$

where:

S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

Table for Filed Antenna:

For BT/LE/2.4GHz:

Ant.	Brand	S/N	Antenna Type	Connector	Gain (dBi)
CH0		146153	Internal	N/A	3.0

For 5GHz:

Ant.	Brand	S/N	Antenna Type	Connector	Gain (dBi)
CH0		146153	Internal	N/A	4.1

For WWAN:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
CH0	 BOSCH	N/A	PCB	N/A	4	WCDMA Band II
CH0	 BOSCH	N/A	PCB	N/A	2.57	WCDMA Band V
CH0	 BOSCH	N/A	PCB	N/A	4	LTE Band 2
CH0	 BOSCH	N/A	PCB	N/A	2.8	LTE Band 4
CH0	 BOSCH	N/A	PCB	N/A	2.57	LTE Band 5
CH0	 BOSCH	N/A	PCB	N/A	0	LTE Band 12

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
CH0	TAOGLAS	MA250.A.LBI.001	Dipole	N/A	3.37	WCDMA Band II
CH0	TAOGLAS	MA250.A.LBI.001	Dipole	N/A	1.29	WCDMA Band V
CH0	TAOGLAS	MA250.A.LBI.001	Dipole	N/A	3.37	LTE Band 2
CH0	TAOGLAS	MA250.A.LBI.001	Dipole	N/A	3.79	LTE Band 4
CH0	TAOGLAS	MA250.A.LBI.001	Dipole	N/A	1.29	LTE Band 5
CH0	TAOGLAS	MA250.A.LBI.001	Dipole	N/A	0.72	LTE Band 12

External Antenna (For evaluation only)

Band	Max. gain for FCC MPE Limits	Max. gain for Industry Canada MPE Limits	Maximum gain to be compliant with all imits
WCDMA Band II	12.5	9.1	9.1
WCDMA Band V	10.0	6.7	6.7
LTE Band 2	12.5	9.6	9.6
LTE Band 4	13.0	9.3	9.3
LTE Band 5	10.4	7.1	7.1
LTE Band 12	9.8	6.7	6.7

Output power including tune up tolerance

Function	Target power (dBm)	Tolerance (dB)
BT	1	±1
BLE	7	±1
WLAN 2.4G	18	±1
RLAN 5GHz UNII-1	16	±2
RLAN 5GHz UNII-2A	16	±2
RLAN 5GHz UNII-2C	14	±2
RLAN 5GHz UNII-3	13	±2
WCDMA	23	±1
LTE	24	±1

2. TEST RESULTS

For BT:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Peak Output Power (mW)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)	Test Result
3.00	1.9953	2	1.5849	0.00062943	1	Complies

For LE:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Peak Output Power (mW)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)	Test Result
3.00	1.9953	8	6.3096	0.00250582	1	Complies

For 2.4GHz:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Peak Output Power (mW)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)	Test Result
3.00	1.9953	19	79.4328	0.03154644	1	Complies

For 5GHz UNII-1:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Peak Output Power (mW)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)	Test Result
4.10	2.5704	18	63.0957	0.03228125	1	Complies

For 5GHz UNII-2A:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Peak Output Power (mW)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)	Test Result
4.10	2.5704	18	63.0957	0.03228125	1	Complies

For 5GHz UNII-2C:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Peak Output Power (mW)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)	Test Result
4.10	2.5704	16	39.8107	0.02036809	1	Complies

For 5GHz UNII-3:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Peak Output Power (mW)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)	Test Result
4.10	2.5704	15	31.6228	0.01617895	1	Complies

For WWAN:

Mode	Band	Frequency (MHz)	Antenna Gain (dBi)	Max. Output Power (dBm)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)	Test Result
WCDMA	Band II	1907.6	4	24	0.1255	1.0000	Complies
WCDMA	Band V	826.4	2.57	24	0.0903	0.5509	Complies
LTE	Band 2	1860.0	4	25	0.1580	1.0000	Complies
LTE	Band 4	1732.5	2.8	25	0.1199	1.0000	Complies
LTE	Band 5	836.5	2.57	25	0.1137	0.5577	Complies
LTE	Band 12	704.0	0	25	0.0629	0.4693	Complies

For the max simultaneous transmission MPE:

Maximum Bluetooth Power Density (mW/cm ²)	Maximum WLAN Power Density (mW/cm ²)	Maximum WWAN Power Density (mW/cm ²)
0.0025	0.0323	0.1580
Simultaneous transmission of Bluetooth+WWAN		
0.1605<1		
Simultaneous transmission of WIFI+WWAN		
0.1903<1		

Note:

(1) The calculated distance is 20 cm.

End of Test Report