

**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) and Digital C4FM/CQPSK Transceiver Measurement Method (TIA 102 CAAA-C).

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	<u>    x    </u>
2. RF Power Output Data	<u>    x    </u>
3. Audio Frequency Response	<u>    x    </u>
4. Audio Lowpass Filter Response	<u>    x    </u>
5. Modulation Limiting	<u>    x    </u>
6. Occupied Bandwidth	<u>    x    </u>
7. Conducted Spurious Emissions	<u>    x    </u>
8. Radiated Spurious Emissions	<u>    x    </u>
9. Frequency Stability (Volt/Temp)	<u>    x    </u>

**Test Equipment List**

Pursuant to 47 CFR 2.1033(c)

Description	Model #	Serial Number	Calibration Due Date
Modulation Analyzer	8901B	2718A01311	27-JUN-17
Audio Analyser	8903B	3011A13381	01-APR-17
Spectrum Analyzer	E4440A	MY46185008	28-FEB-16
Dynamic Signal Analyzer	35670A	MY42506767	06-FEB-17
Signal Generator	E4420B	MY41000462	08-DEC-17
Power Meter	E4416A	MY45100958	18-AUG-15
Power Sensor	E9301B	MY41495723	19-FEB-17
Power Supply	6033A	2817A03996	17-AUG-17
Microwave Generator	SMP 04	100131	24-Jun-15
Spectrum Analyzer/ESI Test Receiver	ESIB 26	100336	18-Jun-15
Bilog Antenna [30MHz-2GHz]	CBL6112B	2950	17-Oct-15
Bilog Antenna [30MHz-2GHz]	CBL6112B	2863	17-Jul-15
DRG Horn Freq. 700MHz-18GHz	SAS-571	1143	10-Jun-16
DRG Horn Freq. 700MHz-18GHz	SAS-571	1027	17-Oct-15
Temp/Humidity Monitor	TM 320	12249289	12-Nov-15
SAC (5m Semi-anechoic Chamber)	S800-HX	J2308	Jun-15
Antenna Positioning Tower (Boresight)	TLT2	NA	No Cal. Req'd
System controller	SC104V	050806-1	No Cal. Req'd
Turntable. Flush Mount 2M	FM2011	NA	No Cal. Req'd
Pre-amplifier	PAM-0118	270A	No Cal. Req'd

Table 1: List of equipments 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) * 90.541, 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)	-
TX Audio Low Pass Filter Response	2.1047	-
Modulation Limiting	2.1047 * 74.463 (VHF & UHF)	-
Occupied Bandwidth	2.1049, 90.210, * 90.691 (800 MHz), 22.359 (VHF,UHF), * 24.133 (900 MHz), * 74.462(b) (VHF & UHF)	* RSS GEN Sec 6.6, * RSS 119 Sec 5.5,  * RSS 134 Sec 5.5 (900 MHz)
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)
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
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) Notice 2011-08 (TETRA)
* Power Line Conducted Spurious Emissions	* 15.107	-
* Transient Frequency Behaviour	* 90.214 (VHF & UHF)	* RSS 119 Sec 5.9 (VHF & UHF)
* Adjacent Channel Power	* 90.543 (a)-(d)(700 MHz) * 90.221(b) (UHF TETRA) 90.221(c) (8/900 TETRA) R&O FCC 12-114, FCC 11-63 (TETRA)	* RSS 119 Sec 4.3 (700 MHz) * RSS 119 Sec 5.8.9 (700 MHz) * RSS 119 Sec 5.5 Table 3 <sup>(Note 2)</sup> (TETRA) * RSS 119 Sec 5.8.10 (TETRA)

Table 2: List of FCC and IC reference

*\* Note: Not Applicable for this filing*

**Measurement Procedures Used for Submitted Data****RF Power Output**

Pursuant to FCC Rules 2.1046 (a)

Conducted power is measured in accordance with TIA-603-D section 2.2.1.2. The transmitter under test is connected to an Power Meter using the forward port of a suitable attenuator pad and power sensor.

The transmitter is operated in test mode under nominal conditions. The DC voltage applied to the transmitter are read directly from the calibrated DC Power Supply. Remote voltage sensing is used to ensure the correct DC voltage is applied to the battery terminal of DUT. 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 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.

**Audio Frequency Response**

Pursuant to FCC Rule 2.1047(a)

The transmitter output is monitored with an Modulation Analyzer, whose FM demodulator output is fed to an Audio Analyzer. De-emphasis is disabled and filtering above 15 kHz, internal to the test equipment, is 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 300 Hz - 3000 Hz. A constant input level is then maintained and the oscillator frequency is varied between the range of 100 Hz to 5000 Hz. The frequency response is plotted, using a reference of 0 dB at 1 kHz.

**Audio Lowpass Filter Response**

Pursuant to FCC Rule 2.1047(a)

The audio oscillator portion of an Audio Analyzer is connected to the input of the post limiter lowpass filter. The output of the lowpass filter (OMAP TX SSI) is measured with the Audio Analyzer. The response is swept between the limits of 100 Hz and 30 kHz. Oscillator level is chosen to be the as high as possible that will not cause limiting at any frequency, and is maintained constant vs. frequency.

**Modulation Limiting**

Pursuant to FCC Rule 2.1047(b)

An audio oscillator is connected to the microphone audio input. The transmitter output is monitored with an Modulation Analyzer. The flat frequency response FM demodulator output of the Modulation Analyzer is fed to an Audio Analyzer. The 20 kHz lowpass 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  $\pm 20$  dB 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 four times, for conditions with Tone Private Line, Digital Private Line, Trunking (these are continuous subaudible signaling formats), and without subaudible signalling (referred to as "carrier squelch mode").

**Occupied Bandwidth**

Pursuant to FCC Rules 2.1049

**Procedure for Occupied Bandwidth Measurement for Voice Transmission**

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 source is connected to the microphone audio input of the transmitter. The audio source frequency is set to 2500 Hz 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.

**Conducted Spurious Emissions**

Pursuant to FCC Rule 2.1051

The output of the transmitter is connected, via a suitable attenuator, to the input of an spectrum analyzer. The level of spurious emissions, in dBm, is plotted. This data is measured at the lower, middle, and upper frequency limits of the frequency range.

**Note:**

RBW setting is adjusted to 100kHz for frequency below 1GHz and 1MHz for frequency above 1GHz

**Radiated Spurious Emissions**

Pursuant to FCC Rules 2.1053

**Test Site:**

The site, located at Penang, Malaysia 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 be 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

**Frequency Stability**

Pursuant to FCC Rule 2.1055

**Method of Measurement:****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. 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.

Operate the transmitter under standard test conditions and monitor the output with a frequency deviation meter or calibrated test receiver. With 1000 Hz sine wave audio input applied through a dummy microphone circuit, adjust the audio input to give 20% of full rated system deviation. Maintaining a constant input voltage, vary the input frequency from 300 to 3000 Hz, and observe the deviation.