

**FCC PART 15, SUBPART B and C; RSS-210 and RSS-GEN
TEST REPORT***for***SENSOR****MODEL: ACS810**

Prepared for

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DATE: SEPTEMBER 6, 2019

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GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the federal government.

Device Tested: Sensor
 Model: ACS810
 S/N: N/A

Product Description: See Expository Statement.

Modifications: The EUT was not modified during the testing.

Customer: Targus
 1211 N. Miller St.
 Anaheim, CA 92806

Test Dates: August 26-30, September 4, 2019

Test Specifications covered by accreditation:

Emissions requirements
FCC Standard: CFR Title 47, Part 15, Subpart B and Subpart C
ISED Standard: RSS-210, Issue 10 and RSS-GEN, Issue 5



Test Procedure: ANSI C63.4:2014, ANSI C63.10: 2013

Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Spurious Radiated RF Emissions, 9 kHz – 25000 MHz (Transmitter and Digital portion)	Complies with the Class A and Class B limits of CFR Title 47, Part 15 Subpart B; the limits of CFR Title 47, Part 15, Subpart C, section 15.205, 15.209 and 15.225; RSS-210 clause B.6 and RSS-GEN Highest reading in relation to spec limit: 45.19 (QP) dBuV/m @ 352.60 MHz (*U = 3.19 dB)
2	Temperature Testing, -20°C - 50°C (AC mode and Battery)	Complies with the limits of FCC 15.225 and RSS-210.
3	Conducted RF Emissions, 150 kHz – 30 MHz	The EUT complies with the Class B limits of CFR Title 47, Part 15 Subpart B; the limits of CFR Title 47, Part 15, Subpart C, section 15.207; and RSS-GEN Highest reading in relation to spec limit: 33.15 (Avg) dBuV/m @ 0.190 MHz (*U = 2.72 dB)

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the Sensor, Model: ACS810. The emissions measurements were performed according to the measurement procedure described in ANSI C63.4 and ANSI C63.10. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.225; RSS-210 and RSS-GEN.



2. ADMINISTRATIVE DATA

2.1 Location of Testing

The emissions tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823 and 20621 Pascal Way Lake Forest, California 92630.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

Targus

Super Tan

Senior Quality Engineering Manager

Compatible Electronics Inc.

Kyle Fujimoto

Test Engineer

James Ross

Test Engineer

2.4 Date Test Sample was Received

The test sample was received prior to the initial test date.

2.5 Disposition of the Test Sample

The test sample has not been returned to Targus as of the date of this test report.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
N/A	Not Applicable
BLE	Bluetooth Low Energy
USB	Universal Serial Bus

3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this emissions Test Report.

SPEC	TITLE
FCC Title 47, Part 15 Subpart C	FCC Rules - Radio frequency devices (including digital devices) – Intentional Radiators
FCC Title 47, Part 15 Subpart B	FCC Rules - Radio frequency devices (including digital devices) – Unintentional Radiators
ANSI C63.4 2014	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz
ANSI C63.10 2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
EN 50147-2 1997	Anechoic chambers, Alternative test site suitability with respect to site attenuation
RSS-210 Issue 10: 2017	Licence-Exempt Radio Apparatus: Category I Equipment
RSS Gen Issue 5: 2018 + Amendment 1: 2019	General Requirements for Compliance of Radio Apparatus

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration

AC Mode: The Sensor, Model: ACS810 (EUT) was connected to and powered via a 5V USB AC adapter via its micro-USB connector. The EUT was investigated in all three orthogonal axes. The EUT was continuously transmitting at both 13.56 MHz and in BLE.

Battery Mode: The Sensor, Model: ACS810 (EUT) was tested as a stand-alone unit and powered by two AA batteries. The EUT was investigated in all three orthogonal axes. The EUT was continuously transmitting at both 13.56 MHz and in BLE.

When being programmed, the EUT was also connected to a laptop. The laptop was also connected to an AC Adapter. The programming allowed the EUT to operate in BLE. The laptop was removed prior to the testing.

The firmware is stored in one of the network drives in the company's server.

The amplitude of the fundamental for both the BLE and 13.56 MHz transmitter did not change when both radios were simultaneously transmitting. Also, there were no additional emissions detected.

The final radiated data was taken for the EUT in both configurations described above. The final conducted data was taken in the AC Mode described above. Please see Appendix E for the data sheets.

4.1.1 Cable Construction and Termination

Cable 1

(AC Power Mode Only)

This is a 1.5-meter braid-shielded cable powering and connecting the EUT to the AC adapter. It has a micro USB connector at the Sensor end and has a USB type 'A' connection to the AC adapter end. The cable was bundled to a length of 1-meter. The shield of the cable was grounded to the chassis via the connectors.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT**5.1 EUT and Accessory List**

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
SENSOR (EUT)	TARGUS	ACS810	N/A	OXM000103
SWITCHING ADAPTER (100-240V 50/60 Hz)	SHENZHEN HONOR ELECTRONIC CO., LTD	ADS-12BA-06B	05075G	N/A
LAPTOP*	LENOVO	T430	101-2037	N/A
AC ADAPTER (LAPTOP)*	LENOVO	ADLX65YCC2 A	N/A	N/A
UENERGYTESTAPP**	CSR	2.4.3	N/A	N/A

*Used to program the EUT only, then was removed from the test setup

**Used to program the EUT to transmit BLE

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. CYCLE
RADIATED AND CONDUCTED EMISSIONS TEST EQUIPMENT					
TDK TestLab	TDK RF Solutions, Inc.	9.22	700145	N/A	N/A
Computer	Hewlett Packard	p6716f	MXX1030PX0	N/A	N/A
LCD Monitor	Hewlett Packard	52031a	3CQ046N3MG	N/A	N/A
EMI Receiver, 20 Hz – 26.5 GHz	Keysight Technologies	N9038A	MY5120150	August 23, 2019	1 Year
CombiLog Antenna	Com-Power	AC-220	061093	June 5, 2019	2 Year
System Controller	Sunol Sciences Corporation	SC110V	112213-1	N/A	N/A
Turntable	Sunol Sciences Corporation	2011VS	N/A	N/A	N/A
Antenna-Mast	Sunol Sciences Corporation	TWR95-4	112213-3	N/A	N/A
Turntable	Com-Power	TT-100	N/A	N/A	N/A
Antenna-Mast	Com-Power	AM-100	N/A	N/A	N/A
Horn Antenna	Com-Power	AH-118	071175	February 22, 2018	2 Year
Preamplifier	Com-Power	PA-118	181653	January 25, 2019	1 Year
Preamplifier	Com-Power	PA-840	711013	May 10, 2018	2 Year
Horn Antenna	Com-Power	AH-826	71957	N/A	N/A
Loop Antenna	Com-Power	AL-130R	121090	February 5, 2019	2 Year
LISN (EUT)	Com-Power	LI-215A	191951	August 7, 2019	1 Year
LISN (ACC)	Com-Power	LI-215A	191952	August 7, 2019	1 Year
Attenuator 10 dB	SureCall	SC-ATT-10	17100025	November 27, 2018	1 Year

Emissions Test Equipment (continued)

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. CYCLE
FREQUENCY TOLERANCE OF CARRIER SIGNAL TEST EQUIPMENT					
Temperature Chamber	Despatch Industries, Inc.	16212A	149857	March 22, 2019	2 Year
Digital Multimeter	Fluke	115	Asset #: 4168	September 20, 2018	1 Year
Variable Autotransformer	Superior Electric Company	Type: 11560	Spec. BP142056	N/A	N/A
EMI Receiver	Keysight Technolgies	N9038A	MY55330012	February 5, 2019	1 Year

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 of this report for emissions test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.

7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1 RF Emissions

7.1.1 Conducted Emissions Test

The EMI Receiver was used as a measuring meter. A 10 dB attenuator was used for the protection of the EMI Receiver input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the EMI Receiver. The output of a second LISN was terminated by a 50-ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding, and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by computer software. The final qualification data is located in Appendix E.

Test Results:

The EUT complies with the limits of CFR Title 47, Part 15, section 15.207; the **Class B** limits of CFR Title 47, Part 15, Subpart B; and RSS-GEN for conducted emissions.

7.1.2 Radiated Emissions (Spurious and Harmonics) Test – Lab A

The EMI Receiver was used as a measuring meter. The measurement meter was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the measurement meter records the highest measured reading over all the sweeps. The following antenna and measurement bandwidths were used as specified in the following table.

The resolution bandwidths and transducers used for this test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 kHz to 150 kHz	200 Hz	Loop Antenna
150 kHz to 30 MHz	9 kHz	Loop Antenna

An open field, non-ground plane test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4. Please see section 6.2 of this report for mounting, bonding, and grounding of the EUT. The portable turntable supporting the EUT is remote controlled using a motor. The portable turntable permits EUT rotation of 360 degrees in order to maximize emissions. Data was collected in the worst case (highest emission) configuration of the EUT. At the transmit frequency band, the antenna height was 1 meter; the EUT was rotated 360 degrees; and the antenna was positioned in three orthogonal positions and the position with the highest emission level was recorded (for H field radiated field strength).

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. The EUT was tested at a 10-meter test distance to obtain final test data. The final qualification data is located in Appendix E.

The corrected spec limit at 10 meters is based on the following formula: $[(40) \text{Log} (\text{spec test distance} / \text{actual test distance})] + \text{spec limit}$. This is based on by using the square of an inverse linear distance extrapolation factor of 40 dB/decade per FCC 15.31 (f)(2).

The final qualification data sheets are located in Appendix E.

The e-field factor is derived from the magnetic field factor plus 51.5, which is the characteristic impedance of the medium. Please see Appendix D for a table of magnetic and electric field factors.

Test Results:

The EUT complies with the limits of CFR Title 47, Part 15, Subpart C, Sections 15.209 and 15.225; the limits of RSS-210 clause B.6; and RSS-GEN for radiated emissions. Please see Appendix E for the data sheets.

7.1.3 Radiated Emissions (Spurious and Harmonics) Test – Lab D

The EMI Receiver was used as the measuring meter. A built-in, internal preamplifier was used to increase the sensitivity of the instrument. The EMI Receiver was initially used with the Analyzer mode feature activated. In this mode, the EMI receiver can then record the actual frequency to be measured. This final reading is then taken accurately in the EMI Receiver mode, which takes into account the cable loss, amplifier gain and antenna factors, so that a true reading is compared to the true limit. The effective measurement bandwidth used for the radiated emissions test was according to the frequency measured (200 Hz for 9 kHz to 150 kHz, 9 kHz for 150 kHz to 30 MHz, 120 kHz for 30 MHz to 1 GHz and 1 MHz for 1 GHz to 25 GHz).

The frequencies above 1 GHz were averaged using the RMS detector function on the EMI Receiver.

The EMI test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is in full compliance with ANSI C63.4. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results.

The EUT was tested at a 3-meter test distance. The six highest emissions are listed in Table 1.0.

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 kHz to 150 kHz	200 Hz	Loop Antenna
150 kHz to 30 MHz	9 kHz	Loop Antenna
30 MHz to 1 GHz	120 kHz	CombiLog Antenna
1 GHz to 25 GHz	1 MHz	Horn Antenna

Test Results:

The EUT complies with the **Class B** limits of **CFR** Title 47, Part 15, Subpart B; Subpart C sections 15.205, 15.209 and 15.225; and the limits of RSS-GEN and RSS-210 clause B.6 for radiated emissions.

7.1.4 RF Emissions Test ResultsTable 1.0 RADIATED EMISSION RESULTS
Sensor, Model: ACS810
AC Mode

Frequency MHz	Corrected Reading* dBuV/m	Specification Limit dBuV/m	Delta (Cor. Reading – Spec. Limit) dB
352.60 (H)	45.19 (QP)	46.00	-0.81
379.70 (H)	42.79 (QP)	46.00	-3.21
162.70 (V)	38.55 (QP)	43.50	-4.95
135.60 (H)	34.46 (QP)	43.50	-9.04
138.80 (H)	32.77 (QP)	43.50	-10.73
130.80 (V)	32.72 (QP)	43.50	-10.78

Table 2.0 RADIATED EMISSION RESULTS
Sensor, Model: ACS810
Battery Mode

Frequency MHz	Corrected Reading* dBuV/m	Specification Limit dBuV/m	Delta (Cor. Reading – Spec. Limit) dB
31.30 (H)	24.40 (QP)	40.00	-15.60
32.60 (H)	24.19 (QP)	40.00	-15.81
34.10 (H)	24.06 (QP)	40.00	-15.94
35.20 (H)	23.32 (QP)	40.00	-16.68
38.70 (H)	22.66 (QP)	40.00	-17.34
161.60 (H)	25.87 (QP)	43.50	-17.63

Table 3.0 CONDUCTED EMISSION RESULTS
Sensor, Model: ACS810

Frequency MHz	Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
0.190 (BL)	33.15 (Avg)	53.40	-20.25
0.178 (BL)	33.57 (Avg)	53.88	-20.32
0.222 (BL)	31.87 (Avg)	52.25	-20.38
0.206 (BL)	32.15 (Avg)	52.80	-20.65
0.174 (WL)	26.65 (Avg)	54.61	-27.97
0.158 (WL)	26.55 (Avg)	54.61	-28.07

Notes:

(H) Horizontal
(V) Vertical
(BL) Black Lead
(WL) White Lead
(QP) Quasi Peak
(Avg) Average

* The complete emissions data is given in Appendix E of this report.

7.2 Frequency Tolerance of Carrier Signal

The EUT was placed in a temperature chamber and set to +50 degrees Celsius. The EUT was exposed to this temperature for a period of 10 minutes. The temperature was subsequently decreased at 10 degree increments down to -20 degrees Celsius with a 30 minute acclimation period between each temperature. At each temperature, the EUT's fundamental emission was measured with an EMI Receiver to determine whether the carrier signal was within 0.01% of the fundamental frequency at startup, 2 minutes, 5 minutes, and 10 minutes after removal from the temperature chamber.

Also, at +20 degrees Celsius, the EUT's input voltage was varied between 85% and 115% using a variable auto transformer and the fundamental of the EUT was measured with an EMI Receiver to determine whether the carrier signal was within 0.01% of the fundamental frequency.

A data sheet of the Frequency Tolerance testing is located in Appendix E.

Test Results:

The EUT complies with the requirements of FCC Title 47, Part 15, Subpart, C, section 15.225 [e]; RSS-GEN and RSS-210 Clause B.6. Please see Appendix E for the data sheets.

8. CONCLUSIONS

The Sensor, Model: ACS810, as tested, meets all of the specification limits defined in FCC Title 47, Part 15, Subpart B and Subpart C, sections 15.205, 15.209, and 15.225; RSS-GEN and RSS-210.



APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Newbury Park Division
1050 Lawrence Drive
Newbury Park, CA 91320
(805) 480-4044

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

LABORATORY ACCREDITATIONS AND RECOGNITIONS



NVLAP LAB CODE 200528-0

Quote from ISO-ILAC-IAF Communiqué on 17025:

"A laboratory's fulfilment of the requirements of ISO/IEC 17025:2005 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations. The management system requirements in ISO/IEC 17025:2005 (Section 4) are written in language relevant to laboratory operations and meet the principles of ISO 9001:2008 Quality Management Systems — Requirements."

For US, Canada, Australia/New Zealand, Japan, Taiwan, Korea, and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025. **For the most up-to-date version of our scopes and certificates please visit <http://celectronics.com/quality/scope/>**





APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Subpart B, FCC 15.225, RSS-GEN, and RSS-210 specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modifications were made to the EUT during the testing.



APPENDIX C

ADDITIONAL MODELS

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Sensor
Model: ACS810
S/N: N/A

ADDITIONAL MODELS COVERED UNDER THIS REPORT:

There were no additional models covered under this report.

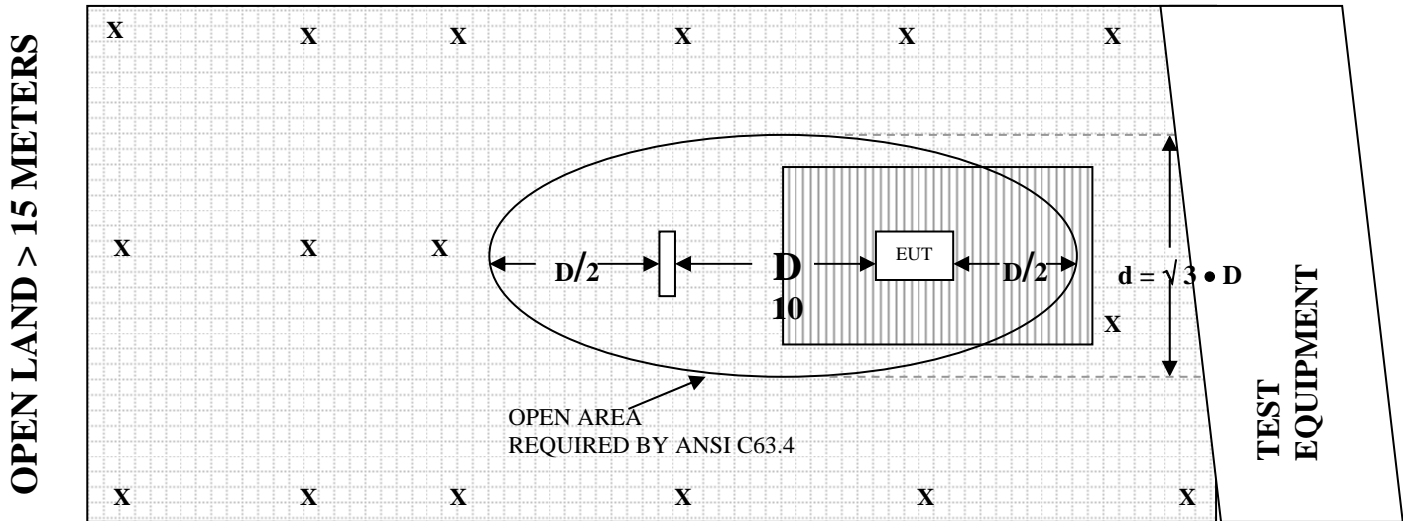


APPENDIX D

DIAGRAMS AND CHARTS

FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED SITE

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

- | | | | |
|----------|--------------------------|--|-----------------|
| X | = GROUND RODS | | = GROUND SCREEN |
| D | = TEST DISTANCE (meters) | | = WOOD COVER |

FIGURE 2: LAYOUT OF THE SEMI-ANECHOIC TEST CHAMBER

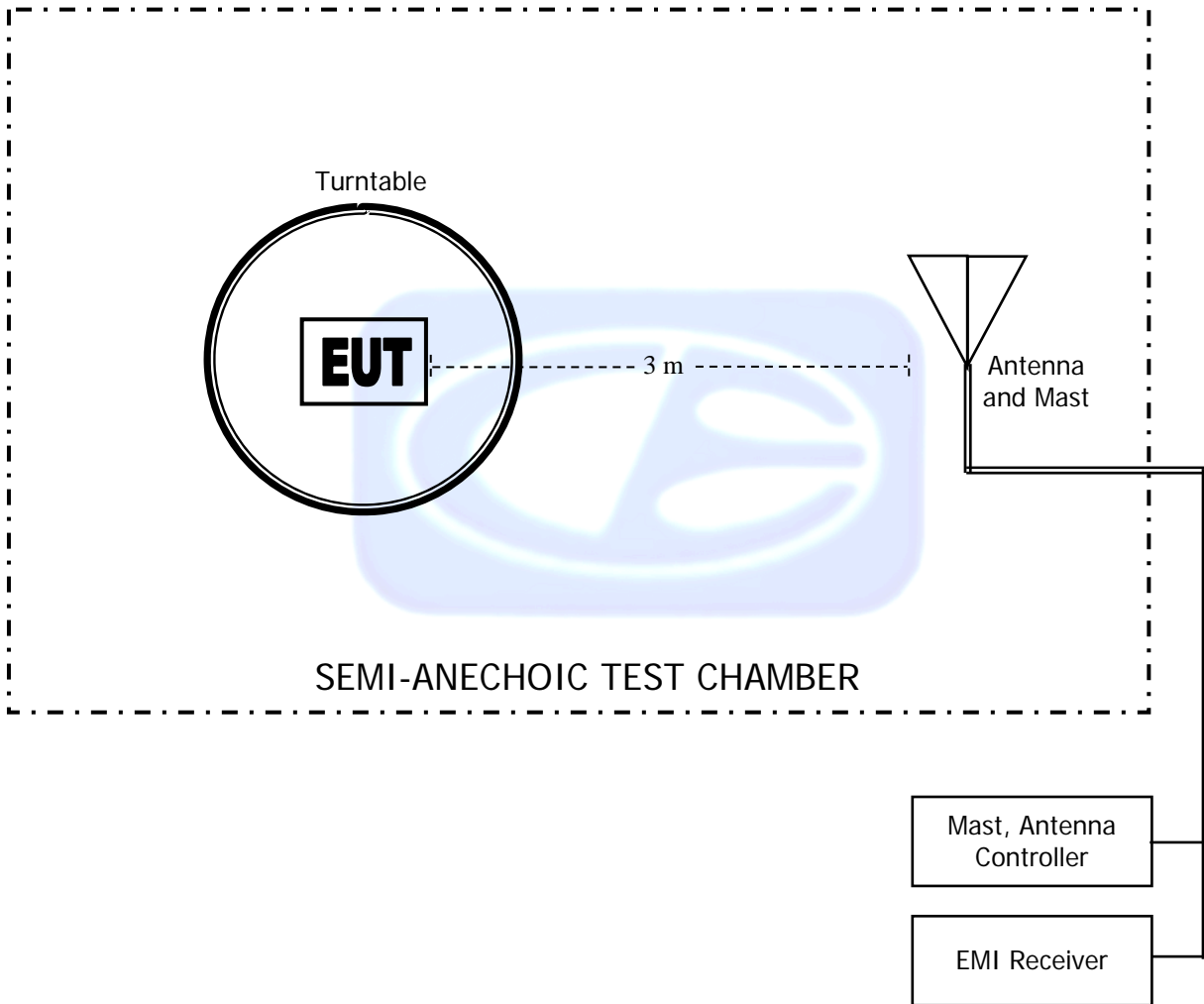
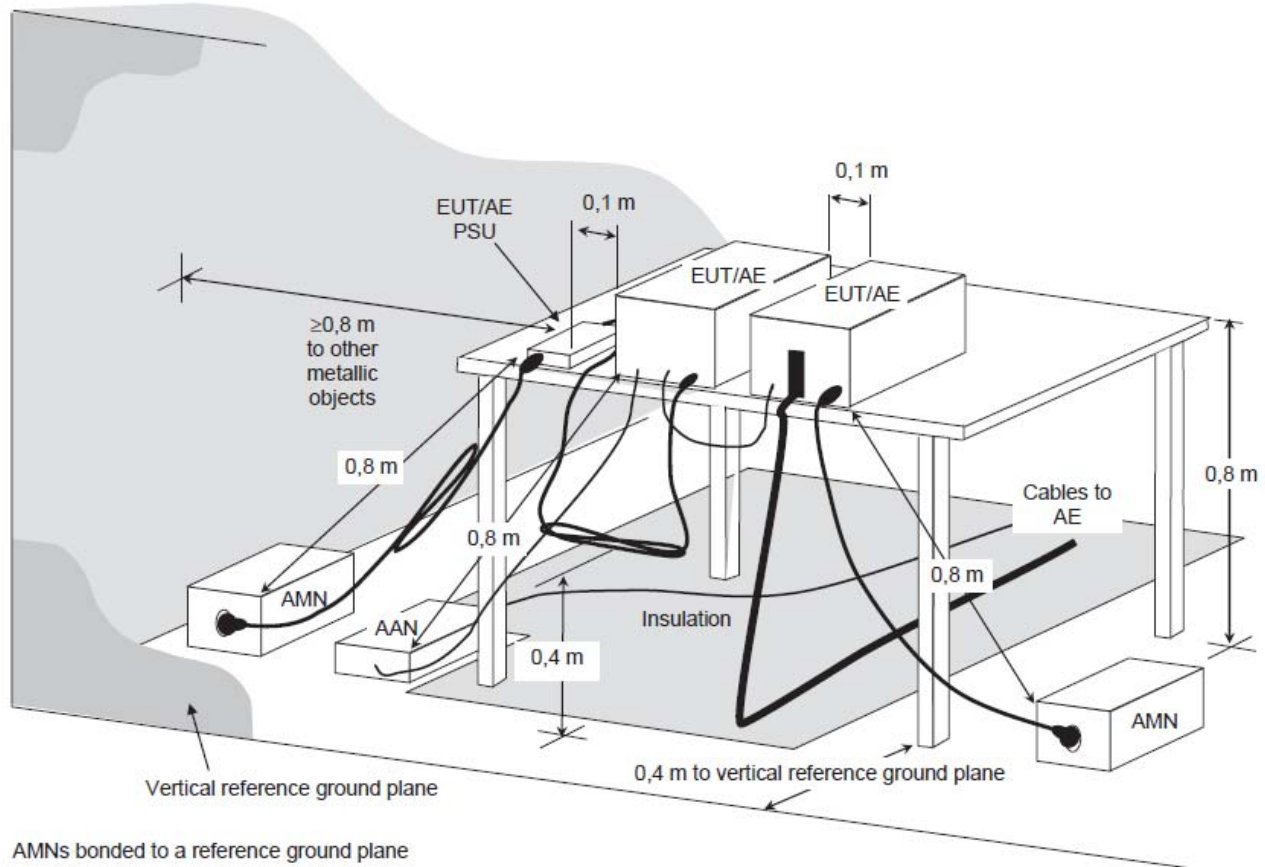


FIGURE 3: CONDUCTED EMISSIONS TEST SETUP



COM-POWER AL-130R**LOOP ANTENNA**

S/N: 121090

CALIBRATION DATE: FEBRUARY 5, 2019

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.01	15.6	-35.9
0.02	14.8	-36.7
0.03	15.6	-35.9
0.04	15.1	-36.4
0.05	14.4	-37.0
0.06	14.6	-36.9
0.07	14.4	-37.1
0.08	14.3	-37.1
0.09	14.5	-36.9
0.10	14.1	-37.3
0.20	14.1	-37.3
0.30	14.0	-37.4
0.40	14.0	-37.4
0.50	14.2	-37.2
0.60	14.2	-37.2
0.70	14.2	-37.2
0.80	14.2	-37.3
0.90	14.3	-37.2
1.00	14.5	-37.0
2.00	14.5	-36.9
3.00	14.5	-36.9
4.00	14.7	-36.8
5.00	14.6	-36.9
6.00	14.6	-36.9
7.00	14.6	-36.9
8.00	14.6	-36.9
9.00	14.6	-36.9
10.00	14.8	-36.6
11.00	14.9	-36.6
12.00	14.8	-36.6
13.00	14.8	-36.7
14.00	14.6	-36.8
15.00	14.5	-36.9
16.00	14.5	-37.0
17.00	14.6	-36.9
18.00	14.7	-36.7
19.00	14.8	-36.6
20.00	14.9	-36.6
21.00	14.6	-36.8
22.00	14.2	-37.2
23.00	13.7	-37.7
24.00	13.3	-38.2
25.00	13.0	-38.5
26.00	12.9	-38.6
27.00	13.0	-38.5
28.00	13.1	-38.4
29.00	13.1	-38.4
30.00	12.9	-38.5

COM-POWER AC-220**COMBILOG ANTENNA**

S/N: 61093

CALIBRATION DATE: JUNE 5, 2019

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	22.10	200	15.30
35	20.90	250	16.80
40	20.10	300	19.00
45	19.40	350	19.60
50	18.40	400	21.70
60	15.10	450	21.60
70	12.00	500	22.20
80	11.60	550	22.70
90	13.50	600	24.20
100	14.70	650	24.40
120	15.90	700	24.50
125	15.90	750	25.40
140	14.80	800	26.30
150	15.50	850	26.70
160	19.80	900	27.50
175	15.20	950	27.80
180	14.90	1000	27.90

COM POWER AH-118**HORN ANTENNA**

S/N: 071175

CALIBRATION DATE: FEBRUARY 22, 2018

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	23.71	10.0	40.08
1.5	25.46	10.5	40.75
2.0	29.26	11.0	41.78
2.5	27.95	11.5	41.02
3.0	29.03	12.0	40.32
3.5	29.70	12.5	40.96
4.0	30.71	13.0	40.29
4.5	31.62	13.5	39.48
5.0	33.23	14.0	39.89
5.5	35.07	14.5	42.75
6.0	34.43	15.0	40.98
6.5	34.98	15.5	38.54
7.0	36.75	16.0	39.40
7.5	37.10	16.5	39.40
8.0	37.66	17.0	41.74
8.5	39.29	17.5	42.58
9.0	37.75	18.0	44.68
9.5	38.23		

COM-POWER PA-118**PREAMPLIFIER**

S/N: 181653

CALIBRATION DATE: JANUARY 25, 2019

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	40.10	6.0	40.60
1.1	40.10	6.5	39.50
1.2	40.00	7.0	39.40
1.3	39.70	7.5	39.30
1.4	39.60	8.0	39.20
1.5	39.90	8.5	40.50
1.6	40.00	9.0	39.60
1.7	39.70	9.5	39.50
1.8	39.50	10.0	38.80
1.9	39.60	11.0	38.70
2.0	39.90	12.0	42.20
2.5	40.10	13.0	40.00
3.0	40.80	14.0	40.30
3.5	40.60	15.0	40.20
4.0	40.50	16.0	41.00
4.5	41.60	17.0	39.70
5.0	39.20	18.0	40.90
5.5	40.00		

COM-POWER AH-826**HORN ANTENNA****S/N: 71957**

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	33.5	22.5	35.5
18.5	33.5	23.0	35.9
19.0	34.0	23.5	35.7
19.5	34.0	24.0	35.6
20.0	34.3	24.5	36.0
20.5	34.9	25.0	36.2
21.0	34.7	25.5	36.1
21.5	35.0	26.0	36.2
22.0	35.0	26.5	35.7

COM-POWER PA-840**MICROWAVE PREAMPLIFIER****S/N: 711013****CALIBRATION DATE: MAY 10, 2018**

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	26.90	31.0	24.56
19.0	24.65	31.5	25.84
20.0	25.74	32.0	26.93
21.0	24.78	32.5	27.76
22.0	24.83	33.0	25.76
23.0	24.81	33.5	26.76
24.0	25.52	34.0	26.51
25.0	24.90	34.5	27.49
26.0	25.92	35.0	27.64
26.5	26.53	35.5	27.45
27.0	26.41	36.0	25.08
27.5	24.78	36.5	25.61
28.0	25.13	37.0	24.69
28.5	29.29	37.5	24.10
29.0	28.44	38.0	24.83
29.5	27.51	38.5	24.41
30.0	27.12	39.0	24.44
30.5	26.42	39.5	22.96
		40.0	22.29



FRONT VIEW

TARGUS
SENSOR
MODEL: ACS810
AC MODE

FCC SUBPART B AND C; RSS-GEN; and RSS-210 – RADIATED EMISSIONS – BELOW 30 MHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

TARGUS
SENSOR
MODEL: ACS810
AC MODE

FCC SUBPART B AND C; RSS-GEN; and RSS-210 – RADIATED EMISSIONS – BELOW 30 MHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

TARGUS
SENSOR
MODEL: ACS810
BATTERY MODE

FCC SUBPART B AND C; RSS-GEN; and RSS-210 – RADIATED EMISSIONS – BELOW 30 MHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

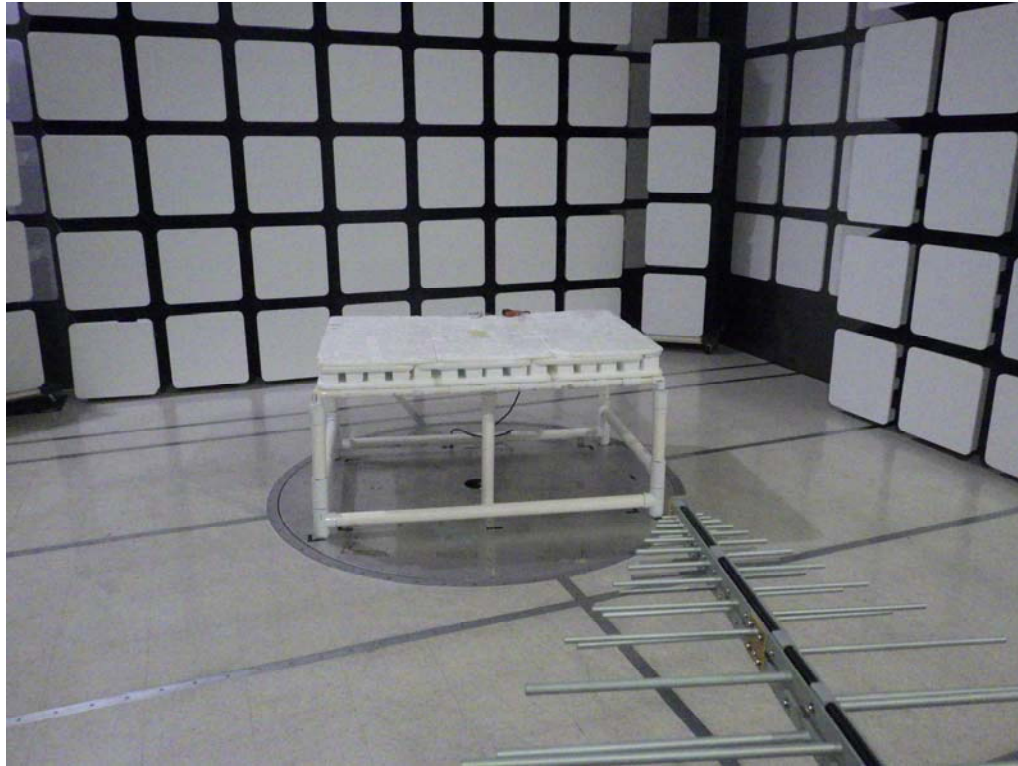


REAR VIEW

TARGUS
SENSOR
MODEL: ACS810
BATTERY MODE

FCC SUBPART B AND C; RSS-GEN; and RSS-210 – RADIATED EMISSIONS – BELOW 30 MHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

TARGUS
SENSOR
MODEL: ACS810
AC MODE

FCC SUBPART B AND C; RSS-GEN; and RSS-210 – RADIATED EMISSIONS – ABOVE 30 MHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

TARGUS
SENSOR
MODEL: ACS810
AC MODE

FCC SUBPART B AND C; RSS-GEN; and RSS-210 – RADIATED EMISSIONS – ABOVE 30 MHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

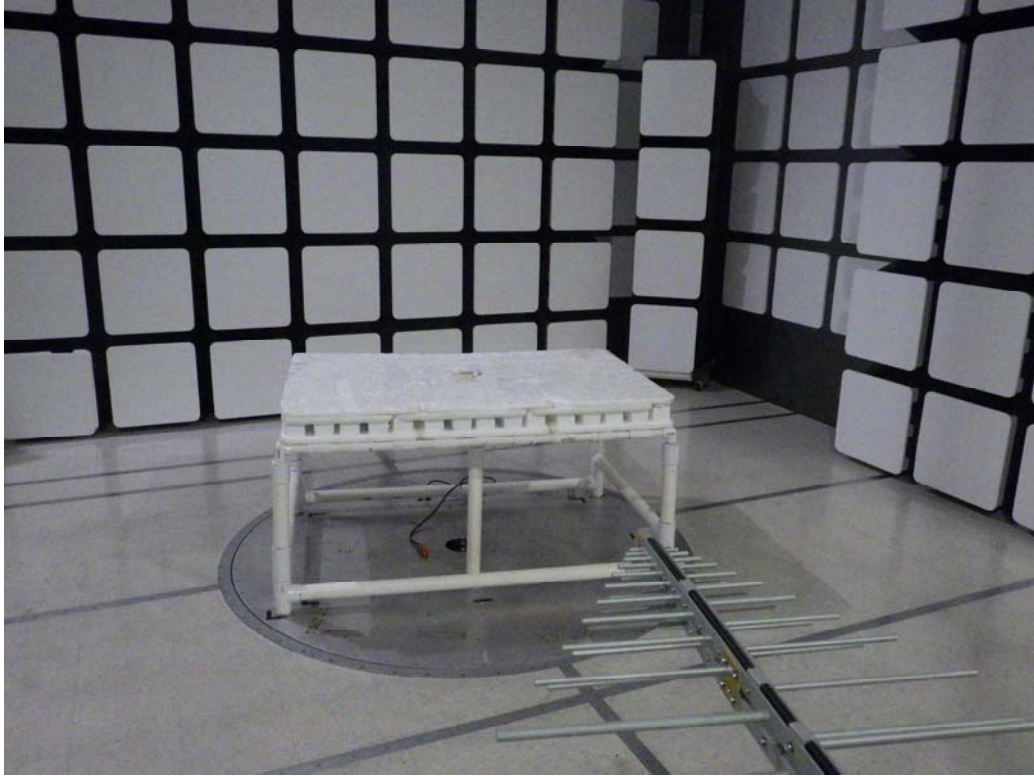


FRONT VIEW

TARGUS
SENSOR
MODEL: ACS810
BATTERY MODE

FCC SUBPART B AND C; RSS-GEN; and RSS-210 – RADIATED EMISSIONS – ABOVE 30 MHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

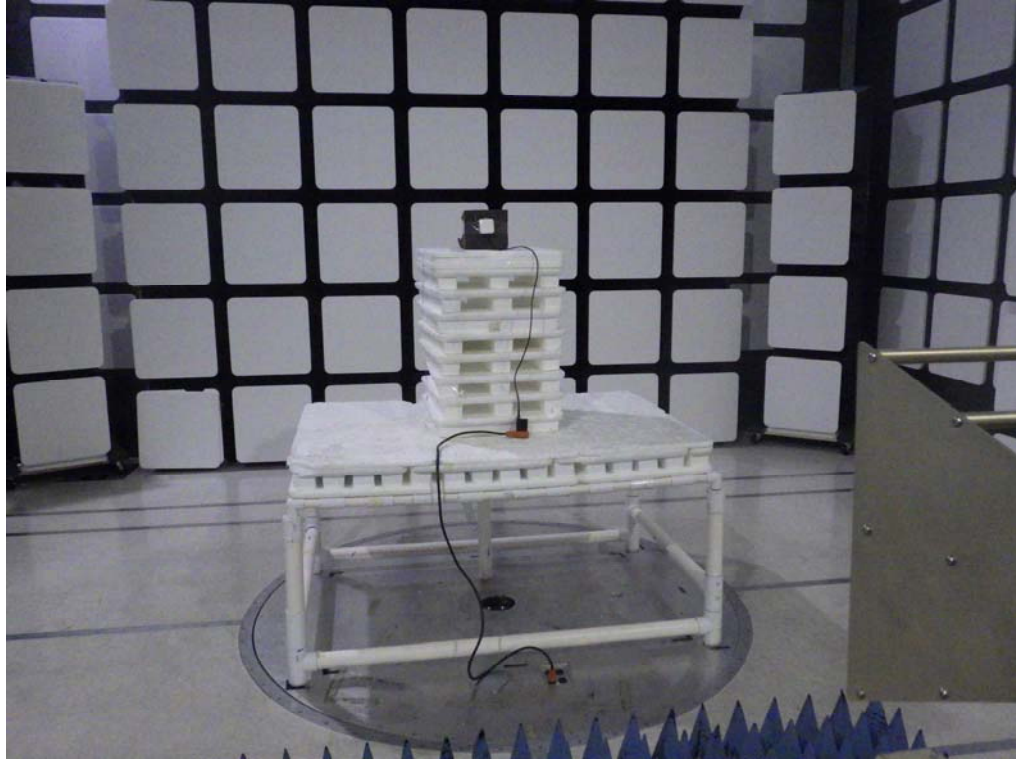


REAR VIEW

TARGUS
SENSOR
MODEL: ACS810
BATTERY MODE

FCC SUBPART B AND C; RSS-GEN; and RSS-210 – RADIATED EMISSIONS – ABOVE 30 MHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

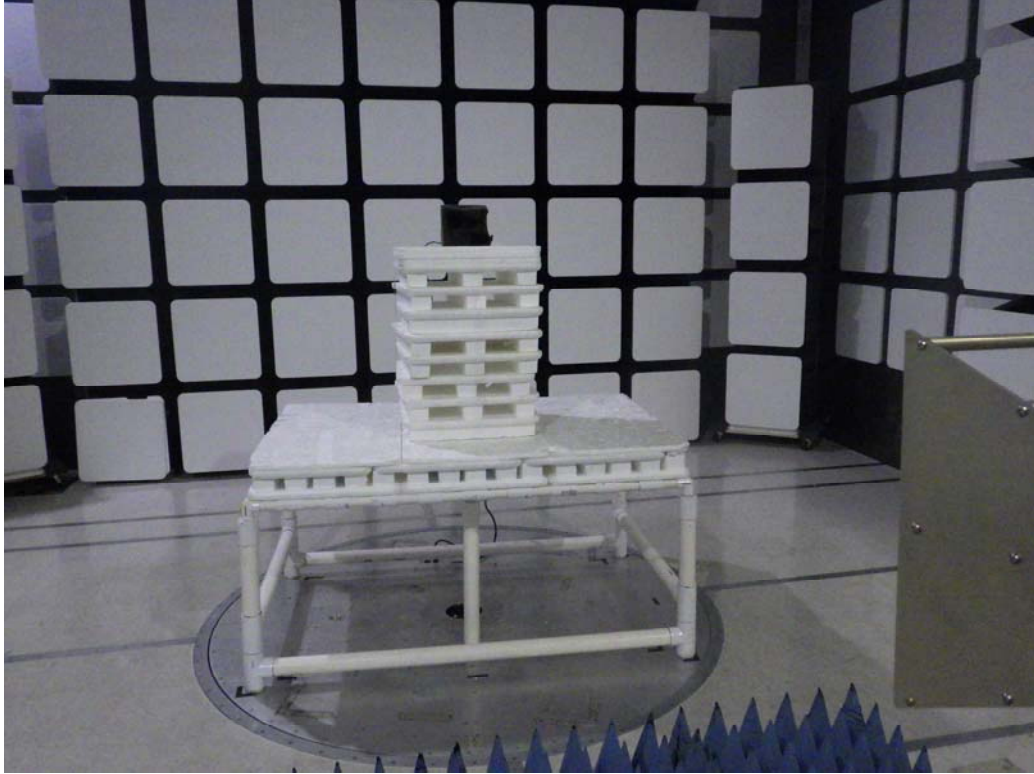


FRONT VIEW

TARGUS
SENSOR
MODEL: ACS810
AC MODE

FCC SUBPART B AND C; RSS-GEN; and RSS-210 – RADIATED EMISSIONS – ABOVE 1 GHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

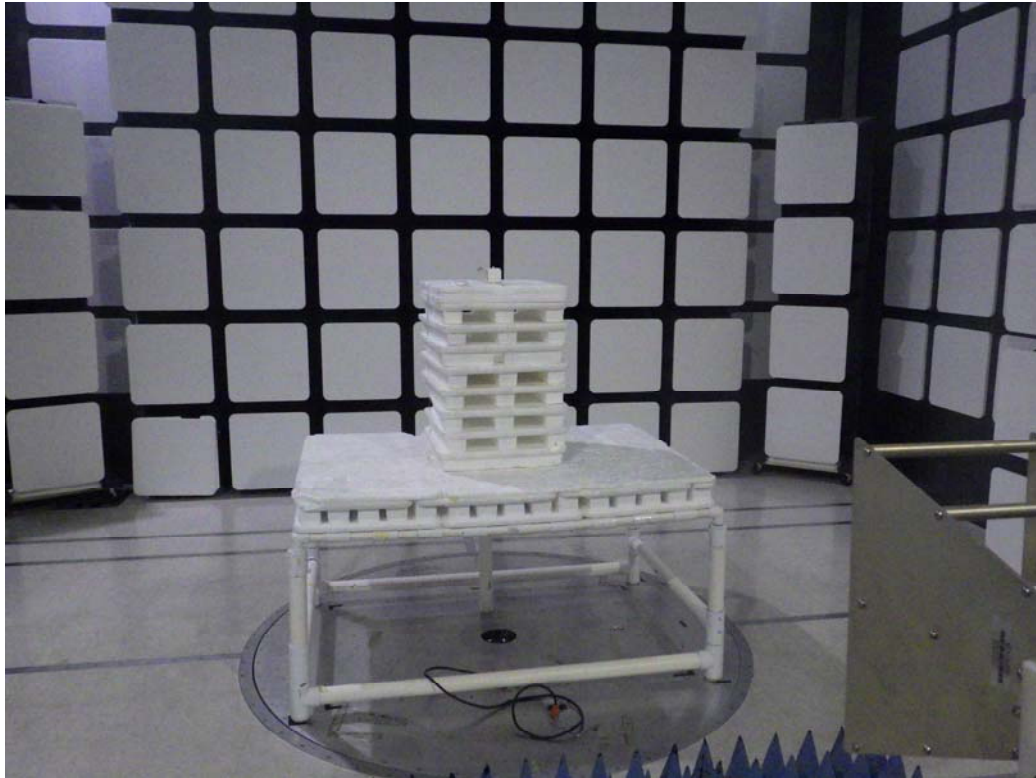


REAR VIEW

TARGUS
SENSOR
MODEL: ACS810
AC MODE

FCC SUBPART B AND C; RSS-GEN; and RSS-210 – RADIATED EMISSIONS – ABOVE 1 GHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

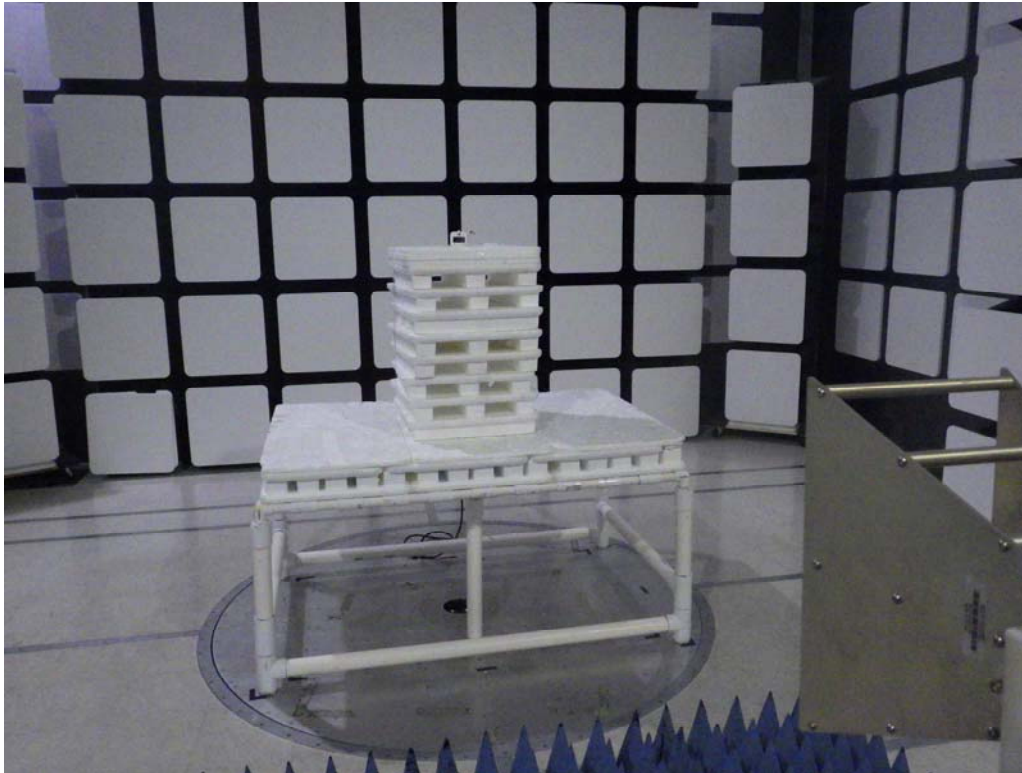
TARGUS
SENSOR

MODEL: ACS810

BATTERY MODE

FCC SUBPART B AND C; RSS-GEN; and RSS-210 – RADIATED EMISSIONS – ABOVE 1 GHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

TARGUS
SENSOR
MODEL: ACS810
BATTERY MODE

FCC SUBPART B AND C; RSS-GEN; and RSS-210 – RADIATED EMISSIONS – ABOVE 1 GHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

TARGUS
SENSOR
MODEL: ACS810
AC MODE

FCC SUBPART B AND C; and RSS-GEN – CONDUCTED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

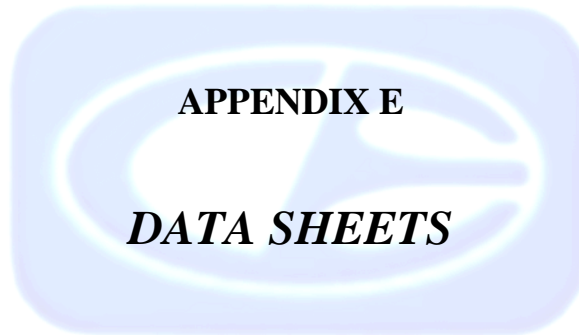


REAR VIEW

TARGUS
SENSOR
MODEL: ACS810
AC MODE

FCC SUBPART B AND C; and RSS-GEN – CONDUCTED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



RADIATED EMISSIONS

DATA SHEETS

FCC 15.225

Targus
 Sensor
 Model: ACS810

Date: 08/26/2019
 Lab: A
 Tested By: Harvey Samaco

Test Distance - 10 Meters
13.56 MHz Transmitter - AC Mode

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit (at 10 m)	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
13.56	39.37	H	103.07	-63.70	Peak	180.00	100.00	X-Axis
13.56	38.58	H	103.07	-64.49	Peak	90.00	100.00	Y-Axis
13.56	40.92	H	103.07	-62.15	Peak	270.00	100.00	Z-Axis
13.56	34.26	V	103.07	-68.81	Peak	90.00	100.00	X-Axis
13.56	35.28	V	103.07	-67.79	Peak	180.00	100.00	Y-Axis
13.56	38.36	V	103.07	-64.71	Peak	270.00	100.00	Z-Axis
27.12	24.71	H	48.62	-23.91	Peak	45.00	100.00	X-Axis
27.12	24.70	H	48.62	-23.92	Peak	90.00	100.00	Y-Axis
27.12	23.58	H	48.62	-25.04	Peak	135.00	100.00	Z-Axis
27.12	23.21	V	48.62	-25.41	Peak	45.00	100.00	X-Axis
27.12	25.24	V	48.62	-23.38	Peak	90.00	100.00	Y-Axis
27.12	26.23	V	48.62	-22.39	Peak	135.00	100.00	Z-Axis

- Note #1: The Limit per section 15.225 is 15848 uV/m @ 30 Meters
 Note #2: 15848 uV/m = 83.99 dBuV/m
 Note #3: The Limit at 10 meters for FCC 15.225 is 83.99 + [40 (Log 30/10)] = 103.07 dBuV/m
 Note #4: The Limit per section 15.209 is 30 uV/m @ 30 Meters
 Note #5: 30 uV/m = 29.54 dBuV/m
 Note #6: The Limit at 10 Meters for FCC 15.209 is 29.54 + [40 (Log 30/10)] = 48.62 dBuV/m
 Note #7: The emissions from 13.410-13.553 MHz and 13.567-13.710 MHz pass because the fundamental is already below the FCC 15.209 limit

FCC 15.225

Targus
 Sensor
 Model: ACS810

Date: 08/26/2019
 Lab: A
 Tested By: Harvey Samaco

Test Distance - 10 Meters

13.56 MHz Transmitter – Battery Mode

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
13.56	38.27	H	103.07	-64.80	Peak	45.00	100.00	X-Axis
13.56	37.26	H	103.07	-65.81	Peak	135.00	100.00	Y-Axis
13.56	38.52	H	103.07	-64.55	Peak	90.00	100.00	Z-Axis
13.56	34.25	V	103.07	-68.82	Peak	225.00	100.00	X-Axis
13.56	33.21	V	103.07	-69.86	Peak	245.00	100.00	Y-Axis
13.56	31.25	V	103.07	-71.82	Peak	235.00	100.00	Z-Axis
27.12	24.12	H	48.62	-24.50	Peak	90.00	100.00	X-Axis
27.12	25.26	H	48.62	-23.36	Peak	180.00	100.00	Y-Axis
27.12	24.01	H	48.62	-24.61	Peak	125.00	100.00	Z-Axis
27.12	25.24	V	48.62	-23.38	Peak	135.00	100.00	X-Axis
27.12	24.26	V	48.62	-24.36	Peak	150.00	100.00	Y-Axis
27.12	27.25	V	48.62	-21.37	Peak	145.00	100.00	Z-Axis

Note #1: The Limit per section 15.225 is 15848 uV/m @ 30 Meters

Note #2: 15848 uV/m = 83.99 dBuV/m

Note #3: The Limit at 10 meters for FCC 15.225 is 83.99 + [40 (Log 30/10)] = 103.07 dBuV/m

Note #4: The Limit per section 15.209 is 30 uV/m @ 30 Meters

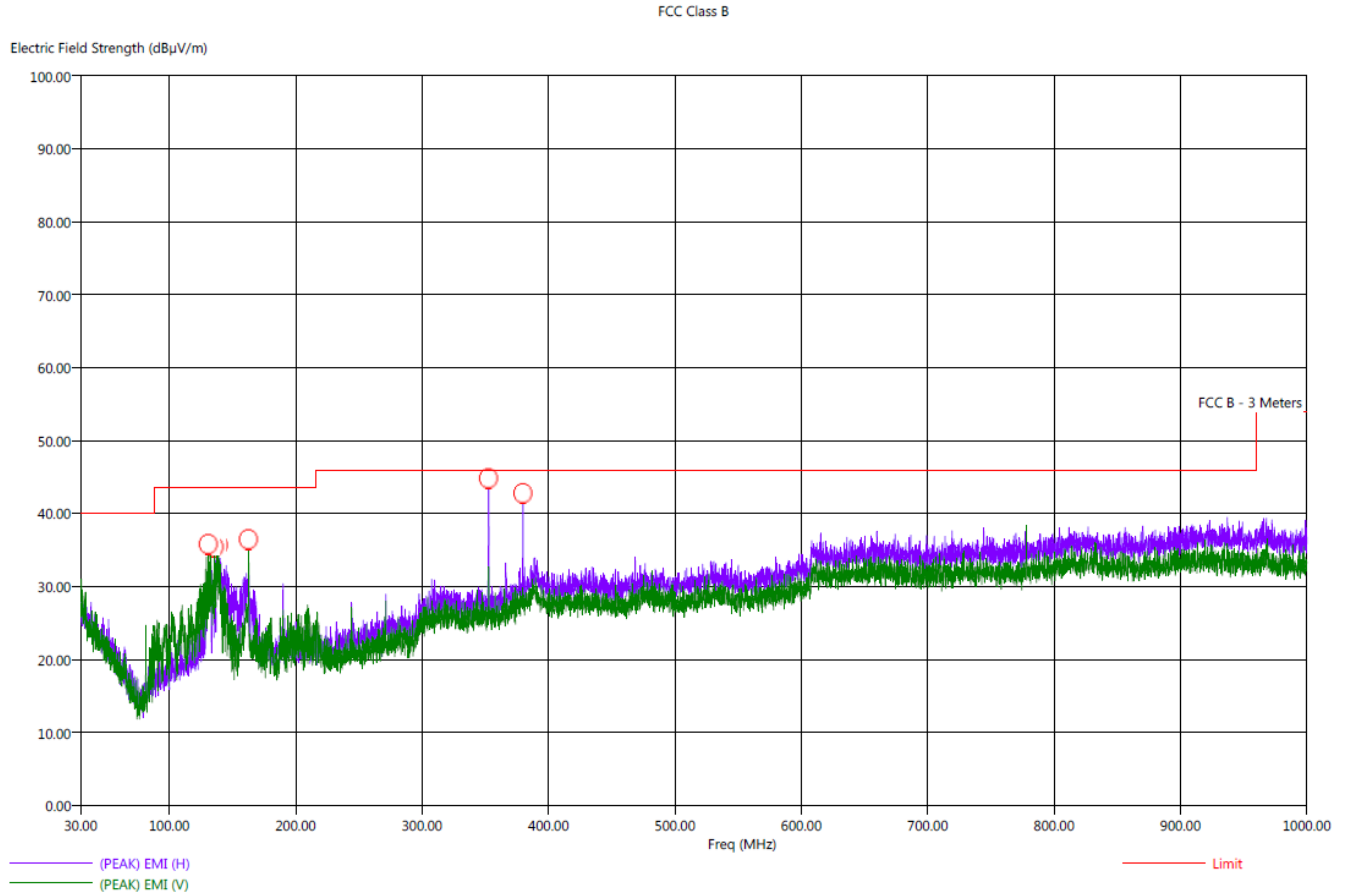
Note #5: 30 uV/m = 29.54 dBuV/m

Note #6: The Limit at 10 Meters for FCC 15.209 is 29.54 + [40 (Log 30/10)] = 48.62 dBuV/m

Note #7: The emissions from 13.410-13.553 MHz and 13.567-13.710 MHz pass because the fundamental is already below the FCC 15.209 limit

Title: Pre-Scan - FCC Class B
File: 3 - Agilent - Pre-Scan - Low Ch - AC mode - FCC Class B - 30 MHz to 1000 MHz - Edge of table - New cable.set
Operator: Harvey Samaco
EUT Type: Sensor
EUT Condition: The EUT was set to continuously transmit BLE and at 13.56 MHz
Company: Targus
Model: ACS810
S/N: N/A
AC mode

8/28/2019 10:47:07 AM
Sequence: Preliminary Scan



Title: Radiated Final - FCC Class B
 File: 3 - Agilent - Final-Scan - Low Ch - AC mode - FCC Class B - 30 MHz to 1000 MHz - Edge of table - New cable.set
 Operator: Harvey Samaco
 EUT Type: Sensor
 EUT Condition: The EUT was set to continuously transmit BLE and at 13.56 MHz
 Company: Targus
 Model: ACS810
 S/N: N/A
 AC mode

8/28/2019 10:55:50 AM
 Sequence: Final Measurements

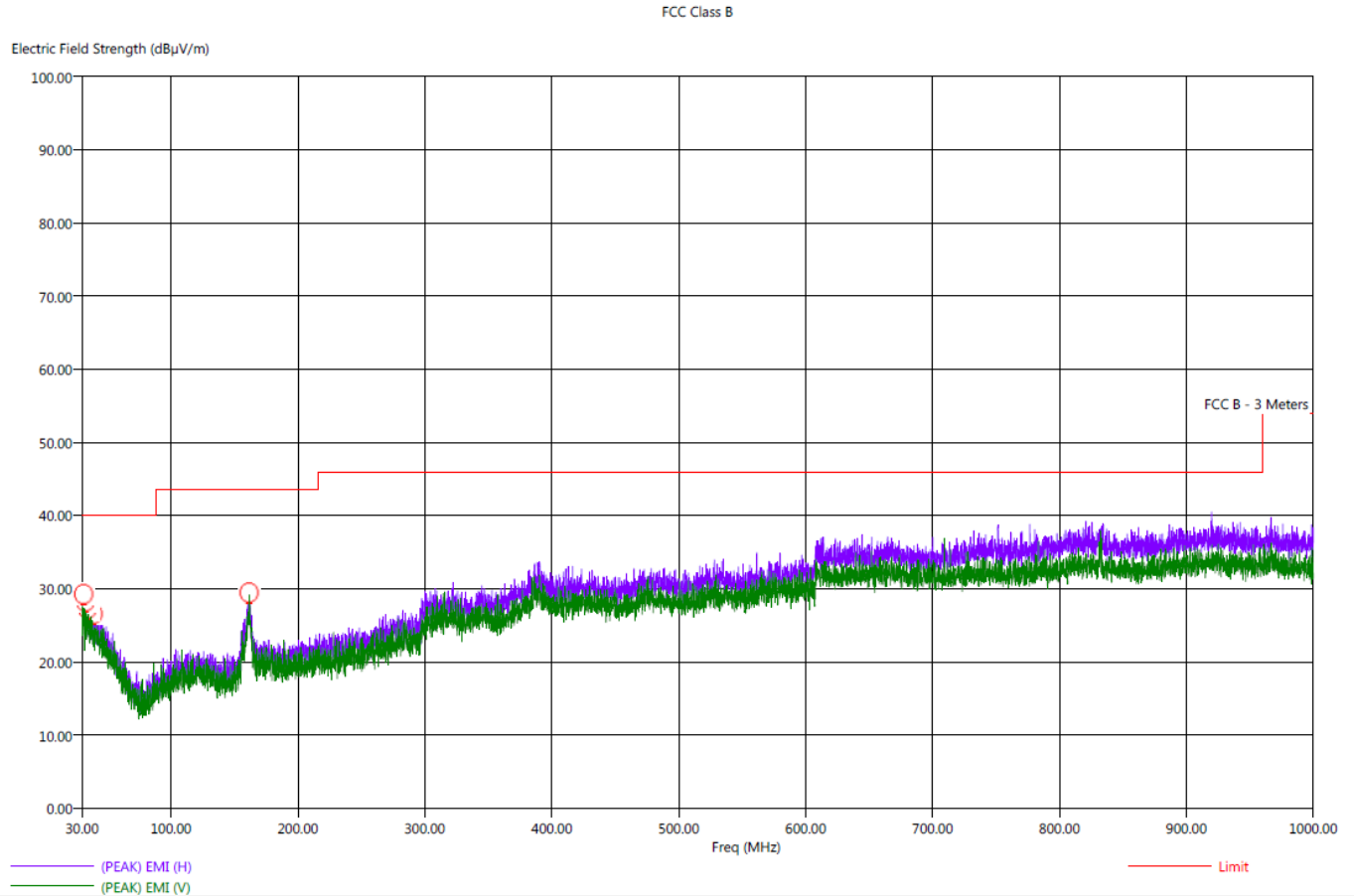
FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dB μ V/m)	(QP) EMI (dB μ V/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dB μ V/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
130.80	V	37.53	32.72	-5.97	-10.78	43.50	15.60	1.23	280.50	111.38
135.60	H	37.25	34.46	-6.25	-9.04	43.50	15.14	1.24	348.75	270.43
138.80	H	36.55	32.77	-6.95	-10.73	43.50	14.90	1.26	0.00	174.91
162.70	V	39.87	38.55	-3.63	-4.95	43.50	20.00	1.30	24.25	111.20
352.60	H	45.93	45.19	-0.07	-0.81	46.00	19.50	1.91	359.00	111.38
379.70	H	43.98	42.79	-2.02	-3.21	46.00	21.77	2.02	2.50	111.26



Title: Pre-Scan - FCC Class B
File: 2 - Agilent - Pre-Scan - Low Ch - Battery - FCC Class B - 30 MHz to 1000 MHz - Center of table.set
Operator: Harvey Samaco
EUT Type: Sensor
EUT Condition: The EUT was set to continuously transmit BLE and at 13.56 MHz
Company: Targus
Model: ACS810
S/N: N/A
Battery

8/28/2019 11:24:32 AM
Sequence: Preliminary Scan



Title: Radiated Final - FCC Class B
 File: 2 - Agilent - Final-Scan - Low Ch - Battery - FCC Class B - 30 MHz to 1000 MHz - Center of table.set
 Operator: Harvey Samaco
 EUT Type: Sensor
 EUT Condition: The EUT was set to continuously transmit BLE and at 13.56 MHz
 Company: Targus
 Model: ACS810
 S/N: N/A
 Battery

8/28/2019 11:33:37 AM
 Sequence: Final Measurements

FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dB μ V/m)	(QP) EMI (dB μ V/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dB μ V/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
31.30	H	30.27	24.40	-9.73	-15.60	40.00	21.66	0.82	198.75	365.89
32.60	H	29.58	24.19	-10.42	-15.81	40.00	21.52	0.83	63.75	350.31
34.10	H	29.34	24.06	-10.66	-15.94	40.00	21.14	0.84	105.00	111.20
35.20	H	28.61	23.32	-11.39	-16.68	40.00	20.77	0.86	241.25	222.85
38.70	H	28.26	22.66	-11.74	-17.34	40.00	20.17	0.89	68.25	286.19
161.60	H	31.23	25.87	-12.27	-17.63	43.50	22.07	1.30	201.25	222.79

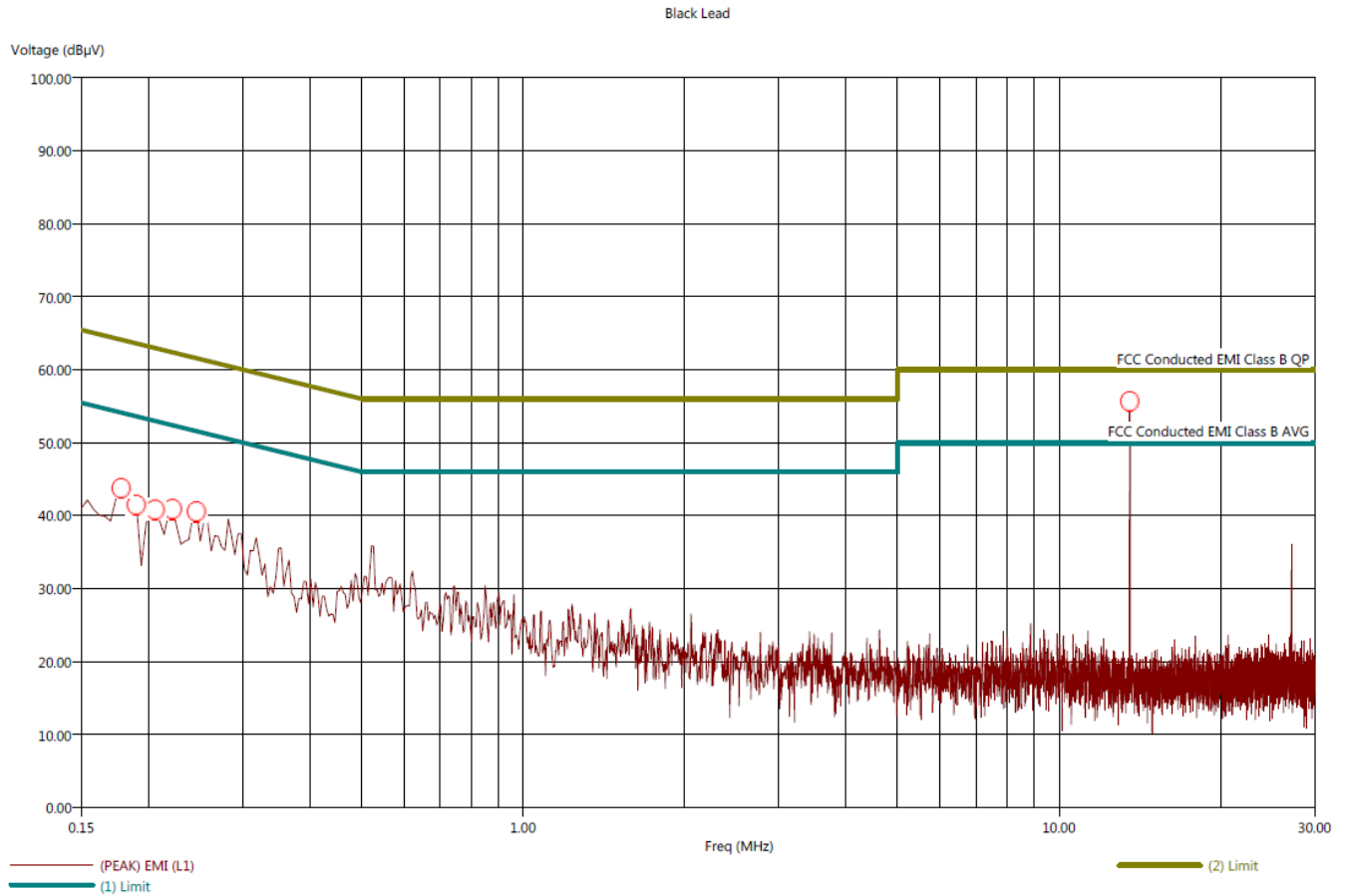




***CONDUCTED EMISSIONS
DATA SHEETS***

Title: FCC Class B - Black Lead
 File: Keysight - Pre-Scan - Black Lead - FCC Class B.set
 Operator: Harvey Samaco
 EUT Type: Sensor
 EUT Condition: The EUT was set to continuously transmit BLE and at 13.56 MHz
 Company: Targus
 Model: ACS810
 S/N: N/A

8/30/2019 8:59:29 AM
 Sequence: Preliminary Scan



Title: FCC Class B - Black Lead
 File: Keysight - Final Scan - Black Lead - FCC Class B.set
 Operator: Harvey Samaco
 EUT Type: Sensor
 EUT Condition: The EUT was set to continuously transmit BLE and at 13.56 MHz
 Company: Targus
 Model: ACS810
 S/N: N/A

8/30/2019 9:00:30 AM
 Sequence: Final Measurements

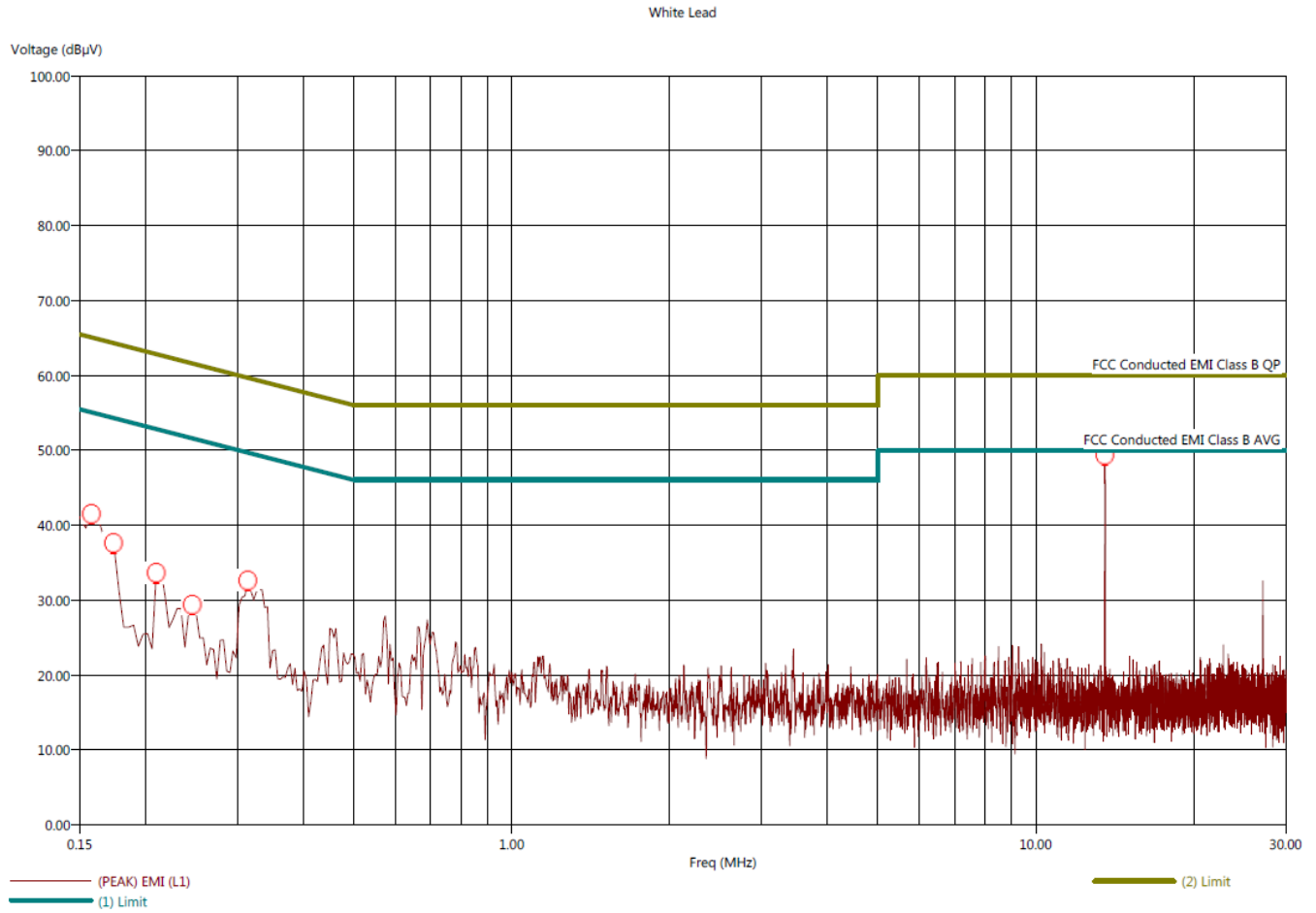
Black Lead										
Freq (MHz)	(PEAK) EMI (dBμV)	(AVG) EMI (dBμV)	(PEAK) Margin (dB)	(AVG) Margin (dB)	(AVG) Limit (dBμV)	Cable (dB)	Transducer (dB)	Filter (dB)		
0.178	46.44	33.57	-7.45	-20.32	53.88	0.00	0.41	9.80		
0.190	44.75	33.15	-8.65	-20.25	53.40	0.00	0.38	9.80		
0.206	43.45	32.15	-9.35	-20.65	52.80	0.00	0.35	9.79		
0.222	43.48	31.87	-8.77	-20.38	52.25	0.00	0.31	9.79		
0.246	34.38	19.79	-16.69	-31.28	51.07	0.00	0.25	9.77		
13.558	55.72	52.25	5.72	2.25	50.00	0.14	0.51	9.79		

Note: The emission at 13.558 MHz was re-measured with a 100 Ohm resistive load in place of the antenna and was fully compliant.



Title: FCC Class B - White Lead
 File: Keysight - Pre-Scan - White Lead - FCC Class B.set
 Operator: Harvey Samaco
 EUT Type: Sensor
 EUT Condition: The EUT was set to continuously transmit BLE and at 13.56 MHz
 Company: Targus
 Model: ACS810
 S/N: N/A

8/30/2019 8:56:47 AM
 Sequence: Preliminary Scan



Title: FCC Class B - White Lead
 File: Keysight - Final Scan - White Lead - FCC Class B.set
 Operator: Harvey Samaco
 EUT Type: Sensor
 EUT Condition: The EUT was set to continuously transmit BLE and at 13.56 MHz
 Company: Targus
 Model: ACS810
 S/N: N/A

8/30/2019 8:57:51 AM
 Sequence: Final Measurements

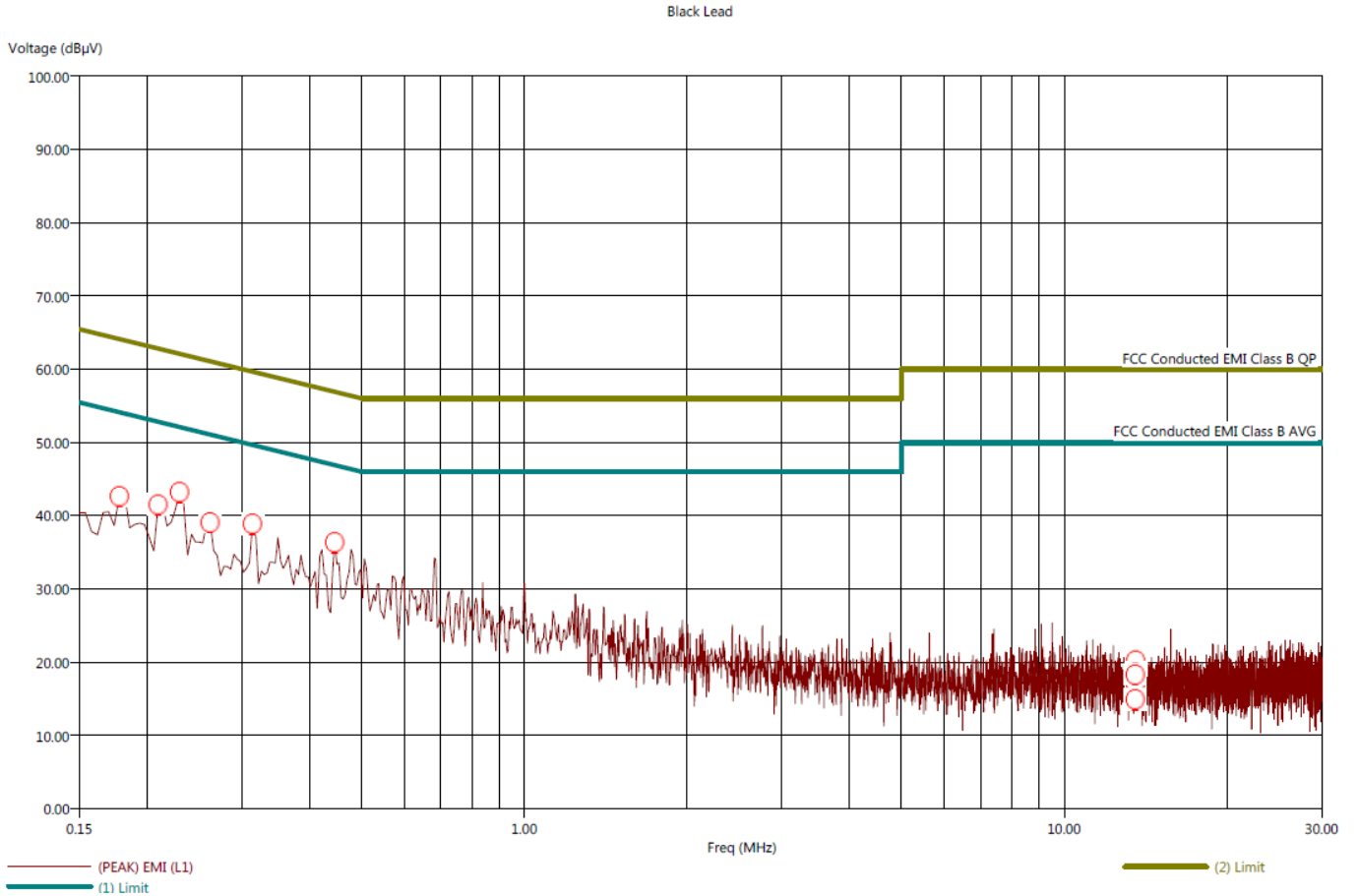
White Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin (dB)	(AVG) Margin (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.158	40.77	26.55	-13.85	-28.07	54.61	0.00	0.45	9.80	
0.174	40.06	26.65	-14.56	-27.97	54.61	0.00	0.45	9.80	
0.210	37.16	23.28	-15.86	-29.74	53.02	0.00	0.36	9.80	
0.246	34.67	19.88	-16.84	-31.63	51.51	0.00	0.27	9.78	
0.314	32.89	18.34	-16.96	-31.51	49.85	0.00	0.18	9.75	
13.558	54.44	49.69	4.44	-0.31	50.00	0.14	0.51	9.79	

Note: The emission at 13.558 MHz was re-measured with a 100 Ohm resistive load in place of the antenna and was fully compliant.



Title: FCC Class B - Black Lead
 File: Keysight - Pre-Scan - Black Lead - Antenna terminated - FCC Class B.set
 Operator: Harvey Samaco
 EUT Type: Sensor
 EUT Condition: The EUT was set to continuously transmit BLE and at 13.56 MHz
 Company: Targus
 Model: ACS810
 S/N: N/A
 Note: The antenna for the 13.56 MHz transmitter was terminated to a 100 Ohm resistor

8/30/2019 8:28:34 AM
 Sequence: Preliminary Scan



Title: FCC Class B - Black Lead
 File: Keysight - Final Scan - Black Lead - Antenna terminated - FCC Class B.set
 Operator: Harvey Samaco
 EUT Type: Sensor
 EUT Condition: The EUT was set to continuously transmit BLE and at 13.56 MHz
 Company: Targus
 Model: ACS810
 S/N: N/A
 Note: The antenna for the 13.56 MHz transmitter was terminated to a 100 Ohm resistor

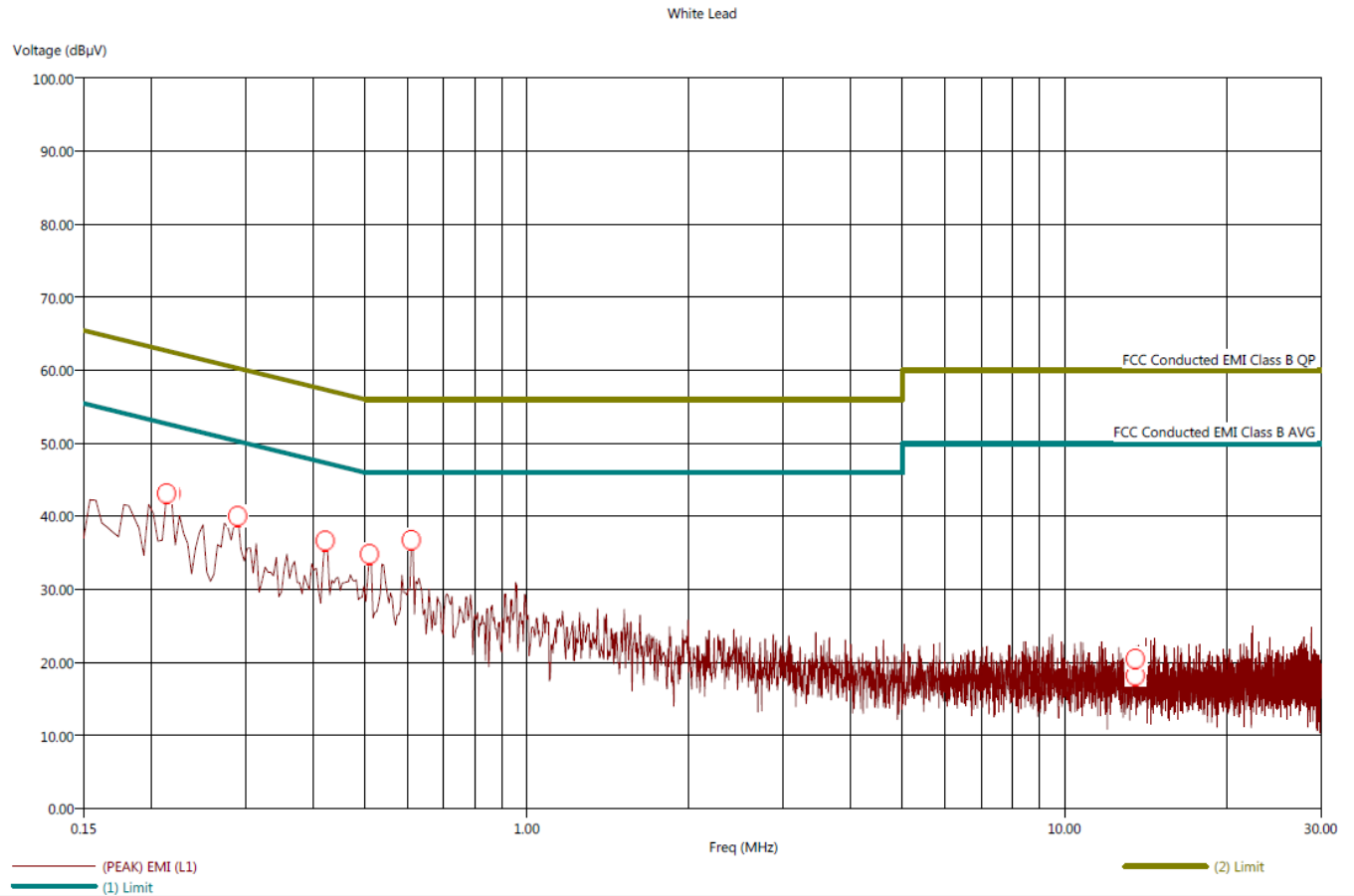
8/30/2019 8:30:06 AM
 Sequence: Final Measurements

Black Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin (dB)	(AVG) Margin (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.178	45.87	32.90	-8.10	-21.07	53.98	0.00	0.41	9.80	
0.210	44.61	31.57	-8.00	-21.04	52.61	0.00	0.33	9.79	
0.230	44.60	31.37	-7.63	-20.86	52.23	0.00	0.31	9.79	
0.262	28.10	15.17	-22.75	-35.68	50.85	0.00	0.24	9.77	
0.314	24.48	13.07	-24.95	-36.36	49.44	0.00	0.16	9.75	
0.446	26.52	12.75	-20.30	-34.07	46.82	0.00	0.12	9.71	
13.546	16.98	1.38	-33.02	-48.62	50.00	0.14	0.51	9.79	
13.550	16.99	1.41	-33.01	-48.59	50.00	0.14	0.51	9.79	
13.558	21.25	1.32	-28.75	-48.68	50.00	0.14	0.51	9.79	
13.562	16.80	1.29	-33.20	-48.71	50.00	0.14	0.51	9.79	
13.566	23.02	1.85	-26.98	-48.15	50.00	0.14	0.51	9.79	
13.570	17.16	1.25	-32.84	-48.75	50.00	0.14	0.51	9.79	



Title: FCC Class B - White Lead
 File: Keysight - Pre-Scan - White Lead - Antenna terminated - FCC Class B.set
 Operator: Harvey Samaco
 EUT Type: Sensor
 EUT Condition: The EUT was set to continuously transmit BLE and at 13.56 MHz
 Company: Targus
 Model: ACS810
 S/N: N/A
 Note: The antenna for the 13.56 MHz transmitter was terminated to a 100 Ohm resistor

8/30/2019 8:26:05 AM
 Sequence: Preliminary Scan



Title: FCC Class B - White Lead
 File: Keysight - Final Scan - White Lead - Antenna terminated - FCC Class B.set
 Operator: Harvey Samaco
 EUT Type: Sensor
 EUT Condition: The EUT was set to continuously transmit BLE and at 13.56 MHz
 Company: Targus
 Model: ACS810
 S/N: N/A
 Note: The antenna for the 13.56 MHz transmitter was terminated to a 100 Ohm resistor

8/30/2019 8:34:26 AM
 Sequence: Final Measurements

White Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin (dB)	(AVG) Margin (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.182	31.11	15.58	-22.75	-38.28	53.86	0.00	0.41	9.80	
0.186	30.82	15.89	-23.60	-38.53	54.41	0.00	0.44	9.80	
0.218	29.19	14.48	-23.19	-37.90	52.38	0.00	0.32	9.79	
0.238	29.13	14.64	-23.00	-37.49	52.13	0.00	0.31	9.79	
0.250	28.69	13.85	-22.95	-37.79	51.64	0.00	0.28	9.78	
0.254	28.28	13.98	-23.26	-37.56	51.54	0.00	0.27	9.78	
13.550	17.26	1.27	-32.74	-48.73	50.00	0.14	0.51	9.79	
13.554	16.68	1.19	-33.32	-48.81	50.00	0.14	0.51	9.79	
13.562	17.46	1.10	-32.54	-48.90	50.00	0.14	0.51	9.79	
13.566	16.62	1.13	-33.38	-48.87	50.00	0.14	0.51	9.79	
13.570	17.44	1.31	-32.56	-48.69	50.00	0.14	0.51	9.79	



TEMPERATURE TESTING AC MODE

Note: The Nominal Frequency is 13.56 MHz

Temp. Degrees C.	Freq. at 0 Min. (MHz)	Freq. at 2 Min. (MHz)	Freq. at 5 Min. (MHz)	Freq. at 10 Min. (MHz)	Max %	Min %
50	13.559835	13.559830	13.559830	13.559830	0.00125	0.00122
40	13.559860	13.559850	13.559850	13.559850	0.00111	0.00103
30	13.559880	13.559880	13.559875	13.559865	0.000996	0.000922
20	13.559880	13.559880	13.559880	13.559885	0.000885	0.000848
10	13.559920	13.559920	13.559920	13.559930	0.000590	0.000332
0	13.559955	13.559950	13.559955	13.559955	0.000369	0.000332
-10	13.559980	13.559980	13.559985	13.559985	0.000147	0.000111
-20	13.559990	13.559990	13.559980	13.559980	0.000147	0.000074

Voltage (VAC)	Frequency (MHz)	Change from Nominal (%)
102.0	13.559885	0.000848
120.0	13.559885	0.000848
138.0	13.559890	0.000811

Test Requirements: Limit is 100 ppm or $\pm 0.01\%$ deviation
 Note #1: Max % is the maximum percent change from nominal
 Note #2: Min % is the minimum percent change from nominal
 Note #3: The limit is 13.558644 MHz to 13.561356 MHz

TEMPERATURE TESTING BATTERY MODE

Note: The Nominal Frequency is 13.56 MHz

Temp. Degrees C.	Freq. at 0 Min. (MHz)	Freq. at 2 Min. (MHz)	Freq. at 5 Min. (MHz)	Freq. at 10 Min. (MHz)	Max %	Min %
50	13.559980	13.559980	13.559980	13.559980	0.000147	0.000147
40	13.559980	13.559980	13.559980	13.559980	0.000147	0.000147
30	13.559980	13.559980	13.559980	13.559980	0.000147	0.000147
20	13.559980	13.559980	13.559980	13.559980	0.000147	0.000147
10	13.559980	13.559980	13.559980	13.559980	0.000147	0.000147
0	13.559980	13.559980	13.559980	13.559980	0.000147	0.000147
-10	13.559970	13.559970	13.559970	13.559970	0.000221	0.000221
-20	13.559970	13.559970	13.559970	13.559970	0.000221	0.000221

Test Requirements: Limit is 100 ppm or $\pm 0.01\%$ deviation
Note #1: Max % is the maximum percent change from nominal
Note #2: Min % is the minimum percent change from nominal
Note #3: The limit is 13.558644 MHz to 13.561356 MHz