EXHIBIT 7

Measurement Procedure & Test Equipment Used

Except where otherwise stated, all measurements are made following the Electronic Industries Association (EIA) Minimum Standard for Portable/Personal Land Mobile Communications FM or PM Equipment 25-1000MHz-(EIA/TIA-603-D).

This exhibit presents a brief summary of how the measurements were made, the required limits, and the test equipment used.

The following procedures are presented with this application.

1.	Test Equipment List	x
2.	RF Power Output Data	x
3.	Audio Frequency Response	x
4.	Audio Low Pass Filter Response	x
5.	Modulation Limiting	x
6.	Occupied Bandwidth	x
7.	Radiated Spurious Emissions	x
8.	Conducted Spurious Emissions	x
9.	Frequency Stability (Volt/Temp)	x
10.	Transient Frequency Behavior	x
11.	Adjacent Channel Power	_
12.	1559-1605MHz Radiated Emissions (GNSS)	_

Test Equipment List

Measurement Equipment List- Pursuant To FCC Rules 2.947 (d)

Device	Model	S/N	Due Date
Computer	HP ProDesk 600 G1 SFF	SGH351S4JY	Cal Not Required
RF Signal Generator	Agilent E4420B	MY43350189	2-Apr-16
Modulation Analyzer	HP 8901B	3438A05163	27-Mar-17
Audio Analyzer	HP 8903B	3011A13379	16-Jan-17
Dynamic Signal Analyzer	Agilent 35670A	MY42507095	5-Oct-14
PSA Series Spectrum Analyzer	Agilent E4445A	MY45300745	10-Jul-16
Power Supply	HP 6623A	3448A04775	14-Jul-17
Power Meter	Agilent E4416A	MY50000548	12-Nov-14
Power Sensor (with 30DB Pad)	Agilent E9301B	MY51020001	20-Jan-17
Infiniium Oscilloscope	Agilent Infiniium 54831D MSO	MY42001937	15-Aug-17
15MHz Functional Generator	HP 33120A	US36005090	3-Jun-17
Espec Chamber	Espec SH-241	92008993	9-Nov-14
Dual Directional Coupler	HP 778D	1144A08558	Cal Not Required
NHP-300 + High Pass Filter 50 ohm	Mini Circuits	15542	Cal Not Required
Dual Directional Coupler	HP 778D	MY52180211	Cal Not Required
30 dB attenuator	Aeroflex/Weinschel, model 47-30-34, 50W	N/A	Cal Not Required
50 Ohms terminating load	MCE/Weinschel 1429-4	N/A	Cal Not Required
Signal Generator	SMP22	100015	1-Jul-15
Spectrum Analyzer/ESI Test Receiver	ESI 26	827769/009	27-May-15
EMI Test Receiver	ESIB 40	100308	15-Oct-14
System controller	SC99V	110901-1	No Cal. Required
Turntable. Flush Mount 2M Part# 15284	FM2011VS	60811	No Cal. Required
Antenna Positioning Tower	TLT2	122313-5B	No Cal. Required
Antenna Positioning Tower	TLT2	122313-5B	No Cal. Required
OATS RF Tray	2000	NA	No Cal. Required
Power Supply	6032A	3542A12712	19-Dec-14
DRG Horn Freq. 700MHZ-18GHZ	SAS-571	511	30-Jun-15
DRG Horn Freq. 700MHZ-18GHZ	SAS-200/571	271	16-Oct-14
Bilog Antenna 30MHz to 2GHz	CBL 6112D	36015	4-Sep-15
Biconilog. Freq. 30MHZ-2GHZ	3141	9703-1047	17-Mar-15
Bilog Antenna 30MHz to 2GHz	CBL 6112D	30991	26-Sep-15
USB Programming Cable	26576A	NA	No Cal. Required

Table 1: List of equipment used

Test Name	FCC Rules Part (47 CFR)	IC Rules
RF Power Output Data	2.1046(a), 2.1033(c)(6), 2.1033(c)(7) and 2.1033(c)(8) * 90.545(b)(4) (700MHz) 22.565(f) (VHF & UHF), * 24D (900MHz)	RSS-Gen Sec 4.8, RSS-119 Sec 5.4.1, * RSS 134 (900MHz)
TX Audio Frequency Response	2.1047 and 2.1033(c)(13) 22.355	-
TX Audio Low Pass Filter Response	2.1047	-
Modulation Limiting	2.1047	-
Occupied Bandwidth	2.1049, 90.210, * 90.691 (800MHz), 22.359 (b) (VHF & UHF), * 24D (900MHz)	RSS GEN Sec 4.6, RSS 119 Sec 5.5, * RSS 134 (900MHz)
TX Radiated Spurious Emissions	2.1053, 90.210, 22.359(a) (VHF & UHF), * 24D (900MHz)	RSS GEN Sec 4.9, RSS 119 Sec 4.2, 5.8, * RSS 134 (900MHz)
TX Conducted Spurious Emissions	2.1051, 90.210, 22.359(a) (VHF & UHF), * 24D (900MHz) * 80 (VHF)	RSS GEN Sec 6.2, RSS 119, * RSS 134 (900MHz) * RSS 182 (VHF)
Frequency Stability (Temp / Supply Voltage)	2.1055, 90.213, * 90.539 (700MHz)	RSS GEN Sec 4.7, RSS 119 Sec 5.3
Transient Frequency Behavior	90.214	RSS 119 Sec 5.9
* Adjacent Channel Power	* 90.543 (700MHz)	* RSS 119 Sec 4.3, 5.8.9 (700MHz)
* 1559-1610 MHz Radiated Emissions (GNSS)	* 2.1053, 90.543 (e) (700MHz)	-

Table 2: List of FCC and IC reference

** Note: Not Applicable for this filing*

EXHIBIT 7A - RF Output Power

The transmitter under test is connected to Power Meter using the forward port of 30dB attenuator and power sensor appropriate calibration offsets, derived from a traceable RF attenuator, which has been precision characterized by an outside testing laboratory, are entered into the wattmeter to calibrate for the use of the coupler.

The transmitter is operated under normal conditions at the specified nominal DC input voltage. The DC supply path to the final stage only (or to the RF power amplifier module, if the final stage only is not accessible) is interrupted to allow insertion of a DC ammeter in series with the DC supply. The DC voltage drop of the ammeter is negligible. A DC voltmeter is used to measure the DC voltage applied to the final stage. The DC input power to the final stage (in watts) is computed as the product of the DC current (in amperes) times the DC voltage (in volts). This measurement is performed at the lowest, the middle, and the highest operating frequencies of the operating bandwidth of the equipment.

The calibration of the power meter, power sensor and attenuator pads is verified on an annual basis. Other power measurement systems that may be used are correlated with this calibrated reference system before measurements are performed, and calibration factors are adjusted as necessary to obtain precise correlation.

EXHIBIT 7B - Audio Frequency Response

The transmitter output is monitored with modulation analyzer, whose FM demodulator output is fed to an audio analyzer. De-emphasis or filtering within the test equipment is not used. An audio oscillator signal, derived from the Audio Analyzer, is connected to the microphone audio input of the transmitter. At a frequency of 1kHz, the level is adjusted to obtain 20% of full system deviation, to ensure that limiting does not occur at any frequency in the range of 300Hz – 3000Hz. A constant input level is then maintained and the oscillator frequency is varied between the ranges of 100Hz to 5000Hz. The frequency response is plotted, using a reference of 0 dB at 1kHz.

EXHIBIT 7C - Audio Low Pass Filter Response

The audio oscillator portion of an audio analyzer is connected to the input of the post limiter low pass filter. The oscillator is adjusted, at 1000Hz and level 16 dB greater than that required to produce standard test modulation. The output of the low pass filter is measured with dynamic signal analyzer. The response is swept between the limits of 1000Hz - 30000Hz. Oscillator level is chosen to be as high as possible and that will not cause limiting at any frequency, and maintaining a constant input level versus frequency.

EXHIBIT 7D – Modulation Limiting

An audio oscillator is connected to the microphone audio input. The transmitter output is monitored with modulation analyzer. The flat frequency response FM demodulator output of the modulation analyzer is fed to an audio analyzer. The 20kHz low pass filter of the modulation analyzer is used to reduce the level of residual high frequency noise. The oscillator level is adjusted, at 1kHz, to obtain 60% of full system deviation. The oscillator level is then varied over a range of +/-20dB in 5 dB increments, and the resulting deviation is plotted. This measurement is repeated at 300 Hz and 3kHz. The above procedure is performed three times, for conditions with Tone Private Line, Digital Private Line, and Carrier Squelch Mode (without sub-audible signaling).

EXHIBIT 7E - Occupied Bandwidth

Procedure for Occupied Bandwidth Measurement for Voice Transmission

The transmitter is connected, via a suitable attenuator, to the Series Spectrum Analyzer. The spectrum analyzer settings for the reference calibration are in accordance with 47 CFR 90.210 (d) (4). The unmodulated carrier's emission spectrum is captured on the spectrum analyzer and then used to establish a 0 dB reference plot for exhibits.

Audio source from audio analyzer is connected to the microphone audio input of the transmitter. The audio source frequency is set to 2500Hz and the amplitude is adjusted to a level 16 dB above that required to produce 50% of full system deviation at the frequency of maximum response of the audio modulation circuit, in accordance with 47 CFR Part 2.1049(c)(1). The spectrum analyzer settings are adjusted in accordance with 47 CFR 90.210(d)(4) and the analyzer is swept to record the resultant emission levels using the appropriate emission mask.

This measurement is repeated with Tone Private Line (TPL) sub-audible signaling and audio by adding a 250.3Hz TPL tone at 15% full system deviation with the previously defined 2500Hz tone. The amplitude of the modulating signal is adjusted so that the total deviation, which includes the TPL deviation, is the full system deviation. An additional measurement is made with Digital Private Line (DPL) sub-audible signaling and audio by adding a DPL code 131 at 15% full system deviation with the previously defined 2500Hz tone. The amplitude of the modulating signal is adjusted so that the total deviation, which includes the DPL deviation, is the full system deviation.

Procedure for Occupied Bandwidth Measurement for 2000/3000 Hz FSK Data

The transmitter is connected, via a suitable attenuator, to the Spectrum Analyzer. The spectrum analyzer settings for the reference calibration are in accordance with 47 CFR 90.210 (d) (4). The unmodulated carrier's emission spectrum is captured on the spectrum analyzer and then used to establish a 0 dB reference plot for exhibits.

The audio function generator is connected to the flat (non-pre-emphasized) transmit audio input of the radio under test. A second function generator producing a square wave output at a frequency of 1200Hz is connected to the voltage control input of the first generator. The first generator is set to produce a sine wave signal at a center frequency of 2500Hz and the amplitude of the square wave from the second generator is adjusted so that the frequency of the first generator is varied ± 500Hz. The resulting output of the first generator is an AFSK sine wave signal that shifts between two discrete frequencies, 2000Hz and 3000Hz, at a rate of 1200Hz. The amplitude of the first generator, which modulates the transmitter, is adjusted for full system deviation. The spectrum analyzer settings are adjusted in accordance with 47 CFR 90.210 (d) (4) and the analyzer is swept to record the resultant emission levels using the appropriate emission mask.

This measurement is repeated with Tone Private Line (TPL) sub-audible signaling and 2000/3000Hz FSK data by adding a 250.3Hz TPL tone at 15% full system deviation with the previously defined data signal. The amplitude of the modulating signal is adjusted so that the total deviation, which includes the TPL deviation, is the full system deviation. An additional measurement is made with Digital Private Line (DPL) sub-audible signaling and 2000/300Hz FSK data by adding a DPL code 131 at 15% full system deviation with the previously defined 2500Hz tone. The amplitude of the modulating signal is adjusted so that the total deviation, which includes the DPL deviation, is the full system deviation.

Procedure for Occupied Bandwidth Measurement for 4-Level FSK Data

The transmitter is connected, via a suitable attenuator, to the Spectrum Analyzer. The spectrum analyzer settings for the reference calibration are in accordance with 47 CFR 90.210 (d) (4). The unmodulated carrier's emission spectrum is captured on the spectrum analyzer and then used to establish a 0 dB reference plot for exhibits.
The radio is placed in test mode such that it transmits a 511-bit pseudo-random bit sequence based on ITU-T O.153 in the 2:1 TDMA protocol's payload, which is in accordance to 47 CFR 2.1049 (h). The spectrum analyzer

settings are adjusted in accordance with 47 CFR 90.210 (d) (4) and the analyzer is swept to record the resultant emission levels using the appropriate emission mask.

Note: The occupied bandwidth plot exhibits cover a ± 50kHz frequency range that is centered on the assigned frequency.

EXHIBIT 7F - Radiated Spurious Emissions

The site, located at Plantation EMC laboratory is in a region which is reasonably free from RF interference and has been approved by the Commission for Spurious Measurements.

The equipment is placed on the turntable, connected to a dummy RF load and then placed in normal operation using the intended power source. A broadband receiving antenna, located 3 meters from the transmitter-under-test (TUT), picks up any signals radiated from the transmitter and its operation accessories. The antenna is adjustable in height and can by horizontally and vertically polarized. A spectrum analyzer covering the necessary frequency range is used to detect and measure any radiation picked up by the above mentioned receiving antenna.

<u>Method of Measurement:</u>

The equipment is adjusted to obtain peak reading of received signals wherever they occur in the spectrum by:

1. Rotating the transmitter under test.

2. Adjusting the antenna height.

The testing procedure is repeated for both horizontal and vertical polarization of the receiving antenna. Relative signal strength is indicated on the spectrum analyzer connected to the receiving antenna. To obtain actual radiated signal strength for each spurious and harmonic frequency observed, a standard signal generator with calibrated output is connected to a dipole antenna adjusted to that particular frequency. This dipole antenna is substituted for the transmitter under test. The signal generator is adjusted in output level until a reading identical to that obtained with the actual transmitter is observed on the spectrum analyzer. Signal strength is then read directly from the generator. Actual measurements are recorded on the attached graphs.

Note:
RBW setting is adjusted to 100kHz for spurious emissions below 1GHz and 1MHz for spurious emissions above 1GHz.

EXHIBIT 7G - Conducted Spurious Emissions

The output of the transmitter is connected, via a suitable attenuator, to the input of an Spectrum Analyzer. This data is measured at the upper and lower frequency limits of the frequency range. If transmit power is adjusted, the measurement is repeated at various power levels including minimum and maximum.

Note:
RBW setting is adjusted to 100kHz for spurious emissions below 1GHz and 1MHz for spurious emissions above 1GHz.

EXHIBIT 7H – Frequency Stability (Supply voltage / Temperature)

A. Temperature (Non-heated type crystal oscillators):
Frequency measurements are made at the extremes of the temperature range -30 to +60 degrees centigrade and at intervals of not more than 10 degrees centigrade throughout the range. Sufficient time is allowed prior to each measurement for the circuit components to stabilize.

B. Power Supply Voltage:
The primary voltage was varied from 85% to 115% of the nominal supply voltage. For handheld portable, the primary voltage was varied from battery operating end point to 115% of the nominal supply voltage. Voltage is measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

EXHIBIT 7I - Transient Frequency Behavior

The output of the radio is connected to an modulation analyzer by way of a directional coupler, 30dB attenuator, and 2:1 combining network. This output is first measured with an power meter and then the power meter is replaced by the modulation analyzer, and the RF output of an signal generator is connected to the second port of the combining network at a level of 30dB less than the output level of the radio measured after the attenuator. The RF output of the signal generator is modulated with a 1kHz tone and deviation of 12.5kHz or 25kHz depending on the channel spacing. The modulation output of the modulation analyzer is connected to a digital storage oscilloscope. The signal generator is turned on first, and then the radio keyed or de-keyed depending on the particular test. The oscilloscope is triggered by way of a RF peak detector that detects the RF output of the radio by way of the directional coupler.

The picture of the oscilloscope display is stored on a floppy disk and transferred to a computer. The key up attack time plot shows the 1kHz from the RF signal generator signal from the modulation output of the modulation analyzer, and when the radio is keyed, the output signal from the radio captures the receiver of the modulation analyzer, resulting in the carrier only signal. The de-key decay time plots show the unmodulated signal from the radio and when the radio is de-keyed, the 1kHz from the RF signal generator signal captures the receiver of the modulation analyzer, resulting in the 1kHz signal shown in the plots.

EXHIBIT 7J – Adjacent Channel Power

A reference level of the Unit Under Test was obtained by setting the measurement bandwidth of the spectrum analyzer to the channel size and measuring the power in the channel. Measurements were then taken at specified offsets and measurement bandwidths as specified in 90.543(a). For the far-out offsets, the dynamic range of the spectrum analyzer had to be extended. This was accomplished by connecting the output of the Unit Under Test to Port 1 of a circulator, connecting a tunable bandpass filter with a terminating load to Port 2 and connecting Port 3 of the circulator to the spectrum analyzer. With the spectrum analyzer swept over the desired measurement offset, the bandpass filter was slowly tuned from a higher frequency setting toward the current transmitter frequency. As the bandpass filter is tuned, frequencies outside of the filter's bandpass response are reflected back to the circulator where they are then passed to the spectrum analyzer. Frequencies inside the filter's response are passed to the terminating load and thus eliminated from the input of the spectrum analyzer. As the bandpass filter is tuned, the display of the spectrum analyzer is observed. As the center frequency of the filter approaches the current transmitter frequency, the level of the transmitter signal on the display of the spectrum analyzer will drop. The bandpass filter was tuned to the point where sufficient dynamic range of the spectrum analyzer was obtained. Actual measurements are recorded in the attached table.

EXHIBIT 7K – 1559-1610MHz Radiated Emissions (GNSS)

Measurements were conducted per TIA-102.CAAA-B Section 2.2.6.4. The transmitter is terminated into a 50 ohm load and interfaced through a suitable high pass filter to a spectrum analyzer. This allows for the measurement of spurious emission levels in the GNSS band. The transmitter is replaced with a signal generator to determine the loss of the setup at the measurement frequencies. And, the radiated emissions in the GNSS band are calculated as follows:

EIRP (dBm) = Level (dBm) - Loss (dB) + Antenna Gain (dBi)

Note:
RBW setting is adjusted to 1MHz.