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 25-1000 MHz (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
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Test Equipment List

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

Device	Model	S/N	Due Date
Computer	Hp600pd	SGH351S4V3	Cal Not Required
RF Signal Generator	Agilent E4420B	MY41000465(A)	07-Nov-17
Modulation Analyzer	HP 8901B	3403A04974	04-Nov-17
Audio Analyzer	HP 8903B	3413A13935	09-Apr-17
Dynamic Signal Analyzer	Agilent 35670A	MY42506847	20-Oct-17
PSA Series Spectrum Analyzer	Agilent E4445A	MY43360388	25-Aug-16
HP DC Power Supply	HP 6623A	3305A02648	16-Dec-17
Power Meter	Agilent E4416A	GB41293748	08-Apr-17
Power Sensor (with 30DB Pad)	Agilent E9301B	MY41495388	08-Apr-17
Infiniium Oscilloscope	Agilent MSO8104A	MY48240107	16-Mar-17
15MHz Functional Generator	HP 33120A	US34013620	17-Apr-17
Espec Chamber	SH-642	93000860	15-Jul-16
Dual Directional Coupler	HP 778D	14163	Cal Not Required
NHP-88 + High Pass Filter 50 ohm (780-3000)	Mini Circuits	15542	Cal Not Required
4-Way Pad	Measurement DIV M530	NA	Cal Not Required
30-dB attenuator	Weischel Engineering 9305 30	NA	Cal Not Required
USB Programming Cable	PMKN4126A	NA	Cal Not Required
Aeroflex Weinshel (50ohm terminated)	1424-4	22769	Cal Not Required

Table 1: List of Equipment

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) * 90.541, 90.545(b)(4) (700 MHz) 22.565(f) (VHF & UHF), * 24.132 (900 MHz) 74.461 (VHF & UHF)	RSS-Gen Sec 6.12, RSS-119 Sec 5.4.1, * RSS 119 Sec 5.4.5 (700 MHz) * RSS 134 Sec 5.4 (900 MHz)
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 74.463 (VHF & UHF)	-
Occupied Bandwidth	2.1049, 90.210, * 90.691 (800MHz), 22.359 (b) (VHF & UHF), * 24D (900MHz) 74.462(b) (VHF & UHF)	RSS GEN Sec 6.6, RSS 119 Sec 5.5, * RSS 134 (900MHz)
TX Radiated Spurious Emissions	2.1053, 90.210, 22.359 (VHF,UHF) 74.462(c) (VHF & UHF)	RSS GEN Sec 6.13, RSS 119 Sec 4.2, 5.8
TX Conducted Spurious Emissions	2.1051, 90.210, 22.359 (VHF,UHF), * 24.133 (900MHz) 80.211(c) (VHF), 74.462(c) (VHF & UHF)	RSS GEN Sec 6.13, RSS 119 Sec 4.2, 5.8, * RSS 134 Sec 6.3(ii) (900MHz) RSS 182 (VHF)
Frequency Stability (Temp / Supply Voltage)	2.1055, 90.213, * 90.539 (700 MHz) 22.355 * 24.135 (900 MHz) 74.464 (VHF & UHF)	RSS GEN Sec 6.11 RSS 119 Sec 5.3 * RSS 134 Sec 7 (900MHz)
Transient Frequency Behavior	90.214 (VHF & UHF)	RSS 119 Sec 5.9 (VHF & UHF)
* 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 1 kHz, 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 1 kHz.

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 20 kHz low pass filter of the modulation analyzer is used to reduce the level of residual high frequency noise. The oscillator level is adjusted, at 1 kHz, 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 3 kHz. 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 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

Test Site:

The site, located at Penang, Malaysia 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.

Method of Measurement

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 frequency below 1GHz and 1MHz for frequency 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.