REPORT ON
Radio testing of the STANDARD HORIZON GX1700
In accordance with ANSI/TIA/EIA-603-C, RSS-182

Report number TA001112 November 2011

GENERAL INFORMATION

MODEL NAME:	GX1700	
FCC ID:	K6630483X3D	
IC:	511B-30483X3S	
MANUFACTURER:	Vertex Standard Co., Ltd.	
TRADE NAME:	STANDARD HORIZON	
EUT DESCRIPTION:	VHF FM Mobile Transceiver	
SERIAL NUMBER:	1L000006	
VOLTAGE RQUIREMENTS:	13.8 DC	[V]
NUMBER OF CHANNELS:	65	
SPECIFICATION ARE REFERENCED:	ANSI/TIA/EIA-603-C RSS-182	

TRANSMITTERS

TYPE OF EMISSION:	16K0G3E, 16K0G2B(for DSC)	
FREQUENCY RANGE:	156.05 to 157.43	[MHz]
POWER OUTPUT RATING:	1 to 25 x Switchable __ Variable __ N/A	[W]
MAXIMUM POWER RATING:	25	[W]
INPUT IMPEDANCE (MIC):	2000	[Ω]
OUTPUT IMPEDANCE (RF):	50	[Ω]
Collector Voltage:	13.8	[V]
Collector Current:	5	[A]

RECEIVERS

FREQUENCY RANGE:	156.050 to 163.475	[MHz]
INTERMEDIATE FREQUENCIES:	1st -21.7	[MHz]
	2nd -450	[kHz]
INPUT IMPEDANCE (RF):	50	[Ω]
OUTPUT IMPEDANCE (SP):	4	[Ω]
AUDIO OUTPUT POWER:	4.5	[W]

This report was prepared by Vertex Standard Co., Ltd.

Test performed by Shigemitu Takahashi

Shigemitu Takahashi

Chief Test Engineer
Engineering Division T/A Section
Vertex Standard Co., Ltd.

Date: November 1, 2011

GX1700 Channel Settings

CH No.	Shown on LCD	Transmit Frequency [MHz]	Receive Frequency [MHz]	CH Spacing	Power	
					HI	LOW
1	CH16	156.800	156.800	25k	25W	1W
2	CH70	156.525	156.525	25k	25W	1W
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

NAME OF TEST: R.F. Power Output (Conducted)
SPECIFICATION: 47 CFR 2.1046 (a)
GUIDE: ANSI/TIA/EIA-603-C, Paragraph 2.2.1.2
TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

1. The EUT was connected to a resistive coaxial attenuator of normal load impedance, and the modulated output powerwas measured by means of an R.F. power meter.

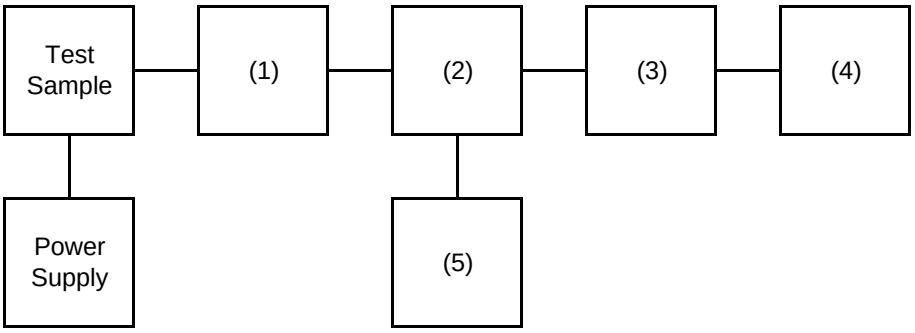
2. Measurement accuracy is ± 4%

MEASUREMENT RESULTS

NOMINAL, MHz	CHANNEL	R.F. POWER, WATTS	
		LOW	HIGH
156.800	16	0.9	23.8
156.525	70	0.9	23.7

TRANSMITTER POWER CONDUCTED MEASUREMENTS

TEST 1: R.F. POWER OUTPUT
TEST 2: FREQUENCY STABILITY



Instruments	Description	Calibration Date	Next Calibration
(1) COAXUAL ATTENUATOR	WEINSCHELL 49-10-43	2011.1.10	1 Year After
(2) RF COUPLER	ADVANTEST TR4153	-	1 Year After
(3) POWER SENSOR	Agilent 8482B	2010.12.27	1 Year After
(4) POWER METER	Agilent 8901B POWER MODE	2010.12.27	1 Year After
(5) FREQUENCY COUNTER	Agilent 8901B FREQUENCY MODE	2010.12.27	1 Year After

NAME OF TEST:	Unwanted Emissions (Conducted)
SPECIFICATION:	47 CFR 2.1051
GUIDE:	ANSI/TIA/EIA-603-C, Paragraph 2.2.13.2
TEST EQUIPMENT:	As per attached page

MEASUREMENT PROCEDURE

1. The emissions were measured for the worst case as follows:
   (a): within a band of frequencies defined by the carrier frequency plus and minus one channel.
   (b): from the lowest frequency generated in the EUT and to at least the 10th harmonic of the carrier frequency, or 40GHz, whichever is lower.

2. The magnitude of spurious emissions that are attenuated more than 20dB below the permissible value need not be specified.

3. MEASUREMENT RESULTS:

FREQUENCY OF CARRIER, MHz	=	156.8 , 156.525 , 0
SPECTRUM SEARCHED, GHz	=	0 to 10 x Fc
MAXIMUM RESPONSE, Hz	=	2900
ALL OTHER EMISSIONS	=	>= 20dB BELOW LIMIT

NAME OF TEST: Unwanted Emissions (Conducted)

LIMIT'S), dBc:	-(43+10xLOG(P))	=	-57	(	25 Watts	)
	-(43+10xLOG(P))	=	-43	(	1 Watts	)

High Power

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBm	LEVEL, dBc	MARGIN, dB

measurements exceed the requirements by more than 20 dB

NAME OF TEST: Unwanted Emissions (Conducted)

LIMIT'S), dBc:	-(43+10xLOG(P))	=	-57	(	25 Watts	)
	-(43+10xLOG(P))	=	-43	(	1 Watts	)

Low Power

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBm	LEVEL, dBc	MARGIN, dB

measurements exceed the requirements by more than 20 dB

NAME OF TEST: Field Strength of Spurious Radiation
SPECIFICATION: 47 CFR 2.1053 (a)
GUIDE: ANSI/TIA/EIA-603-C, Paragraph 2.2.12.2

MEASUREMENT PROCEDURE

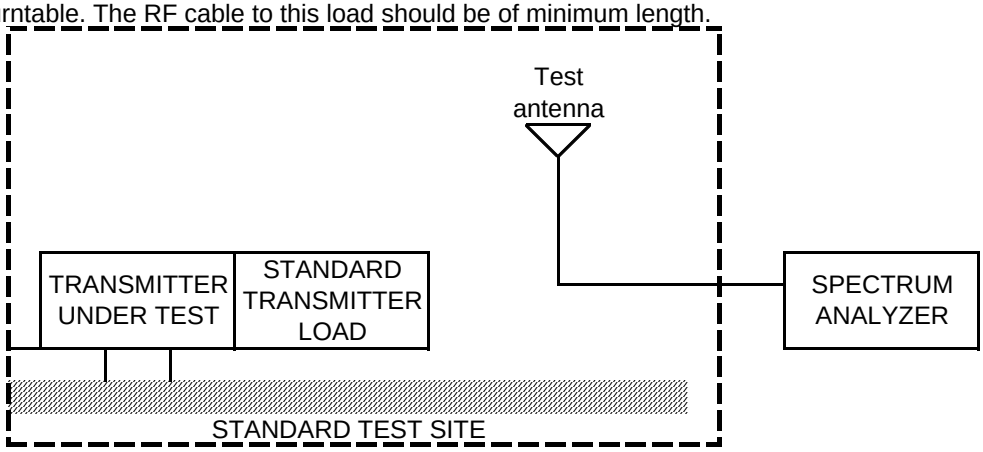
2.2.12.1 Definition: Radiated spurious emissions are emissions from the equipment when transmitting load on a frequency or frequencies which are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.

2.2.12.2 Method of measurement

A) Connect the equipment as illustrated.

B) Adjust the spectrum analyzer for the following settings:
1) Resolution Bandwidth <= 3kHz
2) Video Bandwidth >= 10kHz
3) Sweep Speed <= 2000Hz/second
4) Detector Mode = Positive Peak

C) Place the transmitter to be tested on the turntable in the standard test site. The transmitter is transmitting into a non-radiating load which is placed on the turntable. The RF cable to this load should be of minimum length.

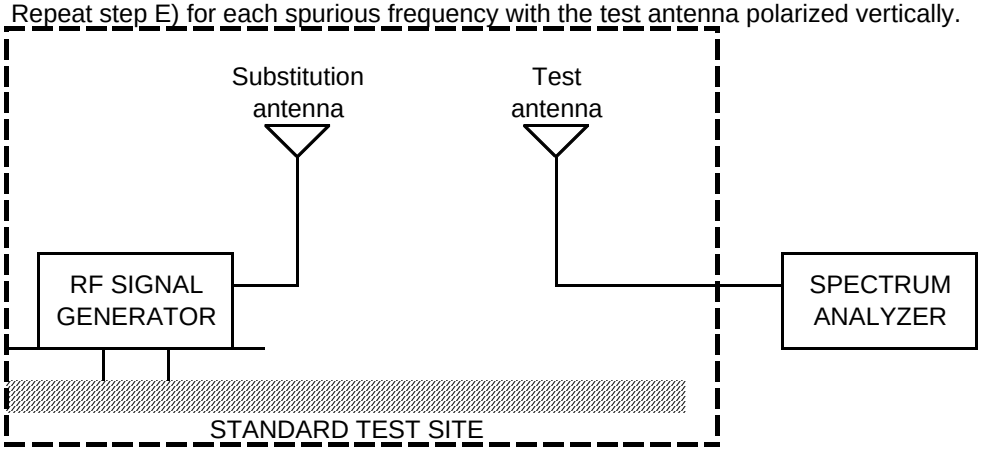


D) For each spurious measurment the test antenna should be adjusted to the correct length for the frequency involved. This length maybe determined from a calibration ruler supplied with the equipment. Measurements shall be made from the lowest radio frequency generated in the equipment to the tenth harmonic of the carrier, except for the region close to the carrier qeual to ± the test bandwidth (see section 1.3.4.4).

E) For each spurious frequency, raise and lower the test antenna from 1 m to 4 m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity.

NAME OF TEST: Field Strength of Spurious Radiation

F) Repeat step E) for each spurious frequency with the test antenna polarized vertically.



G) Reconnect the equipment as illustrated.

H) Keep the spectrum analyzer adjusted as in step B).

I) Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved).
The center of the substitutuion antenna should be approximately at the same location as the center of the transmitter. At lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is plarized vertically. In such case the lower end of the antenna should be 0.3m above the ground.

J) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas at both ends horizontally polarized and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output untill the previusl recorded maximum reading for the set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.

K) Repeat step J) with both antennas vertically polarized for each spurious frequency.

L) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in step J) and K) by the power loss in the cable between the generator and the antenna and futher corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna.

M) The levels recorded in step L) are absolute levels of radiated spurious emissions in dBm. The radiated spurious emissions in dB can be calculated by the following:

Radiated spurious emissions dB = 10log10(TX power in watts/0.001) - the levels in step L)

NAME OF TEST: Field Strength of Spurious Radiation

Note: It is permissible that other antennas provided can be referenced to a dipole.

Instruments	Description	Calibration Date	Next Calibration
TRANSDUCER	Schaffner-Chase CBL6143	-	-
TRANSDUCER	EMCO 3115	-	-
AMPLIFIER	Agilent 8447D	2011.2.14	1 Year After
AMPLIFIER	Agilent 8449B	2011.2.14	1 Year After
SPECTRUM ANALYZER	Agilent 8561B	2010.12.10	1 Year After

NAME OF TEST: Field Strength of Spurious Radiation

LIMIT'S), dBc: -(43+10xLOG(P)) = -57 (25 Watts)
-(43+10xLOG(P)) = -43 (1 Watts)

High Power

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	C.F., dB	ERP, dBm	ERP, dBc
156.8000	470.4000	44.9	31.1	-31.0	-75.0

NAME OF TEST: Field Strength of Spurious Radiation

LIMIT'S), dBc:	-(43+10xLOG(P))	=	-57	(25	Watts)
	-(43+10xLOG(P))	=	-43	(1	Watts)

Low Power

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	C.F., dB	ERP, dBm	ERP, dBc

measurements exceed the requirements by more than 20 dB

NAME OF TEST: Receiver Spurious Emissions (Conducted)
STATE: 0 : General
All other emissions in the required measurement range ware mora than 20dB below the required limits.

MEASUREMENT RESULTS

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBm	LEVEL, nW
156.800	135.100	-72.5	0.0562

NAME OF TEST: Receiver Spurious Emissions (Radiated)
STATE: 0 : General
All other emissions in the required measurement range ware mora than 20dB below the required limits.

MEASUREMENT RESULTS

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@m	CF, dB	uV/m
156.800	135.100	48.3	3	-9.2	90.2
156.800	270.200	46.2	3	-10.6	60.3
156.800	405.300	42.0	3	-6.3	61.0
156.800	540.400	42.2	3	-5.7	66.8
156.800	675.500	41.6	3	-4.9	68.4
156.800	810.600	37.9	3	-4.9	44.7
156.800	945.700	38.5	3	-4.2	51.9
156.800	1763.000	51.5	3	-5.3	204.2
156.800	1890.000	47.7	3	-4.4	146.2

NAME OF TEST: Subpart T G3E Emissions
SPECIFICATION: 47 CFR 80.961 (a) & (b)

MEASUREMENT PROCEDURE

(a) The receiver is capable of reception of G3E Emissions on the required frequencires.

(b) The sensitivity of the receiver at 20dB SINAD is better than:

Sensitivity, dBm	=	-118.2
Sensitivity, uV	=	0.275