

## RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF) Radiation as specified in §1.1307(b)

FCC ID: 2AHVK-OLIVECAM

### EUT Specification

| EUT                               | SPORT DVR                                                                                                                                                                                                                      |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Frequency band (Operating)</b> | <input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz<br><input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz<br><input type="checkbox"/> WLAN: 5.745GHz ~ 5825GHz<br><input type="checkbox"/> Others  |
| <b>Device category</b>            | <input type="checkbox"/> Portable (<20cm separation)<br><input checked="" type="checkbox"/> Mobile (>20cm separation)<br><input type="checkbox"/> Others ____                                                                  |
| <b>Exposure classification</b>    | <input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> )<br><input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )                                  |
| <b>Antenna diversity</b>          | <input checked="" type="checkbox"/> Single antenna<br><input type="checkbox"/> Multiple antennas<br><input type="checkbox"/> Tx diversity<br><input type="checkbox"/> Rx diversity<br><input type="checkbox"/> Tx/Rx diversity |
| <b>Max. output power</b>          | 17.18dBm (0.052W)                                                                                                                                                                                                              |
| <b>Antenna gain (Max)</b>         | 2.61 dBi                                                                                                                                                                                                                       |
| <b>Evaluation applied</b>         | <input checked="" type="checkbox"/> MPE Evaluation<br><input type="checkbox"/> SAR Evaluation                                                                                                                                  |

Limits for Maximum Permissible Exposure(MPE)

| Frequency Range(MHz)                                         | Electric Field Strength(V/m) | Magnetic Field Strength(A/m) | Power Density(mW/cm <sup>2</sup> ) | Average Time |
|--------------------------------------------------------------|------------------------------|------------------------------|------------------------------------|--------------|
| <b>(A) Limits for Occupational/Control Exposures</b>         |                              |                              |                                    |              |
| 300-1500                                                     | --                           | --                           | F/300                              | 6            |
| 1500-100000                                                  | --                           | --                           | 5                                  | 6            |
| <b>(B) Limits for General Population/Uncontrol Exposures</b> |                              |                              |                                    |              |
| 300-1500                                                     | --                           | --                           | F/1500                             | 6            |
| 1500-100000                                                  | --                           | --                           | 1                                  | 30           |

## Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

$P_d$  = Power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in Mw

$G$  = gain of antenna in linear scale

$\pi$  = 3.1416

$R$  = distance between observation point and center of the radiator in cm

$P_d$  the limit of MPE, 1mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

## Measurement Result

| Operating Mode | Channel Frequency (MHz) | Measured Power (dBm) | Tune up tolerance (dBm) | Max. Tune up Power (dBm) | Antenna Gain (dBi) | Power density at 20cm (mW/ cm <sup>2</sup> ) | Power density Limits (mW/cm <sup>2</sup> ) |
|----------------|-------------------------|----------------------|-------------------------|--------------------------|--------------------|----------------------------------------------|--------------------------------------------|
| 802.11b        | 2412                    | 16.79                | 16.79±1                 | 17.79                    | 2.61               | 0.0218                                       | 1                                          |
|                | 2437                    | 16.79                | 16.79±1                 | 17.79                    | 2.61               | 0.0218                                       | 1                                          |
|                | 2462                    | 17.18                | 17.18±1                 | 18.18                    | 2.61               | 0.0239                                       | 1                                          |
| 802.11g        | 2412                    | 14.45                | 14.45±1                 | 15.45                    | 2.61               | 0.0127                                       | 1                                          |
|                | 2437                    | 16.59                | 16.59±1                 | 17.59                    | 2.61               | 0.0208                                       | 1                                          |
|                | 2462                    | 15.14                | 15.14±1                 | 16.14                    | 2.61               | 0.0149                                       | 1                                          |
| 802.11n (HT20) | 2412                    | 14.58                | 14.58±1                 | 15.58                    | 2.61               | 0.0131                                       | 1                                          |
|                | 2437                    | 16.65                | 16.65±1                 | 17.65                    | 2.61               | 0.0211                                       | 1                                          |
|                | 2462                    | 15.11                | 15.11±1                 | 16.11                    | 2.61               | 0.0148                                       | 1                                          |
| 802.11n (HT40) | 2422                    | 13.11                | 13.11±1                 | 14.11                    | 2.61               | 0.0093                                       | 1                                          |
|                | 2437                    | 15.54                | 15.54±1                 | 16.54                    | 2.61               | 0.0164                                       | 1                                          |
|                | 2452                    | 15.79                | 15.79±1                 | 16.79                    | 2.61               | 0.0173                                       | 1                                          |