Exhibit A
Kymeta u7

Radiation Hazard Report

Analysis of Non-Ionizing Radiation for a 0.79 m Earth Station

This analysis provides the calculated non-ionizing radiation levels for a 0.79-meter earth station system.

The methods and calculations performed in this analysis are based on the FCC Office of Engineering and Technology Bulletin, No.65, October 1985 as revised in 1997 in Edition 97-01. The radiation safety limits used in the analysis are in conformance with the FCC R&O 96-326 (Summarized in Annex 1). There are separate exposure limits applicable to the General Population/Uncontrolled Environment and the Occupational/Controlled Environment. The Maximum Permissible Exposure (MPE) limits for persons in a General Population/Uncontrolled environment for the frequency band of this antenna, is 1 mW/cm2 for a 30 minute or lower time period as shown in Annex 1 (a). The MPE limit for persons in an Occupational/Controlled environment for the frequency band of this antenna is 5 mW/cm2 for a 6 minute time or lower period as shown in Annex 1 (b). The purpose of this analysis described is to determine the power flux density levels of the earth station at the main reflector surface, the near-field, transition region, far-field, between the sub-reflector or feed and, at the main reflector surface, and between the antenna edge and the ground and to compare these levels to the specified MPEs.

The parameters of the antenna that is the subject of this analysis are shown in Table 1.
Intermediate calculated values and constants are provided in Table 2.

Table 1. Input Parameters Used for Determining Power Flux Densities

Parameter	Symbol	Formula	Value	Units
Antenna Diameter	D	Input	0.79	m
Frequency	F	Input	14125	MHz
Transmit Power	P	Input	25	W
Antenna Gain (dBi)	G_{es}	Input	34.5	dBi

Table 2. Calculated Values and Constants

Parameter	Symbol	Formula	Value	Units
Antenna Surface Area	$A_{surface}$	$\pi D^2/4$	0.49	m^2
Wavelength	λ	300/F	0.021239	m
Antenna Gain (factor)	G	$10^{Ges/10}$	2818.38	n/a
Pi	π	Constant	3.1415927	n/a
Antenna Efficiency	η	$G\lambda^2/(\pi^2 D^2)$	0.21	n/a

1. Antenna Main Reflector Surface

The power density in the main reflector is determined from the Power level and the area of the main reflector aperture. This is determined from the following equation:

Power Density at the Main Reflector Surface:

$$S_{surface} = 4P/A_{surface} \quad (1)$$

$$= 204.012 \quad W/m^2$$

$$= 20.401 \quad mW/cm^2$$

2. Near Field Calculation

Power Flux density is considered to be at a maximum value throughout the entire length of the defined Near Field region. The region is contained within a cylindrical volume having the same diameter as the antenna. Past the boundary of the Near Field region, the power density from the antenna decreases linearly with respect to increasing distance. The distance to the end of the Near Field is determined from the following equation:

Extent of the Near Field:

$$R_{nf} = D^2 / (4\lambda) \quad (2)$$

$$= 7.35 \quad m$$

The maximum power density in the Near Field is determined from the following equation:

Near Field Density:

$$S_{nf} = 16.0\ \eta\ P / (\pi\ D^2) \quad (3)$$

$$= 4.211 \quad mW/cm^2$$

3. Transition Region Calculation

The Transition Region is located between the Near and Far Field regions. The power density begins to decrease linearly with increasing distance in the Transition region. While the power density decreases inversely with distance in the Transition region, the power density decreases inversely with the square of the distance in the Far Field region. The power density calculated in Section 1 is the highest power density the antenna can produce in any of the regions away from the antenna. The power density at a distance R_t is determined from the following equation:

Transition Region Power Density:

$$S_t = S_{nf}\, R_{nf} / R_t \quad (4)$$

$$= 4.211 \quad mW/cm^2$$

4. Far Field Distance Calculation

The distance to the Far Field Region is calculated using the following equation:

Distance to Far Field Region:

$$R_{ff} = 0.6\ D^2 / \lambda \qquad (5)$$

$$= \quad 17.631 \quad \text{m}$$

The maximum main beam power density in the far field is determined from the following equation:

On-axis Power Density in the Far Field:

$$S_{ff} = G\ P / (4\ \pi\ R_{ff}^2) \qquad (6)$$

$$= \quad 1.804 \quad \text{mW/cm}^2$$

5. Region between the Main Reflector and the Ground

Assuming uniform illumination of the reflector surface, the power density between the antenna and the ground is determined from the following equation:

Power Density between Reflector and Ground:

$$S_g = P / A_{surface} \qquad (7)$$

$$= \quad 5.100 \quad \text{mW/cm}^2$$

7. Summary of Calculations

Table 3. Summary of Expected Radiation levels for Uncontrolled Environment

Region	Symbol	Calculated Maximum Radiation Power Density Level (mW/cm^2)	Hazard Assessment
1. Main Reflector	$S_{surface}$	20.401	Potential Hazard
2. Near Field (R_{nf} = 7.35 m)	S_{nf}	4.211	Potential Hazard
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	4.211	Potential Hazard
4. Far Field (R_{ff} = 17.63 m)	S_{ff}	1.804	Potential Hazard
5. Between Main Reflector and Ground	S_g	5.100	Potential Hazard

Table 4. Summary of Expected Radiation levels for Controlled Environment

Region	Symbol	Calculated Maximum Radiation Power Density Level (mW/cm^2)	Hazard Assessment
1. Main Reflector	$S_{surface}$	20.401	Potential Hazard
2. Near Field (R_{nf} = 7.35 m)	S_{nf}	4.211	Satisfies FCC MPE
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	4.211	Satisfies FCC MPE
4. Far Field (R_{ff} = 17.63 m)	S_{ff}	1.804	Satisfies FCC MPE
5. Between Main Reflector and Ground	S_g	5.100	Potential Hazard

It is the applicant's responsibility to ensure that the public and operational personnel are not exposed to harmful levels of radiation.

8. Conclusion

The above analysis was based on the maximum transmit power capability of the terminal. The results show that there is an exceedance of the safe levels for uncontrolled environment. For controlled environment the limits are met except on the main reflector (Table 3). The earth station will be marked with the standard radiation hazard warnings to inform anyone in close proximity to the terminal of potential RF radiation. Given that the terminal is vehicle mounted and in motion, prolonged exposure at the radiating surface will not occur.

Additionally, it should be noted that transmit power of the terminal during normal operation will be lower than the maximum HPA power of the earth station on which the analysis was based and therefore actual operations will result in lower RF exposure levels than those calculated. This antenna will be mounted on a vehicle and the main beam will be pointed toward the sky with a certain elevation angle. Since the radiation levels are for the main beam, human exposure in the near field is not possible and the maximum far field exposure to humans would be due to a side lobe.

These terminals are intended for use by operators and technicians that will receive training on the potential for RF exposure and procedures will be established to ensure that safe distances are maintained, including the turning off the transmitter when the terminal needs is accessed by operators, maintenance or other authorized personnel.

"The licensee shall take all necessary measures to ensure that the antenna does not create potential exposure of humans to radiofrequency radiation in excess of the FCC exposure limits defined in 47 CFR 1.1307(b) and 1.1310 wherever such exposures might occur. Measures must be taken to ensure compliance with limits for both occupational/controlled exposure and for general population/uncontrolled exposure, as defined in these rule sections. Compliance can be accomplished in most cases by appropriate restrictions such as fencing. Requirements for restrictions can be determined by predictions based on calculations, modeling or by field measurements. The FCC's OET Bulletin 65 (available on-line at www.fcc.gov/oet/rfsafety) provides information on predicting exposure levels and on methods for ensuring compliance, including the use of warning and alerting signs and protective equipment for workers."

ANNEX 1

(MPE Levels)

a) Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm^2)
30-300	0.2
300-1500	Frequency(MHz)*(4.0/1200)
1500-100,000	1

b) Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm^2)
30-300	1
300-1500	Frequency(MHz)*(4.0/1200)
1500-100,000	5

Radiation Hazard Report

Analysis of Non-Ionizing Radiation for a 0.27 m Earth Station

This analysis provides the calculated non-ionizing radiation levels for a 0.27-meter earth station system.

The methods and calculations performed in this analysis are based on the FCC Office of Engineering and Technology Bulletin, No.65, October 1985 as revised in 1997 in Edition 97-01. The radiation safety limits used in the analysis are in conformance with the FCC R&O 96-326 (Summarized in Annex 1). There are separate exposure limits applicable to the General Population/Uncontrolled Environment and the Occupational/Controlled Environment. The Maximum Permissible Exposure (MPE) limits for persons in a General Population/Uncontrolled environment for the frequency band of this antenna, is 1 mW/cm2 for a 30 minute or lower time period as shown in Annex 1 (a). The MPE limit for persons in an Occupational/Controlled environment for the frequency band of this antenna is 5 mW/cm2 for a 6 minute time or lower period as shown in Annex 1 (b). The purpose of this analysis described is to determine the power flux density levels of the earth station at the main reflector surface, the near-field, transition region, far-field, between the sub-reflector or feed and, at the main reflector surface, and between the antenna edge and the ground and to compare these levels to the specified MPEs.

The parameters of the antenna that is the subject of this analysis are shown in Table 1.
Intermediate calculated values and constants are provided in Table 2.

Table 1. Input Parameters Used for Determining Power Flux Densities

Parameter	Symbol	Formula	Value	Units
Antenna Diameter	D	Input	0.27	m
Frequency	F	Input	14125	MHz
Transmit Power	P	Input	50	W
Antenna Gain (dBi)	G_{es}	Input	30	dBi

Table 2. Calculated Values and Constants

Parameter	Symbol	Formula	Value	Units
Antenna Surface Area	$A_{surface}$	$\pi D^2/4$	0.06	m^2
Wavelength	λ	300/F	0.021239	m
Antenna Gain (factor)	G	$10^{Ges/10}$	1000.00	n/a
Pi	π	Constant	3.1415927	n/a
Antenna Efficiency	η	$G\lambda^2/(\pi^2 D^2)$	0.63	n/a

1. Antenna Main Reflector Surface

The power density in the main reflector is determined from the Power level and the area of the main reflector aperture. This is determined from the following equation:

Power Density at the Main Reflector Surface:

$$S_{surface} = 4P/A_{surface} \quad (1)$$

$$= 3493.113 \quad W/m^2$$

$$= 349.311 \quad mW/cm^2$$

2. Near Field Calculation

Power Flux density is considered to be at a maximum value throughout the entire length of the defined Near Field region. The region is contained within a cylindrical volume having the same diameter as the antenna. Past the boundary of the Near Field region, the power density from the antenna decreases linearly with respect to increasing distance. The distance to the end of the Near Field is determined from the following equation:

Extent of the Near Field:

$$R_{nf} = D^2 / (4\lambda) \quad (2)$$

$$= 0.86 \quad m$$

The maximum power density in the Near Field is determined from the following equation:

Near Field Density:

$$S_{nf} = 16.0\, \eta\, P / (\pi\, D^2) \quad (3)$$

$$= 219.003 \quad mW/cm^2$$

3. Transition Region Calculation

The Transition Region is located between the Near and Far Field regions. The power density begins to decrease linearly with increasing distance in the Transition region. While the power density decreases inversely with distance in the Transition region, the power density decreases inversely with the square of the distance in the Far Field region. The power density calculated in Section 1 is the highest power density the antenna can produce in any of the regions away from the antenna. The power density at a distance R_t is determined from the following equation:

Transition Region Power Density:

$$S_t = S_{nf}\, R_{nf} / R_t \quad (4)$$

$$= 219.003 \quad mW/cm^2$$

4. Far Field Distance Calculation

The distance to the Far Field Region is calculated using the following equation:

Distance to Far Field Region:

$$R_{ff} = 0.6\ D^2 / \lambda \quad (5)$$

$$= \quad 2.059 \quad \text{m}$$

The maximum main beam power density in the far field is determined from the following equation:

On-axis Power Density in the Far Field:

$$S_{ff} = G\ P / (4\ \pi\ R_{ff}^2) \quad (6)$$

$$= \quad 93.814 \quad \text{mW/cm}^2$$

5. Region between the Main Reflector and the Ground

Assuming uniform illumination of the reflector surface, the power density between the antenna and the ground is determined from the following equation:

Power Density between Reflector and Ground:

$$S_g = P / A_{surface} \quad (7)$$

$$= \quad 87.328 \quad \text{mW/cm}^2$$

7. Summary of Calculations

Table 3. Summary of Expected Radiation levels for Uncontrolled Environment

Region	Symbol	Calculated Maximum Radiation Power Density Level (mW/cm^2)	Hazard Assessment
1. Main Reflector	$S_{surface}$	349.311	Potential Hazard
2. Near Field (R_{nf} = 0.86 m)	S_{nf}	219.003	Potential Hazard
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	219.003	Potential Hazard
4. Far Field (R_{ff} = 2.06 m)	S_{ff}	93.814	Potential Hazard
5. Between Main Reflector and Ground	S_g	87.328	Potential Hazard

Table 4. Summary of Expected Radiation levels for Controlled Environment

Region	Symbol	Calculated Maximum Radiation Power Density Level (mW/cm^2)	Hazard Assessment
1. Main Reflector	$S_{surface}$	349.311	Potential Hazard
2. Near Field (R_{nf} = 0.86 m)	S_{nf}	219.003	Potential Hazard
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	219.003	Potential Hazard
4. Far Field (R_{ff} = 2.06 m)	S_{ff}	93.814	Potential Hazard
5. Between Main Reflector and Ground	S_g	87.328	Potential Hazard

It is the applicant's responsibility to ensure that the public and operational personnel are not exposed to harmful levels of radiation.

8. Conclusion

The above analysis was based on the maximum transmit power capability of the terminal. The results show that there is an exceedance of the safe levels for the Uncontrolled (Table 3) Environment and the Controlled Environment (Table 4). The earth station will be marked with the standard radiation hazard warnings to inform anyone in close proximity to the terminal of potential RF radiation. Given that the terminal is vehicle mounted and in motion, prolonged exposure at the radiating surface will not occur.

Additionally, it should be noted that transmit power of the terminal during normal operation will be lower than the maximum HPA power of the earth station on which the analysis was based and therefore actual operations will result in lower RF exposure levels than those calculated. This antenna will be mounted on a vehicle and the main beam will be pointed toward the sky with a certain elevation angle. Since the radiation levels are for the main beam, human exposure in the near field is not possible and the maximum far field exposure to humans would be due to a side lobe.

These terminals are intended for use by operators and technicians that will receive training on the potential for RF exposure and procedures will be established to ensure that safe distances are maintained, including the turning off the transmitter when the terminal needs is accessed by operators, maintenance or other authorized personnel.

"The licensee shall take all necessary measures to ensure that the antenna does not create potential exposure of humans to radiofrequency radiation in excess of the FCC exposure limits defined in 47 CFR 1.1307(b) and 1.1310 wherever such exposures might occur. Measures must be taken to ensure compliance with limits for both occupational/controlled exposure and for general population/uncontrolled exposure, as defined in these rule sections. Compliance can be accomplished in most cases by appropriate restrictions such as fencing. Requirements for restrictions can be determined by predictions based on calculations, modeling or by field measurements. The FCC's OET Bulletin 65 (available on-line at www.fcc.gov/oet/rfsafety) provides information on predicting exposure levels and on methods for ensuring compliance, including the use of warning and alerting signs and protective equipment for workers."

ANNEX 1

(MPE Levels)

a) Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	**Power Density (mW/cm^2)**
30-300	0.2
300-1500	Frequency(MHz)*(4.0/1200)
1500-100,000	1

b) Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	**Power Density (mW/cm^2)**
30-300	1
300-1500	Frequency(MHz)*(4.0/1200)
1500-100,000	5

Radiation Hazard Report

Analysis of Non-Ionizing Radiation for a 0.28 m Earth Station

This analysis provides the calculated non-ionizing radiation levels for a 0.28-meter earth station system.

The methods and calculations performed in this analysis are based on the FCC Office of Engineering and Technology Bulletin, No.65, October 1985 as revised in 1997 in Edition 97-01. The radiation safety limits used in the analysis are in conformance with the FCC R&O 96-326 (Summarized in Annex 1). There are separate exposure limits applicable to the General Population/Uncontrolled Environment and the Occupational/Controlled Environment. The Maximum Permissible Exposure (MPE) limits for persons in a General Population/Uncontrolled environment for the frequency band of this antenna, is 1 mW/cm2 for a 30 minute or lower time period as shown in Annex 1 (a). The MPE limit for persons in an Occupational/Controlled environment for the frequency band of this antenna is 5 mW/cm2 for a 6 minute time or lower period as shown in Annex 1 (b). The purpose of this analysis described is to determine the power flux density levels of the earth station at the main reflector surface, the near-field, transition region, far-field, between the sub-reflector or feed and, at the main reflector surface, and between the antenna edge and the ground and to compare these levels to the specified MPEs.

The parameters of the antenna that is the subject of this analysis are shown in Table 1.
Intermediate calculated values and constants are provided in Table 2.

Table 1. Input Parameters Used for Determining Power Flux Densities

Parameter	Symbol	Formula	Value	Units
Antenna Diameter	D	Input	0.28	m
Frequency	F	Input	14125	MHz
Transmit Power	P	Input	50	W
Antenna Gain (dBi)	G_{es}	Input	30	dBi

Table 2. Calculated Values and Constants

Parameter	Symbol	Formula	Value	Units
Antenna Surface Area	$A_{surface}$	$\pi D^2/4$	0.06	m^2
Wavelength	λ	300/F	0.021239	m
Antenna Gain (factor)	G	$10^{Ges/10}$	1000.00	n/a
Pi	π	Constant	3.1415927	n/a
Antenna Efficiency	η	$G\lambda^2/(\pi^2 D^2)$	0.58	n/a

1. Antenna Main Reflector Surface

The power density in the main reflector is determined from the Power level and the area of the main reflector aperture. This is determined from the following equation:

Power Density at the Main Reflector Surface:

$$S_{surface} = 4P/A_{surface} \quad (1)$$

$= 3248.060 \ W/m^2$

$= 324.806 \ mW/cm^2$

2. Near Field Calculation

Power Flux density is considered to be at a maximum value throughout the entire length of the defined Near Field region. The region is contained within a cylindrical volume having the same diameter as the antenna. Past the boundary of the Near Field region, the power density from the antenna decreases linearly with respect to increasing distance. The distance to the end of the Near Field is determined from the following equation:

Extent of the Near Field:

$$R_{nf} = D^2 / (4\lambda) \quad (2)$$

$= 0.92 \ m$

The maximum power density in the Near Field is determined from the following equation:

Near Field Density:

$$S_{nf} = 16.0 \ \eta \ P / (\pi \ D^2) \quad (3)$$

$= 189.354 \ mW/cm^2$

3. Transition Region Calculation

The Transition Region is located between the Near and Far Field regions. The power density begins to decrease linearly with increasing distance in the Transition region. While the power density decreases inversely with distance in the Transition region, the power density decreases inversely with the square of the distance in the Far Field region. The power density calculated in Section 1 is the highest power density the antenna can produce in any of the regions away from the antenna. The power density at a distance R_t is determined from the following equation:

Transition Region Power Density:

$$S_t = S_{nf} \, R_{nf} / R_t \quad (4)$$

$= 189.354 \ mW/cm^2$

4. Far Field Distance Calculation

The distance to the Far Field Region is calculated using the following equation:

Distance to Far Field Region:

$$R_{ff} = 0.6\ D^2 / \lambda \qquad (5)$$

$$= \quad 2.215 \quad m$$

The maximum main beam power density in the far field is determined from the following equation:

On-axis Power Density in the Far Field:

$$S_{ff} = G\ P / (4\ \pi\ R_{ff}^2) \qquad (6)$$

$$= \quad 81.113 \quad mW/cm^2$$

5. Region between the Main Reflector and the Ground

Assuming uniform illumination of the reflector surface, the power density between the antenna and the ground is determined from the following equation:

Power Density between Reflector and Ground:

$$S_g = P / A_{surface} \qquad (7)$$

$$= \quad 81.202 \quad mW/cm^2$$

7. Summary of Calculations

Table 3. Summary of Expected Radiation levels for Uncontrolled Environment

Region	Symbol	Calculated Maximum Radiation Power Density Level (mW/cm^2)	Hazard Assessment
1. Main Reflector	$S_{surface}$	324.806	Potential Hazard
2. Near Field (R_{nf} = 0.92 m)	S_{nf}	189.354	Potential Hazard
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	189.354	Potential Hazard
4. Far Field (R_{ff} = 2.21 m)	S_{ff}	81.113	Potential Hazard
5. Between Main Reflector and Ground	S_g	81.202	Potential Hazard

Table 4. Summary of Expected Radiation levels for Controlled Environment

Region	Symbol	Calculated Maximum Radiation Power Density Level (mW/cm^2)	Hazard Assessment
1. Main Reflector	$S_{surface}$	324.806	Potential Hazard
2. Near Field (R_{nf} = 0.92 m)	S_{nf}	189.354	Potential Hazard
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	189.354	Potential Hazard
4. Far Field (R_{ff} = 2.21 m)	S_{ff}	81.113	Potential Hazard
5. Between Main Reflector and Ground	S_g	81.202	Potential Hazard

It is the applicant’s responsibility to ensure that the public and operational personnel are not exposed to harmful levels of radiation.

8. Conclusion

The above analysis was based on the maximum transmit power capability of the terminal. The results show that there is an exceedance of the safe levels for the Uncontrolled (Table 3) Environment and the Controlled Environment (Table 4). The earth station will be marked with the standard radiation hazard warnings to inform anyone in close proximity to the terminal of potential RF radiation. Given that the terminal is vehicle mounted and in motion, prolonged exposure at the radiating surface will not occur.

Additionally, it should be noted that transmit power of the terminal during normal operation will be lower than the maximum HPA power of the earth station on which the analysis was based and therefore actual operations will result in lower RF exposure levels than those calculated. This antenna will be mounted on a vehicle and the main beam will be pointed toward the sky with a certain elevation angle. Since the radiation levels are for the main beam, human exposure in the near field is not possible and the maximum far field exposure to humans would be due to a side lobe.

These terminals are intended for use by operators and technicians that will receive training on the potential for RF exposure and procedures will be established to ensure that safe distances are maintained, including the turning off the transmitter when the terminal needs is accessed by operators, maintenance or other authorized personnel.

"The licensee shall take all necessary measures to ensure that the antenna does not create potential exposure of humans to radiofrequency radiation in excess of the FCC exposure limits defined in 47 CFR 1.1307(b) and 1.1310 wherever such exposures might occur. Measures must be taken to ensure compliance with limits for both occupational/controlled exposure and for general population/uncontrolled exposure, as defined in these rule sections. Compliance can be accomplished in most cases by appropriate restrictions such as fencing. Requirements for restrictions can be determined by predictions based on calculations, modeling or by field measurements. The FCC's OET Bulletin 65 (available on-line at www.fcc.gov/oet/rfsafety) provides information on predicting exposure levels and on methods for ensuring compliance, including the use of warning and alerting signs and protective equipment for workers."

ANNEX 1

(MPE Levels)

a) Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm^2)
30-300	0.2
300-1500	Frequency(MHz)*(4.0/1200)
1500-100,000	1

b) Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm^2)
30-300	1
300-1500	Frequency(MHz)*(4.0/1200)
1500-100,000	5