
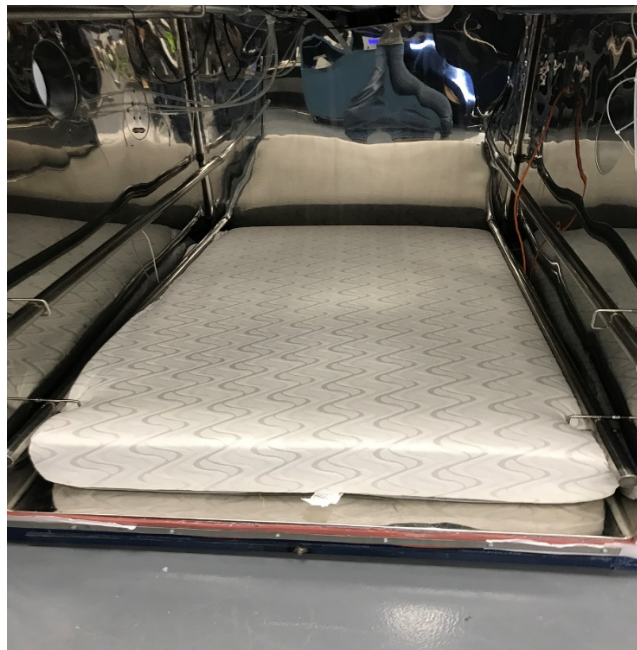




GREENGUARD CERTIFICATION TEST REPORT					
Customer Information	NEST BEDDING JOE ALEXANDER 835 SAN PABLO AVE ALBANY CA 94706				
Product Description	Nest Bedding® Love & Sleep Mattress®				
Test Group	Bedding - 01				
Category	Residential				
Test Type	Certification	Year 3			
Test Method	UL 2821 "GREENGUARD Certification Program Method for Measuring and Evaluating Chemical Emissions From Building Materials, Finishes and Furnishings Using Dynamic Environmental Chambers"				
GREENGUARD & GREENGUARD Gold	TVOC	Formaldehyde	Total Aldehydes	CREL/TLV	NMP
	✓	✓	✓	✓	✓
✓ - meets criteria; X - over criteria					
Laboratory Approval	 Allyson M. McFry Chemistry Laboratory Director				

MODELING FOR PREDICTED AIR CONCENTRATION					
Certification Program	Environment Basis	Modeling Basis	Surface Area (m²)	Room Volume (m³)	ACH (1/hr)
GREENGUARD and GREENGUARD Gold	EPA Exposure Factors Handbook	mattress	2.6	34.9	0.45

PHOTOGRAPH OF SAMPLE



GREENGUARD RESULTS SUMMARY

Product Description		Nest Bedding® Love & Sleep Mattress®	
GREENGUARD & GREENGUARD Gold Acceptable IAQ Criteria		168 Hour Product Measurement	Product Compliance for IAQ
TVOC ^a	≤ 0.22 mg/m ³	0.011 mg/m ³	Yes
Formaldehyde	≤ 0.0073 ppm	0.0015 ppm	Yes
Total Aldehydes ^b	≤ 0.043 ppm	0.004 ppm	Yes
1-Methyl-2-Pyrrolidinone	≤ 0.16 mg/m ³	< 0.001 mg/m ³	Yes
Individual VOCs	≤ 1/100 TLV and ≤ ½ chronic REL	See Below	

^a "TVOC" is the sum of all VOCs measured via TD/GC/MS which elute between n-hexane (C₆) and n-hexadecane (C₁₆) quantified using calibration to a toluene surrogate.

^b "Total Aldehydes" is the sum of all measured normal aldehydes from formaldehyde to nonanal, plus benzaldehyde. Heptanal through nonanal are analyzed using TD/GC/MS. The remaining aldehydes are analyzed using HPL/UV methodology. All aldehydes are quantified to authentic standards.

Note that certain environments and/or modeling scenarios may prevent assessment of low level CREL and TLV analytes due to the emissions being below the lower LOQ (0.04 µg). For example, benzene ½ CREL is 1.5 µg/m³.

Product Description		Nest Bedding® Love & Sleep Mattress®			
COMPOUNDS FOUND WITH EXISTING TLV OR CHRONIC REL					
CAS Number	Compound	1/100 TLV ^a (µg/m ³)	½ CA Chronic REL ^b (µg/m ³)	168 Hour Product Measurement (µg/m ³)	Product Compliance for IAQ
75-07-0	Acetaldehyde	450	70	4	Yes
149-57-5	Hexanoic acid, 2-ethyl	50.0	---	2	Yes
3333-52-6	Tetramethylbutanedinitrile	27.9	---	1	Yes

^a American Conference of Governmental Industrial Hygienists. Threshold Limit Values for Chemical Substances and Physical Agents. Cincinnati, OH: ACGIH.

^b <http://www.oehha.ca.gov/air/allrels.html> - Chronic Reference Exposure Levels (CRELs) Adopted by the State of California Office of Environmental Health Hazard Assessment (OEHHA).

PROJECT DESCRIPTION

This study was conducted using a UL Environment's GREENGUARD test method following the requirements of GREENGUARD Certification program. The product was monitored for emissions of total volatile organic compounds (TVOC), formaldehyde, target list aldehydes, and other individual volatile organic compounds (VOCs) over a 168 hour exposure period. These emissions were measured and the resultant air concentrations were determined for each of the potential pollutants. Determination of compliance is based on predicted air concentrations modeled using the GREENGUARD program room loading.

Report Outline:

Table 1	Environmental Chamber Study Parameters
Table 2	Emission Factors and Predicted Air Concentrations
Table 3	Emission Factors of Identified VOCs
Table 4	Emission Factor of Target List Aldehydes
Table 5	Supplemental Emissions Information
Chain of Custody	Chain of Custody

Download more information regarding UL's technical references and resources, product evaluation methodologies information, quality control program, and environmental chamber evaluations from our website [click here](#) or <https://www.ul.com/offers/greenguard-certification>

For RSD, Quality Assurance Report or other quality documents, [Request](#) here or contact ULE.

TABLE 1

ENVIRONMENTAL CHAMBER STUDY PARAMETERS	
Product Description	Nest Bedding® Love & Sleep Mattress®
Product Manufacture Date	November 18, 2019
Product Collection Date	Not Provided
Product Shipping Date	November 18, 2019
Date Received	November 20, 2019
Accredited Laboratory Location*	ULE - Marietta
Test Description	The product was received by UL Environment as packaged and shipped by the customer. The package was visually inspected and stored in a controlled environment immediately following sample check-in. Just prior to loading, the product was unpackaged and prepared for the required loading. The sample was placed inside the environmental chamber, and tested according to the specified protocol.
Test Period	12/2/2019 - 12/9/2019**
Area	one-sided area = 2.952 m ²
Chamber Volume	5.46 m ³
Product Loading	0.54 m ² /m ³
Test Conditions	1.00 ± 0.05 ACH 50% RH ± 5% RH 23.1°C - 24.4°C

**Unable to confirm product meets all GREENGUARD sampling requirements. Date(s) not provided on the Chain of Custody.

The temperature range specification is 23°C ± 1°. The actual temperature range listed above may vary slightly. If the range is outside this specification, data was reviewed to ensure a negative impact did not occur.

*Accredited Laboratory Locations	
Location	Address
ULE - Marietta	UL Environment 2211 Newmarket Parkway, Marietta, GA 30067-9399 USA
ULE - Guangzhou	UL Verification Services (Guangzhou) 1-3F & Room 501, Building 2 (R&D Center A1), No. 25, South Huanshi Avenue, Nansha District, Guangzhou 511458, China
ULE - Cabiante	UL International Italia S.r.l ATTN: IAQ Laboratory Via Europa, 9, I – 22060 – Cabiante (Como), Italia
ULE - Vietnam	UL VS (VIET NAM) CO. LTD., Lot C5, Conurbation 2, Street K1, Cat Lai Industrial Zone, Thanh My Loi Ward, District 2, Ho Chi Minh City, Vietnam
UL - Shimadzu	Shimadzu Techno-Research, Inc. 1, Nishinokyo-Shimoaicho Nakagyo-ku, Kyoto 604-8436 Japan
KCL	Korea Conformity Laboratories #805, I-Valley, 149 Gongdan-ro Gunpo-si, Gyeonggi-do, 15849 Korea

This test is accredited and meets the requirements of ISO/IEC 17025 as verified by ANSI National Accreditation Board. Refer to certificate and scope of accreditation AT-1297.

TABLE 2

Product Description		Nest Bedding® Love & Sleep Mattress®	
TVOC EMISSION FACTORS AND PREDICTED AIR CONCENTRATIONS			
Elapsed Exposure Hour*	Emission Factor µg/m ² •hr	Predicted Air Concentration** µg/m ³	
6	467	77	
24	293	50	
48	234	39	
72	163	30	
96	147	23	
168	62.9	11	
1 st Order Exponential Decay Constant = $k_T = 0.011$			
FORMALDEHYDE EMISSION FACTORS AND PREDICTED AIR CONCENTRATIONS			
Elapsed Exposure Hour*	Emission Factor µg/m ² •hr	Predicted Air Concentration**	
		µg/m ³	ppm
6	17.0	3	0.002
24	17.4	3	0.002
48	14.6	2	0.002
72	13.9	2	0.002
96	11.9	2	0.002
168	11.3	2	0.002
Power Law Decay Constant = $k_F = 0.234$			
TOTAL ALDEHYDE EMISSION FACTORS AND PREDICTED AIR CONCENTRATIONS			
Elapsed Exposure Hour*	Emission Factor µg/m ² •hr	Predicted Air Concentration**	
		µg/m ³	ppm
6	232	38	0.021
24	106	18	0.010
48	68.3	12	0.007
72	59.8	10	0.006
96	50.1	8	0.005
168	37.2	6	0.004
Power Law Decay Constant = $k_A = 0.536$			

*Exposure hours are nominal (± 1 hour).

BQL = Below quantifiable level of 0.04 µg based on a standard 18 L air collection volume for VOCs and 0.1 µg based on a standard 45 L air collection volume for aldehydes.

**Predicted Air Concentrations are based on GREENGUARD modeling predicted concentration parameters. For more information [click here](#).

TABLE 3

Product Description		Nest Bedding® Love & Sleep Mattress®					
EMISSION FACTORS OF IDENTIFIED INDIVIDUAL VOLATILE ORGANIC COMPOUNDS							
CAS Number	Compound	Elapsed Exposure Hour µg/m ² •hr					
		6	24	48	72	96	168
541-02-6	Cyclopentasiloxane, decamethyl	61.6	37.6	30.0	25.5	21.8	14.7
149-57-5	Hexanoic acid, 2-ethyl [†]	23.9	21.4	22.5	13.7	13.8	11.8
629-59-4	Tetradecane [†]	22.2	18.9	16.3	9.8	10.0	7.8
1330-20-7	Xylenes (Total) [†]	18.4	7.9	4.9			
556-67-2	Cyclotetrasiloxane, octamethyl	18.3	10.5	7.1	4.6		
123-86-4	Acetate, butyl	15.4	7.1	4.5			
141-79-7	3-Penten-2-one, 4-methyl*	12.8	7.0	4.6			
1112-55-6	Silane, tetraethenyl-*	12.6	10.8	10.0	5.7	6.4	5.6
540-97-6	Cyclohexasiloxane, dodecamethyl	11.8	8.7	7.4	6.5	6.5	4.5
108-65-6	1-Methoxy-2-propyl acetate*	11.5	5.7	3.7			
112-40-3	Dodecane [†]	11.3	10.4	6.2	4.6	4.4	
5989-27-5	D-Limonene*	11.2	6.9	5.3	6.4	4.6	
1000462-98-6	(-)-Isopinocampheol, trimethylacetate*	10.5	7.8	6.3	4.6	6.0	
112-41-4	1-Dodecene	10.1	7.2	5.9	4.4	4.2	
127-18-4	Ethene, 1,1,2,2-tetrachloro (Tetrachloroethylene) [†]	9.8	3.8				
295-17-0	Cyclotetradecane	9.6	7.7	6.8	4.3	4.7	
71-36-3	1-Butanol (N-Butyl alcohol) [†]	9.5	4.7				
80-56-8	Pinene, a (2,6,6-Trimethyl-bicyclo[3.1.1]hept-2-ene)	9.4	6.2	4.9			
3333-52-6	Tetramethylbutanedinitrile** [†]	8.6	6.2	5.2	4.8	5.2	3.8
4537-11-5	Benzene, (1-butylhexyl)	8.5	8.0	9.8	6.3	7.0	
108-88-3	Toluene (Methylbenzene)	8.5					
627-69-0	1,2-Propanediol, 1-acetate*	8.4	5.4	8.6	6.6	6.4	4.5
629-62-9	Pentadecane	8.3	6.3	7.1	4.6	4.8	
111-76-2	Ethanol, 2-butoxy [†]	8.2	5.9	4.5	4.0		
100-41-4	Benzene, ethyl [†]	7.9	4.6				
4537-12-6	Benzene, (1-propylheptyl)*	7.4	5.1	5.1	4.9		
79-01-6	Ethene, 1,1,2-trichloro (Trichloroethylene) [†]	7.4					
13287-24-6	Nonadecane, 9-methyl-*	7.3	5.7	4.9			
112-71-0	Tetradecane, 1-bromo-*	7.0					
4621-36-7	Benzene, (1-ethyloctyl)*	6.9	6.7	7.1	4.0	4.7	
85763-57-1	11-Methyldodecanol*	6.7					
544-76-3	Hexadecane (Cetane) [†]	6.7	6.6	6.9	4.2	5.4	
144-39-8	1,6-Octadien-3-ol, 3,7-dimethyl-, propanoate*	6.3	4.2				
124-19-6	Nonyl aldehyde (Nonanal) [†]	6.0	4.6	4.6	7.6	6.4	

Product Description		Nest Bedding® Love & Sleep Mattress®					
EMISSION FACTORS OF IDENTIFIED INDIVIDUAL VOLATILE ORGANIC COMPOUNDS							
CAS Number	Compound	Elapsed Exposure Hour µg/m ² •hr					
		6	24	48	72	96	168
62376-17-4	Cyclohexane, 1,2-dimethyl-3-pentyl-4-propyl*	5.9					
74630-39-0	1-Undecene, 4-methyl-*	5.8					
25551-13-7	Trimethylbenzene (All Isomers)†	5.0					
106-46-7	Benzene, 1,4-dichloro†	4.9	4.0				
57-55-6	1,2-Propanediol (Propylene glycol)	4.7					
55956-25-7	2-Propanol, 1-[1-methyl-2-(2-propenyloxy)ethoxy]*	4.4	4.8	5.0			
719-22-2	2,5-Cyclohexadiene-1,4-dione, 2,6-bis(1,1-dimethylethyl)*	4.1	4.0	4.4	4.3	5.0	4.0
141-63-9	Pentasiloxane, dodecamethyl	4.0					
142-82-5	Heptane	3.9					
2425-77-6	1-Decanol, 2-hexyl*		4.3	4.0			
112-82-3	Hexadecane, 1-bromo-*		5.1				
14905-56-7	Tetradecane, 2,6,10-trimethyl-*		4.6				

*Indicates NIST/EPA/NIH best library match only based on retention time and mass spectral characteristics.

†Denotes quantified using multipoint authentic standard curve. Other VOCs quantified relative to toluene.

Quantifiable level is 0.04 µg based on a standard 18 L air collection volume.

TABLE 4

Product Description		Nest Bedding® Love & Sleep Mattress®					
EMISSION FACTORS OF TARGET LIST ALDEHYDES							
CAS Number	Compound	Elapsed Exposure Hour µg/m²•hr					
		6	24	48	72	96	168
4170-30-3	2-Butenal	BQL	BQL	BQL	BQL	BQL	BQL
75-07-0	Acetaldehyde	198	84.2	49.1	38.3	31.8	25.9
100-52-7	Benzaldehyde	BQL	BQL	BQL	BQL	BQL	BQL
5779-94-2	Benzaldehyde, 2,5-dimethyl	BQL	BQL	BQL	BQL	BQL	BQL
529-20-4	Benzaldehyde, 2-methyl	BQL	BQL	BQL	BQL	BQL	BQL
620-23-5 / 104-87-0	Benzaldehyde, 3- and/or 4-methyl	5.4	BQL	BQL	BQL	BQL	BQL
123-72-8	Butanal	BQL	BQL	BQL	BQL	BQL	BQL
590-86-3	Butanal, 3-methyl	BQL	BQL	BQL	BQL	BQL	BQL
50-00-0	Formaldehyde	17.0	17.4	14.6	13.9	11.9	11.3
66-25-1	Hexanal	5.2	BQL	BQL	BQL	BQL	BQL
110-62-3	Pentanal	BQL	BQL	BQL	BQL	BQL	BQL
123-38-6	Propanal	5.0	BQL	BQL	BQL	BQL	BQL

BQL = Below quantifiable level of 0.1 µg based on a standard 45 L air collection volume.

TABLE 5

SUPPLEMENTAL EMISSIONS INFORMATION

The table below represents this product's identified chemical emissions found on certain regulatory lists. This list only provides a statement regarding possible health effects associated with this compound and not the relative risks of exposure. Proper interpretation of the risks associated with exposure to a given regulated compound requires a more detailed evaluation of toxicological activity. Certain purchasing programs may require this information be submitted.

Product Description		Nest Bedding® Love & Sleep Mattress®					
CAS Number	Compound	✓() = FOUND IN LISTING (CLASS)					
		CAL PROP. 65	NTP	IARC	CAL AIR TOXICS	CREL	TLV
71-36-3	1-Butanol (N-Butyl alcohol) [†]				✓(IVB)		✓
141-79-7	3-Penten-2-one, 4-methyl						✓
75-07-0	Acetaldehyde	✓(1)	✓(2B)	✓(2B)	✓(IIA)	✓	✓
123-86-4	Acetate, butyl						✓
106-46-7	Benzene, 1,4-dichloro [†]	✓(1)	✓(2B)	✓(2B)	✓(IIA)	✓	✓
100-41-4	Benzene, ethyl [†]	✓(1)		✓(2B)	✓(IIA)	✓	✓
5989-27-5	D-Limonene			✓(3)			
111-76-2	Ethanol, 2-butoxy [†]			✓(3)	✓(IIA)		✓
127-18-4	Ethene, 1,1,2,2-tetrachloro (Tetrachloroethylene) [†]	✓(1)	✓(2B)	✓(2A)	✓(I)	✓	✓
79-01-6	Ethene, 1,1,2-trichloro (Trichloroethylene) [†]	✓(2)	✓(2B)	✓(2A)	✓(IIA)	✓	✓
50-00-0	Formaldehyde	✓(1)	✓(2A)	✓(1)	✓(IIA)	✓	✓
142-82-5	Heptane						✓
149-57-5	Hexanoic acid, 2-ethyl [†]	✓(1)					✓
80-56-8	Pinene, a (2,6,6-Trimethyl-bicyclo[3.1.1]hept-2-ene)						✓
123-38-6	Propanal				✓(IVA)		✓
3333-52-6	Tetramethylbutanedinitrile [†]						✓
108-88-3	Toluene (Methylbenzene)	✓(2)		✓(3)	✓(IIA)	✓	✓
25551-13-7	Trimethylbenzene (All Isomers) [†]						✓
1330-20-7	Xylenes (Total) [†]			✓(3)	✓(IIA)	✓	✓

[†]Denotes quantified using multipoint authentic standard curve

CAL Prop. 65: California Health and Welfare Agency, Proposition 65 Chemicals

1 = known to cause cancer

2 = known to cause reproductive toxicity

NTP: National Toxicology Program

2A = known to be carcinogenic to humans

2B = reasonably anticipated to be carcinogenic to humans

IARC: International Agency on Research of Cancer

1 = carcinogenic to humans

2A = probably carcinogenic to humans

2B = possibly carcinogenic to humans

3 = unclassifiable as to carcinogenicity to humans

4 = probably not carcinogenic to humans

Date Issued: December 20, 2019
Product ID#: 1000811990-2628748
Test Report #: 1000811990-2628748
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California Air Toxics

- I = Substances identified as Toxic Air Contaminants, known to be emitted in California, with a full set of health values reviewed by the Scientific Review Panel.
- IIA = Substances identified as Toxic Air Contaminants, known to be emitted in California, with one or more health values under development by the Office of Environmental Health Hazard Assessment for review by the Scientific Review Panel.
- IIB= Substances NOT identified as Toxic Air Contaminants, known to be emitted in California, with one or more health values under development by the Office of Environmental Health Hazard Assessment for review by the Scientific Review Panel.
- III = Substances known to be emitted in California and are NOMINATED for development of health values or additional health values.
- IVA = Substance identified as Toxic Air Contaminants, known to be emitted in California and are TO BE EVALUATED for entry into Category III.
- IVBA =Substance NOT identified as Toxic Air Contaminants, known to be emitted in California and are TO BE EVALUATED for entry into Category III.
- V = Substance identified as Toxic Air Contaminants, and NOT KNOWN TO BE EMITTED from stationary source facilities in California based on information from the AB 2588 Air Toxic "Hot Spots" Program and the California Toxic Release Inventory.
- VI = Substances identified as Toxic Air Contaminants, NOT KNOWN TO BE EMITTED from stationary source facilities in California, and are active ingredients in pesticides in California.

CREL: California Office of Environmental Health's Hazard Assessment (OEHHA), Chronic Reference Exposure Levels

✓ = Found in Listing

ACGIH TLV American Conference of Governmental Industrial Hygienists Threshold Limit Values for Chemical Substances and Physical Agents.

✓ = Found in Listing.

Date Issued: December 20, 2019
 Product ID#: 1000811990-2628748
 Test Report #: 1000811990-2628748
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 RES2

CHAIN OF CUSTODY

INTERNAL Use Only			
Project #	1000811990		
Product #	2628748		
Order #	13086166		
Task Line	1.1	UL BU	
____ of _____			

2628748		2628748	
Description Nest Bedding Love & Sleep Mattress			
Customer: Nest Bedding			
Received Date:		Aurora Project No.: 1000811990	
2019-NOV-20 09:15:24 AM		Order No.: 13086166	
		Oracle Project No.:	
		2 of 3	

Rush Request – Subject to upcharge. Customer must confirm with UL prior to submitting product.

GREENGUARD Test Information			
Test Type	<input checked="" type="checkbox"/> Certification Test • Annual/Initial Year 3		<input type="checkbox"/> Out-of-Scope Test
	<input type="checkbox"/> Quarterly Test • Year Quarter		<input type="checkbox"/> Profile Study Test
Service Line	<input checked="" type="checkbox"/> GREENGUARD <input checked="" type="checkbox"/> GREENGUARD GOLD <input type="checkbox"/> Other		
Test Group	Bedding - 01		
Product Category	Mattresses & Bedding	Subcategory	Mattresses
Application	<input type="checkbox"/> Floor/Ceiling <input type="checkbox"/> Panel <input type="checkbox"/> Wall <input type="checkbox"/> Work Surface <input type="checkbox"/> Other:		
Wet Products Only	Coverage Rate	Density	Specific Gravity

Product and Company Information			
Product Description	Nest Bedding® Love & Sleep Mattress®		
Manufacture ID#			
Company Name	Nest Bedding	Date Manufactured	11/18/2019
		Contact Name	Joe Alexander
		Job Title	
Address		Contact Phone	
		Contact Email	joe@nestbedding.com

Collection Information			
Collector Name		Date Collected	mm/dd/yyyy
Collector Phone		Time Collected	
Collector Signature		Collection Location	

Shipping Information			
Carrier	Fed. Ex	Date Shipped	mm/dd/yyyy 11-18-19
Shipper Name	Brooklyn Bedding	Time Shipped	
Shipper Phone	602-786-7714	Air Bill #	7770 1483 3099
Shipper Signature	[Signature]		

Sample Submitted to			
<input checked="" type="checkbox"/> UL Environment (Marietta) 2211 Newmarket Pkwy Suite 106 Marietta, GA 30067, USA	<input type="checkbox"/> UL Verification Services (Guangzhou) Building A1, 3F, Nansha Science and Technology Innovation Ctr. No. 25, South Huanzhi Avenue, Nansha District, Guangzhou 511458, China	<input type="checkbox"/> UL International Italia S.r.l ATTN: IAQ Laboratory Via Europa, 9 I - 22060 - Cabiato (Como), Italia	<input type="checkbox"/> Other

Post Testing Sample Disposition			
(Sample will be disposed of 30 days after report is issued if information below is not provided)			
Return Shipping Co.		Customer Shipping Acct #	

Internal Use Only – Receiving Information			
Receiver Name	[Signature]	Receiver Signature	[Signature]
Condition Upon Arrival	<input checked="" type="checkbox"/> Acceptable <input type="checkbox"/> Not Acceptable	Receive Date	11/20/19
Condition Notes		Receive Time	8:45 AM
Completed By	ULE	Based On	Program Testing Schedule
		Date	10/17/2019

00-EN-F0853 – Issue 5.0