



3.2.8 TEST RESULTS (Above 1000 MHz)

U-NII-1 5150-5250MHz

U-NII 1										
Frequency (MHz)	Reading (dBuV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission Level (dBμV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (802.11n20/ 5180 MHz)										
3246.41	44.58	44.70	6.70	28.20	-9.80	34.78	68.20	-33.42	Pk	Vertical
3246.41	41.65	44.70	6.70	28.20	-9.80	31.85	54.00	-22.15	AV	Vertical
3256.02	44.85	44.70	6.70	28.20	-9.80	35.05	68.20	-33.15	Pk	Horizontal
3256.02	41.30	44.70	6.70	28.20	-9.80	31.50	54.00	-22.50	AV	Horizontal
3999.32	39.32	44.20	7.90	29.70	-6.60	32.72	74.00	-41.28	Pk	Vertical
3999.32	35.95	44.20	7.90	29.70	-6.60	29.35	54.00	-24.65	AV	Vertical
3993.14	39.97	44.20	7.90	29.70	-6.60	33.37	74.00	-40.63	Pk	Horizontal
3993.14	36.79	44.20	7.90	29.70	-6.60	30.19	54.00	-23.81	AV	Horizontal
7226.79	36.71	43.50	11.40	35.50	3.40	40.11	68.20	-28.09	Pk	Vertical
7226.79	34.14	43.50	11.40	35.50	3.40	37.54	54.00	-16.46	AV	Vertical
7222.93	37.67	43.50	11.40	35.50	3.40	41.07	68.20	-27.13	Pk	Horizontal
7222.93	33.79	43.50	11.40	35.50	3.40	37.19	54.00	-16.81	AV	Horizontal
10360.40	38.96	44.50	13.80	38.80	8.10	47.06	68.20	-21.14	Pk	Vertical
10360.40	37.08	44.50	13.80	38.80	8.10	45.18	54.00	-8.82	AV	Vertical
10360.28	40.16	44.50	13.80	38.80	8.10	48.26	68.20	-19.94	Pk	Horizontal
10360.28	36.83	44.50	13.80	38.80	8.10	44.93	54.00	-9.07	AV	Horizontal
11028.47	33.59	43.60	14.30	39.50	10.20	43.79	74.00	-30.21	Pk	Vertical
11028.47	30.60	43.60	14.30	39.50	10.20	40.80	54.00	-13.20	AV	Vertical
11017.40	33.46	43.60	14.30	39.50	10.20	43.66	74.00	-30.34	Pk	Horizontal
11017.40	31.12	43.60	14.30	39.50	10.20	41.32	54.00	-12.68	AV	Horizontal
13283.64	32.46	42.60	15.90	38.90	12.20	44.66	74.00	-29.34	Pk	Vertical
13283.64	29.36	42.60	15.90	38.90	12.20	41.56	54.00	-12.44	AV	Vertical
13292.39	32.35	42.60	15.90	38.90	12.20	44.55	74.00	-29.45	Pk	Horizontal
13292.39	29.84	42.60	15.90	38.90	12.20	42.04	54.00	-11.96	AV	Horizontal
Mid Channel (802.11n20/ 5200 MHz)										
3255.89	44.65	44.70	6.70	28.20	-9.80	34.85	68.20	-33.35	Pk	Vertical
3255.89	40.92	44.70	6.70	28.20	-9.80	31.12	54.00	-22.88	AV	Vertical
3245.86	44.93	44.70	6.70	28.20	-9.80	35.13	68.20	-33.07	Pk	Horizontal
3245.86	41.31	44.70	6.70	28.20	-9.80	31.51	54.00	-22.49	AV	Horizontal
3984.81	39.70	44.20	7.90	29.70	-6.60	33.10	74.00	-40.90	Pk	Vertical
3984.81	35.78	44.20	7.90	29.70	-6.60	29.18	54.00	-24.82	AV	Vertical
3980.61	39.35	44.20	7.90	29.70	-6.60	32.75	74.00	-41.25	Pk	Horizontal
3980.61	36.47	44.20	7.90	29.70	-6.60	29.87	54.00	-24.13	AV	Horizontal
7227.96	36.51	43.50	11.40	35.50	3.40	39.91	68.20	-28.29	Pk	Vertical
7227.96	34.48	43.50	11.40	35.50	3.40	37.88	54.00	-16.12	AV	Vertical
7217.59	37.13	43.50	11.40	35.50	3.40	40.53	68.20	-27.67	Pk	Horizontal
7217.59	34.90	43.50	11.40	35.50	3.40	38.30	54.00	-15.70	AV	Horizontal
10400.35	39.25	44.50	13.80	38.80	8.10	47.35	68.20	-20.85	Pk	Vertical
10400.35	36.37	44.50	13.80	38.80	8.10	44.47	54.00	-9.53	AV	Vertical
10399.96	39.08	44.50	13.80	38.80	8.10	47.18	68.20	-21.02	Pk	Horizontal
10399.96	37.07	44.50	13.80	38.80	8.10	45.17	54.00	-8.83	AV	Horizontal
11020.80	33.88	43.60	14.30	39.50	10.20	44.08	74.00	-29.92	Pk	Vertical
11020.80	31.08	43.60	14.30	39.50	10.20	41.28	54.00	-12.72	AV	Vertical
11016.99	34.17	43.60	14.30	39.50	10.20	44.37	74.00	-29.63	Pk	Horizontal
11016.99	29.69	43.60	14.30	39.50	10.20	39.89	54.00	-14.11	AV	Horizontal
13284.94	31.59	42.60	15.90	38.90	12.20	43.79	74.00	-30.21	Pk	Vertical
13284.94	29.02	42.60	15.90	38.90	12.20	41.22	54.00	-12.78	AV	Vertical
13281.96	31.56	42.60	15.90	38.90	12.20	43.76	74.00	-30.24	Pk	Horizontal
13281.96	29.93	42.60	15.90	38.90	12.20	42.13	54.00	-11.87	AV	Horizontal



High Channel (802.11n20/ 5240 MHz)										
3254.64	44.12	44.70	6.70	28.20	-9.80	34.32	68.20	-33.88	Pk	Vertical
3254.64	42.14	44.70	6.70	28.20	-9.80	32.34	54.00	-21.66	AV	Vertical
3253.48	45.16	44.70	6.70	28.20	-9.80	35.36	68.20	-32.84	Pk	Horizontal
3253.48	42.03	44.70	6.70	28.20	-9.80	32.23	54.00	-21.77	AV	Horizontal
3993.46	40.12	44.20	7.90	29.70	-6.60	33.52	74.00	-40.48	Pk	Vertical
3993.46	37.06	44.20	7.90	29.70	-6.60	30.46	54.00	-23.54	AV	Vertical
3988.10	38.94	44.20	7.90	29.70	-6.60	32.34	74.00	-41.66	Pk	Horizontal
3988.10	35.88	44.20	7.90	29.70	-6.60	29.28	54.00	-24.72	AV	Horizontal
7217.02	37.12	43.50	11.40	35.50	3.40	40.52	68.20	-27.68	Pk	Vertical
7217.02	34.15	43.50	11.40	35.50	3.40	37.55	54.00	-16.45	AV	Vertical
7216.71	37.24	43.50	11.40	35.50	3.40	40.64	68.20	-27.56	Pk	Horizontal
7216.71	34.50	43.50	11.40	35.50	3.40	37.90	54.00	-16.10	AV	Horizontal
10479.95	40.19	44.50	13.80	38.80	8.10	48.29	68.20	-19.91	Pk	Vertical
10479.95	35.85	44.50	13.80	38.80	8.10	43.95	54.00	-10.05	AV	Vertical
10480.10	40.12	44.50	13.80	38.80	8.10	48.22	68.20	-19.98	Pk	Horizontal
10480.10	35.73	44.50	13.80	38.80	8.10	43.83	54.00	-10.17	AV	Horizontal
11034.39	34.02	43.60	14.30	39.50	10.20	44.22	74.00	-29.78	Pk	Vertical
11034.39	30.41	43.60	14.30	39.50	10.20	40.61	54.00	-13.39	AV	Vertical
11017.78	33.67	43.60	14.30	39.50	10.20	43.87	74.00	-30.13	Pk	Horizontal
11017.78	30.36	43.60	14.30	39.50	10.20	40.56	54.00	-13.44	AV	Horizontal
13284.28	31.93	42.60	15.90	38.90	12.20	44.13	74.00	-29.87	Pk	Vertical
13284.28	29.43	42.60	15.90	38.90	12.20	41.63	54.00	-12.37	AV	Vertical
13282.87	32.79	42.60	15.90	38.90	12.20	44.99	74.00	-29.01	Pk	Horizontal
13282.87	29.28	42.60	15.90	38.90	12.20	41.48	54.00	-12.52	AV	Horizontal

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. All modes have been measurement, only worst mode was reported.
3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.



3.2.9 TEST RESULTS (Band edge Requirements)

U-NII 1(5.15-5.25) GHz										
Frequency	Meter Reading	Amplifier	Loss	Antenna Factor	Orrected Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	(dB)	(dB)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
802.11n BW20MHz										
5150	40.17	44.20	8.98	31.60	-3.62	36.55	74	-37.45	Peak	Vertical
5150	29.40	44.20	8.98	31.60	-3.62	25.78	54	-28.22	AVG	Vertical
5150	39.82	44.20	8.98	31.60	-3.62	36.20	74	-37.80	Peak	Horizontal
5150	28.90	44.20	8.98	31.60	-3.62	25.28	54	-28.72	AVG	Horizontal
5250	46.37	44.20	9.35	31.60	-3.25	43.12	74	-30.88	Peak	Vertical
5250	31.62	44.20	9.35	31.60	-3.25	28.37	54	-25.63	AVG	Vertical
5250	38.11	44.20	9.35	31.60	-3.25	34.86	74	-39.14	Peak	Horizontal
5250	31.20	44.20	9.35	31.60	-3.25	27.95	54	-26.05	AVG	Horizontal
802.11n BW40MHz										
5150	40.45	44.20	8.98	31.60	-3.62	36.83	74	-37.17	Peak	Vertical
5150	29.46	44.20	8.98	31.60	-3.62	25.84	54	-28.16	AVG	Vertical
5150	41.17	44.20	8.98	31.60	-3.62	37.55	74	-36.45	Peak	Horizontal
5150	31.46	44.20	8.98	31.60	-3.62	27.84	54	-26.16	AVG	Horizontal
5250	43.82	44.20	9.35	31.60	-3.25	40.57	74	-33.43	Peak	Vertical
5250	31.56	44.20	9.35	31.60	-3.25	28.31	54	-25.69	AVG	Vertical
5250	40.38	44.20	9.35	31.60	-3.25	37.13	74	-36.87	Peak	Horizontal
5250	29.26	44.20	9.35	31.60	-3.25	26.01	54	-27.99	AVG	Horizontal
802.11ac BW80MHz										
5150	38.87	44.20	8.98	31.60	-3.62	35.25	74	-38.75	Peak	Vertical
5150	31.20	44.20	8.98	31.60	-3.62	27.58	54	-26.42	AVG	Vertical
5150	38.72	44.20	8.98	31.60	-3.62	35.10	74	-38.90	Peak	Horizontal
5150	27.88	44.20	8.98	31.60	-3.62	24.26	54	-29.74	AVG	Horizontal
5250	43.97	44.20	9.35	31.60	-3.25	40.72	74	-33.28	Peak	Vertical
5250	28.56	44.20	9.35	31.60	-3.25	25.31	54	-28.69	AVG	Vertical
5250	38.43	44.20	9.35	31.60	-3.25	35.18	74	-38.82	Peak	Horizontal
5250	29.08	44.20	9.35	31.60	-3.25	25.83	54	-28.17	AVG	Horizontal



4. POWER SPECTRAL DENSITY TEST

4.1 LIMIT

1. For mobile and portable client devices in the 5.15-5.25 GHz band, , the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
3. For the band 5.725-5.850 GHz, the peak power spectral density shall not exceed 30 dBm in any 500KHz band. If transmitting antenna directional gain is greater than 6 dBi, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.2 TEST PROCEDURE

1. The setting follows Method SA-1 of FCC KDB 789033 D02 General U-NII Test Procedures New Rules v02r01.

For devices operating in the band, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (*i.e.*, 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

- a) Set $RBW \geq 1/T$, where T is defined in section II.B.I.a).
- b) Set $VBW \geq 3$ RBW.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10 \log (500\text{kHz}/RBW)$ to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add $10 \log (1\text{MHz}/RBW)$ to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the sections 5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

4.3 DEVIATION FROM STANDARD

No deviation.

4.4 TEST SETUP



4.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

4.6 TEST RESULTS

Note: The test data please reference to attachment “STS2506034W03_Appendix 5G WIFI”.

5. BANDWIDTH MEASUREMENT

5.1 EMISSION BANDWIDTH (EBW) 26 BANDWID PROCEDURES / LIMIT

The following procedure shall be used for measuring 26 bandwidth

5.1.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW $\geq$ RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.5 TEST RESULTS

Note: The test data please reference to attachment "STS2506034W03_Appendix 5G WIFI".

5.2 OCCUPIED BANDWIDTH (99%) TEST APPLIED PROCEDURES / LIMIT

The following procedure shall be used for measuring (99 %) power bandwidth.

5.2.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures v02r01.

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW $\geq 3 \cdot$ RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

5.2.2 DEVIATION FROM STANDARD

No deviation.

5.2.3 TEST SETUP



5.2.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.2.5 TEST RESULTS

Note: The test data please reference to attachment "STS2506034W03_Appendix 5G WIFI".

5.3 MINIMUM EMISSION BANDWIDTH(6 DB) PROCEDURES / LIMIT

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.725-5.85 GHz. The following procedure shall be used for measuring this bandwidth.

5.3.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures v02r01.
 - a) Set RBW = 100 kHz.
 - b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
 - c) Detector = Peak.
 - d) Trace mode = max hold.
 - e) Sweep = auto couple.
 - f) Allow the trace to stabilize.
 - g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.3.2 DEVIATION FROM STANDARD

No deviation.

5.3.3 TEST SETUP



5.3.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.3.5 TEST RESULTS

Note: The test data please reference to attachment "STS2506034W03_Appendix 5G WIFI".

6. MAXIMUM CONDUCTED OUTPUT POWER

6.1 LIMIT

For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz, If transmitting antennas of directional gain greater than 6 dBi are used.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used.

FCC Part15 (15.407) , Subpart E				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.407(a) (1) (iv)	Max Output Power	0.25 watt	5150-5250	PASS
		The lesser of 250 mW or 11 dBm + 10 log (26 dB emission bandwidth)	5250-5350 5470-5725	
15.407(a) (3)		1 watt	5725-5895	

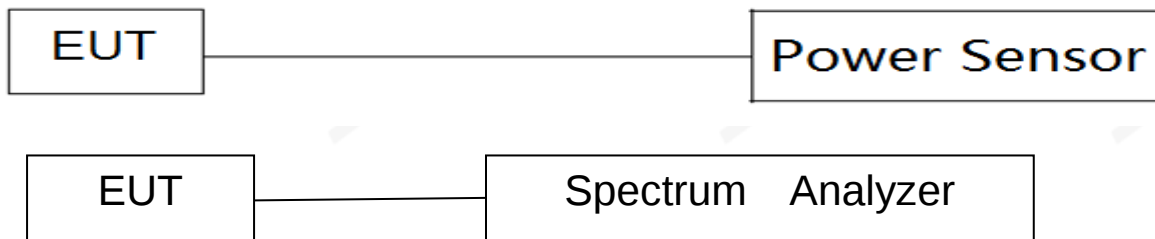
6.2 TEST PROCEDURE

The EUT was directly connected to the Power Sensor&PC

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 5 Unless otherwise a special operating condition is specified in the follows during the testing.

6.6 TEST RESULTS

Note: The test data please reference to attachment “STS2506034W03_Appendix 5G WIFI”.

7. CONDUCTED BANDEDGE

7.1 LIMIT

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band:
 - (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

7.2 TEST PROCEDURE

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak
RB / VB (emission in restricted band)	1 MHz / 3 MHz
Offset	Ant Gain+Test system loss

7.3 TEST SETUP



7.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.5 TEST RESULTS

Note: The test data please reference to attachment "STS2506034W03_Appendix 5G WIFI".



8. AUTOMATICALLY DISCONTINUE TRANSMISSION

8.1 LIMIT OF AUTOMATICALLY DISCONTINUE TRANSMISSION

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

8.2 TEST RESULT OF AUTOMATICALLY DISCONTINUE TRANSMISSION

During no any information transmission, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission



9. ANTENNA REQUIREMENT

9.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

9.2 EUT ANTENNA

The EUT antenna is PIFA Antenna. It comply with the standard requirement.



APPENDIX - PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

*****END OF THE REPORT*****