RF Exposure evaluation

Product Name	:	Motorcycle Smart System
FCC ID	:	2BMPM-ARMSS03
Test Standard	:	KDB447498D04 General RF Exposure Guidance v01

According to 447498 D04 Interim General RF Exposure Guidance v01

Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

$$P_{\text{th}}\,(\text{mW}) = ERP_{20\,\text{cm}}\,(\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases} \quad \text{(B. 1)}$$

$$P_{\text{th}}\,(\text{mW}) = \begin{cases} ERP_{20\,\text{cm}}(d/20\ \text{cm})^{x} & d \le 20\ \text{cm} \\ ERP_{20\,\text{cm}} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases} \quad \text{(B. 2)}$$

where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\,\text{cm}}\sqrt{f}}\right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20\text{cm}}$ is per Formula (B.1).
The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)										
		5	10	15	20	25	30	35	40	45	50
	300	39	65	88	110	129	148	166	184	201	217
	450	22	44	67	89	112	135	158	180	203	226
	835	9	25	44	66	90	116	145	175	207	240
	1900	3	12	26	44	66	92	122	157	195	236
	2450	3	10	22	38	59	83	111	143	179	219
	3600	2	8	18	32	49	71	96	125	158	195
	5800	1	6	14	25	40	58	80	106	136	169

Calculated Result and Limit (WORSE CASE IS AS BELOW)

Mode	Frequency (MHz)	Max Output power(dBm)	Max Output power(mW)	Ant gain (dBi)	Evaluation ERP(dBm)	Evaluation ERP(mW)	Limit of Pth （mW）	Result
BT1:3-DH1	2402	9.087	8.10	2.98	9.917	9.81	3060.00	Pass
BT2:BLE 2M	2480	4.244	2.66	2.98	5.074	3.22	3060.00	Pass
2.4G WIFI:N20	2462	12.946	19.71	2.98	13.776	23.86	3060.00	Pass
LTE Band 2: QPSK/20MBandwidth	1900	22.82	191.43	1.55	22.22	166.72	3060.00	Pass
LTE Band 5: QPSK/5MBandwidth	836.5	22.6	181.97	0.42	20.87	122.18	1706.46	Pass
LTE Band 7: QPSK/15MBandwidth	2507.5	20.65	116.14	0.68	19.18	82.79	3060.00	Pass

ERP=Max Output power+Ant gain-2.15

Simultaneous emission:

$\sum_{i=1}^{a} \frac{P_i}{P_{\mathrm{th},i}}$	=(8.10+2.66+19.71+191.43+181.97+116.14)/3060=0.16994<1

$\sum_{j=1}^{b} \frac{ERP_j}{ERP_{\mathrm{th},j}}$	=(9.81+3.22+23.86+166.72+122.18+82.79)/3060 =0.13352<1

Comply with RF exposure exemption limit.