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Date: 13 April 2023

I.T.L. Product Testing Ltd.

FCC/IC Radio Test Report

for

Questar Auto Technologies Ltd.

Equipment under test

Vehicle Telematics System

Enabler Unit

FCC ID: 2A6DICONNECT

Tested by: _____
M. Zohar

Approved by: _____
I. Mansky

This report concerns: Class II Permissive change

Equipment type: FCC: DSR, Part 15 Security/Remote Control Transceiver
IC: Vehicle Entertainment/Network Device

Limits used: FCC: 47CFR 15 Section 15.231 (a-d)
IC: RSS-210, Issue 10 (December 2019, Annex A)

Measurement procedure used: FCC: ANSI C63.10-2013
IC: RSS-Gen Issue 5 (April 2018) + Amendment 1 (March 2019)

Prepared by:

R. Ezrah

I.T.L. Product Testing Ltd.

1 Bat Sheva St., Lod 7116002, Israel

Email: rame@itlglobal.org

Applicant:

Yair Shuvali

Questar Auto Technologies Ltd.

1 Abba Eban Blvd, Herzliya Pituach 4672519, Israel

Email: yairs@questarauto.com

Table of Contents

1. General Information

1.1 Administrative Information

Manufacturer:	Questar Auto Technologies Ltd.
Manufacturer's Address:	1 Abba Eban Blvd, Herzliya Pituach 4672519, Israel
Manufacturer's Representative:	Yair Shuvali
Equipment Under Test (E.U.T):	Vehicle Telematics System
Equipment Model No.:	Enabler Unit
Equipment Serial No.:	PCB P/N TRF-PCB1301-A1 (Rev A1)
Date of Receipt of E.U.T:	November 16, 2022
Start of Test:	November 16, 2022
End of Test:	November 30, 2022
Test Laboratory Location:	I.T.L (Product Testing) Ltd. 1 Bat Sheva St., Lod 7120101 Israel
Test Specifications:	FCC Part 15, Subpart C, Section 231 (a-d) RSS-210, Issue 10 (December 2019, Annex A)

1.2 List of Accreditations

The EMC laboratory of I.T.L. is accredited by the following bodies:

1. The American Association for Laboratory Accreditation (A2LA) (U.S.A.), Certificate No. 1152.01.
2. The Federal Communications Commission (FCC) (U.S.A.), FCC Designation No. IL1005.
3. Industry Canada (Canada), IC File No.: 46405-4025; Site Nos. IC 4025A-1, IC 4025A-2.

I.T.L. Product Testing Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with I.T.L.'s terms of accreditation unless stated otherwise in the report.

1.3 Product Description

The two models are installed in a truck trailer to provide telematics. Both are DC-powered from the trailer's battery and are controlled by the Connect 2G/4G (also installed in the truck), as part of a vehicle telematics system.

The two models are based on the Connect 4G, using the same identical card, but with the following differences:

- **Trailer:** different outdoor enclosure, different battery (10Ah), no assembly of the Wi-Fi transceiver.

- **Enabler:** different outdoor enclosure, no assembly of the Wi-Fi transceiver, no assembly of the Cellular 4G transceiver.

The two models do not connect to the vehicle's CAN bus.

The **Trailer** is connected to the trailer's ABS unit (that is connected to the CAN bus), to receive data, only as a listener in "receive" mode.

The Enabler uses the CAN bus as a serial interface, only to connect to the Connect model, not to the trailer's CAN bus.

1.4 Test Methodology

Both conducted and radiated tastings were performed according to ANSI C63.10:2013& RSS-Gen Issue 5 (April 2018) + Amendment 1 (March 2019) procedures. Radiated testing was performed at an antenna-to-EUT distance of 3 meters.

1.5 Test Facility

Emissions tests were performed at I.T.L.'s testing facility in Lod, Israel. I.T.L.'s EMC Laboratory is accredited by A2LA, certificate No. 1152.01 and its FCC Designation Number is IL1005.

1.6 Measurement Uncertainty

Radiated Emission

Radiated Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4) for open site:
30-1000MHz:
Expanded Uncertainty (95% Confidence, K=2):
± 4.96 dB

1 GHz to 6 GHz
Expanded Uncertainty (95% Confidence, K=2):
±5.19 dB

>6 GHz
Expanded Uncertainty (95% Confidence, K=2):
±5.51 dB

QUESTAR
Driving Knowledge

Date: 1 January 2023

Model Difference Declaration

Dear Madam/Sir,

We, Questar Auto Technologies Ltd., 1 Abba Eban Blvd, Herzliya Pituach 4672519, Israel

hereby declare, that the EUT model that was tested at the I.T.L. EMC laboratory between October 18, 2021 and March 2, 2022, which is as follows:

- EUT: Vehicle Telematics System
- Model name: Connect Family (Connect-P)

is identical in all components, RF modules, electronic design, and PCB layout to:

- EUT: Vehicle Telematics System
- Model names: Enabler 412, Trailer 412

Except for the following:

a) The PCB has two additional layers for improving EMC performance
b) There are additional EMC filters
c) New microcontroller family: STM32F412 (instead of STM32F413).
d) New 433MHz antenna (Enabler 412 utilizes helical antenna; Trailer 412 utilizes L antenna.)

Please relate to them (from an EMC/Radio point of view) as the same product.

Sincerely,

Mr. Yair Shuvali
Hardware Manager

Shuvali Yair

Questar Auto Technologies Ltd.

2. System Test Configuration

2.1 Justification

1. The E.U.T contains an approved 433.92 MHz transceiver (FCC ID: 2A6DICONNECT), model number: ”Connect Family”. See model declaration on previous page.
2. This report subject is to check compliance for C2 Permissive Change.
3. Final radiated emission tests were performed after exploratory emission testing that was performed in three orthogonal polarities, to determine the “worst case” radiation.
4. According to the screening results below, the “worst case” was at the Z axis.

Orientation	Frequency	Field Strength	3rd Harmonic	5th Harmonic
	(MHz)	(dBuV/m)	(dBuV/m)	(dBuV/m)
Z axis	433.92	92.7	48.3	51.5
Y axis	433.92	92.0	46.8	49.2
X axis	433.92	91.5	46.2	49.0

Figure 1. Screening Results

2.2 EUT Exercise Software

No special exercise software was used.

2.3 Special Accessories

No special accessories were needed to achieve compliance.

2.4 Equipment Modifications

The customer reduced the power level by software, until the E.U.T achieved the necessary C2PC requirements

2.5 Configuration of Tested System

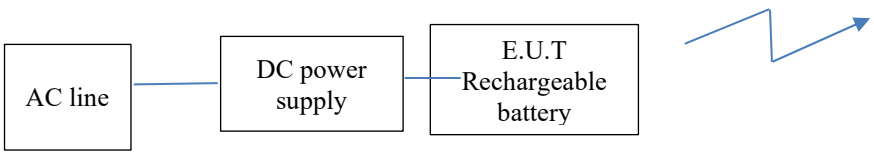


Figure 2. Configuration of Tested System

3. Test Setup Photos

See a separate file.

4. Average Factor Calculation

1. Burst duration in 100msec = 8.0msec
2. Pulse duration and pulse period ratio = 1
3. Average Factor $= 20 \log \left[\frac{\text{Pulse duration}}{\text{Pulse period}} \times \frac{\text{burst duration}}{100\text{msec}} \times \text{Num of burst within 100msec} \right]$

$$\text{Average Factor} = 20 \log \left[1 \times \frac{8.0}{100} \times 1 \right] = -21.9\text{dB}$$

Customer declaration

QUESTAR
Driving Knowledge

C1101 Transmit mode deceleration

C1101 Transmit slots declaration

Author: Yair Shuvali

Version: 0.1

Maturity
☐ draft
☒ released

Revision History

Version	Change Description	Author	Date
0.1		Yair Shuvali	01.03.22

C1101 Transmit data over the air

The data baud rat over the air is 19.2Kbit/sec
The data payload is 20Bytes 2-FSK

This gives approximately 8msec transmit duration time
The gap between each transmit period might be up to 7.5sec

5. Field Strength of Fundamental

5.1 Test Specification

FCC, Part 15, Subpart C, Section 15.231(b)

RSS-210, Issue 10 (December 2019), Annex A, Section A.1.2

5.2 Test Procedure

(Temperature (18°C)/ Humidity (58%RH))

The E.U.T was tested in the open site, placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization.

5.3 Test Limit

The field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental @3m (µV/m)	Field strength of fundamental @3m (dBµV/m)
40.66-40.70(FCC only)	2,250	67.0
70-130	1,250	61.9
130-174	[1]1,250 to 3,750	61.9 to 71.5[1]
174-260	3,750	71.5
260-470	[1]3,750 to 12,500	71.5 to 81.9[1]
Above 470	12,500	81.9

[1] Linear interpolation

* The limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions

** If average emission measurements are employed, the provisions in §15.35 for averaging pulsed emissions and for limiting peak emissions apply

5.4 Test Results

JUDGEMENT: Passed by -10.0 dB

The EUT met the FCC Part 15, Subpart C, Section 15.231(b) and RSS-210, Issue 10 (December 2019), Annex A, Section A.1.2 specification requirements.

The details of the highest emissions are given in *Figure 3 to Figure 5*.

Field Strength of Fundamental

E.U.T Description	Vehicle Telematics System
Type	21.9
Serial Number:	PCB P/N TRF-PCB1301-A1 (Rev A1)

Specification: FCC, Part 15, Subpart C, 15.231(b)& RSS-210, Issue 10 (December 2019), Annex A, Section A.1.2

Antenna Polarization: Horizontal/Vertical

Test Distance: 3 meters Detector: Peak

Freq.	Pol.	Peak Reading	Average Factor	Average Result	Peak limit	Averge limit	Peak Margin	Averge Margin
(MHz)	(V/H)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV/m)	(dBµV/m)	(dB)	(dB)
433.92	V	90.6	-21.9	68.7	100.8	80.8	-10.2	-12.1
433.92	H	92.7	-21.9	70.8	100.8	80.8	-8.1	-10.0

Figure 3. Field Strength of Fundamental - Average/Peak Results

Notes:

1. Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.
2. "Average Result" (dBµV/m)=Peak Reading (dBµV/m) + Average Factor (dB).

Field Strength of Fundamental

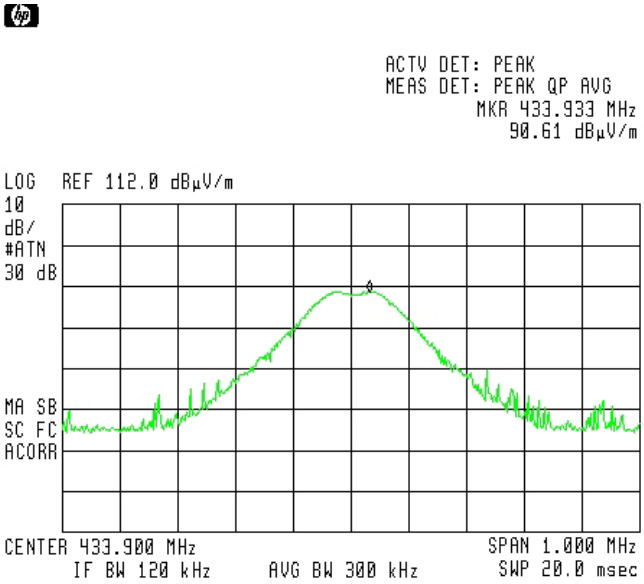


Figure 4. Field Strength of Fundamental - Vertical

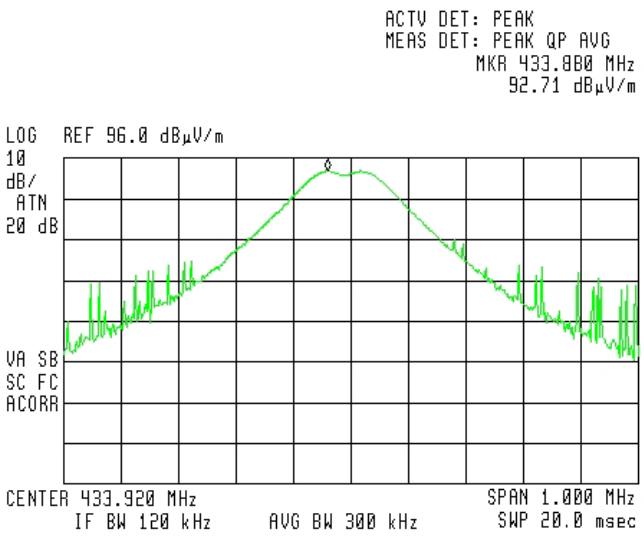


Figure 5. Field Strength of Fundamental - Horizontal

5.5 Test Instrumentation Used; Field Strength of Fundamental

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
EMI Receiver	HP(Agilent)	8542E	3906A00276	February 22, 2022	February 22, 2023
RF Filter	HP(Agilent)	85420E	3705A00248	February 22, 2022	February 22, 2023
Log periodic antenna	EMCO	3146	9505-4081	27 Apr. 2021	27 Apr. 2024
35m coaxial cable for oats	EIM (Huber Suhner)	RG214-11N(X2) RG214/U	(blank)	June 22, 2022	June 22, 2023

Figure 6. Test Equipment Used

6. Field Strength of Spurious Emissions

6.1 Test Specification

FCC, Part 15, Subpart C, Section 15.231(b)

RSS-210, Issue 10 (December 2019), Annex A, Section A.1.2

6.2 Test Procedure

(Temperature (21°C)/ Humidity (55%RH))

For measurements between 0.009MHz-30MHz:

The E.U.T was tested inside the shielded room and placed on a non-metallic table, 0.8 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.
The frequency range 0.009MHz-30MHz was scanned

For measurements between 30.0MHz-1.0GHz:

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization. The frequency range 30.0MHz -1.0GHz was scanned and the list of the highest emissions was verified and updated accordingly.

For measurements between 1.0GHz-5.0GHz:

The E.U.T was tested inside the shielded room and placed on a non-metallic table, 1.5 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.
The frequency range 1.0GHz -5.0GHz was scanned

6.3 FCC/IC Test Limit

Spurious emissions shall be attenuated to the average limits shown in next table or to the general limits shown in §15.209, whichever limit permits a higher field strength:

Fundamental frequency	Field strength of spurious emissions@3m	Field strength of spurious emissions@3m
(MHz)	(µV/m)	(dBµV/m)
40.66-40.70	225	47.0
70-130	125	41.9
130-174	[1]125 to 375	[1]41.9 to 51.5
174-260	375	51.5
260-470	[1]375 to 1,250	[1]51.5 to 61.9
Above 470	1,250	61.9

[1] Linear interpolation

* The limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions

** If average emission measurements are employed, the provisions in §15.35 for averaging pulsed emissions and for limiting peak emissions apply

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)	Field strength (dBµV/m)	Field strength* (dBµV/m)@3m
0.009-0.490	2400/F(kHz)	300	48.5-13.8	128.5-73.8
0.490-1.705	24000/F(kHz)	30	33.8-23.0	73.8-63.0
1.705-30.0	30	30	29.5	69.5
30-88	100	3	40.0	40.0
88-216	150	3	43.5	43.5
216-960	200	3	46.0	46.0
Above 960	500	3	54.0	54.0

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

Figure 7 FCC Table of Limits

Frequency (MHz)	Magnetic Field strength (µA/m)	Measurement distance (m)	Magnetic Field strength (dBµA/m)	Magnetic Field strength* (dBµA/m)@3m
0.009-0.490	6.37/F(kHz)	300	-3.0-(-37.7)	77.0-42.2
0.490-1.705	63.7/F(kHz)	30	-17.7-(-28.5)	22.3-11.4
1.705-30.0	0.08	30	-21.9	18.0
Frequency (MHz)	**Field strength (microvolts/meter)**	**Measurement distance (meters)**	**Field strength (dBµV/m)**	**Field strength* (dBµV/m)@3m**
30-88	100	3	40.0	40.0
88-216	150	3	43.5	43.5
216-960	200	3	46.0	46.0
Above 960	500	3	54.0	54.0

Figure 8 IC Table of Limits

6.4 Test Results

JUDGEMENT: Passed by -7.7 dB

The EUT met the requirements of the FCC Part 15, Subpart C RSS-210, Issue 10 (December 2019), Annex A, Section A.1.2 specification.

The margin between the emission level and the specification limit was -7.7 dB in the worst case, at the frequency of 2603.5 MHz, vertical polarization.

For additional information see *Figure 9*.

Radiated Emission

E.U.T Description Vehicle Telematics System
Type Enabler Unit
Serial Number: PCB P/N TRF-PCB1301-A1 (Rev A1)

Specification: FCC Part 15, Subpart C& RSS-210, Issue 10 (December 2019), Annex A, Section A.1.2

Antenna Polarization: Vertical/ Horizontal Frequency range: 0.009MHz to 5GHz
Antenna: 3 meters distance Detectors: Peak, Average

Freq.	Pol.	Peak Reading	Average Factor	Average Result	Peak limit	Averge limit	Peak Margin	Averge Margin
(MHz)	(V/H)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV/m)	(dBµV/m)	(dB)	(dB)
1301.7	H	48.3	-21.9	26.4	80.8	60.8	20.0	-12.5
1301.7	V	43.5	-21.9	21.6	80.8	60.8	20.0	-17.3
2169.6	H	51.5	-21.9	29.6	80.8	60.8	20.0	-9.3
2603.5	H	53.1	-21.9	31.2	80.8	60.8	20.0	-7.7

Figure 9. Spurious Radiated Emission Results

Notes:

1. Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.
2. "Average Result" (dBµV/m) = Peak Reading (dBµV/m) + Average Factor (dB).

6.5 Test Instrumentation Used, Radiated Measurements

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
EMI Test Receiver	Rohde & Schwarz	ESCI7	100724	February 20, 2022	February 20, 2023
EMI Receiver	HP(Agilent)	8542E	3906A00276	February 22, 2022	February 22, 2023
RF Filter	HP(Agilent)	85420E	3705A00248	February 22, 2022	February 22, 2023

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
Biconical Antenna	EMCO	3110B	9912-3337	January 18, 2022	January 18, 2024
Log Periodic Antenna	EMCO	3146	9505-4081	January 20, 2021	January 20, 2023
Horn Antenna	ETS	3115	29845	May 25, 2021	May 25, 2024
Active Loop Antenna	EMCO	6502	2950	July 5, 2022	July 5, 2023
Spectrum Analyzer	HP(Agilent)	8591E	3414U01226	February 21, 2022	February 21, 2023
35m coaxial cable for oats	EIM (Huber Suhner)	RG214-11N(X2) RG214/U	(blank)	June 22, 2022	June 22, 2023
Full Anechoic Civil Chamber	ETS	S81	SL 11643	NCR	NCR
Antenna Mast	ETS	2070-2	9608-1497	NCR	NCR
Turntable	ETS	2087	-	NCR	NCR
Mast & Table Controller	ETS/EMCO	2090	9608-1456	NCR	NCR

Figure 10. Test Equipment Used

7. 20dB Bandwidth

7.1 Test Specification

FCC, Part 15, Subpart C, Section 15.231(c)

RSS-210, Issue 10 (December 2019), Annex A, Section A.1.3

7.2 Test Procedure

(Temperature (21°C)/ Humidity (50%RH))
The transmitter unit operated with normal modulation. The spectrum analyzer was set to 30 kHz resolution BW and center frequency of the transmitter fundamental. The spectrum bandwidth of the transmitter unit was measured and recorded. The BW was measured at 20 dBc points.

7.3 Test Limit

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

7.4 Test Results

Specification: FCC Part 15, Subpart C: (15.231(c))

Bandwidth Reading	Specification
(kHz)	(kHz)
433.92	166.5

Figure 11. 20dB Bandwidth Test Results

For additional information, see *Figure 12*.

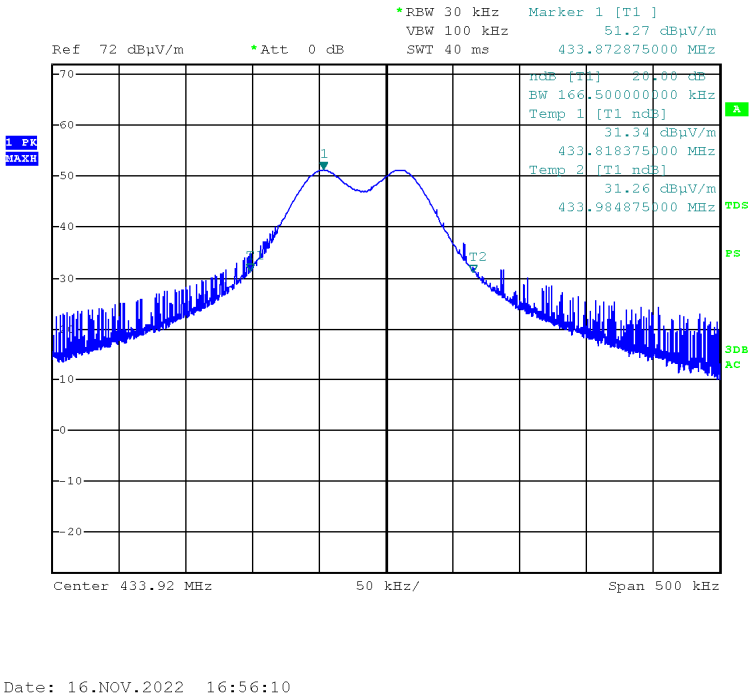


Figure 12. 20dB Bandwidth Results

7.5 Test Equipment Used; 20dB Bandwidth

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
EMI Receiver	HP(Agilent)	8542E	3906A00276	February 22, 2022	February 22, 2023
RF Filter	HP(Agilent)	85420E	3705A00248	February 22, 2022	February 22, 2023
Log-periodic Antenna	EMCO	3146	9505-4081	April 27, 2021	April 27, 2024

Figure 13. Test Equipment Used

8. Appendix A - Correction Factors

8.1 For ITL #1911 OATS RF Cable

Frequency (MHz)	Cable Loss (dB)		Frequency (MHz)	Cable Loss (dB)
1.0	0.5		450.00	5.83
10.00	1.0		500.00	6.33
20.00	1.34		550.00	6.67
30.00	1.5		600.00	6.83
50.00	1.83		650.00	7.17
100.00	2.67		700.00	7.66
150.00	3.17		750.00	7.83
200.00	3.83		800.00	8.16
250.00	4.17		850.00	8.5
300.00	4.5		900.00	8.83
350.00	5.17		950.00	8.84
400.00	5.5		1000.00	9.0

8.2 For ITL #1840 Anechoic Chamber RF Cable

Frequency (MHz)	Cable Loss (dB)		Frequency (MHz)	Cable Loss (dB)
1000.0	-1.4		10000.0	-6.0
1500.0	-1.7		10500.0	-6.2
2000.0	-2.0		11000.0	-6.2
2500.0	-2.3		11500.0	-6.0
3000.0	-2.6		12000.0	-6.0
3500.0	-2.8		12500.0	-6.1
4000.0	-3.1		13000.0	-6.3
4500.0	-3.3		13500.0	-6.5
5000.0	-3.6		14000.0	-6.7
5500.0	-3.7		14500.0	-7.0
6000.0	-4.0		15000.0	-7.3
6500.0	-4.4		15500.0	-7.5
7000.0	-4.7		16000.0	-7.6
7500.0	-4.8		16500.0	-8.0
8000.0	-5.0		17000.0	-8.0
8500.0	-5.1		17500.0	-8.1
9000.0	-5.6		18000.0	-8.2
9500.0	-5.8			

8.3 For ITL # 1075 Active Loop Antenna

Frequency (MHz)	MAF (dBs/m)	AF (dB/m)
0.01	-33.1	18.4
0.02	-37.2	14.3
0.03	-38.2	13.3
0.05	-39.8	11.7
0.1	-40.1	11.4
0.2	-40.3	11.2
0.3	-40.3	11.2
0.5	-40.3	11.2
0.7	-40.3	11.2
1	-40.1	11.4
2	-40.0	11.5
3	-40.0	11.5
4	-40.1	11.4
5	-40.2	11.3
6	-40.4	11.1
7	-40.4	11.1
8	-40.4	11.1
9	-40.5	11.0
10	-40.5	11.0
20	-41.5	10.0
30	-43.5	8.0

8.4 For ITL #1356 Biconical Antenna

Frequency (MHz)	AF (dB/m)
30	13.00
35	10.89
40	10.59
45	10.63
50	10.12
60	9.26
70	7.74
80	6.63
90	8.23
100	11.12
120	13.16
140	13.07
160	14.80
180	16.95
200	17.17

8.5 For ITL # 1349 Log Periodic Antenna

Frequency (MHz)	AF (dB/m)
200	11.58
250	12.04
300	14.76
400	15.55

500	17.85
600	18.66
700	20.87
800	21.15
900	22.32
1000	24.22

8.6 For ITL # 1352 1-18 Horn Antenna

Frequency (GHz)	AF (dB/m)		Frequency (GHz)	AF (dB/m)
0.75	25		9.5	38
1.0	23.5		10.0	38.5
1.5	26.0		10.5	38.5
2.0	29.0		11.0	38.5
2.5	27.5		11.5	38.5
3.0	30.0		12.0	38.0
3.5	31.5		12.5	38.5
4.0	32.5		13.0	40.0
4.5	32.5		13.5	41.0
5.0	33.0		14.0	40.0
5.5	35.0		14.5	39.0
6.0	36.5		15.0	38.0
6.5	36.5		15.5	37.5
7.0	37.5		16.0	37.5
7.5	37.5		16.5	39.0
8.0	37.5		17.0	40.0
8.5	38.0		17.5	42.0
9.0	37.5		18.0	42.5

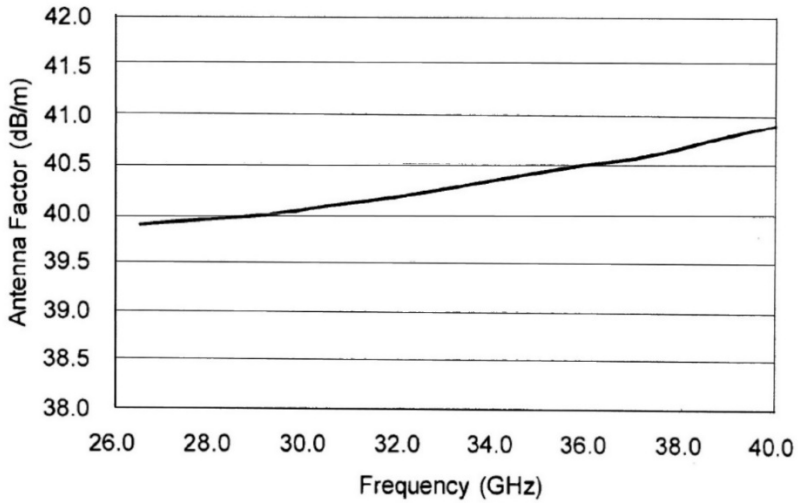
8.7 For ITL # 1353 18-26.5 GHz Horn Antenna

Frequency (MHz)	Measured antenna factor dB/m
18000	32.4
18500	32.0
19000	32.3
19500	32.4
20000	32.3
20500	32.8
21000	32.8
21500	32.7

Frequency (MHz)	Measured antenna factor dB/m
22000	33.1
22500	33.0
23000	33.1
23500	33.8
24000	33.5
24500	33.5
25000	33.8
25500	33.9
26000	34.2
26500	34.7

The antenna factor shall be added to the receiver reading in dBµV to obtain field strength in dBµ V/m.

8.8 For ITL # 1777 26.5-40 GHz Horn Antenna



8.9 For Horn Antenna Model: SWH-28

CALIBRATION DATA

3 m distance

Frequency MHZ	Measured antenna factor dB/m
18000	32.4
18500	32.0
19000	32.3
19500	32.4
20000	32.3
20500	32.8
21000	32.8
21500	32.7
22000	33.1
22500	33.0
23000	33.1
23500	33.8
24000	33.5
24500	33.5
25000	33.8
25500	33.9
26000	34.2
26500	34.7

[1] The antenna factor shall be added to receiver reading in dBµV to obtain field strength in dBµV/m.

End of Test Report