TEST REPORT

of

FCC Part 2, 27
FCC ID : VAW-SMR-AI250

Equipment Under Test	:	Mobile WiMAX Pico-BTS
Model Name	:	SMR-AI250
Applicant	:	SK telesys Co., Ltd.
Manufacturer	:	SK telesys Co., Ltd.
Date of Test(s)	:	2010-01-12 ~ 2010-01-20
Date of Issue	:	2010-01-26

In the configuration tested, the EUT complied with the standards specified above.

Tested By:  **Date** **2010-01-26**

Feel Jeong

Approved By  **Date** **2010-01-26**

Charles Kim

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1. General Information

1-1. Testing Laboratory

SGS Testing Korea Co., Ltd.
- 705, Dongchun-Dong Sooji-Gu, Yongin-Shi, Kyungki-Do, South Korea.
www.electrolab.kr.sgs.com
Telephone : +82 +31 428 5700
FAX : +82 +31 427 2371

1-2. Details of Applicant

Applicant	:	SK telesys Co.,Ltd.
Address	:	8~12F, Chorim Bldg. 6-3, Sunae-Dong, Bundang-Gu, Seongnam, Gyeonggi-Do, 463-825
Contact Person	:	Seung-moon Lee
Phone No.	:	+82-31-786-5764
Fax No.	:	+81-31-786-5799

1-3. Description of EUT

Kind of Product	Mobile WiMAX Pico-BTS
Model Name	SMR-AI250
Serial Number	N/A
Operating Frequency	Down link : 2502 ~ 2690 MHz
	Up link : 2502 ~ 2690 MHz
Frequency Band	*AB/BC/CD/EF/FH/HG
Power	20 dBm(MIMO)
Power Rating	Input: 120 Vac, 60 Hz(AC/DC Adaptor), 48 Vdc (POE)
Modulation Technique	OFDMA
Tx antenna Gain	1.5 dBi(Dipole Antenna)
Type of Emission	9M12W7D

***Frequency points (channels)**

Table 1 Frequency band list

Band	Low Frequency (MHz)	Middle Frequency (MHz)	High Frequency (MHz)
AB	2508.5	2518.5	2528.5
BC	2525.0	2535.0	2545.0
CD	2541.5	2551.5	2561.5
EF	2630.5	2640.5	2650.5
FH	2647.0	2657.0	2667.0
HG	2663.5	2673.5	2683.5

1-4. Test Modes

Test modes are summarized in Table 2, Table per technical descriptions of the EUT. Tests within the present test report were performed under various test modes.

Table 2 Test modes list

Test Mode	Description
QPSK 1/2	The modulation and coding scheme (MCS) of this test mode is QPSK 1/2 according to IEEE 802.16e, Wave2
QPSK 3/4	The modulation and coding scheme (MCS) of this test mode is QPSK 3/4 according to IEEE 802.16e, Wave2
16QAM 1/2	The modulation and coding scheme (MCS) of this test mode is 16QAM 1/2 according to IEEE 802.16e, Wave2
16QAM 3/4	The modulation and coding scheme (MCS) of this test mode is 16QAM 3/4 according to IEEE 802.16e, Wave2
64QAM 1/2	The modulation and coding scheme (MCS) of this test mode is 64QAM 1/2 according to IEEE 802.16e, Wave2
64QAM 2/3	The modulation and coding scheme (MCS) of this test mode is 64QAM 2/3 according to IEEE 802.16e, Wave2
64QAM 3/4	The modulation and coding scheme (MCS) of this test mode is 64QAM 3/4 according to IEEE 802.16e, Wave2
64QAM 5/6	The modulation and coding scheme (MCS) of this test mode is 64QAM 5/6 according to IEEE 802.16e, Wave2

Table 3 Test modes data rate(MIMO mode)

MCS	SM(Matrix B)
QPSK 1/2	3 M
QPSK 3/4	4.5 M
16QAM 1/2	6 M
16QAM 3/4	9.2 M
64QAM 1/2	18 M
64QAM 2/3	22 M
64QAM 3/4	27 M
64QAM 5/6	27 M

1-5. Test Equipment List

EQUIPMENT	MANUFACTURER	MODEL	CAL DUE.
Signal Generator	Rohde & Schwarz	SMJ 100A	Sep. 25, 2010
Spectrum Analyzer	Rohde & Schwarz	FSV30	May 15, 2010
Spectrum Analyzer	Rohde & Schwarz	FSL6	Sep. 25, 2010
Combiner	Agilent	11636B	Apr. 03, 2010
Attenuator	Agilent	8498A	Sep. 29, 2010
AC Power Supply	Dea kwang	Slidacs	Sep. 25, 2010
Bilog Antenna	SCHWARZBECK MESSELEKTRONIK	VULB9163	Jul. 22, 2010
Horn Antenna	Rohde & Schwarz	HF906	May 26, 2010
Horn Antenna	Rohde & Schwarz	HF906	May 26, 2010
Dipole Antenna	VHAP/UHAP	975/958	Oct. 30, 2011
High-pass Filter	MICROWAVE-CIRCUITS	H03G12	Apr. 01, 2010
Preamplifier	Agilent	8449B	Apr. 01, 2010
Preamplifier	Agilent	8447F	Jun. 02, 2010
Anechoic Chamber	SY Corporation	L x W x H 9.6 m x 6.4 m x 6.6 m	Jan. 31, 2011

1-6. Summary of Test Results

APPLIED STANDARD: FCC Part 2,27		
Section in FCC Part 2,27	**Test Item**	**Result**
§2.1046 §27.50(h)(1)	Maximum Channel Power	Complied
§27.53(l)(2)	Field Strength of Spurious Radiation	Complied
§2.1049	Occupied Bandwidth 26dB	Complied
§2.1051 §27.53(l)(6)	Spurious Emission at Antenna Terminal	Complied
§2.1055 §27.54	Frequency Stability	Complied
§27.53(l)(2)	Band Edge	Complied
§1.1307(b)(1)	Maximum Permissible Exposure (Exposure of Humans to RF Fields)	Complied

1-7 Test Report Revision

Revision	Report number
0	F690501/RF-RTL003565

1.8 Worst-Case Configuration and Mode

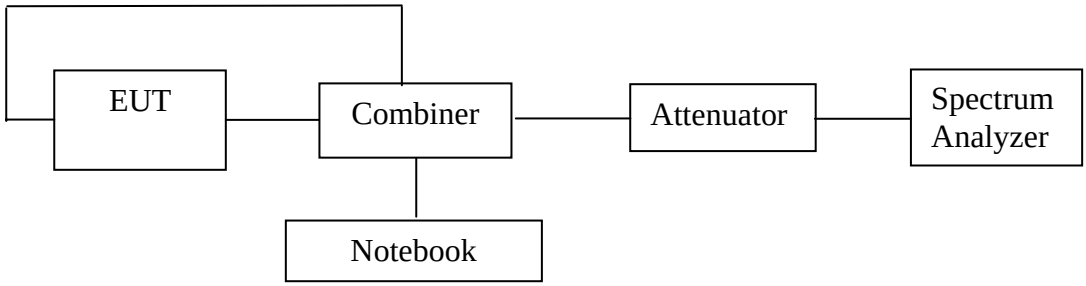
Pre-test was performed on antenna terminal port to determine the worst-case mode

AC/DC Adapter mode

Test mode	Band	Frequency (MHz)	Measured Channel Power	
			dBm	mW
QPSK 1/2	EF	2630.5	19.65	92.26
QPSK 3/4		**2630.5**	**19.68**	**92.90**
16QAM 1/2		2630.5	19.68	92.90
16QAM 3/4		**2630.5**	**19.73**	**93.97**
64QAM 1/2		2630.5	19.66	92.47
64QAM 2/3		2630.5	19.70	93.33
64QAM 3/4		2630.5	19.67	92.68
64QAM 5/6		2630.5	19.65	92.26

2. Maximum Channel Power

2.1. Set up



2.2. Limit

According to 47 CFR Part 2 section § 2.1046 and Part 27 section § 27.50(h)(1), the maximum EIRP of a base station shall not exceed 33 dBW + 10 lg (X/Y) dBW, where X is the actual channel width in MHz and Y is either 6 MHz if prior to transition or the station is in the MBS following transition or 5.5 MHz if the station is in the LBS and UBS following transition.

As to the limit, the X is 10 MHz and Y is 5.5 MHz for the EUT, so the limit is calculated to be 33 dBW + 10 log(10 MHz/5.5 MHz) = 65.60 dBm.

2.3. Test Procedure

1. The transmitter was tested while in a continuous transmit mode.
2. The EUT was tuned to a low, middle, and high channel in the downlink (base to mobile).
3. RF power output was measured with an RF port at the EUT.

2.4. Test Results

Ambient temperature : 23 ℃ Relative humidity : 48 %R.H.

AC/DC Adapter mode

Test mode	Channel	Frequency (MHz)	Measured Channel Power	
			dBm	mW
QPSK 3/4	Low	2508.5	20.03	100.69
QPSK 3/4	Middle	2630.5	19.68	92.90
QPSK 3/4	High	2683.5	19.55	90.16

Test mode	Channel	Frequency (MHz)	Measured Channel Power	
			dBm	mW
16QAM 3/4	Low	2508.5	20.10	102.33
16QAM 3/4	Middle	2630.5	19.73	93.97
16QAM 3/4	High	2683.5	19.56	90.36

POE mode

Test mode	Channel	Frequency (MHz)	Measured Channel Power	
			dBm	mW
16QAM 3/4	Low	2508.5	19.84	96.38
16QAM 3/4	Middle	2630.5	19.68	92.90
16QAM 3/4	High	2683.5	19.45	88.10

AC/DC Adapter mode_QPSK 3/4

Low Channel

Middle Channel

High Channel

AC/DC Adapter mode_16QAM 3/4

Low Channel

Middle Channel

High Channel

POE mode_16QAM 3/4

Low Channel

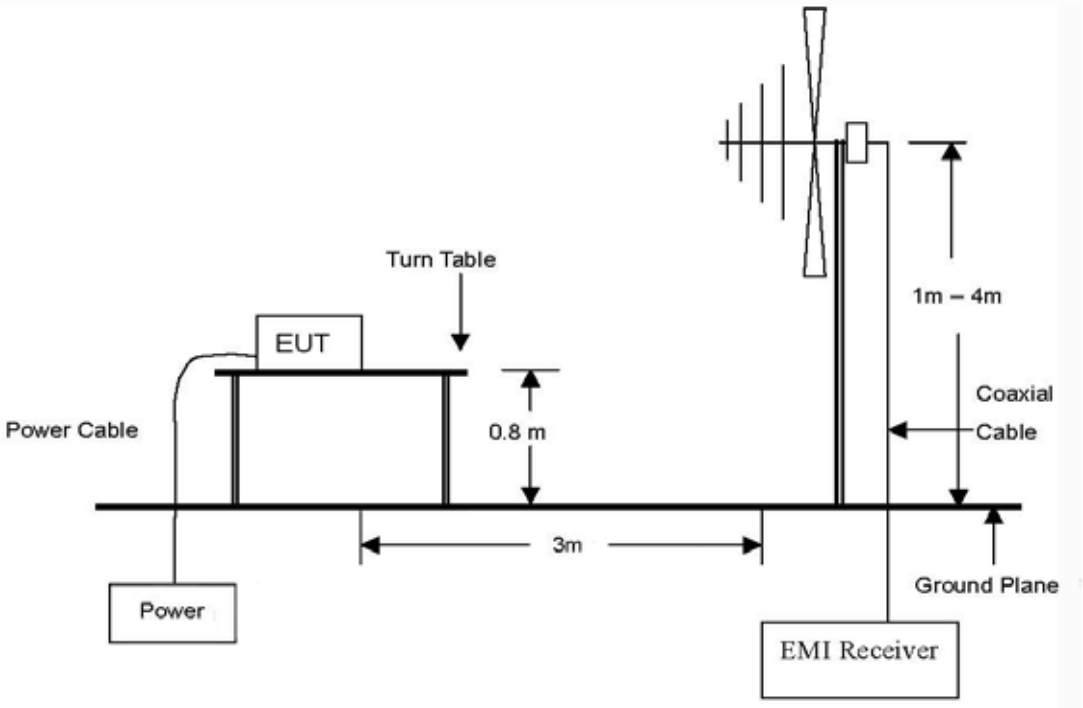
Middle Channel

High Channel

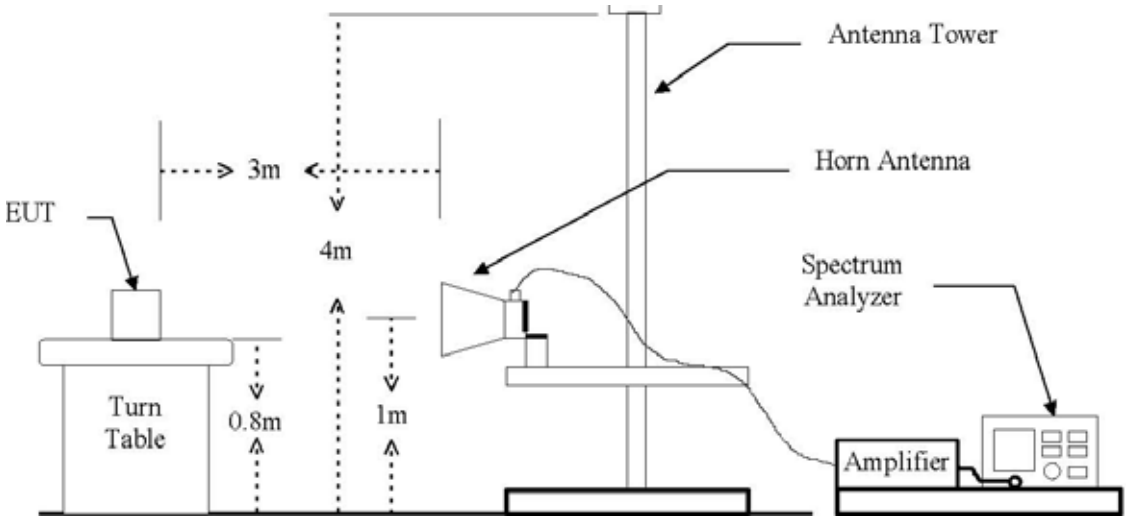
3. Field Strength of Spurious Radiation

3.1. Set up

The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to 18 GHz Emissions.



3.2. Limit

According to 47 CFR Part 2 section § 2.1053 and Part 27 section § 27.53(l)(2) and § 27.53(l)(6), the power of any emissions outside the licensee's frequency bands of operation must be attenuated below the transmitter power (P in watts) by at least 43 +10 log (P) dB. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater.

The limit is calculated to be P (W) - {43 dB + 10 log [P (W)]} = 10 log [1000 P (W)] (dBm) - 43 dB - 10 log [P (W)) = 30 dBm - 43 dB = -13 dBm.

3.3. Test Procedure: Based on ANSI/TIA 603C: 2004

1. On a test site, the EUT shall be placed at 0.8cm height on a turn table, and in the position closest to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3m from EUT to correspond to the frequency of the transmitter.
3. The output of the test antenna shall be connected to the measuring receiver and the peak detector is used for the measurement.
4. The transmitter shall be switched on, the measuring receiver shall be tuned to the frequency of the transmitter under test.
5. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
6. The transmitter shall then the rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
8. The maximum signal level detected by the measuring receiver shall be noted.
9. The transmitter shall be replaced by a horn (substitution antenna).
10. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
11. The substitution antenna shall be connected to a calibrated signal generator.
12. In necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase he sensitivity of the measuring receiver.
13. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
14. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring received, which is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
15. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
16. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
17. The measure of the effective radiated power is the large of the two levels recorded, at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary

3.4. Test Result

Ambient temperature : 23 ℃ Relative humidity : 47 %R.H.

AC/DC Adapter mode_16QAM 3/4

Frequency (MHz)	Ant.Pol. (H/V)	S.G. reading (dBm)	CL (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel (2508.5 MHz)							
374.997	H	-36.86	2.25	-7.18	-46.29	-13.00	33.29
400.015	H	-29.03	2.33	-7.23	-38.59	-13.00	25.59
424.992	H	-33.34	2.41	-7.35	-43.10	-13.00	30.10
450.010	H	-24.34	2.50	-7.48	-34.32	-13.00	21.32
500.005	H	-27.64	2.67	-7.73	-38.04	-13.00	25.04
5020.412	V	-27.22	7.20	10.72	-23.70	-13.00	10.70
7527.145	V	-21.79	12.01	11.66	-22.14	-13.00	9.14
Middle Channel (2630.5 MHz)							
374.997	H	-37.28	2.25	-7.18	-46.71	-13.00	33.71
400.015	H	-29.09	2.33	-7.23	-38.65	-13.00	25.65
424.992	H	-33.63	2.41	-7.35	-43.39	-13.00	30.39
450.010	H	-25.12	2.50	-7.48	-35.10	-13.00	22.10
500.005	H	-28.59	2.67	-7.73	-38.99	-13.00	25.99
5260.321	V	-22.47	7.30	10.88	-18.89	-13.00	5.89
7891.514	V	-28.67	9.80	11.99	-26.48	-13.00	13.48
High Channel (2683.5MHz)							
374.997	H	-37.45	2.25	-7.18	-46.88	-13.00	33.88
400.015	H	-30.15	2.33	-7.23	-39.71	-13.00	26.71
424.992	H	-33.90	2.41	-7.35	-43.66	-13.00	30.66
450.010	H	-24.99	2.50	-7.48	-34.97	-13.00	21.97
500.005	H	-28.40	2.67	-7.73	-38.80	-13.00	25.80
5360.000	V	-26.19	7.40	10.95	-22.64	-13.00	9.64
8047.200	V	-28.16	10.01	12.11	-26.06	-13.00	13.06

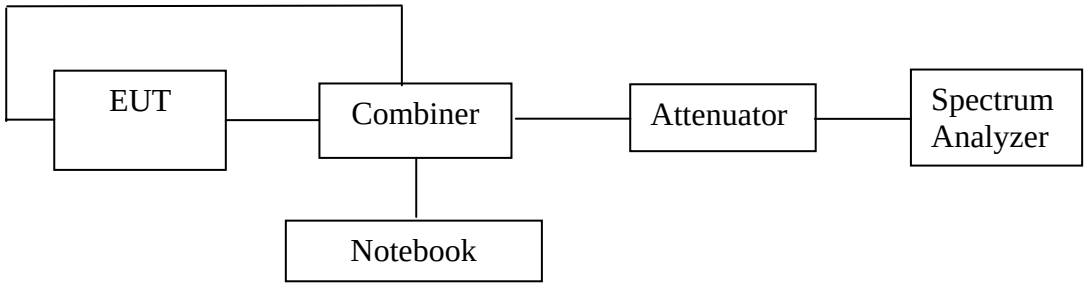
POE model_16QAM 3/4

Frequency (MHz)	Ant.Pol. (H/V)	S.G. reading (dBm)	CL (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel (2508.5 MHz)							
399.974	H	-34.63	2.33	-7.23	-44.19	-13.00	31.19
450.010	H	-28.14	2.50	-7.48	-38.12	-13.00	25.12
500.046	H	-30.44	2.67	-7.73	-40.84	-13.00	27.84
5020.372	V	-27.49	7.21	10.72	-23.98	-13.00	10.98
7527.013	V	-22.05	12.01	11.66	-22.40	-13.00	9.40
Middle Channel (2630.5 MHz)							
399.974	H	-34.39	2.33	-7.23	-43.95	-13.00	30.95
450.010	H	-27.70	2.50	-7.48	-37.68	-13.00	24.68
500.046	H	-31.26	2.67	-7.73	-41.66	-13.00	28.66
5261.000	V	-23.43	7.30	10.88	-19.85	-13.00	6.85
7891.500	V	-29.26	9.80	11.99	-27.07	-13.00	14.07
High Channel (2683.5MHz)							
399.974	H	-34.49	2.33	-7.23	-44.05	-13.00	31.05
450.010	H	-27.77	2.50	-7.48	-37.75	-13.00	24.75
500.046	H	-30.83	2.67	-7.73	-41.23	-13.00	28.23
5360.000	V	-26.19	7.40	10.95	-22.64	-13.00	9.64
8047.200	V	-28.16	10.01	12.11	-26.06	-13.00	13.06

Remake: 1. No more spurious emissions above 9000 MHz for all channel.
2. EIRP= SG Reading –Cable Loss +Gain

4. Occupied Bandwidth 26 dB

4.1. Set up



4.2. Limit

According to 47 CFR Part 2 section § 2.1049 and Part 27, no specific modulation characteristics requirement limits is applicable.

The occupied bandwidth is defined in section § 2.1049: the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. The occupied bandwidth is normally called 99% bandwidth.

According to section § 27.53(l)(6), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. The emission bandwidth is normally called 26 dB bandwidth.

4.3. Test Procedure

1. The transmitter was tested while in a continuous transmit mode.
2. The EUT was tuned to a low, middle, and high channel in both the downlink (base to mobile) and uplink (mobile to base) directions.
3. The resolution bandwidth of the spectrum analyzer was set at 100 kHz.

4.4 Test Results

Ambient temperature : 22 ℃ Relative humidity : 48 %R.H.

AC/DC Adapter mode

Test mode	Channel	Frequency (MHz)	Measured Occupied Bandwidth	
			99%	26dB
16QAM 3/4	Low	2508.5	9.12	9.62
16QAM 3/4	Middle	2630.5	9.12	9.70
16QAM 3/4	High	2683.5	9.12	9.70

POE mode

Test mode	Channel	Frequency (MHz)	Measured Occupied Bandwidth	
			99%	26dB
16QAM 3/4	Low	2508.5	9.12	9.70
16QAM 3/4	Middle	2630.5	9.12	9.70
16QAM 3/4	High	2683.5	9.12	9.70

Please refer to the following plots.

AC/DC Adapter mode_16AQM 3/4

Low Channel

Middle Channel

High Channel

POE mode_16AQM 3/4

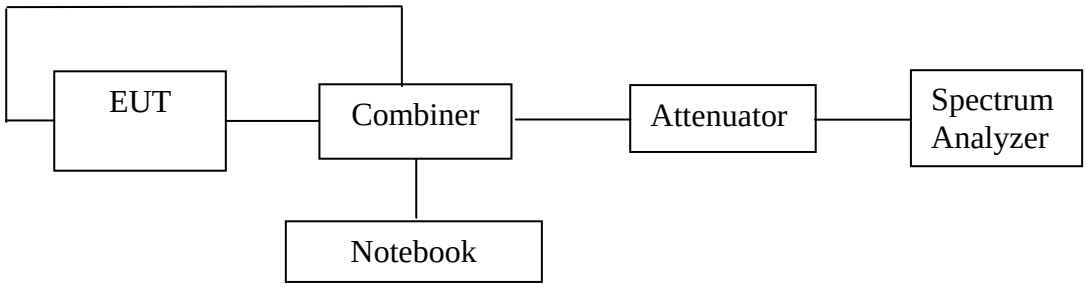
Low Channel

Middle Channel

High Channel

5. Spurious Emissions at Antenna Terminal

5.1. Set up



5.2. Limit

According to 47 CFR Part 2 section § 2.1053 and Part 27 section § 27.53(l)(2) and § 27.53(l)(6), the power of any emissions outside the licensee's frequency bands of operation must be attenuated below the transmitter power (P in watts) by at least 43 +10 log (P) dB. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater.

The limit is calculated to be P (W) - {43 dB + 10 log [P (W)]} = 10 log [1000 P (W)] (dBm) - 43 dB - 10 log [P (W)) = 30 dBm - 43 dB = -13 dBm.

5.3. Test Procedure

1. The transmitter was tested while in a continuous transmit mode.
2. The EUT was tuned to a low, middle, and high channel in the downlink (base to mobile).
3. The resolution bandwidth of the spectrum analyzer was set at 1 MHz.

5.4. Test Results

Ambient temperature : 23 ℃ Relative humidity : 48 %R.H.

Please refer to the following plots.

AC/DC Adapter mode_16AQM 3/4

Low Channel

Middle Channel

High Channel

POE mode_16AQM 3/4

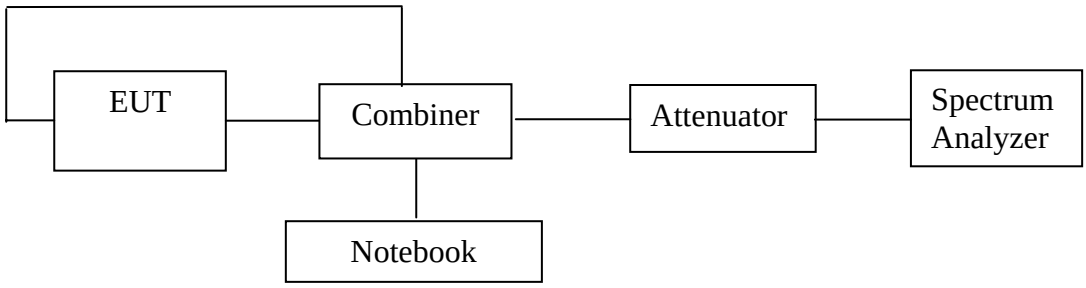
Low Channel

Middle Channel

High Channel

6. Band Edge

6.1. Set up



6.2. Limit

According to 47 CFR Part 2 section § 2.1053 and Part 27 section § 27.53(l)(2) and § 27.53(l)(6), the power of any emissions outside the licensee's frequency bands of operation must be attenuated below the transmitter power (P in watts) by at least 43 +10 log (P) dB. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater.

The limit is calculated to be P (W) - {43 dB + 10 log [P (W)]} = 10 log [1000 P (W)] (dBm) - 43 dB - 10 log [P (W)) = 30 dBm - 43 dB = -13 dBm.

6.3. Test Procedure

1. The transmitter was tested while in a continuous transmit mode.
2. The EUT was tuned to a low, middle, and high channel in both the downlink (base to mobile) and uplink (mobile to base) directions.
3. The resolution bandwidth of the spectrum analyzer was set at 100 kHz.

6.4. Test Results

Ambient temperature : 23 ℃ Relative humidity : 48 %R.H.

Please refer to the following plots.

AC/DC Adapter mode_16AQM 3/4

Low Channel

High Channel

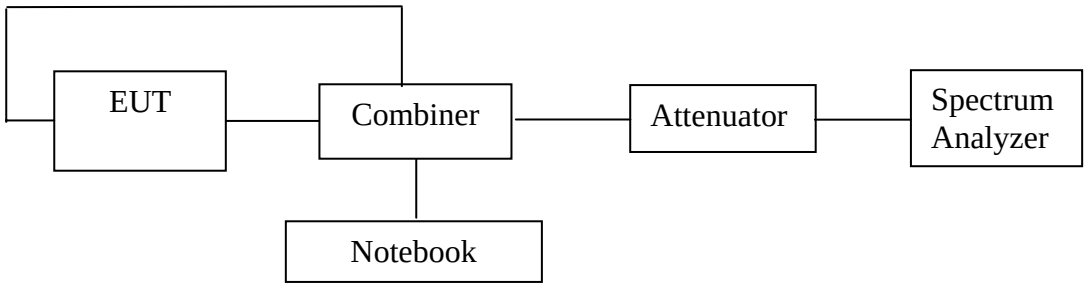
POE mode_16AQM 3/4

Low Channel

High Channel

7. Frequency Stability

7.1. Set up



7.2. Limit

According to 47 CFR Part 2 section § 2.1055 and Part 27 section § 27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

According to WiMAX MRCT, the frequency tolerance is limited to ±2ppm.

7.3. Test Procedure

1. Frequency Stability vs. Temperature: The equipment under test was connected to an external AC power supply and the RF output was connected to a frequency counter via feed-through attenuators.
2. The EUT was placed inside the temperature chamber. The AC leads and RF output cable exited the chamber through an opening made for the purpose.
3. After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the counter.
4. Frequency Stability vs. Voltage: An external variable AC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the AC end point. The output frequency was recorded for each AC.

7.4. Test Results

Ambient temperature : 20 ℃ Relative humidity : 48 %R.H.

Frequency Stability versus Temperature

AC/DC Adapter mode_16 QAM 3/4

Reference Frequency: 2630.5 MHz, Limit: ±2 ppm			
Environment Temperature (℃)	Power Supplied (Vac)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20(Ref.)	120	-364	-0.014
50	120	-571	-0.022
40	120	-510	-0.019
30	120	-396	-0.015
10	120	-352	-0.013
0	120	-458	-0.017
-10	120	-291	-0.011
-20	120	-364	-0.014
-30	120	-481	-0.018

POE mode_16 QAM 3/4

Reference Frequency: 2630.5 MHz, Limit: ±2 ppm			
Environment Temperature (℃)	Power Supplied (Vdc)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20(Ref.)	48	-378	-0.014
50	48	-585	-0.022
40	48	-485	-0.018
30	48	-384	-0.015
10	48	-359	-0.014
0	48	-441	-0.017
-10	48	-312	-0.012
-20	48	-359	-0.014
-30	48	-495	-0.019

Frequency Stability versus AC

AC/DC Adapter mode_16 QAM 3/4

Reference Frequency: 2630.5 MHz, Limit: ±2 ppm			
Power Supplied (Vac)	**Environment Temperature (℃)**	**Frequency Error (Hz)**	**ppm**
102	20	-374	-0.014
138	20	-388	-0.015

POE mode_16 QAM 3/4

Reference Frequency: 2630.5 MHz, Limit: ±2 ppm			
Power Supplied (Vdc)	**Environment Temperature (℃)**	**Frequency Error (Hz)**	**ppm**
40.8	20	-383	-0.015
55.2	20	-389	-0.015

8. 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)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

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

8.1 Friis transmission formula : Pd = (Pout*G)/(4*pi*R^2)

Where
Pd = power density in mW/cm^2
Pout = 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
Pd the limit of MPE, 1 mW/cm^2. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

8.2 Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data
Test Mode : Normal Operation

8.2.1 Output Power into Antenna & RF Exposure Evaluation Distance

Antenna: 1.5 dBi(Dipole Antenna)

AC/DC Adapter mode_16 QAM 3/4

Channel	Frequency (MHz)	Peak output power (dBm)	Antenna gain (dBi)	Power density at 20cm (mW/cm^2)	Limit (mW/cm^2)
Low	2508.5	20.10	1.5	0.02133	1
Middle	2630.5	19.73	1.5	0.01959	
High	2683.5	19.56	1.5	0.01883	

POE mode_16 QAM 3/4

Channel	Frequency (MHz)	Peak output power (dBm)	Antenna gain (dBi)	Power density at 20cm (mW/cm^2)	Limit (mW/cm^2)
Low	2508.5	19.84	1.5	0.02009	1
Middle	2630.5	19.68	1.5	0.01936	
High	2683.5	19.45	1.5	0.01836	